NATIONAL UNIVERSITY OF MONGOLIA
ECONOMIC INSTITURE

# SOCIO-ECONOMIC IMPACT ASSESSMENT OF OYU TOLGOI IN MONGOLIA DURING COVID-19 PANDEMIC

ULAANBAATAR
2021

Oyu Tolgoi

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This study represents the authors' views and does not represent the EI position.

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Prepared and published by "BCI" LLC

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# EXECUTIVE SUMMARY

At present, when the COVID-19 pandemic continues spreading around the world, a research team from the Economic Institute at the National University of Mongolia has examined the impact of Oyu Tolgoi on the Mongolian economy at the macro level, including economic growth, exports, tax revenues, emerging industrial links between foreign investors and domestic producers. The scope of research was considerably wide, including the impact of the OT company on local suppliers, the Mongolian economy and society, especially the labor market, changes in the employees'capacity, local development, local budgeting, global copper market trends, Mongolian own resources and future trends.

The present study was conducted at a time when the impact of the COVID-19 pandemic on our economy has been enormous and direct, indirect and induced impacts of the company were studied. For the first time, an online survey of 154 suppliers that cooperated with the company within Mongolia was conducted, which allowed to clarify the socio-economic development process and the impact related to the OT operations that were not previously studied. In addition to a detailed analysis of OT suppliers by industry, duration of cooperation, changes in cooperation forms, the survey was particularly significant for a detailed study of the employees' years of service, their expertise, their economic status, changes in the above and strengthening of their professional skills.

Between 2011 and 2020, the mining sector averaged 21.7 percent of Mongolian GDP. During this period, mining investment accounted for 73.4 percent of Mongolian total FDI. The slowdown in the Mongolian FDI growth coincided with a slowdown in the FDI inflows due to the global COVID-19 pandemic, with a 22.2 percent decline in FDI in the mining sector, which contributed to 18.5 percent decline in total FDI.

In 2012 t0 2020 the OT company paid to the budget 8.5 trillion MNT in taxes, generating 7.25 to 13.51 percent of annual tax revenue, and paid an average of 188.26 billion MNT in taxes, fees and payments on a quarterly basis. When the amount of fees and payments made by the OT increased by 1 percent, the budget revenue of Mongolia increased by an average of 0.81 percent. In 2020, the OT accounted for 9.72 percent of the national budget revenue. The share of the OT company in the state budget tax revenue increased by 0.95 percentage points compared to the previous year before the pandemic, and the amount of total taxes and fees paid to Umnugovi aimag increased by 2.32 percent in 2020 during the COVID-19 pandemic compared to 2019. The amount of taxes and fees paid by OT to the aimag budget has increased every year, and its share has reached 31 percent, 43 percent and 47 percent in 2018, 2019 and 2020, respectively. If this situation continues, in 2021, the OT payments alone will generate 50 percent of the aimag budget.

The OT exports in total exports of Mongolia accounted for 15.4 percent on average of the past 4 years, reaching the highest level of 20.4 percent in the 4th quarter of 2018, and the lowest level of 10.4 percent in the 3rd quarter of 2019. When the OT exports changed by 1 percentage point, Mongolian exports changed by an average of 0.47 percentage points.

The Mongolian copper sector levies royalties at 5 percent of the standard sales price, similar to the tax rate in copper sectors in other developing countries, so it can be considered "competitive and commercially negotiable". In 2019, Mongolia's copper royalty revenues increased by 22.4 percent, which was caused by 25.7 percent increase in copper prices, and 3.3 percent decrease in copper sales. During the COVID-19 pandemic, the OT copper sales remained unchanged, increasing by 10.6 percent compared to 2019. Copper prices were up 9.2 percent and volumes were up 1.3 percent, which affected sales growth. The impact of copper prices on sales remains high.

As of the fourth quarter of 2020, the Mongolian mining sector employed 3.9 percent of total employed in the country. At the same time, the average salary of employees in Mongolia was 1328.1 thousand MNT, the average salary in Ulaanbaatar was 1423.2 thousand MNT, and the average salary in Umnugovi aimag was 1395.0 thousand MNT. As of December 2020, the OT had 12,364 employees. There were 2,852 local residents from Umnugovi aimag, which made up 26.8 percent of the total labor force. 1720 OT staff and staff from contractor companies participated in a random survey to determine the COVID-19 pandemic impact on OT employment. According to the survey, 86.2 percent of the total employees were skilled professionals. By geographical location, 73.3 percent of employees were from Ulaanbaatar, 12.1 percent were from Umnugovi aimag, 5.8 percent came from Darkhan-Uul aimag, 4.1 percent were from Orkhon aimag, and the rest came from other aimags. Of survey participants 52.9 percent were the sole bread winners for the family and sustained in average 3 people on their salary. 73.9 percent of OT employees earned salaries above the national average or more than 1.5 million MNT. The household income of OT employees increased in 2020 compared to 2019. Incentives and support provided by the organization also helped in keeping household incomes stable. Due to the COVID-19 pandemic impact 60.8 percent of household members of the OT staff had shorter working hours and 25.3 percent had lower salaries, which affected decline of the livelihood. If senior management, executive level managers, managers and supervisors/ superintendents are included in the management staff, the share of Mongolian employees has increased to 72.4-81 percent compared to that in 2013. If specialists/ professionals and technical staff are included in the engineering- technical staff, their number increased from 91.8 to 94.3 percent in the past 7 years. The share of young people aged 25-34 employed by the OT was higher compared to the average in the industry.

According to the OT Investment Agreement, more than 120 million USD has been invested in implementation of phased projects and programs in the educational sector, resulting in 1 mining school, 4 vocational training centers and 15,649 people benefiting from the project and strengthening their professional skills.

As of 2020, 770 foreign and domestic companies were cooperating with the OT. 154 suppliers participated in the COVID-19 pandemic impact study. Although some changes were made in working hours and schedules of the OT suppliers due to the COVID-19 pandemic, 42.9 percent of suppliers generated new workplaces and 28.6 percent kept their workplaces. As for suppliers, 92.9 percent of survey respondents viewed that cooperation with the OT company affected strengthening of skills and capacity of their staff. In 2020, 77.3 percent of suppliers' employees participated in professional training, 67.5 percent - in safety training, and 44.2 percent participated in quality standards training, which made a positive impact on their skills upgrading.

In the past 3 years' entities with profits of 100-500 million MNT and entities with annual profits from 1-10 billion MNT accounted for nearly 60 percent of entities. The share of business entities with sales revenue of up to 100 million MNT has increased. While in 2020 there were 50 entities, which profit from the OT company decreased, that of 68 entities increased compared to previous years.

In 2019, the supplier entities paid in average 55.6 million MNT for social insurance, in 2020 they paid 41.9 million MNT for social insurance. The reason for the decrease in the amount of social insurance paid in 2020 was related to the measures taken in relation to the COVID-19 pandemic, namely, premium to be paid by the entity and the employee was decreased to 5 percent. In 2020, the amount of social insurance paid by 47 entities increased. As for the VAT, the amount of VAT paid by 75 entities (49 percent) increased in 2020. In addition, the amount of corporate income tax paid by 66 supplier entities increased by its absolute meaning.

In 2019, a total of 657.5 billion MNT in taxes was collected in the state budget due to the direct, indirect and induced impact of the OT. In 2020, the pandemic year, the OT and its suppliers paid a total of 626.5

billion MNT in taxes. The multiplier effect of the OT on the national economy went from 1.43 in 2019 to 1.39 in 2020. For SMEs cooperating with the OT, the estimated multiplier effect was 1,292 in 2019, which slightly decreased to 1,288 in 2020.

The mining industry and copper mining as its part play a very important role in the Mongolian national economy. By the mining contribution index, Mongolia is on the 3rd place in the world, which means that mining makes more contribution to the national economy compared to Uzbekistan (16), Kazakhstan (17), Georgia (22) and Russia (23). According to the International Labor Organization survey, Mongolia ranks second in the world by the percentage of jobs created by the mining sector in total employment.

The global copper demand is going to continuously grow in the future related to progress in the renewable energy industry, electric and hybrid car production, urbanization, electrification and changes in the healthcare sector. Researchers view that the COVID-19 pandemic impact leads to the beginning of a new era of copper.

With regard to the Oyu Tolgoi underground mine development, Tsagaan Suvarga and other deposits that are at the exploration stage presently, Mongolia has an opportunity to become a major global supplier in the copper market.

Since there are many opportunities for the mining industry in our country to develop intensively in the future, contribution of this sector and its significance in support of employment and creation of new workplaces will be growing.

# ACKNOWLEDGEMENTS

The research team at the Economic Institute of the National University of Mongolia is happy to evaluate every three years years the benefits of the mega-project implemented in Mongolia based on the OT company statistics, quantitative data and other related data and report our findings to the general public. The previous study assessed the OT impact on Mongolian development, while the present study examines the OT impact during the COVID-19 pandemic. Recognizing the dynamic environment at a time of rapid evolution and change of economic and social issues can help present multi-dimensional development issues in a realistic, clear, and open way.

Mongolia enters a new development cycle, evaluating the new historical opportunities and new challenges of the past three decades, formulating its vision and values and following the Sustainable Development Goals approach. We would like to express our deep gratitude to the OT management and the staff of units that worked with us for cooperation that makes a real contribution to applied economic research.

I would like to notice that the present research was carried out by representatives of three generations and express my sincere gratitude to the consultants and researchers, who have worked side by side on two studies.

Many thanks to Lkhamaa Yo. for her orderly, organized, responsible approach to our day-to-day research activities.

Many thanks to the VMLY&R Mongolia company team and Baigalmaa B., who collaborated with us on this study.

# ABBREVIATIONS

| | |
|---|---|
| **CAGR** | Compound Annual Growth Rate |
| **FDI** | Foreign Direct Investment |
| **GDP** | Gross Domestic Product |
| **EMC** | Erdenet mining company |
| **ICMM** | International Council on Mining and Metals |
| **LQ** | Local Quotient |
| **ILO** | International Labor Organization |
| **ISCG** | iShares Morningstar Small-Cap Growth |
| **HDI** | Human Development Index |
| **MNT** | Mongolian currency |
| **MRUT** | Mineral Resources Use Tax |
| **OFHC** | Oxygen-free high conductivity copper |
| **OT company** | Oyu Tolgoi company |
| **VAT** | Value Added Tax |

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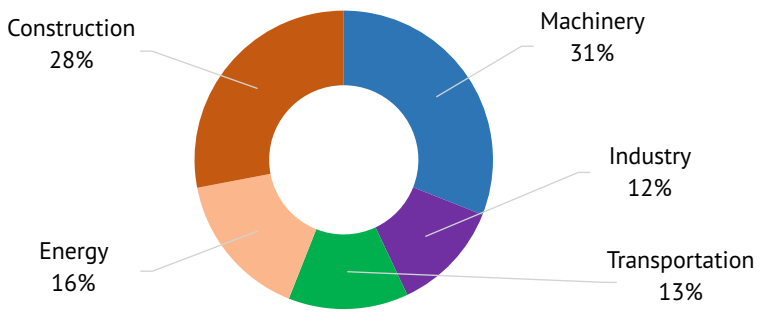
# I. COMPARISON OF THE IMPACT OF THE COPPER AND MINING INDUSTRY ON NATIONAL

## 1.1 GLOBAL DEMAND FOR COPPER

Copper has become an indivisible part of human consumption. New discoveries and new products in the science and the industrial sectors led to sharp increase in copper consumption[1] .

The demand for copper in the energy sector, electronics, construction, production of industrial machinery and mechanisms, equipment, transport, consumer goods and other household use has grown at the global level in average three times in the last 50 years[2] . According to the survey by the International Copper Study Group, the equipment production sector is the largest end use consumer of copper followed by the construction and infrastructure sectors (ISCG, 2020).

*Figure 1.1. Copper end use, 2019*




*Source: the International Copper Study Group report, 2020*

If we look in detail at the demand for copper by kinds, copper is used widely in following products:

- Electric cars
- Appliances for electric cars' charging stations and batteries
- Electric batteries (alkaline)
- New materials for internal combustion engines, copper brass alloy
- Materials for new energy forms (nuclear fusion) - oxygen-free high-conductivity copper (OFHC)
- PV connectors for solar panels (reducing loss and maximizing the solar panel battery power)
- Cables for electric trains
- Internal ducts for air conditioners that are more effective and environmentally-friendly

1 7401 – Copper mattes; cement copper (precipitated copper)
7402 – Unrefined copper; copper anodes for electrolytic refining
7403 – Refined copper and copper alloys, unwrought
7404 – Copper waste and scrap
7405 – Master alloys of copper
7406 – Copper powders and flakes
7407 – Copper bars, rods and profiles
7408 – Copper wire
7409 – Copper plates, sheets and strip, of a thickness exceeding 0,15 mm
7410 – Copper foil (whether or not printed or backed with paper, paperboard, plastics or similar backing materials) of a thickness (excluding any backing) not exceeding 0,15 mm
7411 – Copper tubes and pipes
7412 – Copper tube or pipe fittings (for example, couplings, elbows, sleeves)
7413 – Stranded wire, cables, plaited bands and the like, of copper, not electrically insulated

2 Otgochuluu.Ch, 2020, thesis

- Interconnection for mainboards of electronic appliances, copper pillar technology
- Surfaces with anti-microbial properties at the time of COVID-19 pandemic
- Use in the food industry, copper alloy mesh
- Green construction (batteries), energy saving
- Copper contents in the human body is vital for the health
- Copper in public construction is important for public health due to its anti-microbial properties

According to survey findings of international institutions specializing in copper studies[3] , global copper consumption reached 24.4 million tons in 2019[4] . Researchers noticed that in the past years, copper consumption has shifted to the Asian continent. For example, in 2019, 70 percent of total copper demand was concentrated in Asia. This growth in demand is closely related to urbanization, energy industry development and electrification.

The sectors with the highest copper consumption and their break down into several main sectors by end use can be identified as:

- Construction and assembly – including water supply networks, industrial construction, architecture, communications and electric power;
- Infrastructure – including electricity and communications;
- Production of equipment - including industrial, electric machinery and non-electric machinery production; transport (electric cars, cars with engines other than electric; other accessories);
- Other kinds of appliances and equipment (consumer goods, air conditioning appliances, electronic goods)

As seen from the abovementioned sectors, the energy industry uses copper in large quantities and in a wide frame. In comparison with other metals, copper has a very effective electricity conductivity, which allows production of copper cables for high, medium and low voltage power networks. Copper is an essential ingredient for production of highly efficient electric generators, motors, conductors and all kinds of equipment and appliances for renewable energy sources. For energy systems based on progressive technologies that generate power from solar, wind, thermal energy, copper is the most important raw material due to its high conductivity. As we mentioned earlier, copper is a crucial product for the computer and communications industry.

Copper is also an important ingredient for traditional industries and infrastructure. For instance, copper tubing for drinking water systems in apartment buildings is now standard in most developed countries. Compared to plastic tubes, copper tubes have an advantage due to their anti-microbial properties and lack of emission of harmful substances. As copper tubes are fire- resistant, it also increases greatly reliability of fire-fighting systems during natural disasters and fires.

The demand for the red metal is on the increase in the industrial machinery and mechanism production, as well as equipment production. Ample use of copper in brakes, fixtures, turbine valves of the heavy machinery and large trucks is related to the durability of copper, its mechanical strength, ductility and malleability. Resistance of copper to pressure in a high temperature environment is used for increasing the safety and reliability of brakes and engines.

Another interesting example of copper use in almost every sector is a practice of adding copper in the fodder for animals in fishery farms and traditional farms. Copper is very effective in fighting malnutrition in animals caused by mineral deficiency.

3 World Copper Factbook 2020, International Copper Study Group

4 Clean copper products

The demand for copper is continuously increasing in the marine transport sector. The marine transport plays an important role in the global trade. The bottom of transport ships is covered with copper and copper-nickel alloys, which greatly lessens the friction force and also reduces the fuel consumption.

Cars, trucks and other kinds of vehicles have high contents of copper in them. For example, engines, electric connectors, radiators, joints, brakes, bearings and other protective elements are made of copper. Lately, electric vehicles (EV) production uses four times more copper compared to production of traditional cars. It is related to the fact that use of copper is the most effective resolution in production of batteries, the motor fans and winches, electric connections and battery storage.

By 2019, about 3 million electric cars were in use at the global scale and this number is expected to rise sharply year by year. The main limitation for increased use of electric cars is charging stations. In the future, the network of charging stations will expand with each of charging batteries using 8 kilograms of copper.

Copper is a highly efficient conductor of not only electricity, but also heat. It is easy to recycle, so radiators and cooling systems of heavy-duty trucks are frequently made of copper. Use of copper in production of fuel-efficient planes and powerful locomotives in the railway sector is growing rapidly. For instance, production of high-speed trains requires 2-4 tons of copper per train.

## 1.2. GLOBAL COPPER CONSUMPTION AT THE TIME OF THE COVID-19 PANDEMIC, CHANGES IN IT – THE NEW ERA OF COPPER

The COVID-19 pandemic made a major impact on the global economy including the metal ore market and the copper market. As for copper, it is viewed that the COVID-19 pandemic affected the market in three main directions[5] . At the global scale, a transition to online communication was made and it became possible to work and get education online, which was one of the major factors of the pandemic impact. Secondly, the "green" technology development, which is taking place at a global scale has made a big impact and thirdly, use of copper in the healthcare sector and properties of copper that are examined from the perspectives of its use in treatment attracted attention of researchers[6] .

In the communications industry, at the time of the pandemic, such countries as the USA, the EU, Japan and China started actively introducing the highest speed 5G telecommunications networks with new standards. This electronic revolution makes a direct positive impact on the copper industry, so researchers called the era of the COVID-19 pandemic "the new age of copper" [7]. For example, it was calculated that a Chinese national 5G network alone will require some 72000 tons of copper[8] . Apart from it, 4G communications networks being built around the world, cables and wire necessary for other types of communication drive the demand for copper wire.

As for green development, continuous growth of the electric car industry and development of renewable energy is playing the main role. Solar panels and batteries for them, the wind turbines require a twelve times greater amount of copper compared to the traditional power production[9] . According to the survey by the Glencore company, electric cars use four times more copper compared to traditional vehicles (Glencore 2017).

5 https://voxeu.org/article/covid-19-and-new-age-copper

6 https://blogs.iadb.org/energia/en/covid-19-precipitated-the-age-of-copper-are-producing-countries-prepared-to-supply-the-world-and-capture-greater-value/

7 https://www.cnbc.com/2020/06/24/coronavirus-why-the-pandemic-could-spark-a-copper-rally.html

8 Mills, R (2020), "5G and Metals", 2020

9 Copper Development Association, 2020

Copper use in the healthcare industry has a trend for increase due to its antimicrobial properties. Even before the COVID-19 pandemic, it was estimated that the sector would drive one million tons of demand over the next 20 years. During the pandemic the industry's copper demand has grown sharply[10] .

This boost in future demand and beginning of the new era of copper is taking place against a backdrop of tightening supply in five countries – Chile, Peru, Indonesia, Australia, and Canada that export three quarters of traded copper concentrate[11] . The reason for this is that due to stagnation in the global copper market since 2012, leading miners limited exploration and new project development. COVID-19 has brought the construction of most of new projects to a halt. In Chile, the underground expansion of two largest copper mines (El Teniente and Chuquicamata) has been stopped, while Teck Resources' Quebrada Blanca announced a six-month delay as it sought to protect its 15,000 strong workforce[12] .

Similarly, Peru's new project, Quellaveco, was brought to a standstill. According to researchers' calculations, due to the COVID-19 impact in the beginning of 2020 the copper output of Peru, one of the major exporters in the world, fell by 23 percent, as 75 percent of its workforce went home in a nationwide quarantine, new projects were halted and expansion work was stopped. Thus, a supply gap appeared at the market and prices started growing. For instance, the copper price reached a high level in 2020 and continued to grow in 2021. In January 2021, the copper price at the London Metal Market reached the highest level in the last 8 years reaching 8238 US dollars per ton. As researchers view, the COVID-19 pandemic made a major impact on the growing price of copper, and changes in demand and supply along with other related factors that also influenced this price growth[13] . Another major impact on the price growth is the Chinese market recovery. The industry has recovered in China, on the other hand, supply of copper scrap declined and the control over the processing of copper scrap has been strengthened by the Chinese government.

*Figure 1.2. Macroeconomic trends of copper demand*


*Source: Copper Prices - 45 Year Historical Chart | MacroTrends*

10 Morrison, (2019), "Global copper market under supplied, demand on the rise – report".
Morrison, J (2020), "Copper's Virus-Killing Powers Were Known Even to the Ancients", Smithsonian.

11 COVID-19 and the new age of copper: Opportunities for Latin America, Karina Fernandez-Stark, Penny Bamber, Martin Walter, 07 October 2020

12 Reuters 2020b, Fundacion Terram 2020, Jamasmie 2020

13 Are higher copper prices here to stay? Fastmarkets analysis, 2021

Changes in the demand and supply of the copper market related to the COVID-19 pandemic and the effect of policies have driven the market price of copper and the price reached its highest level in the last 8 years. There is a high probability of slow growth of copper supply due to uncertainty of the market for the long period.

The Global Copper Report 2020 published by the International Copper Study Group in 2019, reported that the U.S. Geological Survey conducted a geological assessment of the global copper resources (with regard to the international standards). Estimates of undiscovered deposits that might be added to the present resources were evaluated at approximately 3.5 billion tons of copper. The amount of total copper that might be discovered in the world (including those that cannot be exploited) might equal 5.6 billion tons[14] . In 2019, economically efficient copper reserves in Chile equaled 210 million tons, in other words, 23 percent of total global reserves, in Australia – 88 million tons or 12 percent, in Peru – 82 million tons or 11 percent and in Mexico- 46 million tons or 6.4 percent.

According to the 2020 report of the International Copper Study Group, there were about 360 registered operating copper mines worldwide with total capacity of 22 million tons and utilization of the capacity equaled in average 87-90 percent. Chile is leading in the world by the production volume and 9 major copper mines that are operating in this country produce 25-30 percent of the global copper. They are followed by the 2 major mines in Peru[15] .

*Table 1.1. Largest copper mines, 2018*

| Exporter country (total production, million tons) | The large mine, (reserves, million tons) and (output, thousand tons) | Main operating company, years of operation before closure |
|---|---|---|
| (reserves, million tons) and | Escondida (32), (1,100) | BHP, 30 years |
| CHILE (5.3) | Collahuasi (26), (282) | Anglo-American, 90 years |
| | Andina (18.8), (250) | Codelco, 75 years |
| | El teniente (15.2), (417) | Codelco, 36 years |
| | Radomiro tomic (12.1), (427) | Codelco, 28 years |
| | Los bronces (11.1), (365) | Anglo-American, 30 years |
| | Los pelambres (…), (400) | Antofagasta |
| | Chuquicamata (…), (350) | Codelco |
| | Radomiro tomic (12), (330) | Codelco, 36 years |
| PERU (2.4)* | Toquepala (17.65), (152) | Joint stock company |
| | Cerro verde (12.9), (270) | Freeport |
| | Antamina (…), (450) | BHP |
| | Las bambas (7.2), (450) | MMG |
| | Toromocho (…), (250) | |
| CHINA (1.8) | Zijinshan (…), (210) | Jiangxi copper |
| | Shuguang (…), (230) | Jiangxi copper |
| USA (1.3) | Morenci (5), (520) | |
| | Bingham canyon (), (280) | Rio Tinto, |
| AUSTRALIA (0.9) | Olympic dam (146), (225) | BHP, 50 years |
| INDONESIA (0.7) | Grasberg (28), (0.4) | Freeport |
| CANADA (0.6) | Highland valley (30), (100) | Teck resources |

** Investment in last years: 28.3 billion USD dollars estimated to increase output*

14 Supporting studies, including documentation of the assessment methodology and descriptions of individual tracts, are available on the USGS Mineral Resources Program Web site, at https://www.usgs.gov/energy-and-minerals/mineral-resources-program/science/global-mineral-resource-assessment

15 Otgochuluu.Ch, 2020, thesis

The demand for copper is expected to grow steadily year after year. Of the 30 largest projects in the world to be launched in 2019 the Oyu Tolgoi underground mining project is to be the first to start mining.

It is evident that the Oyu Tolgoi project, the MAK project, and the Erdenet Mining Corporation are playing an increasingly important role in the Mongolian economy. At present, the Erdenet is not capable of increasing its production significantly, the MAK project has not started, so the only way to increase copper production is to start operations at the Oyu Tolgoi underground mine. Development of the global copper industry, rising prices and demand for copper are opening up huge new opportunities for the Mongolian economy. Since copper is a key raw material for electric vehicles in terms of technology, development of the copper industry in Mongolia means that our economy can make a significant contribution to emergence of a new generation of technology around the world and fulfill its role in global sustainable development. In the future, the Mongolian economy has an opportunity to enter a new stage of development by processing copper and producing new value-added products along with mining and copper concentrate production. In a word, copper is the engine of our future economy.

## 1.3. MONGOLIA

Mongolia has 11,444 million tons of copper ore and 79,548.6 million tons of copper by metal with market price of 529 billion US dollars by 2018 estimates. Exploration works are conducted actively at the present[16] . Presently operating mines are Erdenet and Oyu Tolgoi and will be followed by the mine at Tsagaan Suvarga deposit, which is at the preparation stage[17] . In 2013 when the Erdenet Mining Corporation was operating alone in Mongolia, the copper export accounted for 22.2 percent of the total export of the country. Since 2014, when the Oyu Tolgoi mine started operating, the share of copper export in the total export of our country grew to 54.5 percent and in 2015, it reached 49 percent[18] . When the OT underground mine development is successfully completed, it is expected that starting from 2022-2023, production of the Oyu Tolgoi mine will grow three to four times from the present one. Apart from the Oyu Tolgoi mine these following projects are at the preparation stage that are planned to be mining copper and are at the exploration stage:

*Table 1.2. New copper projects in Mongolia*

| Company | Mine | Explanation |
|---|---|---|
| Erdene | Zuun Mod | Finishing exploration stage |
| Xanadu Mines | Sharchuluut | Exploration stage |
| Xanadu Mines | Oyun Ulaan | Drilling and sample analysis stage |
| MAK | Tsagaan Suvarga | Expected annual capacity: processing of 14.6 million tons of ore |
| Xanadu Mines | Kharmagtai | Drilling and sample analysis stage |
| Xanadu Mines | Khutag Uul | Exploration stage |
| Central Asia Mines | Alag Bayan | Exploration stage |
| Erdene | Khuviin khar | Pre-production stage |
| Erdene | Altan Nar | Exploration stage |

*Source: Companies' websites, BMI company: Mongolian Mining Report*

The copper concentrate export is going to take an important place in the foreign trade in the nearest 20-30 years. By the situation in 2016-2018, the copper industry accounted for 40-50 percent of the Mongolian export, for 15-20 percent of the budget revenue, attracted 70-80 percent of the foreign direct investment and accounted for about 20 percent of the Gross Domestic Product. What is the relation of the development of copper industry and the national economy compared to other countries?

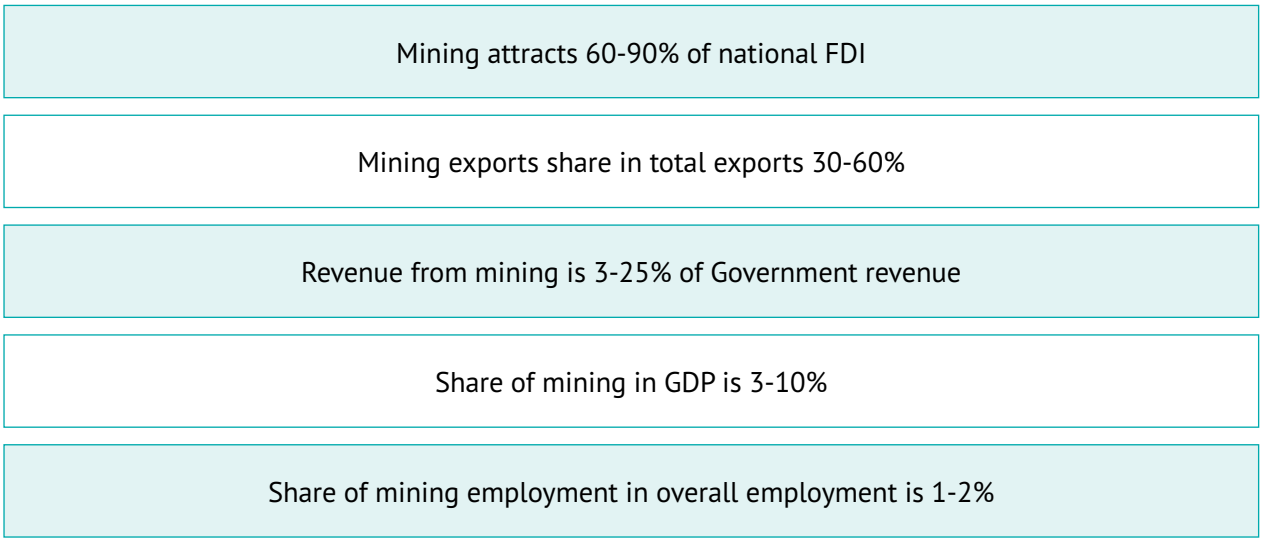
According to the survey by the International Council on Mining and Metals (ICMM 2014 MCI 3), when the contribution of copper industry in the revenues of low- and middle-income countries was compared, the mining sector accounted for 60-90 percent of the Foreign Direct Investment, for 30-60 percent of export and 3-25 percent of the budget income. As for Mongolia, the majority of the Foreign Direct Investment was made to the mining sector and a large part of it went to the Oyu Tolgoi copper project. It can be concluded that the mining sector and its contribution to the Mongolian economy was higher than the global average. It can be illustrated by comparing the indexes.

16 The middle-term Development framework of Mongolia (2018-2025), N report

17 The Tsagaan Suvarga deposit is located in Dornogovi aimag, 110 km northeast of Oyu Tolgoi. Due to its location at the distance of 250 km to Sainshand, it is possible to connect it to an integrated raw material export transportation network in the future. As of the deposit, the MAK company calculated the ore reserves according to the JORC standard in 2006-2007, and in September 2009 it was approved by the EBMZ. However, according to the (old) official classification followed at the time, the total reserves were estimated at1.6 million tons of copper (metal), 66 thousand tons of molybdenum and 11 thousand tons of gold. Its production capacity is planned to be 14.6 million tons of processed ore per year. For example, production of copper concentrate is planned to be 316 thousand tons per year (content 25.7%) and that of molybdenum concentrate - 4.4 tons (content 52%). The mine is planned to be operational for 18 years.

18 Ch. Otgonchuluu, 2020, thesis

*Figure 1.3. Comparison of the mining contribution in the economy of developing countries*




*Source: ICMM, 2014*

As seen from this table, in the Mongolian economy, compared to that of other developing countries, the level of employment in the mining sector was higher, its share in the export was greater, and its share in the budget revenue and in the GDP was larger compared to other countries. Thus, when mining contribution in the Mongolian economy and its impact were compared to that of other countries, importance of mining to the economic life of our country was quite high. The Mining Contribution Index developed by the ICMM[19] combines data on

- export contribution
- mining's contribution to GDP
- mining revenue as percentage of GDP

Results of calculations of the mining contribution for Mongolia were high. In the 2020 list, Mongolia ranked 3rd in the world by this index list in 2020. Detailed observation of every indicator as follows:

- The export contribution was 85.6 percent
- The mining's contribution to GDP was 37.6 percent
- The share of mining revenues in GDP was 28.8 percent

*Table 1.3. The international Mining Contribution Index, the first 23 countries*

| Overall position | Country | Index rating | Share of metals and coals in overall export | Share of metals and coal in GDP | Share of mining rent in GDP |
|---|---|---|---|---|---|
| 1 | Surinam | 98.1 | 80.1 | 45.28 | 19.92 |
| 2 | Congo | 97.6 | 91.1 | 32.7 | 16.17 |
| 3 | Mongolia | 95.7 | 85.6 | 37.61 | 28.8 |
| 4 | Zambia | 95.5 | 76.1 | 20.64 | 14.62 |
| 5 | Guinea | 94.6 | 82.6 | 14.30 | 9.68 |
| 6 | Burkina Faso | 94.4 | 76.6 | 16.0 | 9.4 |
| 7 | Kyrgyzstan | 91.3 | 54.4 | 11.89 | 11.18 |
| 8 | Sudan | 91.3 | 40.6 | 12.15 | 12.70 |

19 ICMM

| Overall position | Country | Index rating | Share of metals and coals in overall export | Share of metals and coal in GDP | Share of mining rent in GDP |
|---|---|---|---|---|---|
| 9 | Mali | 90 | 75.6 | 16.03 | 8.19 |
| 10 | Zimbabwe | 88.2 | 44.5 | 17 | 3.74 |
| 11 | Peru | 88 | 60.5 | 13.04 | 8.21 |
| 12 | Bolivia | 87.8 | 43.3 | 6.66 | 4.11 |
| 13 | Mozambique | 87.6 | 67.2 | 11.13 | 0.62 |
| 14 | Namibia | 86.7 | 50.6 | 6.61 | 4.19 |
| 15 | Gana | 85.5 | 38.3 | 8.48 | 5.65 |
| 16 | Uzbekistan | 82.7 | 27.1 | 9.50 | 7.37 |
| 17 | Kazakhstan | 79.2 | 13.2 | 11.57 | 4.18 |
| 18 | Senegal | 78.4 | 24.2 | 2.55 | 1.11 |
| 19 | Columbia | 77.2 | 22.8 | 3.13 | 0.52 |
| 20 | Guana | 77.1 | 59.2 | 19.99 | 15.13 |
| 21 | Jamaica | 76.7 | 47.9 | 0.62 | 1.17 |
| 22 | Georgia | 74.7 | 19.7 | 1.06 | 0.48 |
| 23 | Russia | 73.9 | 11 | 3.27 | 1.01 |

*Source: ICMM 2014*

This index indicators have been growing in the past years. In 2016, Mongolia took the 20th place by this index, but by 2018, it advanced by 17 places and became one of the first 3 countries in the world by mining contribution index. With the growing impact of the COVID-19 pandemic on the economy, many business entities found themselves in a difficult situation. Production and exports have fallen down in general and GDP fell by 5.3 percent in 2020. The role of the mining industry in the Mongolian economy and its significance have become even greater. The mining contribution to exports, GDP and the budget income were previously mentioned. Another important indicator is the share of mining employment in the total employment of the country. According to the International Labor Organization survey by the indicator of mining employment in total employment Mongolia took the 2nd place among the countries covered by the survey (3.7 percent, with Peru in the 1st place – 4.3 percent).

*Table 1.4. Mining employment in total employment, by percent, 2014*

| Country | Year | Employment in mining | Overall employment | Share of mining employment in overall employment, in percent |
|---|---|---|---|---|
| Peru | 2013 | 198,000 | 4,598,800 | 4.3% |
| Mongolia | 2014 | 40,900 | 1,110,700 | 3.7% |
| Kazakhstan | 2013 | 249,300 | 8,570,600 | 2.9% |
| South Africa | 2014 | 428,000 | 15,317,000 | 2.8% |
| Ukraine | 2015 | 399,100 | 16,443,200 | 2.4% |
| Namibia | 2013 | 13,600 | 685,700 | 2.0% |
| Bolivia | 2014 | 100,300 | 5,082,000 | 2.0% |
| Zambia | 2012 | 90,000 | 5,386,100 | 1.7% |
| Liberia | 2010 | 17,000 | 1,091,000 | 1.6% |
| Zimbabwe | 2014 | 92,300 | 6,265,900 | 1.5% |
| Madagascar | 2012 | 126,800 | 10,441,900 | 1.2% |
| Ghana | 2010 | 112,700 | 10,243,500 | 1.1% |
| Senegal | 2011 | 41,200 | 3,777,900 | 1.1% |
| Guinea | 2012 | 53,300 | 4,982,500 | 1.1% |

| Country | Year | Employment in mining | Overall employment | Share of mining employment in overall employment, in percent |
|---|---|---|---|---|
| Bulgaria | 2015 | 25,700 | 3,031,900 | 0.8% |
| Iran | 2014 | 159,500 | 21,304,300 | 0.7% |
| Armenia | 2015 | 8,000 | 1,072,600 | 0.7% |
| Philippines | 2015 | 234,500 | 38,740,800 | 0.6% |
| Turkey | 2015 | 118,800 | 26,618,500 | 0.4% |

*Source: ILO report and survey*

When countries with large copper resources are compared, Mongolia follows Peru by the indicator of the share of mining employment in total employment, with higher indicator than that of Kazakhstan. In Chile, leading by its copper reserves, copper production accounted for 5-20 percent of GDP, which is higher than in Mongolia[20] . Between 2003 and 2016, metal exports averaged 51 percent of the total shipments overseas, or the equivalent of US $31540 billion a year. The share of copper in total exports in Mongolia is not that high, the total export is in average 6-7 billion US dollars. Mongolia receives more export revenue from copper compared to Chile. In Chile average salaries are twice higher than the regional average in regions where copper mining is the main activity (while the regional average was 16 thousand US $, in 2015 the average GDP per capita in the copper region was over 30 thousand US$ and the average salary was 80-110 percent greater compared to the average of other regions). Between 1990 and 2016, copper mining provided on average of 7.8 percent of tax revenue for Chile. Since this indicator was constantly fluctuating, Chile approved a Stabilization Law, and later Mongolia used the Chilean expertise to establish a Budget Stabilization Fund. Poverty rates in Chile fell from 40.5 percent in 1990 to 8.5 percent in 2015. The mining industry has also created around 400,000 jobs, nearly half of them indirect, which made a significant impact on the 20 billion US dollars suppliers' sector. Regarding mining Research & Development in Chile, there are more than 350 researchers with doctorates working in the mineral resource sector, which represents 6 percent of the total number of researchers with doctorates nationwide. As a result of copper industry development in Chile in the past 30 years, poverty was reduced by 30 percent and GDP per capita quadrupled.

Peru mines nearly 1 million ton of copper annually receiving 23 percent of total export revenue. Between 1990-2000, the mineral exports of this country increased 15 times and at the present it takes the 3rd place in the world by their copper export following Chile by the mining competitiveness index. In Peru, the share of mining in GDP is 12 percent and the mining revenue accounts for the 50 percent of total export. Mongolia does not lead the world by its copper reserves like Peru, but mining exports and the mining revenues account for a higher share in GDP. In Peru, the mining employment multiplier for the non-mining sector employment was 3.2. The capital investment in the mining sector reached 14 million US dollars. According to the survey, the mining sector accounted for 1/3 of the GDP growth in Peru[21] and 13-17 percent of the budget revenue was made up by mining revenue.

**Chapter conclusions**

The global copper demand is going to continuously grow related to progress in the renewable energy industry, electric and hybrid car production, urbanization, electrification and changes in the healthcare sector.

Copper reserves in Mongolia are not very large compared to the global reserves, but in the future, with

20 The Impacts of Copper Mining in Chile Economic and Social Implications for the Country, Copper Alliance, 2017

21 McKinsey, Assessment of Copper industry in Peru, 2013

exploitation of the underground mine in Oyu Tolgoi, the Tsagaan Suvarga and other projects that are presently at the exploration stage, copper mining in our country has an opportunity to become an important major global supplier.

The mining industry and copper mining as its part plays a very important role in the Mongolian national economy. By the mining contribution index, Mongolia is on the 3rd place in the world, which means that mining makes more contribution to the national economy compared to Uzbekistan (16), Kazakhstan (17), Georgia (22) and Russia (23). Compared to Peru and Chili that have greater copper reserves, mining contribution to the national economy is higher in our country. It is related to greater reserves of coal and other kinds of minerals apart from copper and also to the fact that development of other industries in our country is relatively lower compared to the above mentioned countries.

Mining sector employment is very important in our country. According to the International Labor Organization survey Mongolia takes the 2nd place in the world by the percentage of workplaces created in mining in total employment. Since there are many opportunities for the mining industry in our country to develop intensively in the future, contribution of this sector and its significance in support of employment and creation of new workplaces will be growing.

It is important to increase mining contribution in the national economy in the future, to use it as an impetus for economic growth and development, to develop other economic sectors with support of this contribution, to develop a policy of diversification as in Chili and other countries.

**Future trends**

Over the past 25 years, the copper demand increased twice and according to the survey by the McKinsey Global Institute in 2035 the demand for copper is likely to grow by 43 percent compared to the present level. In the report about the global copper industry made by the Fitch Solutions company[22] , from 2021 the global demand will exceed the global supply. For instance, by estimates of the International Copper Study Group, by 2025 there will be a supply gap of 5 million tons of copper at the global market (equal to about 30 percent of Oyu Tolgoi production). Technological progress, urbanization, electrification, the energy revolution, the global population growth, increasing income of developing countries, revolutionary technologies in the renewable energy industry- all of these factors will contribute to the growing global demand in copper by 3.4-4.0 percent annually.

Although copper consumption in China grew by in average 8-12 percent in the period between 2000-2010, in the past years it slowed down to 4.5-5 percent. According to the International Monetary Fund electronic database statistics, the GDP per capita in China grew to 10000 US dollars and copper consumption per capita reached 8 kilograms (compared to 30 kg in Taiwan and 22kg in South Korea). Total consumption of copper will grow as the Chinese population grows and will reach 11 million tons by 2025. Since GDP per capita will increase as well, copper consumption per capita will exceed the present level of 8kg coming closer to the present level in South Korea.

The situation is different as for supply. The reserves of copper mines in the Latin America and Chili might quickly become depleted and production will reduce.

22 Fitch Solution, 2019, Copper Prices: Downside Revision A Trade Dispute Continues To Impact Prices

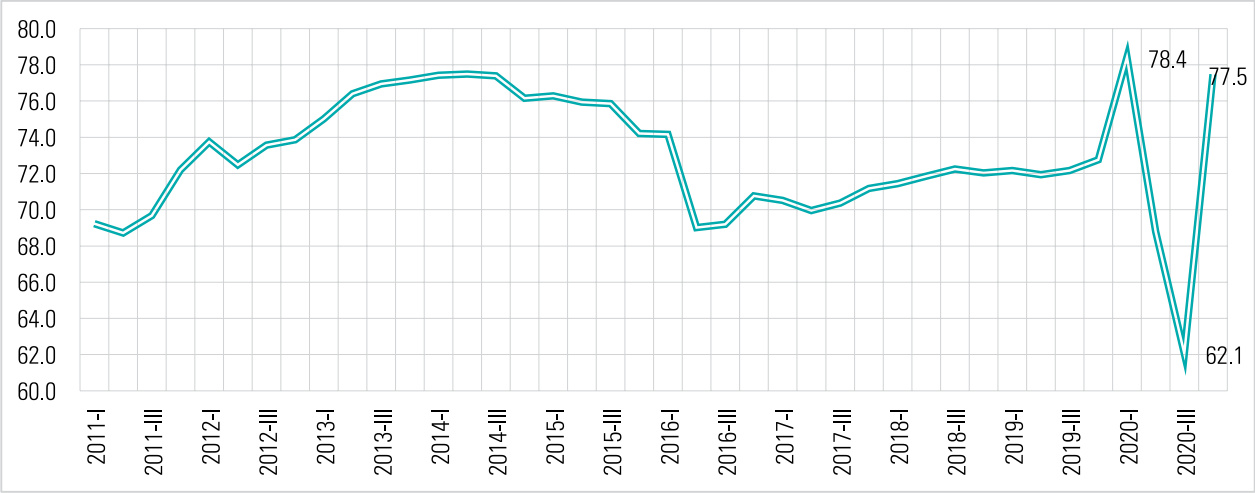
# II. IMPACT OF THE OYU TOLGOI ON THE MONGOLIAN ECONOMY

## 2.1. 2.1 GDP AND THE FOREIGN DIRECT INVESTMENT

Mining industry is the major sector that supports the national economy of Mongolia and economic development at present. The growth and fall of GDP are directly dependent on the growth and development of this industry and revenues from mining become a basis for the economic development. The share of mining in the Mongolian GDP was in average 21.7 percent in the period between 2011-2020.

Since development of mining industry requires considerable investment and Mongolia has limited opportunities for domestic investment, it is based on the Foreign Direct Investment. In the period between 2011-2020, in average 73.4 percent of the Foreign Direct Investment in Mongolia was allocated in the mining sector.

*Figure 2.1. Share of the mining investment in the Foreign Direct Investment*

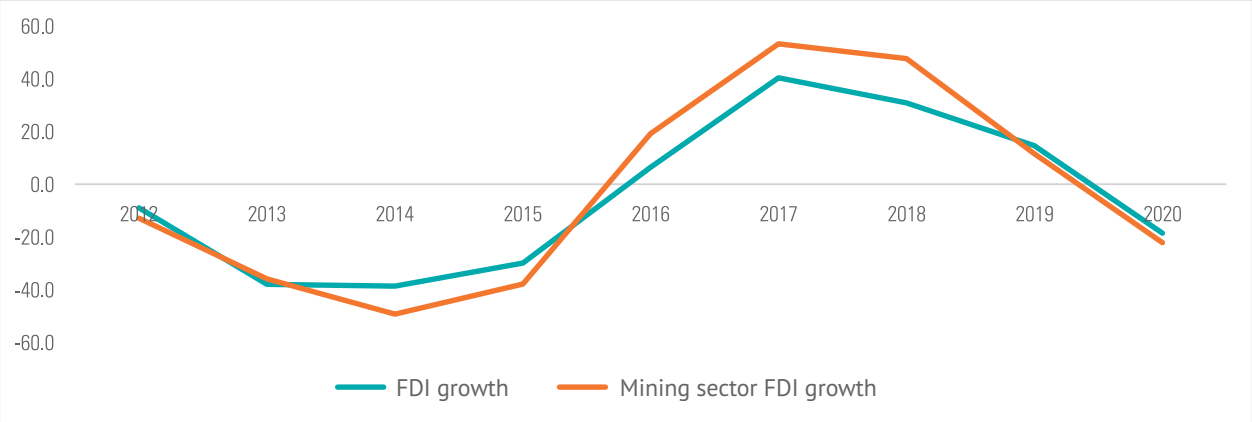



*Source: NSO, Mongol Bank*

According to the Mongol Bank report, in 2019, the Foreign Direct Investment equaled 3133 million US dollars; by 2020, it fell to 2548 million US dollars with reduction of 22.8 percent, which is related to the COVID-19 global pandemic. Due to the impact of this pandemic, the share of the mining sector in the FDI fluctuated- in the first quarter of 2020, it was 78.4 percent, while in the third quarter of 2020, it fell down to 62.1 percent. It was the greatest change in the structure since the second quarter of 2016, when problems related to delay of the Oyu Tolgoi project investment happened. However, since the fourth quarter of 2020, the project investment grew again.

In total, the share of the mining investment in total FDI is 73.4 percent, which shows that changes in FDI are determined by the changes in the FDI in the mining industry, in other words, dynamic changes in both are similar.

*Figure 2.2. FDI and the FDI growth in the mining sector*

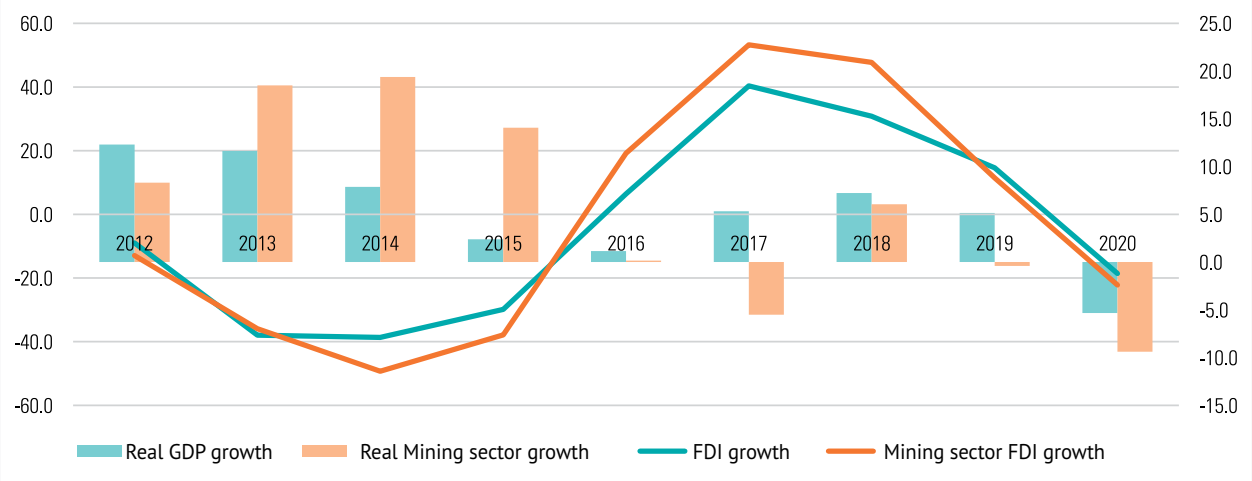



*Source: NSO*

Since 2017, there was a sharp rise in FDI related to the Oyu Tolgoi underground mine investment, which led to the overall FDI growth. As the investment speed has slowed down due to the global COVID-19 pandemic, the FDI flow has also slowed down. The FDI in the mining sector decreased by 22.2 percent, which caused decrease of the total FDI by 18.5 percent.

Let's examine dynamic changes in the real GDP of Mongolia in relation to the dynamic changes in the real mining sector.

*Figure 2.3. Real GDP, real mining sector FDI growth dynamics*




*Source: NSO, Mongol Bank*

Although it may seem that in the years of decreased FDI growth was observed in the GDP and the mining sector, it might be explained in relation to completion of investment in the open mine in Oyu Tolgoi and with the start of the mining operations in this mine. Although investment in the OT mine related to development of the underground mine started peaking up since 2017, it did not support fully the GDP and the mining sector growth. It can be seen that in 2020, the COVID-19 pandemic affected negatively the growth of FDI, GDP and the mining sector.

## 2.2. THE IMPACT OF TAXES, FEES AND PAYMENTS MADE BY OT LLC TO THE MONGOLIAN NATIONAL GDP

The GDP of the country can be calculated with use of three approaches, namely the production, expenditure and income approaches. One of the above, the income approach to calculate GDP, includes the production and import taxes and fees, so GDP = Total National Income + Sales Taxes + Depreciation + Net Foreign Factor Income. Via the taxes and fees paid by the OT company, the GDP growth is affected.

*Table 2.1. GDP and total payments made by the OT company to Mongolia*

| | Oyutolgoi payments | Nominal GDP | Share (%) |
|---|---|---|---|
| 2016Q4 | 121,269.1 | 6,845,296.0 | 1.8% |
| 2017Q1 | 122,121.8 | 5,563,338.5 | 2.2% |
| 2017Q2 | 135,468.2 | 7,607,596.2 | 1.8% |
| 2017Q3 | 146,722.1 | 6,985,786.8 | 2.1% |
| 2017Q4 | 196,556.0 | 7,719,575.7 | 2.5% |
| 2018Q1 | 185,189.9 | 6,642,626.1 | 2.8% |
| 2018Q2 | 183,907.5 | 8,517,119.7 | 2.2% |
| 2018Q3 | 205,432.0 | 8,181,737.7 | 2.5% |
| 2018Q4 | 222,322.6 | 9,069,740.6 | 2.5% |
| 2019Q1 | 226,500.4 | 7,658,989.4 | 3.0% |
| 2019Q2 | 208,608.3 | 9,795,506.9 | 2.1% |
| 2019Q3 | 217,915.3 | 9,725,215.5 | 2.2% |
| 2019Q4 | 202,318.5 | 10,212,917.3 | 2.0% |
| 2020Q1 | 201,720.7 | 7,181,928.3 | 2.8% |
| 2020Q2 | 168,131.3 | 9,697,166.3 | 1.7% |
| 2020Q3 | 188,991.6 | 9,927,940.1 | 1.9% |
| 2020Q4 | 267,238.7 | 10,522,511.0 | 2.5% |

*Source: NSO, OT*

Since the taxes, fees and payments made by the OT company were given in the prices of the given year, the GDP of Mongolia was also taken by the prices of the given year. Although by the prices of the given year the Mongolian GDP in 2020 had slight growth, the real GDP shows 5.4 percent decrease.

According to the descriptive statistical indicators, in the period until the end of the fourth quarter 2020, the OT paid in average 188.3 billion MNT per quarter, which accounted for 2.25 percent of GDP in Mongolia.

*Table 2.2. Total payments by OT company and descriptive statistics of GDP in Mongolia (billion MNT)*

| | N | Mean | Median | Standard deviation | Range | Minimum | Maximum |
|---|---|---|---|---|---|---|---|
| Oyutolgoi LLC payments | 17 | 188.26 | 196.56 | 39.29 | 145.97 | 121.27 | 267.24 |
| Nominal GDP | 17 | 8,344.4 | 8,181.7 | 1,471.5 | 4,959.2 | 5,563.3 | 10,522.5 |

*Source: NSO, OT*

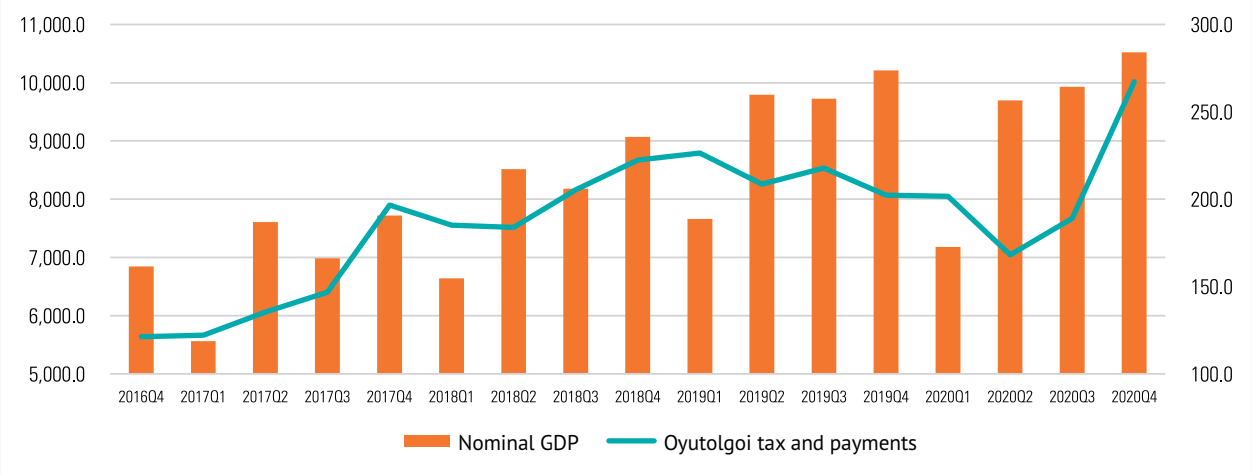
Since the taxes, fees and payments made by OT company are given in the prices of the given year, the GDP of Mongolia is also taken by the prices of the given year. Although the Mongolian GDP in 2020 had slight growth, the real GDP shows 5.4 percent decrease.

According to the descriptive statistical indicators, in the period until the end of the fourth quarter 2020, the OT company paid in average 188.3 billion MNT per quarter which accounted for 2.25 percent of GDP in Mongolia.

In that period, payments were at least 121.27 billion MNT (fourth quarter 2016) or 1.7 percent of GDP at that time and the greatest level was 267.24 billion MNT (fourth quarter 2020) or 2.5 percent of GDP at that time. in that period, the difference between the highest and the lowest meanings was 145.97 billion MNT.

In 2019, before the global pandemic, payments by OT company were 855.34 million MNT or 2.29 percent of GDP in Mongolia, while in 2020, it was 826.02 million MNT or 2.21 percent of GDP decreasing by 0.08 percent points.

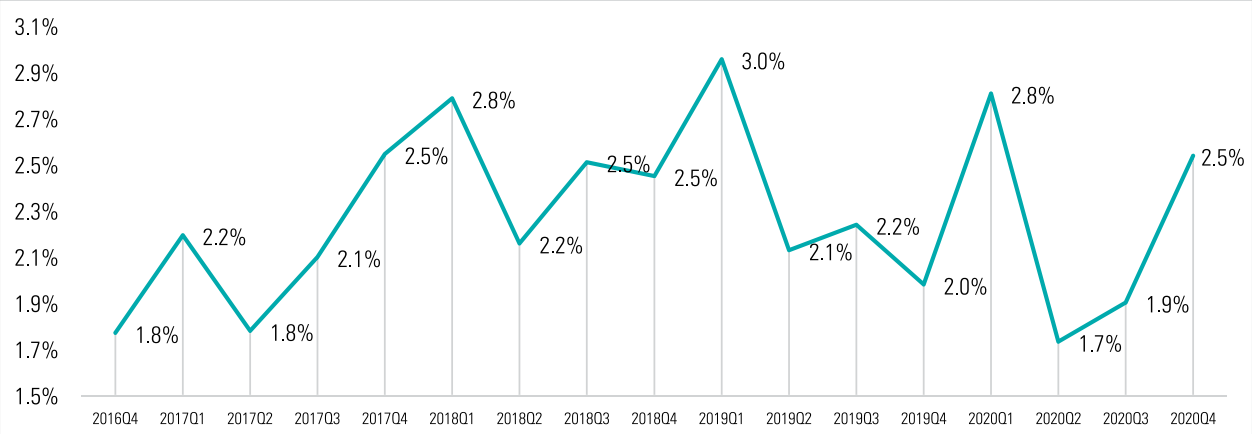
*Figure 2.4. GDP and dynamics of total payments by OT company to Mongolia (billion MNT)*




*Source: NSO, OT*

With regard to the economic situation in Mongolia, in the first quarter of each year, when the GDP is at its lowest, the taxes and payments by the OT company to Mongolia had the highest share in GDP. It is shown by the following figure.

*Figure 2.5. Share of total payments by the OT company in the GDP of Mongolia*



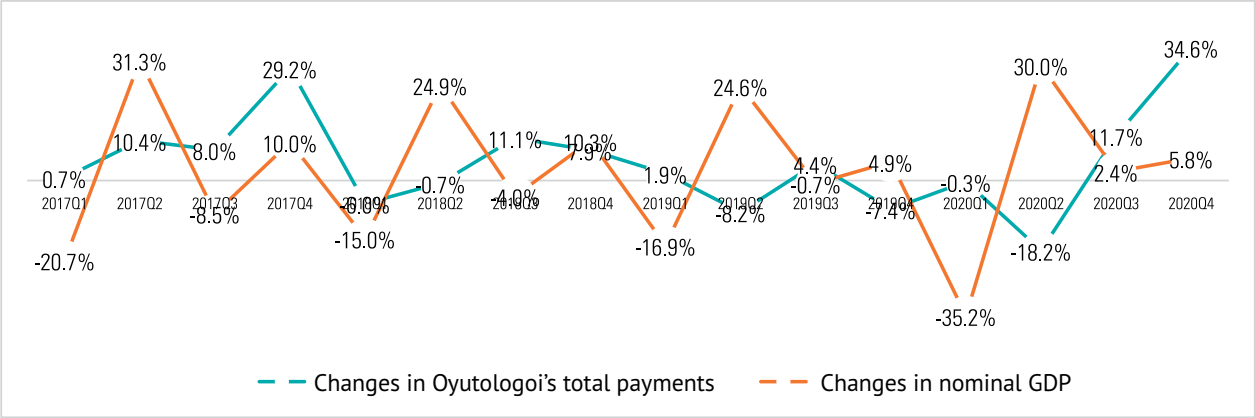

*Source: NSO, OT*

When compared to 2019, due to impact of the COVID-19 pandemic the share reduced in the first 3 quarters, which led to the lowest level of the share in GDP, but in the fourth quarter of 2020, the OT paid the

highest amount of payments and reached the level of fourth quarters in 2017 and 2018.

If we examine the changes, they were related to different restrictive measures and lockdowns related to the COVID-19 pandemic, closure of the borders and other similar activities in that period. In the first quarter of 2020 the GDP of Mongolia had the highest decrease compared to the previous quarter.

*Figure 2.6. GDP and changes in total payments by OT company to Mongolia, by quarters (%)*




*Source: NSO, OT company*

In 2019, the payments by the OT company to Mongolia and fluctuations in relative increase and decrease of taxes, fees and payments were slight, but in the second quarter of 2020, it decreased by 18.2 percent, the biggest slump. However, in the third quarter it increased by 11.7 percent and in the fourth quarter it reached the highest growth level of 34.6 percent.

We examined whether the GDP and the payment made by the OT company to Mongolia had a long-term correlation by using the cointegration test. Since GDP was given by quarters, we made amendments to the given quarter fluctuations and used them in the analysis. As the 2 variables were not stable, we used the ranking difference to make them stable. As the analysis findings showed, these 2 have a long-term constant correlation. In the long run, the amount of payments made by the OT company, its increase by 1 percent leads to 0.52 percent increase in the GDP of Mongolia.

As for the coefficient, it has statistical significance at the level of 1 percent. If the Granger causality test is viewed at the meaning of one period, it can be concluded that the Oyu Tolgoi company payments and the Mongolian GDP has a correlation.

## 2.3IMPACT OF THE OT COMPANY TAXES, FEES AND PAYMENTS TO THE TOTAL BUDGET REVENUE OF MONGOLIA

The share of  total payments made by the OT company to Mongolia in the total budget income of Mongolia was examined by the period of total 17 quarters from the fourth quarter of 2016 until the end of the fourth quarter of 2020.

*Table 2.3. Budget revenue and total payments made by the OT company to Mongolia (million MNT)*

| Улирал | Oyutolgoi payments | Budget revenue | Share (%) |
|---|---|---|---|
| 2016Q4 | 121,269.1 | 1,822,367.2 | 6.7% |
| 2017Q1 | 122,121.8 | 1,616,090. | 7.6% |
| 2017Q2 | 135,468.2 | 1,970,746.6 | 6.9% |
| 2017Q3 | 146,722.1 | 1,904,162.7 | 7.7% |

| | | | |
|---|---|---|---|
| 2017Q4 | 196,556.0 | 2,467,265.5 | 8.0% |
| 2018Q1 | 185,189.9 | 1,993,794.2 | 9.3% |
| 2018Q2 | 183,907.5 | 2,557,638.3 | 7.2% |
| 2018Q3 | 205,432.0 | 2,630,230. | 7.8% |
| 2018Q4 | 222,322.6 | 2,871,965.1 | 7.7% |
| 2019Q1 | 226,500.4 | 2,433,092.8 | 9.3% |
| 2019Q2 | 208,608.3 | 3,115,675.7 | 6.7% |
| 2019Q3 | 217,915.3 | 3,107,893.9 | 7.0% |
| 2019Q4 | 202,318.5 | 3,279,975.9 | 6.2% |
| 2020Q1 | 201,720.7 | 2,224,565.1 | 9.1% |
| 2020Q2 | 168,131.3 | 2,134,139.5 | 7.9% |
| 2020Q3 | 188,991.6 | 2,958,008.3 | 6.4% |
| 2020Q4 | 267,238.7 | 3,085,362.7 | 8.7% |

*Source: OT company, NSO*

*Table 2.4. Descriptive statistics of the total payments of OT company and the national consolidated budget*

| | N | Mean | Median | Standard deviation | Range | Minimum | Maximum |
|---|---|---|---|---|---|---|---|
| Oyutolgoi LLC payments | 17 | 188.26 | 196.56 | 39.29 | 145.97 | 121.27 | 267.24 |
| Budget revenue | 17 | 2'480.76 | 2'467.26 | 524.93 | 1'663.88 | 1'616.09 | 3'279.97 |

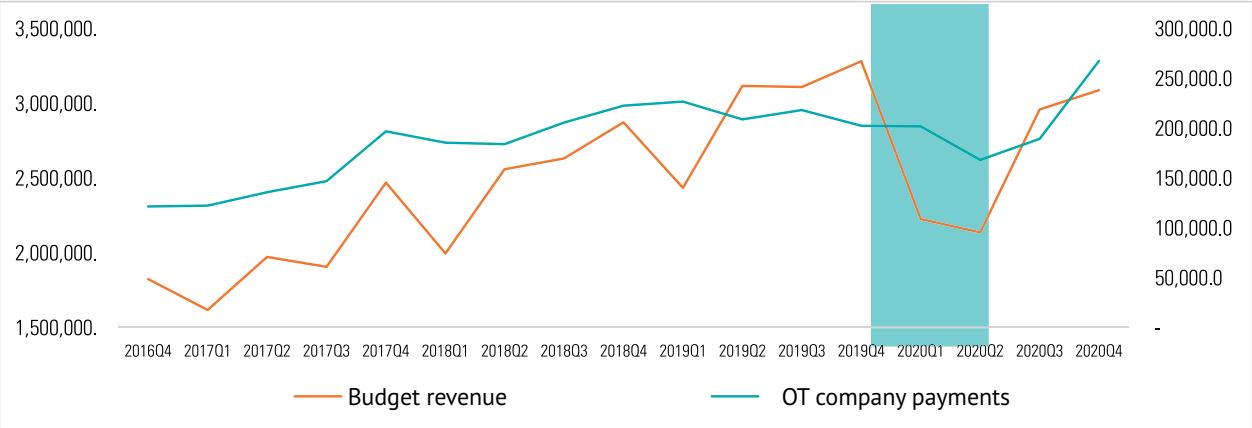
*Source: OT company, NSO*

The OT company made payments in average of 188.26 million MNT quarterly and in that period, it paid at the minimum 121.27 billion MNT (the fourth quarter of 2016), and the highest of 267.24 billion MNT (the fourth quarter of 2020).

While the average total of taxes, fees and payments made by the OT company to the Mongolian budget tended to increase until the end of 2019 and it paid the highest amount of taxes, fees and payments in the fourth quarter of 2020, due to the impact of the COVID-19 pandemic the average quarterly payments decreased by 3.4 percent compared to the previous year 2019.

The budget income of Mongolia is viewed by quarters and has fluctuations, growth and decrease, so it can be can be seen that it has seasonal character.

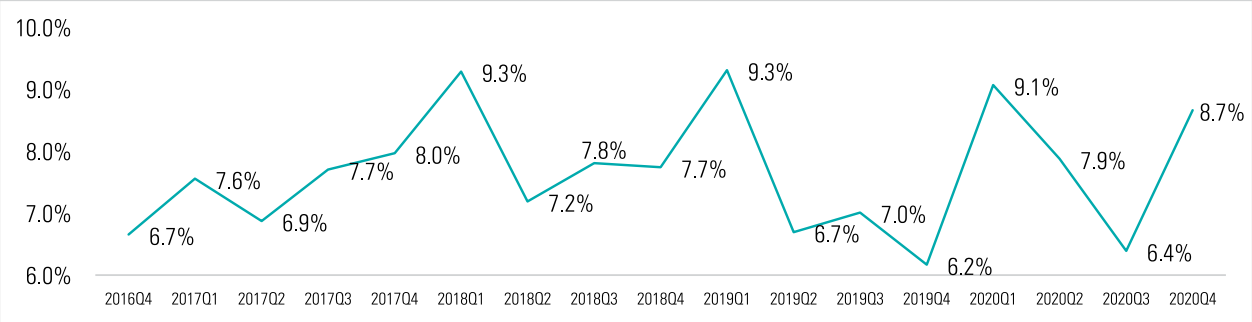
*Figure 2.7. Budget income and total payments made by the OT company to Mongolia*




*Source: OT company, NSO*

Although increases and decreases are observed in the total budget income and the amount of taxes, fees and payments made by the OT company in the short term, it has a trend to be growing in the long term. Although due to the COVID-19 pandemic the national budget revenues declined greatly in the first and second quarters of 2020, it increased starting from the third quarter of 2020. As for the OT company, although the amount of payments made by the OT company slightly decreased, it went up again in the third and fourth quarters of 2020 and exceeded the amount paid during the time without the COVID-19 pandemic, which helped Mongolia to overcome the economic problems during the pandemic.

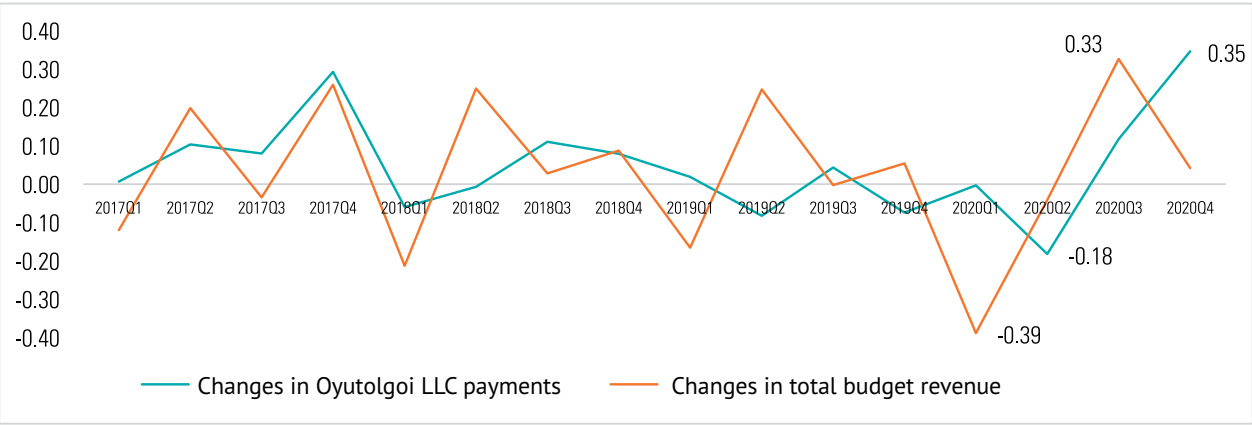
*Figure 2.8. The share of total payments made by the OT company to Mongolia in the total budget revenue*




*Source: OT company, NSO*

Judging from the share in the total budget revenue, the OT company made the highest payment in the first quarter of every year and the lowest - in the fourth quarter. However, in the fourth quarter of 2020, this amount was higher compared to the previous years. Due to the COVID-19 pandemic the amount of revenue collected in the national budget of Mongolia decreased, but the share did not decline. Thus, the amount paid in the fourth quarter of 2020 was 8.7 percent compared with the fourth quarters of previous years, which was higher by 2.5 percent points compared to the previous year.

*Figure 2.9. The percentage of changes in the budget revenue and the percentage of changes in the total amount of payments made by the OT company to Mongolia*




*Source: OT company, NSO*

When the changes in the budget income and changes in the taxes and payments made by the OT company to Mongolia were examined, the amount of payments reduced in the first quarter of 2018, in the second and fourth quarters of 2019 and the second quarter of 2020. Although it went up in other quarters, as for changes in the third and fourth quarters of 2020 they were high regardless of the COVID-19 pandemic.

We examined the existence of a long-term correlation between the national budget income of Mongolia and the total payments made by the OT company to Mongolia with use of the cointegration test and the

results illustrated that there was a stable long-term correlation. When checked by the Granger causality test, payments made by the OT company affected the budget income of Mongolia. Based on this quality, the impact of total payments made by the OT company on the national budget income revenue of Mongolia was determined with use of a linear regression model. The analysis results showed that with increase by 1 percent of the amount of payments made by the OT company, the budget income of Mongolia increased by in average of 0.81 percent. As for the coefficient, it was statistically significant at 1 percent level.

### 2.4. 2.4 IMPACT OF THE OT EXPORT ON THE EXPORT REVENUE OF MONGOLIA

In this part, we aimed to determine the impact made by the total export of the OT company on the export revenue of Mongolia. As previously, we looked at the Mongolian export revenue and the amount of export by the OT company in the period from the fourth quarter 2016 until the end of the fourth quarter of 2020, in total 17 quarters.

*Table 2.5. The volume of Mongolian exports and the volume of the OT company export (million US dollars)*

| | Total exports of Mongolia | Oyutolgoi LLC exports | Share (%) |
|---|---|---|---|
| 2016Q4 | 1583.90 | 224.5 | 14.17 |
| 2017Q1 | 1299.80 | 237.5 | 18.27 |
| 2017Q2 | 1805.90 | 203.7 | 11.28 |
| 2017Q3 | 1477.10 | 246.9 | 16.72 |
| 2017Q4 | 1617.80 | 251.7 | 15.56 |
| 2018Q1 | 1482.44 | 245.6 | 16.57 |
| 2018Q2 | 2098.90 | 341.7 | 16.28 |
| 2018Q3 | 1701.40 | 246.5 | 14.49 |
| 2018Q4 | 1728.90 | 346.2 | 20.02 |
| 2019Q1 | 1771.70 | 352.7 | 19.91 |
| 2019Q2 | 2167.30 | 382.7 | 17.66 |
| 2019Q3 | 2007.10 | 209.2 | 10.42 |
| 2019Q4 | 1673.70 | 221.4 | 13.23 |
| 2020Q1 | 1035.80 | 130.7 | 12.61 |
| 2020Q2 | 1792.60 | 285.6 | 15.93 |
| 2020Q3 | 2318.90 | 283.0 | 12.20 |
| 2020Q4 | 2429.30 | 405.0 | 16.67 |

*Source: NSO, OT company*

As the NSO database gives the export of minerals or mining products in MNT, when examining the impact of OT export on the total Mongolian exports, we converted the total export figures to US dollars. Since the minerals export accounted for in average 80 percent of total exports of Mongolia in the past 4 years, we viewed examining total exports will not influence the analysis results.

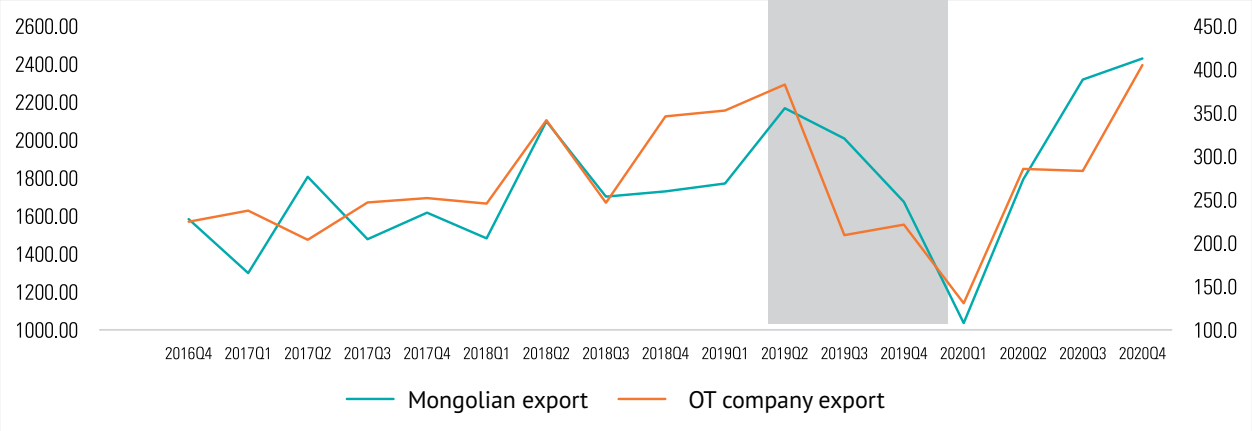
*Table 2.6. The OT company export and descriptive statistics of the Mongolian total exports*

| | N | Mean | Median | Standard deviation | Range | Minimum | Maximum |
|---|---|---|---|---|---|---|---|
| Oyutolgoi LLC's exports | 17 | 271.45 | 246.90 | 72.51 | 274.39 | 130.66 | 405.05 |
| Total exports of Mongolia | 17 | 1764.27 | 1728.90 | 358.95 | 1393.50 | 1035.80 | 2429.30 |

*Source: NSO, OT company*

The descriptive statistic indicators were calculated based on the data from the fourth quarter of 2016 to the fourth quarter of 2020, in total 17 quarters. In the first quarter of 2020, the volume of export by the OT company was the lowest, i.e. 130.66 million US dollars, while it was the highest in the fourth quarter of 2020, i.e. 405.5 million US dollars. It correlated with the highest and lowest export volumes in total exports of Mongolia. It can be seen clearly from the shadowed part showed in the Figure. The average quarterly export volume of the OT company is 271.45 million US dollars, while for Mongolia it is 1764.7 million US dollars with standard deviation of 72.51 and 358.95 respectively.

*Figure 2.10. The volume of Mongolian exports and the volume of the OT company export (million US dollars)*




*Source: NSO, OT company*

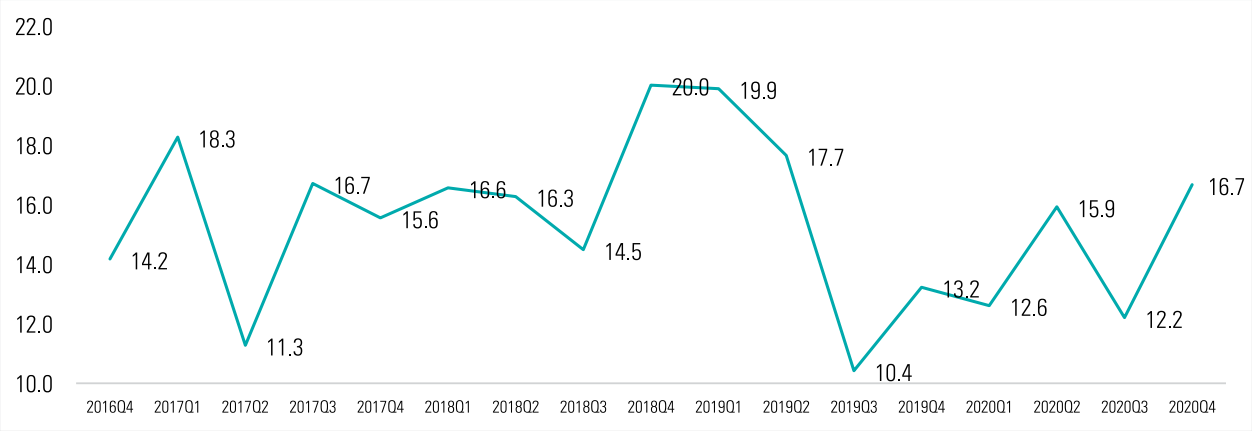
The OT exports are corelated with Mongolian exports, and since the third quarter of 2017, their growth and decline trends have been similar. When the strength of correlation between the two parameters is determined by the correlation coefficient, p = 0.706 or a 70.6 percent dependence is observed.

Exports declined from the second quarter of 2019, reaching a four-year low in the first quarter of 2020 due to certain reasons as the COVID-19 pandemic, border closures and declining commodity prices. This, in turn, had a direct impact on Mongolian budget revenues and reduction of taxes and fees paid by the OT to Mongolia.

As a result of reduction in restrictions related to the COVID-19 pandemic and a policy of economic recovery followed by some countries, conditions for lifting border closures and recovery of commodity prices emerged. This situation provided the OT company and Mongolia with an opportunity to increase their exports. As a result, by April 2020, both exports reached the highest level of the previous four years.

However, by the share in total export of Mongolia it did not reach the level of that in the fourth quarter of the previous year 2018, nor that in the first quarter of 2019.

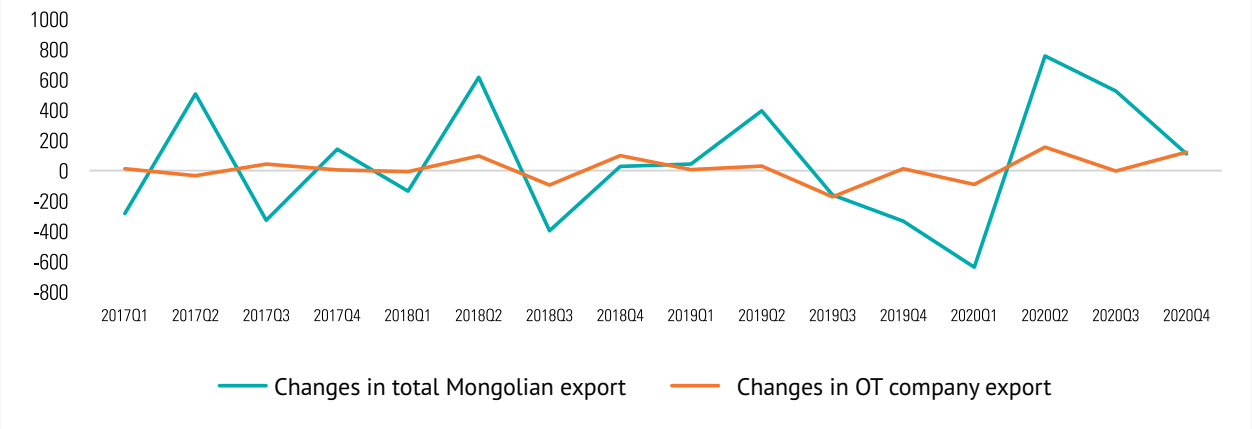
*Figure 2.11. The share of the OT company exports in total Mongolian exports*




*Source: NSO, OT company*

When the share of the OT export in the total exports of Mongolia was viewed by the average of 4 years, it equaled 15.4 percent. It was the highest in the fourth quarter of 2018, i.e. 20.4 percent and the lowest in the third quarter of 2019 or 10.4 percent.

*Figure 2.12. Changes in total Mongolian exports and the OT company export /by quarters/*




*Source: NSO, OT company*

When the export changes were examined, it was the highest in the second quarter of each year. As for the OT company, their export changes were relatively even.

The existence of a long-term correlation between total exports of Mongolia and the OT company export was determined with the use of cointegration test. As for 2 variables, they were not stable, so a ranking difference was used to make them stable.

As the analysis results showed, there was lack of long-term stable correlation. A short-term correlation was determined as for 2 variables, so in a short term, with changes by 1 percent in the OT export, total Mongolian exports changed in average by 0.47 percent points. As for the coefficient, it was statistically significant at the 5 percent level. When checked with use of the Granger causality test, it was determined that the OT export made an impact on the Mongolian exports in a short term, on the contrary, the changes in Mongolian exports did not affect the OT company export.

**Chapter conclusions**

Changes in the mining industry, which became the basis for the Mongolian economy, have had a major effect on macroeconomic changes such as changes in the GDP growth of Mongolia, the national budget revenue, exports, FDI, the labor force and other.

In the period between 2011 to 2020, the mining industry accounted for 21.7 percent of GDP and FDI to this sector accounted for 73.4 percent of total FDI made in the above period.

The COVID-19 pandemic made a negative impact on the FDI, GDP and the mining growth.

The amount of taxes, fees and payments made by the OT company to Mongolia has grown year by year. Although the second quarter of 2020 showed some decline compared to the previous quarters, the amount paid in the fourth quarter reached the record high level in the history of the company.

The Mongolian GDP and the amount of taxes, fees and payments made by the OT company to Mongolia have a long-term stable correlation. If it is expressed in the quantitative meaning, a 1 percent increase in the amount of payments by the OT company leads to an average 0.52 percent rise in the GDP of Mongolia in the given quarter.

As for the budget revenue, due to the impact of COVID-19 pandemic, the budget revenue of Mongolia declined from the fourth quarter of 2019 to the second quarter of 2020, which has similar dynamics with decline of payments made by the OT company to Mongolia. The decline of the budget income and the rise in payments made by OT company increased from the third quarter of 2020.

When the amount of payments made by OT company increases by 1 percent, the budget income of Mongolia increases in average by 0.81 percent, which demonstrated a stable long-term correlation.

The budget income is closely connected to the export volume of the major mining companies. The mining export, including the OT company export, was on decline in the above-mentioned period, which led to the lesser amount of payment made and was followed by the decline in the budget revenue.

The OT's lowest exports were in the first quarter of 2020 equaling 130.66 million USD, while its highest exports in the fourth quarter of 2020 were 405.5 million USD, which corresponded with the lowest and the highest total Mongolian exports. This can be clearly seen in the shaded area shown in the figure. The OT average quarterly exports are 271.45 million USD, compared to 1,764.7 million USD for Mongolia, with standard deviations of 72.51 and 358.95, respectively.

The OT exports affected Mongolian exports in the short term, while changes in Mongolian exports did not affect the OT exports. In the short run, a change by 1 percentage point in OT exports led to a change by an average of 0.47 percentage points in Mongolian exports.

# III. TAX COLLECTION AND LEVYING IN THE MINING INDUSTRY AT NATIONAL AND AIMAG LEVEL AND THE COVID-19 PANDEMIC IMPACT

## 3.1.THE COVID-19 PANDEMIC IMPACT ON NATIONAL TAXATION AND SOCIAL INSURANCE

The Government of Mongolia has been investing heavily in recent years to provide continuous and sustainable funding for social programs, as well as to support economic growth and development in different geographical locations and in the future it is going to expand even more. The impact of large taxpayers on growing public investment is significant, as is its impact on local, regional and national development.

Large taxpayers play an important role in creation of Mongolian budget revenue and such taxpayers are mainly from the mining sector. The tax instruments used in the mining sector consist of fixed fees, unit taxes, and profit taxes[23] .

The OT LLC is one of the largest taxpayers in Mongolia. Its impact on budget revenues has been growing. Within the framework of the current laws, the OT is paying:

- The Corporate Income Tax as 25 percent of taxable income,
- Depreciation is calculated on a straight-line basis with losses carried forward over the next 8 years.
- MRUT or royalties are 5 percent of total income and are deducted from taxable income.
- The VAT is 10 percent on imported, processed and procured and provided goods and services,
- A withholding tax, loan interests, guarantee fees, the royalty income, a financial lease income, management expenses and management service fees, the rent 20 percent,
- Other taxes include 10 percent on dividends and royalty interest income, 2 percent on real estate sales, and 3 percent on transfer income.

In the case of the copper royalties, they are 5 percent of the benchmark sales price[24] . If the market benchmark price exceeds 5,000 US dollars, an additional 22-30 percent surtax royalties per ton of copper ore is imposed (an additional 2 percent for each additional 1,000 USD). There is an additional 11-15 percent surtax royalty per ton of copper concentrate and a 1-5 percent tax per ton for the final copper product.

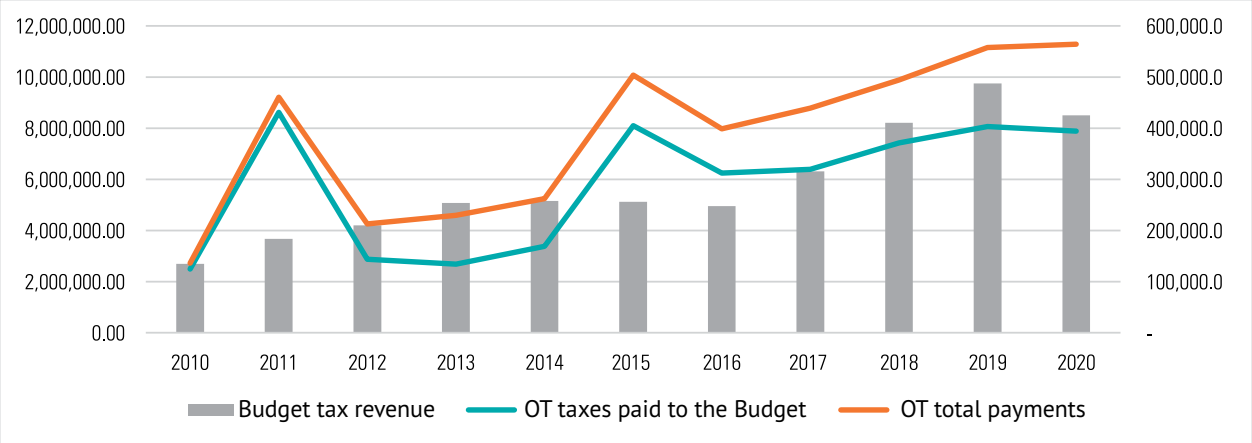
The Oyu Tolgoi is important for provision of the Mongolian GDP growth, as well as for sustaining stable budget revenues and accumulating resources for continued implementation of social development programs. Although the Mongolian GDP grew by 14.9 and 15.9 percent between 2013-2014 and by 16.4, 16.3 and 15.0 percent in the period between 2017-2019, it decreased due to the COVID-19 pandemic impact.

Between 2012 and 2020, the OT company paid 8.5 trillion MNT in taxes to the state budget, generating 7.25-13.51 percent of the annual budget tax revenue. In 2013, it was the lowest at 7.25 percent, while in 2015 it was the highest at 13.51 percent. In the eight years before the outbreak of the COVID-19 pandemic, from 2012 to 2019, it accounted for 9.51 percent of the annual tax revenue.

23 Fixed payments - are fixed regardless of the size, efficiency, production cost and quantity of the project: licenses, contract incentives; unit tax - based on the flow of goods and services: SAVE, import tariffs, VAT, land lease, property tax, etc.; Profit tax - based on a certain percentage of income minus all expenses: profit tax, dividend, profit percentage, production sharing agreement, resource lease tax, windfall profits tax, etc.

24 Quantitative-based royalties are based on physical quantities (size, weight, USD per ton, USD per cubic meter). Royalties can be set by law based on the cost of production. Regularity of royalties is regulated by law, which helps to make progressive adjustments to inflation and risks of product price changes. Moreover, when royalty revenues are stable, they are more administratively efficient and easier to audit.

*Figure 3.1. National budget tax revenue and taxes paid by the OT company, 2010-2020*




*Source: NSO, MTA, OT company, 2021*

In 2019, before the COVID-19 pandemic, the state budget tax revenue was the highest or 9.75 trillion MNT, and the total amount of taxes paid by the OT was 855.34 billion MNT, accounting for 8.77 percent of the budget revenue. However, during the pandemic in 2020, when the state budget revenue decreased to 8.5 trillion MNT compared to the previous year, the amount of taxes paid by the OT decreased to 826.08 billion MNT, but accounted for 9.72 percent of the state budget revenue. With the state tax revenues down about 13 percent from 2019, the amount of taxes paid by the OT company decreased only by 3.4 percent, which shows that the OT played a key role in ensuring fiscal stability during the COVID -19 epidemic despite its decreased payments.

In the years before the COVID-19 pandemic, the taxes paid to the budget and the overall tax trends were alike, which was related to stable operations. However, in 2020, during the pandemic, the amount of taxes paid to the state budget decreased due to decrease in production, while the amount of taxes paid to the local budget for other activities related to mining did not decrease, so the total amount of taxes increased. Compared to the previous year, the share in the state budget tax revenue was 0.95 percentage points higher.

There are many different types of taxes in the mining sector[25] , but the OT company uses fixed fees and unit taxes. Let us examine the impact of copper prices before the COVID-19 pandemic, as copper sales are subject to regular payments. The 2015 comparative index was used to show changes in copper prices, sales, and paid royalties in the period between 2016-2020.

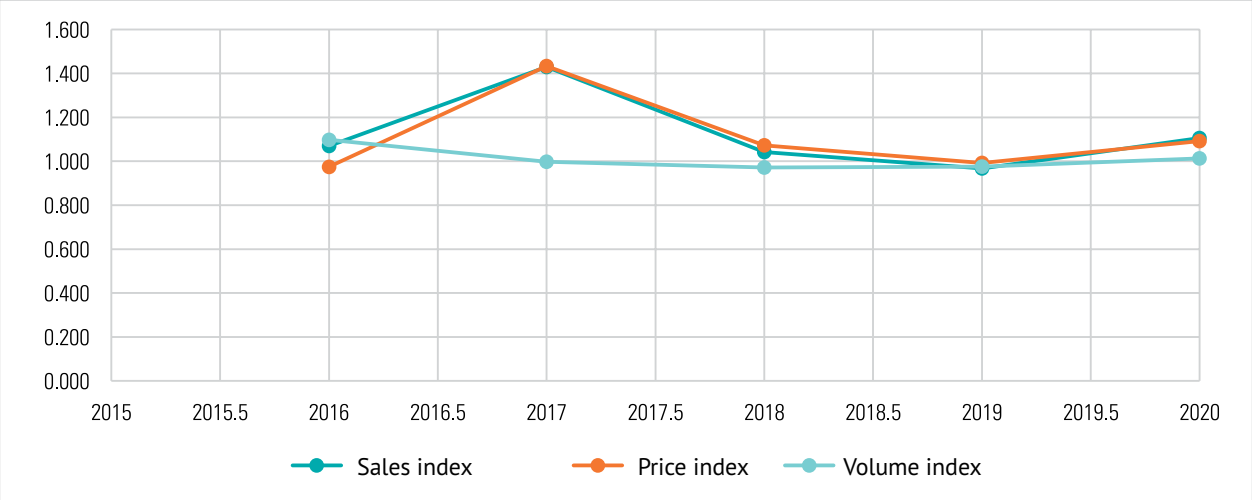
*Figure 3.2. Royalties, copper prices, sales volume, total amount, with use of the CI 2015=100*


*Source: MTA, OT company, 2021*

25

In 2016, prices made an impact of 26.5 percent to the 35.1 percent increase in royalties revenue, while an effect of copper sales was 5.6 percent. In 2017, when the amount of royalties paid by the OT company increased by 42.3 percent, the effect of copper prices was 37.5 percent and sales- 4.8 percent. In 2018, the OT royalty payments decreased by 11 percent. While copper sales increased by 0.6 percent that year, copper prices fell by 11.3 percent, which contributed to decline in royalty payments. In 2019, copper royalty revenues grew by 22.4 percent, which was caused by growth of copper prices by 25.7 percent, even though copper sales decreased by 0.6 percent. This illustrates significant impact of prices at the global copper market on the copper royalties.

*Figure 3.3. OT royalties, copper prices, sales volume, total amount, with use of the CI 2015=100*

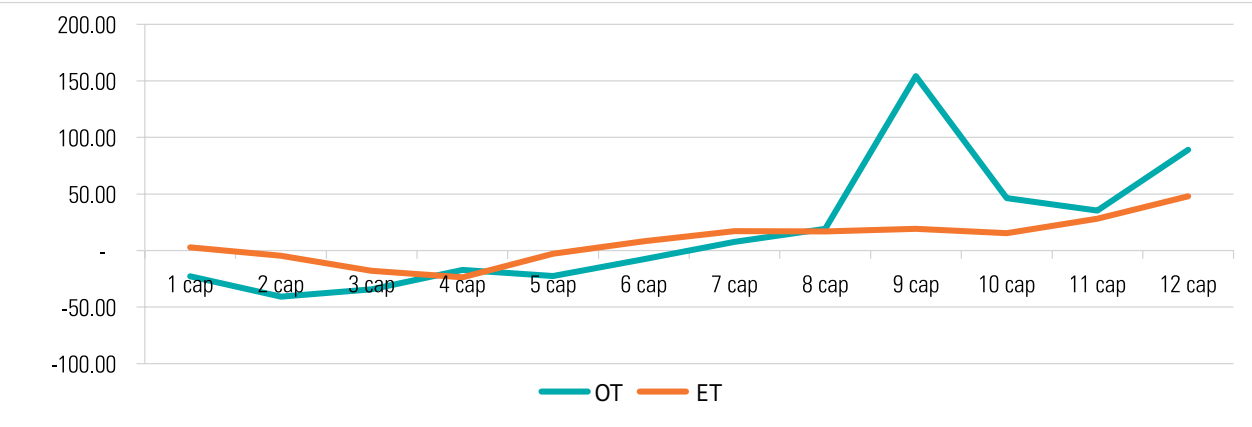



*Source: MTA, OT company, 2021*

The OT company copper sales remained unchanged during the COVID-19 pandemic, and copper sales increased by 10.6 percent compared to 2019. In growth of sales the effect of rising copper prices was 9.2 percent and that of volumes was 1.3 percent. The impact of copper prices on sales was high.

As for the impact of the mining sector, including the copper sector, on budget revenues during the COVID-19 pandemic, the amount of royalty payments decreased in the first half of 2020, but increased again in the second half of the year.

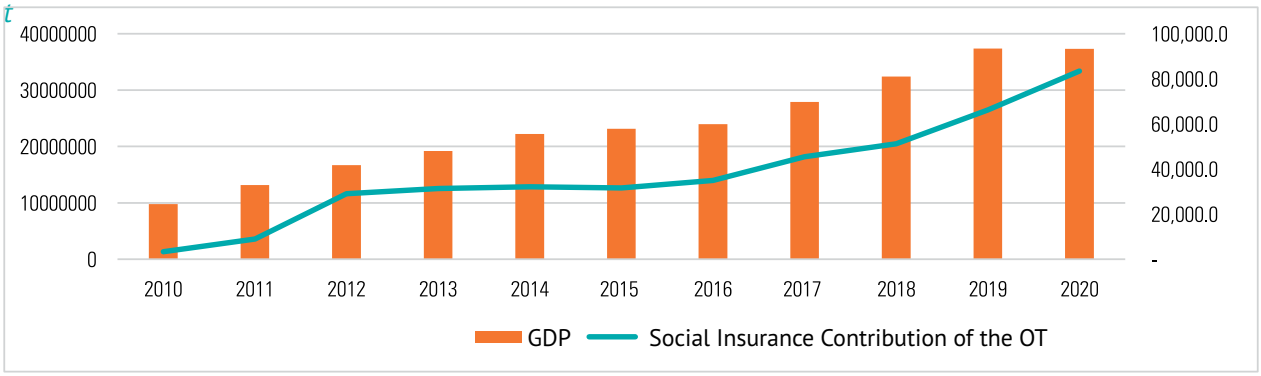
*Figure 3.4. Growth percentage of royalties paid by the OT company and EMC during the COVID-19 pandemic, by months 2020*




*Source: MTA, OT company, 2021*

When royalty payments of the two largest copper companies in 2020 were compared to the previous year and the growth percentage was calculated by months, the monthly growth rate of royalties paid by the OT company in 2020 was the highest in September 2020. Although the volume of the OT copper concentrate export declined in 2020 due to border closure restrictions because of the COVID-19 pandemic, the amount of royalties paid has not decreased during the year. Since August 2020, the OT company exceeded the Erdenet Mining Corporation by the amount of copper royalties paid. Regular copper royalty payments continued to generate budget revenue for Mongolia during the COVID -19 pandemic.

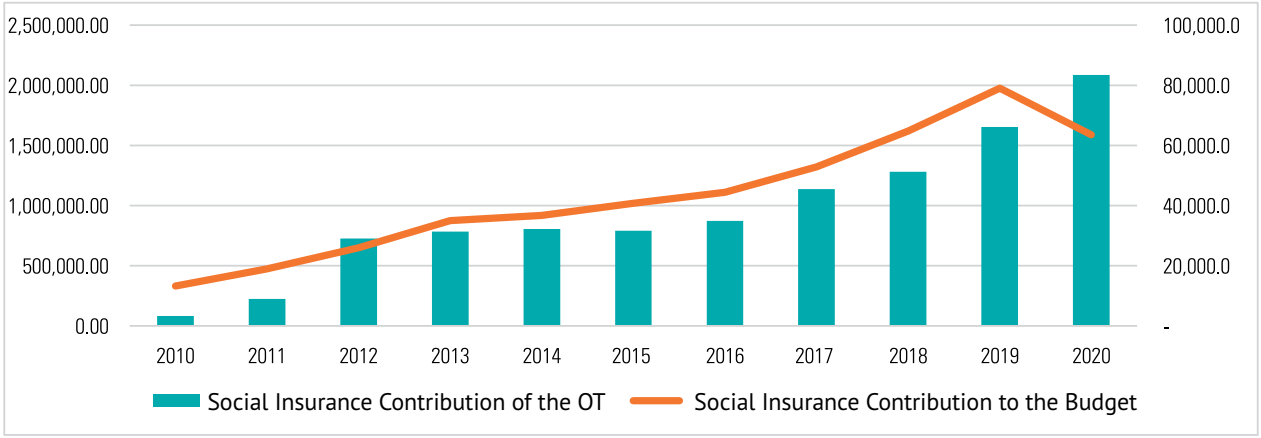
*Figure 3.5. Social insurance contributions of the OT company and the GDP of Mongolia*




*Source: NSO, OT LLC*

During the COVID-19 pandemic, the social security contributions paid by OT LLC have grown substantially. In 2020, premiums in the amount of 83,451.7 million MNT were paid, which is an increase of 26.1 percent compared to 2019. Although the Mongolian GDP declined in 2020, social security payments did not decrease due to the COVID-19 pandemic. In 2020, the Government of Mongolia took a number of regulatory measures related to the COVID-19 pandemic in the framework of the Social Insurance Program, one of which was to reduce the size of the Social insurance contribution .

*Figure 3.6. Social insurance contribution of the OT company and social insurance contribution to the Budget*




*Source: NSO, OT company*

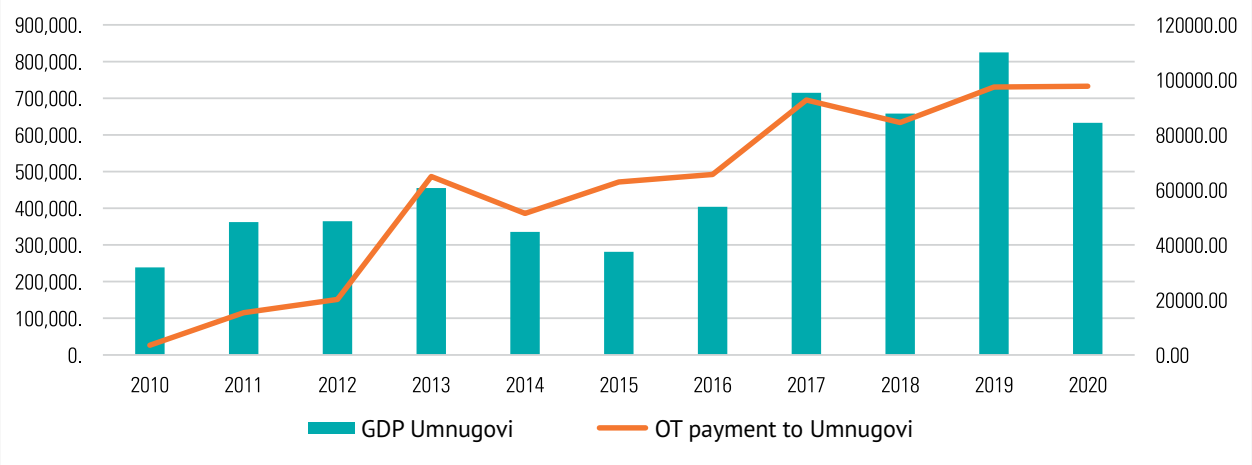
Although the state social insurance revenues increased compared to 2020/2019, the impact on businesses was wide. While most of entities shortened the working hours, mining companies had to take special regulatory measures to ensure normal production operations.

## 3.2. THE COVID-19 PANDEMIC IMPACT ON LOCAL TAXATION AND SOCIAL INSURANCE

Since the time Mongolia started implementation of mega projects with investment of third neighbors, Oyu Tolgoi has been a project that contributed to national, regional and local budgets and strengthening of tax collection.

Since start of the OT project investment agreement implementation, the local budget of Umnugovi aimag has improved and a special fund to successfully implement environmental, economic and social development programs has been established. To this extent, development indicators of the aimag have improved, and cooperation between the aimag government, the tax department and the OT becomes a real example of the changes taking place in the global tax environment in the mining sector.

*Figure 3.7. Taxes and payments made by the OT company to Umnugovi aimag*



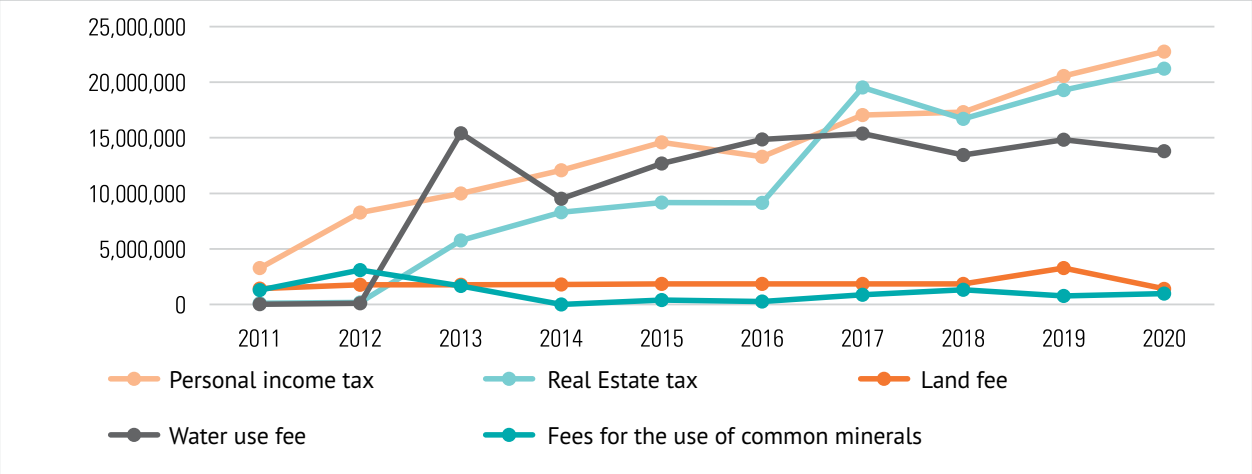

*Source: OT company, the Statistics department of Umnugovi aimag*

According to the data on main taxes and fees paid in 2011-2020, in terms of local budget revenue collection, the OT company is likely to make more payment on such taxes and fees, as the Personal Income Tax, the Real Estate Tax, the water use fee. Although in 2020 the GDP of Umnugovi Aimag decreased by 1,91700.7 million MNT compared to 2019, the volume of tax payments was relatively stable.

Between 2010 and 2020, the OT contributed a total of 656,227.63 million MNT in tax revenue to Umnugovi aimag, which was equivalent to 80 percent of the aimag GDP in 2019, the year before the COVID-19 pandemic. When the tax payment process was compared with the aimag GDP, the amount of taxes paid by OT in the year before the pandemic correlated with the GDP trend. In 2019, Umnugovi Aimag achieved the highest GDP in the last decade. Accordingly, the level of tax payments has changed, and the volume of tax payments was high even during slowdown of the OT operations. Whereas the aimag GDP was expected to decline sharply due to the quarantine measures imposed during the 2020 pandemic, the amount of tax payments by the OT company has not declined.

Fluctuations in the industrial sector have different effects in aimags where the mining sector is concentrated. Diversification of the sector development is discussed in the next chapter. The dynamics of total amount of taxes and fees paid by OT company to Umnugovi aimag shows a tendency for increase in the last decade. During the COVID-19 pandemic, the total amount of taxes and fees paid by OT company to Umnugovi aimag did not decrease.

*Figure 3.8. Selected taxes and payments made by the OT company to Umnugovi aimag (million MNT) 2011-2020*

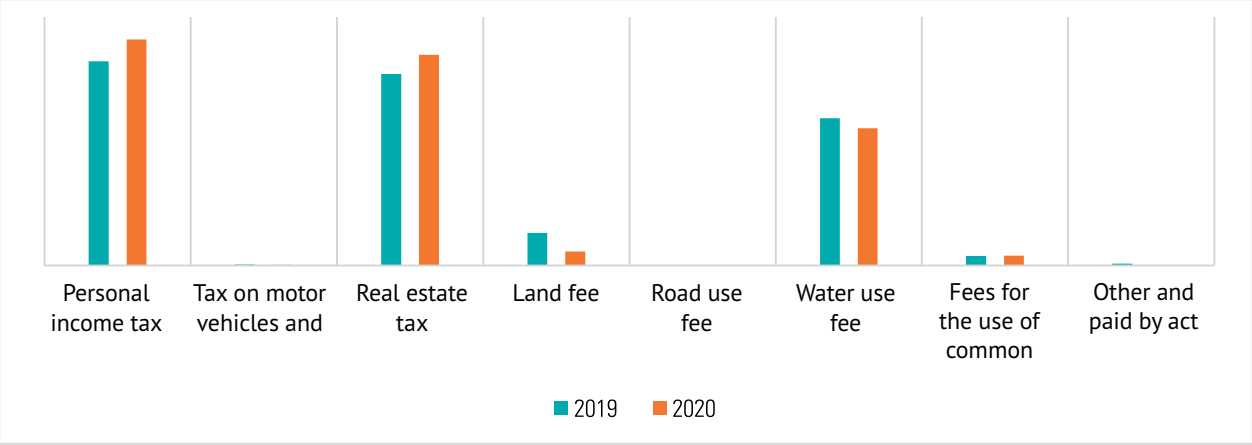



*Source: OT LLC, 2021*

In the last decade, the amount of PIT paid in Umnugovi aimag has increased dramatically. It went up almost 7 times in 2020 compared to 2011. Correspondingly, local economic activities have strengthened.

During the COVID-19 pandemic, the volume of personal income tax and real estate tax payments did not decrease, but water use fees went down slightly. The total amount of taxes and fees paid by the OT company to Umnugovi aimag increased by 2.32 percent in 2020 compared to 2019 during the COVID -19 pandemic. It illustrated that economic activity in Umnugovi aimag has been stable during the pandemic.

*Figure 3.9. Taxes and payments made by the OT company to Umnugovi aimag during the COVID-19 pandemic, 2019-2020*

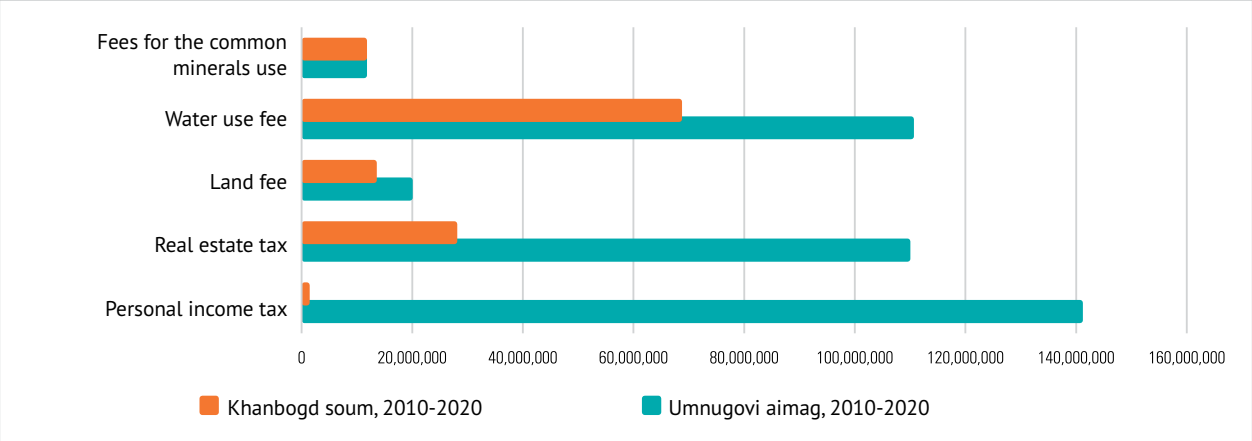



*Source: OT company, the Statistics Department of Umnugovi aimag, 2021*

Judging by the accumulated data of taxes and payments made by the OT company to Umnugovi Aimag and Khanbogd soum over the last decade, the personal income tax (1), real estate tax (2) and water use fee (3) affected mainly the tax base of Umnugovi aimag, while that of Khanbogd soum was affected by water use fees (1), real estate tax (2) and land fees (3). During the COVID -19 pandemic, the volume of PIT and real estate taxes paid by OT to Umnugovi aimag increased, while water use fees decreased slightly. The volume of other taxes and fees also declined in 2020 compared to 2019. As the amount of main taxes and fees did not decrease, taxes and fees paid by OT had a positive effect on the Umnugovi aimag budget revenue.

Due to the OT project influence, the budget revenue collection of soums within the aimag, for instance, Khanbogd soum, has improved. The water use fees accounted for the bulk of Khanbogd soum budget revenue. Over the last decade, the number of real estate in Khanbogd soum has increased, and the volume of real estate tax has increased accordingly.

*Figure 3.10. Cumulative effect of main kinds of taxes on Umnugovi aimag and Khanbogd soum (thousand MNT) 2010-2020*

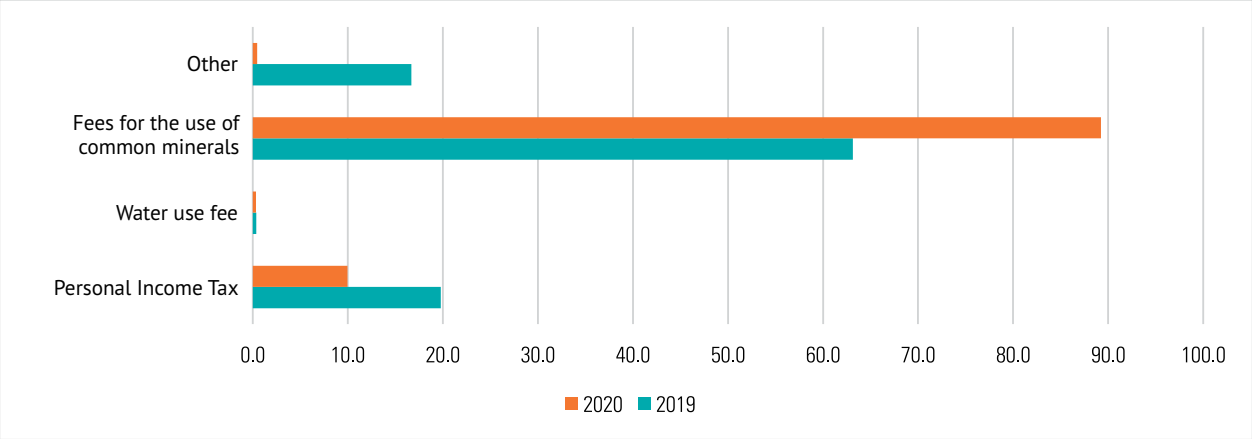



*Source: OT company, the Statistics department of Umnugovi aimag, 2021*

Over the last decade, Khanbogd soum has contributed 61.8 percent of the aimag's budget revenue due to the high share of water use fees in the soum budget revenue. In addition, real estate taxes collected in Khanbogd soum over the last decade made up 1/5 of the aimag budget revenue.

The COVID -19 pandemic had a negative impact on Khanbogd soum budget revenue. Compared to 2019, all taxes and fees, except for Common minerals (CM) fees, have decreased.

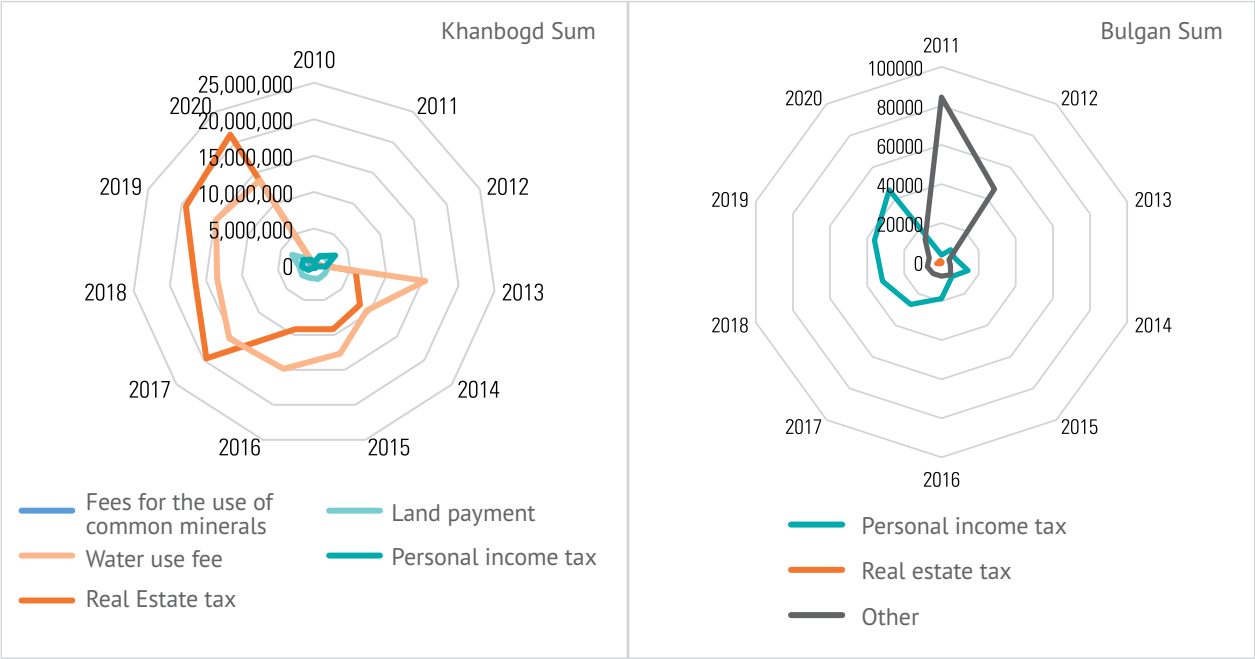
*Figure 3.11. Taxes and payments made by the OT company to Khanbogd soum, by kinds (thousand MNT)*




*Source: OT company, the Statistics department of Umnugovi aimag, 2021*

Compared to 2019, the CM fees paid by OT in 2020 made an impact of a 26 percent increase in Khanbogd soum total budget revenue compared to other taxes and fees. The share of PIT decreased by 9.8 percent, that of water use fees- by 0.1 percent, and the share of other payments the total budget fell by 16.2 percent.

*Figure 3.12. The structure of and changes in taxes and payments in Khanbogd and Bulgan soums, 2010-2020*




*Source: OT company, the Statistics department of Umnugovi aimag, 2021*

Although economic activities in the soum are relatively limited, as a result of the OT operations over the past decade the share of land and water use fees and utility bills in the Khanbogd soum budget revenue collection has grown. In the non-mining Bulgan soum of Umnugovi aimag the budget revenue is comprised by PIT, property tax and other fees. This illustrates not only a difference in tax bases, but also a significant difference in the amount collected.

## 3.3. ISSUES RELATED TO TAXATION IN THE TIME OF A PANDEMIC: INTERNATIONAL EXPERTISE

As a key player in economic development, the copper sector plays two key roles in the country's prosperity:

1. To generate revenue to the state budget, thereby ensuring social, economic and environmental balance, and improving the well-being of the population and society.
2. Copper production, its sales and growth of the copper sector leads to expansion and development of other economic sectors.

Fiscal revenue generation is regulated differently in different countries depending on the basic development conditions and the level achieved by the country.

The main findings of international research are as follows: "... when governments and tax authorities deal with large taxpayers and tax intermediaries, they should follow the next basic principles in order to establish more effective and efficient relationships: first, to reach mutual understanding through a commercial basis; second, to adhere to principles of fairness and justice; third, to be proportional; fourth, to be open and transparent; fifth, to be accountable." When these principles are the foundation of all relationships with large taxpayers, and if effective risk management processes are in place, large corporate taxpayers are highly likely to enter into relationships based on cooperation and mutual trust." Such relationships are presumably to remain in place after the transition to normal post-epidemic conditions.

Recommendations from international organizations on taxation in the mining sector suggest that the royalty rate should be competitive and efficient[26] . It is important to be aware of rapid changes in the institutional environment of international tax collection and levying and the business environment. The use of royalty-based incentives includes: reducing (deducting) royalties for a certain period of time, extending royalty payments (usually no more than three months), and varying rates depending on sales, production, price or costs. Full exemption from royalties is generally rare (Hartley & Otto, 2008).

Sales-based royalties are the most common form of royalties, it has easy to follow international benchmarks, and companies pay extra to state or local budgets for mining non-renewable resources. For example, countries and territories such as Chile, Greenland, Mexico, Sweden, Zimbabwe, Nevada and Arizona in the USA are not subject to royalties. In Laos, the royalty rate is 1-7 percent of total sales revenue and in Australia, rates differ for ore - 7.5 percent, concentrate - 5 percent, metal - 2.5 percent. In some countries, however, other forms of royalties are used. For instance, Saskatchewan, Canada, levies profit-based royalties of 5 percent of net profit, Chile - 5-14 percent of net profit, and Peru - 1-6.28 percent of net profit.

In the copper sector, governments use a variety of methods to impose taxes, and experts suggested that some of them might be more efficient including such methods as "... accelerated depreciation schemes, investment benefits", clarification of investment costs related to cost-based incentives,... types of mining costs for which benefits might be available, and how these costs will be met in the coming years."

If change is necessary, a tolerant approach with certain transitional period, in consultation with key miners and producers, and avoidance of any resource risks will help ensure that implementation of mining taxation is transparent and sustainable. Tax incentives are not fully monitored when they do not attract investment on their own, and are based on contingencies and unplanned income without taking into account the costs and benefits of tax incentives in the mining sector.

Such measures as establishing an effective tax rate in the mining sector, making a right combination of taxes, determining whether the type of tax is specific or exclusive, whether post-tax regulations are appropriate due to risks are aimed at stabilizing the current tax regime. In terms of tax revenue distribution and utilization, while in the past more attention was paid to the mining-based development approach at the national level, at present it is focused more on regional and local development. Therefore, it is proposed to reform the tax system in accordance with allocation policy criteria in line with a more advanced fiscal policy[27] .

On the one hand, this suggests a competitive tax policy; on the other hand, it will be used to seriously address issues such as use of different royalties / tax rates for different mineral products, reduction of the rate of change in royalty / tax on value-added products due to sale of different mineral products after a value-chain investment, imposition of fines for non-compliance with proportional, advanced requirements, limitation of tax evasion based on gaps in coordination of tax laws and regulations, strategies for transfer of profits to areas with low taxes or tax havens.

Growth-directed tax regimes should minimize any changes in the market and support the supply and investment skills of enterprises. However, governments are still faced with a difficult choice of whether or not set a lower tax rate for companies with FDI than for domestic companies.

When governments and tax authorities underestimate trade management of mining companies, they can misunderstand a wider range of operations or transactions and take in response measures that can lead to costly disputes and uncertain situation. Such changes require much more than standard knowledge of tax laws and accounting. The legal and operational structure, international relations and ownership

26 World Bank. Mining royalties: A Global Study of their impact on Investors, Government and Civil Society

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of multinational companies in the global business environment; their risk management strategies and risks in the field of taxation; tax functions, a tax monitoring system, a tax decision-making process; relationships between tax functions and the company's business units should be examined in more detail. Therefore, both parties face a challenge of having the same level of necessary commercial knowledge.

First, institutions that levy and collect tax need to gain a deeper understanding of the "business" of large taxpayers: the way companies operate in the domestic, regional, and global markets; the companies' competitive strategy and business planning concepts; financing of foreign public companies, such as Rio Tinto; financial statements, financial disclosures, financial accounting issues of such public companies, differences, advantages and disadvantages compared to company regulation of companies in Mongolia.

Second, governments and tax authorities need to recognize the specifics of the sector in which the large taxpayers operate: industry-wide trends and norms; products and marketing; intellectual property; competition and regulation; commercial risks. Third, governments and tax authorities need to perceive the unique nature of the business of large taxpayers: volatility of the abovementioned issues in the industry; corporate governance, its management structure and the decision-making process. This suggests that the legal environment for international tax collection and imposition is likely to make a significant impact on the national tax environment due to high economic and non-economic risks faced by large mining taxpayers.

Although developing countries around the world are learning from each other's development experience, different tax regimes in different countries need to be taken into account. For instance, experience of the past 45 years has shown that the Chile liberalization policy[28] is viewed as a package of development policies in terms of its scope, resources, capacity and geographical location.

The Chilean economic policy reforms covered almost all aspects of national development (including mineral prices, taxes, trade, currency exchange rates, the financial sector, the labor market, privatization, energy regulation, social security), and created a regulated, protected environment, directed by the government in local and regional development. To generate budget revenue from the mining sector, the government focused on the profit received by companies, so in Chile mining companies pay a profit tax instead of a sales tax (ad valorem royalty). The scope of the country's development planning was straightforward to the tax authorities, and the scope of taxation for mining companies was explicit. Therefore, when considering tax regulation of the copper sector in Mongolia, this difference cannot be ignored.

At the same time, Mongolia is not a copper producer, but a supplier to producing countries, including our southern neighbor. The impact of the copper sector on Mongolian national development is expected to remain the same after the pandemic, even if the situation returns to normal. Therefore, there is an opportunity to learn about a model of economic development focused on the copper sector from development expertise of other countries at the national, regional and local levels and implement it in accordance with the specifics of our country.

The OT company has been in operation for more than a decade, but has not yet reached a profitability level and development of the underground mine is still in progress. That is why at present a copper sales tax is still levied. The Government of Mongolia continues regular monitoring of regulation of copper royalty collection and imposition of taxes. In particular, the Chilean experience demonstrates that Mongolia has an opportunity to implement a development model of a mining-focused aimag with a development policy based on a comprehensive approach to the financial sector, the labor market and energy regulation policies.

As a large taxpayer, the OT's support of tax policies of multilateral development stakeholders (companies,

28 Started in 1975, since 1990 made an impact on FDI in the Latin America

civil society organizations, local communities etc.) not only increases the responsibility of the Mongolian government, but also helps bringing tax collection and imposition closer to a goal of providing wellbeing of the society and it is likely to have a positive indirect effect on actual implementation.

In general, since the start of the OT operations, the Mongolian tax authorities have focused on strengthening their capacity to comply with a consolidated approach to international taxation. In an evolving environment of international taxation, a need arose to identify the most problematic aspects of the national system and take appropriate, effective measures in line with the taxation system, to study the global tax environment and measures related to international taxation, such as transfer pricing, permanent establishment, tax breaks, not to consider dividends received from foreign subsidiaries as profit, deduction of taxes paid abroad, thin capitalization to reduce interest income, imposition of taxes on non-permanent residents, imposition of taxes on foreign enterprises, prevention of transnational tax evasion, review of international transaction agreements and tax agreements.

In addition, since the start of mega-project implementation in our country, attention was paid to strengthening capacity of evaluating the macroeconomic benefits of such large projects and developing offers of benefits through budget revenues and competitive tax rates. As a result, we are faced with a challenge to further strengthen tax administration in relation to international taxation and collection. In the normal conditions after the COVID-19 pandemic, the scope of these problems will remain the same.

**Chapter conclusions**

The Mongolian copper sector is imposing international standard taxes and fees. In the case of copper royalties, the present 5 percent of the standard sales price is at the same level as the tax rate in the copper sector in other developing countries, so it can be considered as "competitive and commercially negotiable".

The contribution of the copper sector to budget revenues is likely to increase further and has remained stable during the COVID-19 epidemic, which illustrates that large taxpayers make a significant impact on sustainable financing of social programs developed by the Government of Mongolia and steady growth of public investment.

As one of the largest taxpayers, the OT has had a positive impact on Mongolian budget revenue. The OT paid MNT 8.5 trillion in taxes to the state budget between 2012 and 2020, which accounted for 7.25-13.51 percent of annual tax revenues. While in 2019 before the COVID-19 pandemic taxes paid by the OT comprised 8.75 percent of annual tax revenues, in 2020 it reached 9.72 percent. Compared to the previous year, the share in the national budget tax revenue was 0.95 percentage points higher.

In 2019, Mongolian copper royalty revenue increased by 22.4 percent, which was linked to a 25.7 percent increase in copper prices and a 3.3 percent decrease in copper sales. The OT copper sales remained unchanged during the COVID-19 pandemic, and increased by 10.6 percent compared to 2019. Copper price growth by 9.2 percent and volumes - by 1.3 percent caused sales growth. The impact of copper prices on sales has been high.

During the COVID-19 pandemic, the Umnugovi aimag total budget revenue did not change, which was directly related to OT company payments, the volume of personal income tax and real estate tax payments did not decrease, with slight decrease of water use fees. The total amount of taxes and fees paid by the OT project to Umnugovi aimag increased by 2.32 percent in 2020 during the COVID-19 pandemic compared to 2019.

In the last decade, the amount of PIT paid in Umnugovi Aimag has increased dramatically, nearly 7 times greater in 2020 compared to 2011.

The land and water use fees, and utility fees made up the bulk of the Khanbogd soum budget revenue.

Compared to 2019, the TTAM royalty paid by OT in 2020 made an impact of a 26 percent increase in Khanbogd soum total budget revenue compared to other taxes and fees. The share of PIT decreased by 9.8 percent, that of water use fees- by 0.1 percent, and the share of other payments in the total budget fell by 16.2 percent.

In terms of revenue collection for mining and non-mining soums, opportunities to collect, allocate and utilise local budget revenues differ, and the budget of the Khanbogd soum and the aimag budget benefit greatly from mining.

**Future trends**

The Mongolian copper sector has been learning from international experience. Despite the challenges of overcoming effects of the COVID-19 pandemic, similar to other countries, the amount of taxes and fees paid to aimag and local budgets by the OT and its share in the national budget revenue has not decreased, but has a trend for further stabilization. Therefore, after return to normal conditions a positive indirect effect on other sectors of the economy is likely to continue.

However, it is important that the Mongolian development model, which is focused on the mining sector, is more evident, transparent, more understandable to the public.

Successful development of the OT underground mine will provide an opportunity to expand use of fixed payments and unit taxation methods in the mining sector and introduce a profit-based tax.

It is possible to keep the level of taxes and fees in the copper sector at a competitive level and keep the present share of tax revenues in the budget by shifting to more accountable activities.

In connection with the OT activities certain steps have been taken to reform national legislation in line with the international tax administration. The reform will continue in the future.

Despite the fact that public corporate tax law presents a challenge for the Mongolian national tax reform, it will expand opportunities for learning.

# IV. THE COVID-19 PANDEMIC IMPACT ON OT EMPLOYMENT

## 4.1THE OT EMPLOYMENT AND THE COVID-19 PANDEMIC IMPACT

In order to evaluate the impact made on the livelihoods of the OT company staff by the COVID-19 pandemic, a random survey was conducted online. Of 1,720[29] full-time OT staff and staff from contractor companies covered by the survey, 2 respondents refused to fill in the questionnaires, so in total 17,182 staff data was processed with use of the SPSS 26 software.

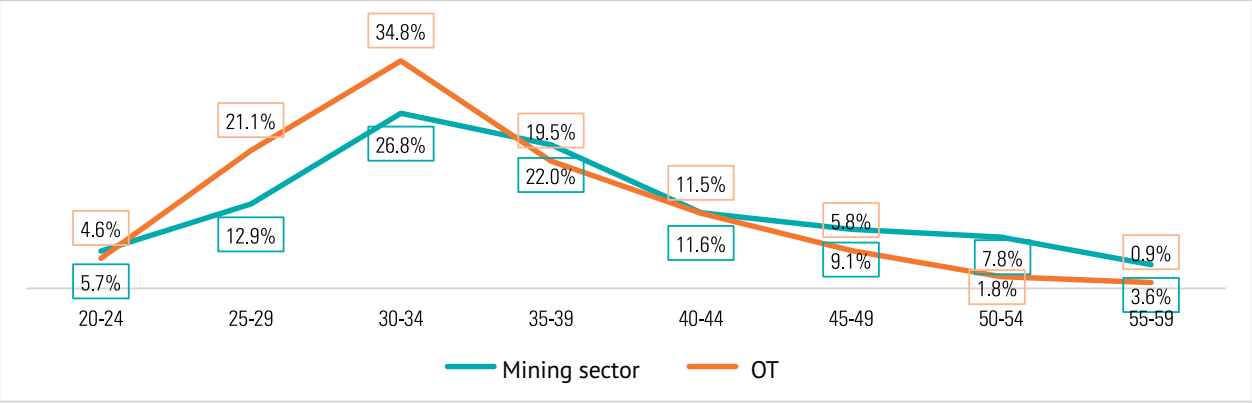
Of the staff covered by the OT survey, 80.6 percent were male and the remaining 19.4 percent were female. As of the 1st quarter of 2021, of total employed in the mining industry men accounted for 85.1 percent. Compared to the composition of workforce in the industry, the share of female staff employed by the OT company is higher by 4.5 points. The average duration of employment of the survey respondents was 11.4 years, of it, duration of employment by the OT company was 5.5 years.

As for the size of the family, the least number of household members was 1, the greatest- was 9, in other words, in average the number of household members was 3.95 or 4 members. The number of the household members of labor age was at the most 6, in average, there were 2 household members of the labor age per family. When the number of employed household members was examined, 52.9 percent were employed by the OT company and were the sole bread winners for the family. The survey respondents viewed that by working for the OT they were able to cover all household expenses with their salaries and their household income increased. Of 908 sole breadwinners 77.1 percent had families with 3-5 members, in average 3.92 or 4 household members.

When the OT employment was viewed by location, of the staff covered by the survey, 73.3 percent were from Ulaanbaatar, 12.1 percent were from the Umnugovi aimag, 5.8 percent were from the Darkhan-Uul aimag, 4.1 percent were from the Orkhon aimag. The remining 4.7 percent or 81 staff were Arkhangai, Bayan-Ulgii, Bayankhongor, Bulgan, Dornogovi, Dundgovi, Dornod, Zavkhan, Uvurkhangai, Sukhbaatar, Selenge, Tuv, Khovd, Khuvsgul and Khentii aimag residents, which demonstrated employment of capable staff from each corner of Mongolia.

While young people aged 25-34 accounted for 39.7 percent of total workforce in mining in Mongolia, of total staff employed by the OT project 55.9 percent were young people aged 25-34, so the share of young people in the OT was higher compared to the average in the industry.

*Figure 4.1. The OT project and the mining industry workforce, by age groups*

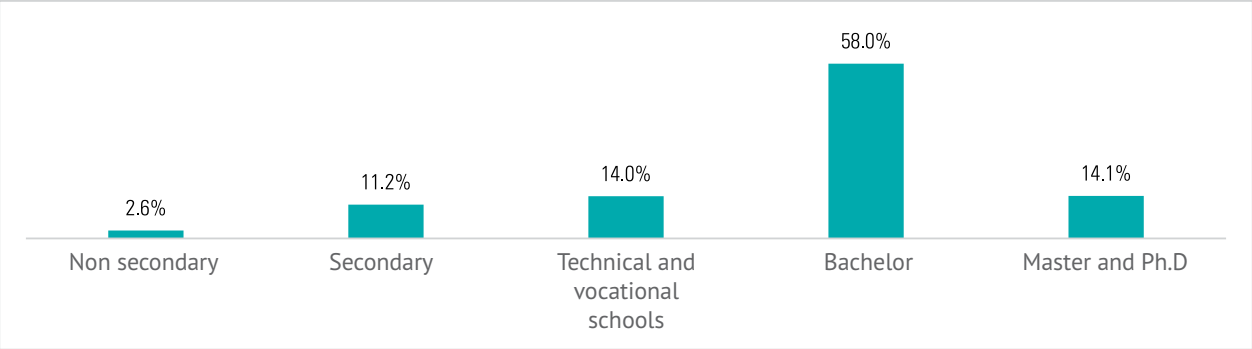



*Source: www.1212.mn*

29 The required sample size for the worker sample survey was 1,625. Here, the weight variance is calculated as the maximum, the probability of not answering the questionnaire is 20 percent, and the error limit is assumed to not exceed 3.5 percent with a 99 percent confidence interval.

As for the educational level, the share of staff with a BA degree was the largest or 58.03 percent, followed by the share of the staff with MA and PhD degrees or technical and vocational/special professional education. The data showed that 86.2 percent of the OT project staff were skilled professionals.

*Figure 4.2. Workforce, by educational level*

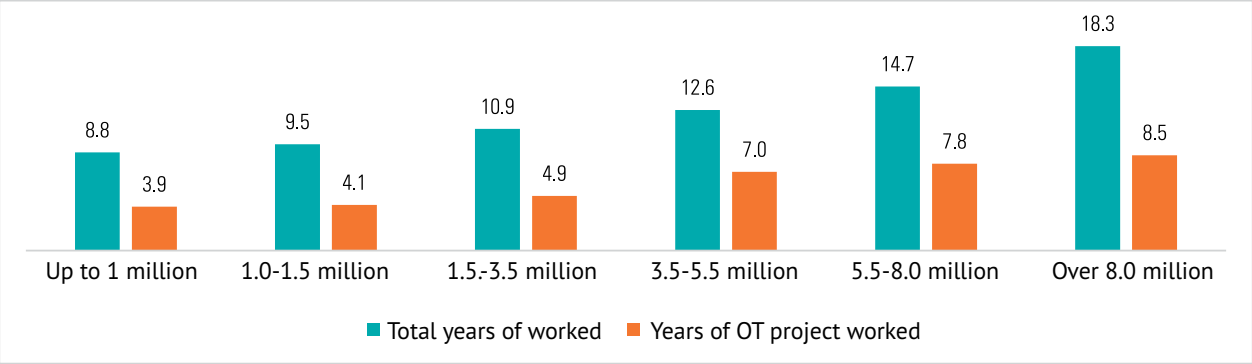



Of survey respondents 86.2 percent or 1480 staff graduated from the Technical Vocational Education and Training /TVET/ colleges, institutes and universities, where they obtained professions. Of these staff, 64.4 percent were employed according to their specialties, with the remaining 35.6 percent employed on positions different from their specialization. By their educational level, staff with technical or special/professional education that were employed according to their specialties prevailed compared to the staff with other educational background.

As of the 4th quarter of 2020, the average salary of employees in Mongolia was 1328.1 thousand MNT, the average salary in Ulaanbaatar was 1423.2 thousand MNT, and in Umnugovi aimag it was 1395.0 thousand MNT. With the launch of the OT operations, the poverty level in Umnugovi aimag has fallen and income of the population has increased. As for the salary level of the OT employees, 73.9 percent of total employees earned above the national average or more than 1.5 million MNT.

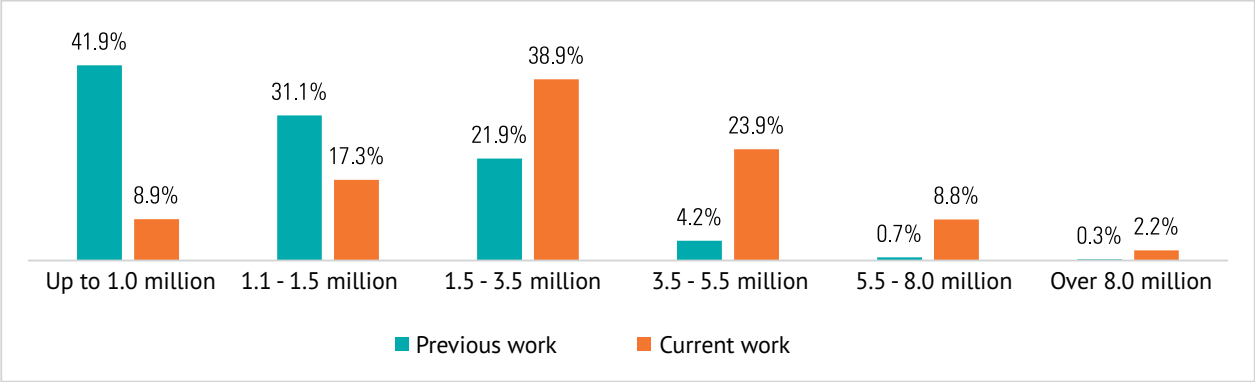
When a strength of correlation between the number of years employed by the OT company and the salaries was examined, the correlation coefficient was evaluated at 0.378, i.e., positive with weak dependence. In other words, the duration of employment and the level of salaries had a 37.8 percent correlation.

*Figure 4.3. Average duration of total employment and employment by the OT company, by the level of salaries*




Of total staff covered by the survey, 87 percent were employed by different other organizations before starting to work for the OT company. When the previous and the present salaries of the staff were compared, 41.9 percent of the staff received salaries up to 1 million MNT in the previous jobs. With the start of work for the OT, changes in the salary distribution took place so, of the abovementioned staff 38.9 percent started earning salaries in the amount of 1.5-3.5 million MNT.

*Figure 4.4. Changes in the salaries, by salary intervals*




When the previous and the present salaries of the staff were compared, of the staff who previously had salaries up to 1 million MNT 84.7 percent, of the staff who previously had salaries from 1.1-1.5 million MNT 75.7 percent, of the staff who previously had salaries from 1.5-3.5 million MNT 51.7 percent, of the staff who previously had salaries in the amount of 3.5-5.5 million MNT 48.8 percent and 40 percent of the staff who previously earned 5.5-8.0 million MNT presently received higher salaries.

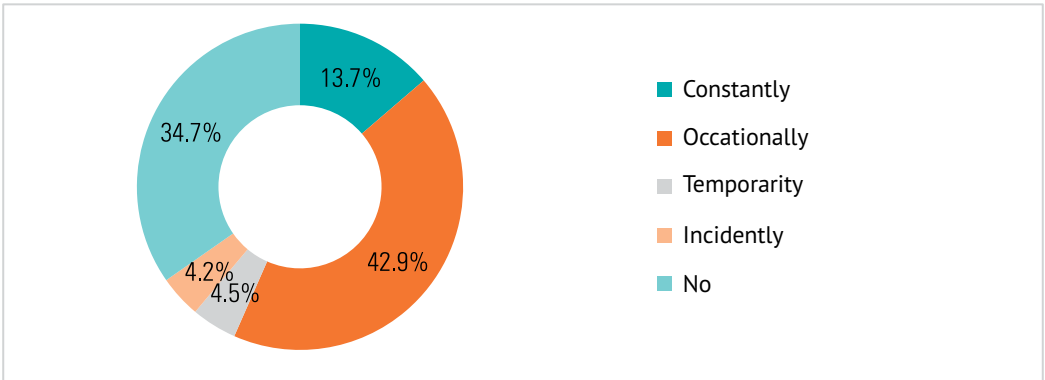
*Table 4.1. Changes in the previous and present monthly salaries, by salary intervals*

| | | Current work | | | | | |
|---|---|---|---|---|---|---|---|
| | | <1.0 | 1.1 - 1.5 сая | 1.5 - 3.5 сая | 3.5 - 5.5 сая | 5.5 - 8.0 сая | >8.0 |
| Previous work | Up to 1.0 million | 15.3% | 24.8% | 33.4% | 18.2% | 7.2% | 1.1% |
| | 1.1 - 1.5 million | 6.0% | 18.3% | 48.6% | 20.0% | 6.2% | 0.9% |
| | 1.5 - 3.5 million | 1.8% | 4.9% | 41.6% | 38.8% | 9.8% | 3.1% |
| | 3.5 - 5.5 million | 3.2% | 3.2% | 14.3% | 36.5% | 31.7% | 11.1% |
| | 5.5 - 8.0 million | 10.0% | | 10.0% | | 40.0% | 40.0% |
| | Over 8.0 million | | 25.0% | | | 50.0% | 25.0% |

When the correlation between the previous and the current salary of 1495 employees, who worked for other companies before the OT, was examined, the correlation coefficient was 0.349, which is positive, with weak dependence.

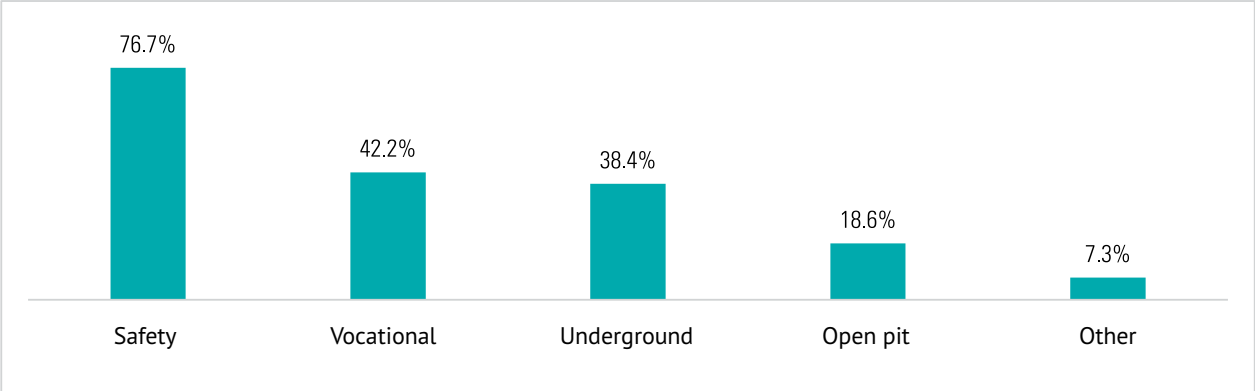
The OT project investment agreement included a provision on training of the Mongolian staff. In this frame the OT company established a training unit in 2012 and has implemented numerous programs aimed at strengthening capacity and upgrading skills of the staff. Of the staff covered by the survey, 65.3 percent or 1,121 staff were covered in upgrading training.

*Figure 4.5. Participation in training, by percent*



In 2020, of the survey respondents 76.7 percent participated in the safety training, 42.2 percent studied in professional training, 38.4 percent were covered by the underground mine operations training and 18.6 percent - by the open mine operations training. Of the staff covered by training, 1,111 staff participated in 1 training, 341 staff participated in 2 kinds of training, 268 staff-in 3 kinds of training and 56 staff participated in 4 different kinds of trainings.

*Figure 4.6. Training coverage in 2020, by kinds of training*



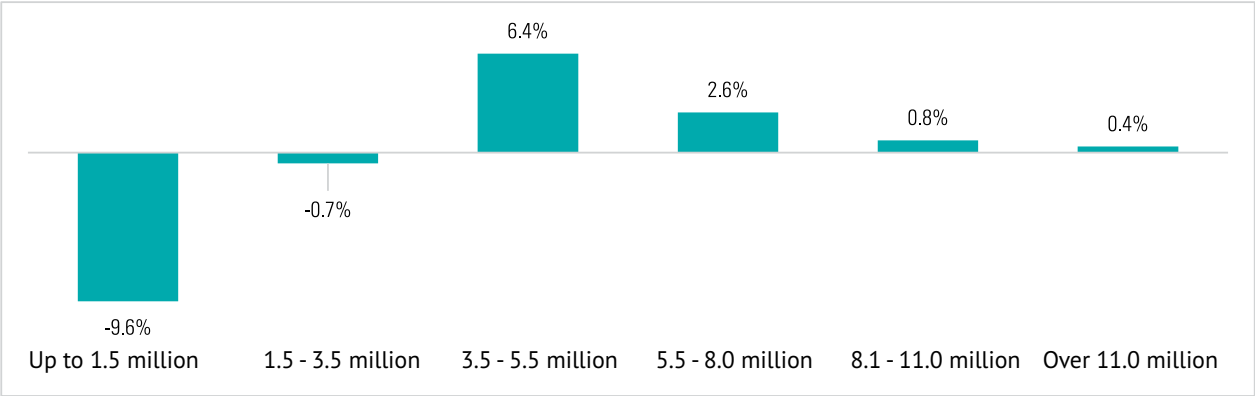

In addition to providing different training on upgrading professional skills and education of its employees, the OT company offered its employees an opportunity to participate in training on upgrading their language skills, training on communication ethics, personal development, healthcare and teamwork skills, so the staff has been studying while working.

**The COVID-19 pandemic impact**

During the COVID-19 pandemic, companies faced a number of challenges that required taking measures on reorganization of workplaces, change of work schedules, promotion of disinfection and immunization to provide occupational safety, and had to adapt to new conditions to continue regular operations. The response of large companies to the challenges was faster than that of medium and small companies. This can be illustrated by changes in staff salaries, incomes, livelihoods of households, and whether stability was maintained.

When the income of households in 2020 was compared to that in 2019, that of households with incomes lower than 3.5 million MNT decreased, while income of households with incomes higher than 3.5 million MNT increased.

*Figure 4.7. Changes in the household income by percent*



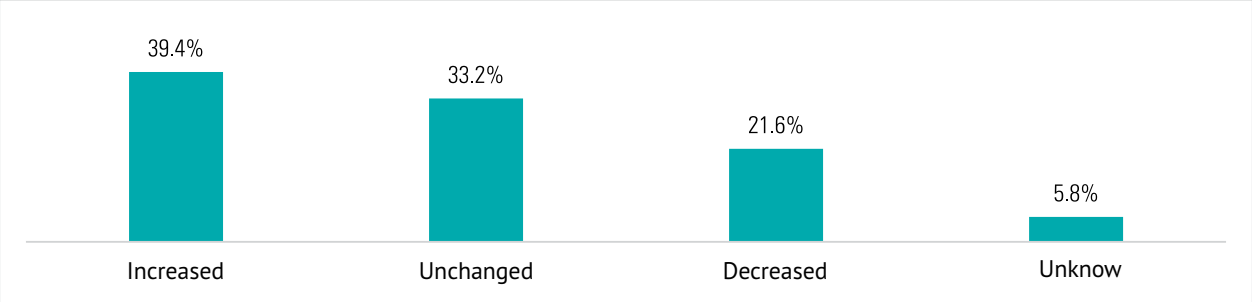
In 2020 compared to 2019, income of 63-92 percent of the staff remained stable. 37 percent of households with income up to 1.5 million MNT, 27.7 percent of households with income up to 1.5-3.5 million MNT, 20.6 percent of households with income from 3.5-5.5 million MNT, 14.1 percent of households with income from 5.5-8.0 million MNT and 19.4 percent of households with income from 8.0-11.0 million MNT had greater income in 2020. As for households with incomes 1.5-3.5 million MNT in 2019, 68.3 percent of them kept their income stable in 2020, while that of 26.5 percent reached 3.5-5.5 million MNT in 2020.

*Table 4.2. Changes in the household income, by income intervals*

| | | 2020 | | | | | |
|---|---|---|---|---|---|---|---|
| | | Up to 1.5 million | 1.5 - 3.5 million | 3.5 - 5.5 million | 5.5 - 8.0 million | 8.0 - 11.0 million | Over 11.0 million |
| 2019 онд | Up to 1.5 million | 63.0% | 33.1% | 3.5% | 0.2% | | 0.2% |
| | 1.5 - 3.5 million | 4.1% | 68.3% | 26.5% | 1.0% | | 0.2% |
| | 3.5 - 5.5 million | 0.3% | 2.6% | 76.5% | 20.1% | 0.5% | |
| | 5.5 - 8.0 million | | 0.6% | 10.4% | 74.8% | 12.9% | 1.2% |
| | 8.1 - 11.0 million | | | 6.5% | 6.5% | 67.7% | 19.4% |
| | Over 11.0 million | | | 4.0% | 4.0% | | 92.0% |

When changes in the amount of household savings due to the impact of the COVID-19 pandemic were clarified, 39.4 percent of respondents were able to increase their savings, 33.2 percent did not change their savings and 21.6 percent reported decline of their savings.

*Figure 4.8. How did the amount of annual savings by your household change in 2020/2019*




Shorter working hours (60.8 percent) and lower salaries (25.3 percent) mostly affected decline of savings. Reduced income of members of those households (65.4 percent) in 2020 compared to 2019 also made a negative impact on their savings.

*Figure 4.9. Changes in the salary income of staff who reported drop of savings, in percent*

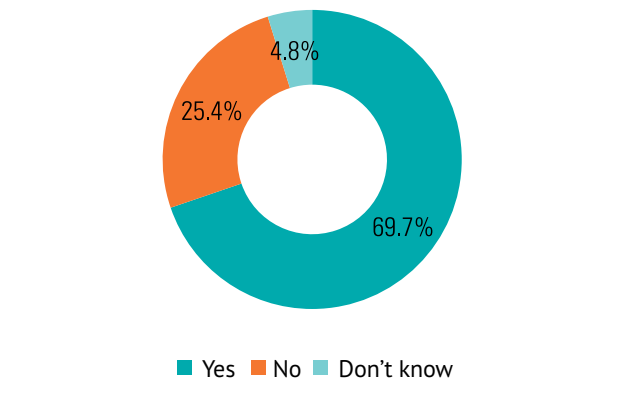
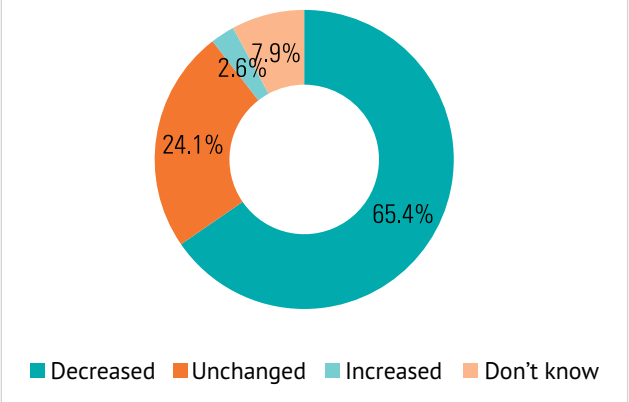



*Figure 4.10. Changes in the income of household members of the staff who reported drop of savings, in percent*



Of the staff covered by the survey, due to the pandemic impact, 52.2 percent experienced changes in their salaries, 39.4 percent reported lack of any changes, and the remaining 8.4 percent did not know the answer to the question. When asked about reasons for change in salaries, 36.9 percent of respondents viewed that shorter working hours, 18.4 percent - that decreased salaries affected it. With regard to the current conditions, the OT company provided support and incentives during the pandemic and 27 percent of the staff benefitted from it.

*Figure 4.11. Did the COVID-19 pandemic make impact on your salary income in 2020/2019*

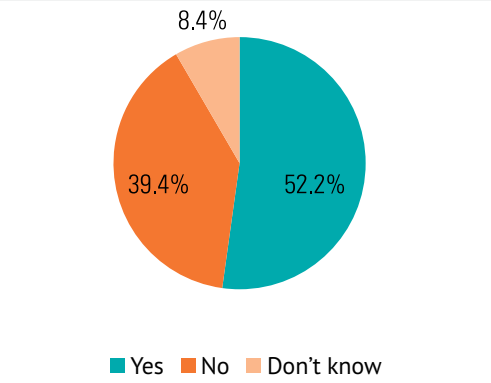
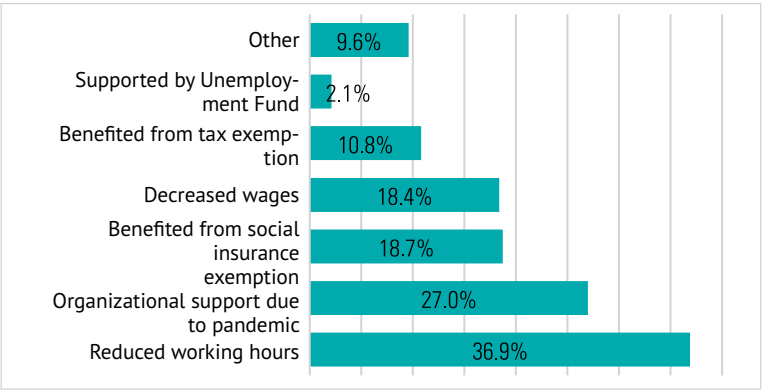
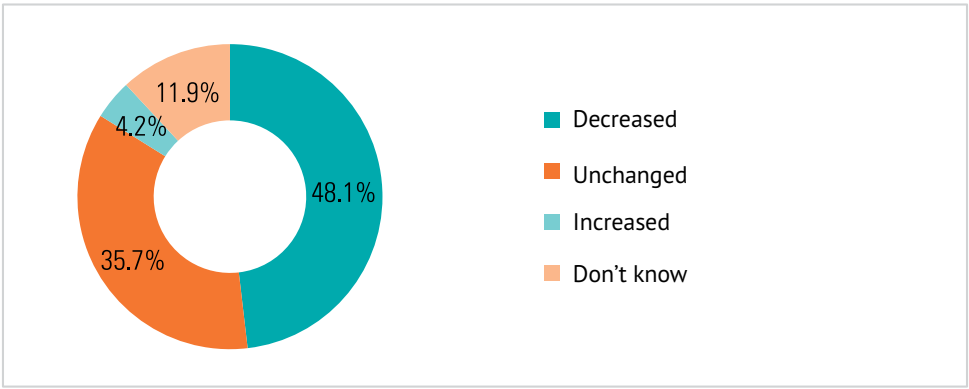



*Figure 4.12. Reasons for changes in the salaries*



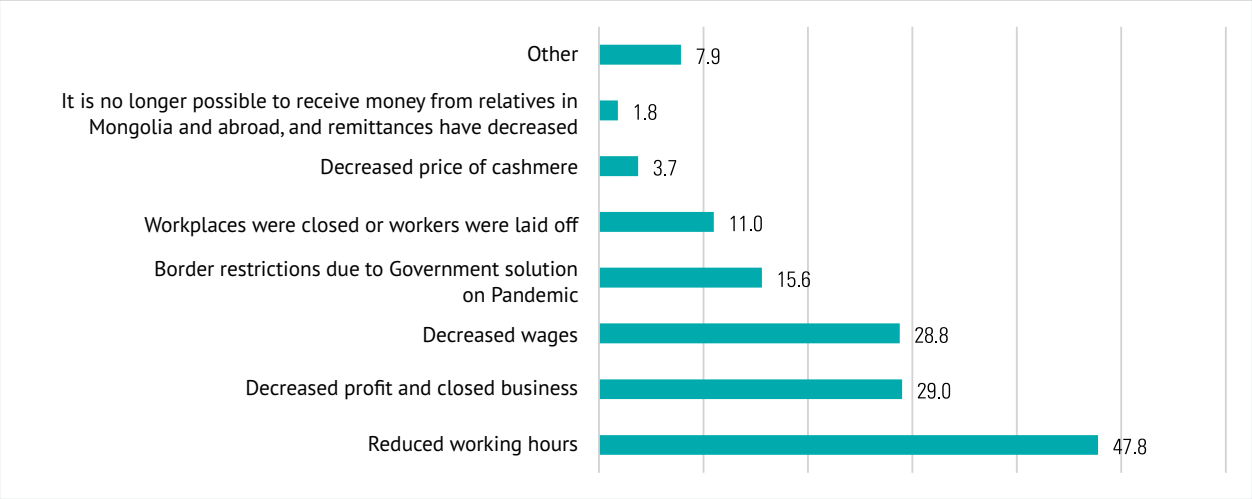

Income of 48.1 percent of other household members went down due to the COVID-19 pandemic impact, while 35.7 percent reported lack of any changes in their income.

*Figure 4.13. Changes in the income of household members due to only the COVID-19 pandemic impact, 2020/2019, by percent*



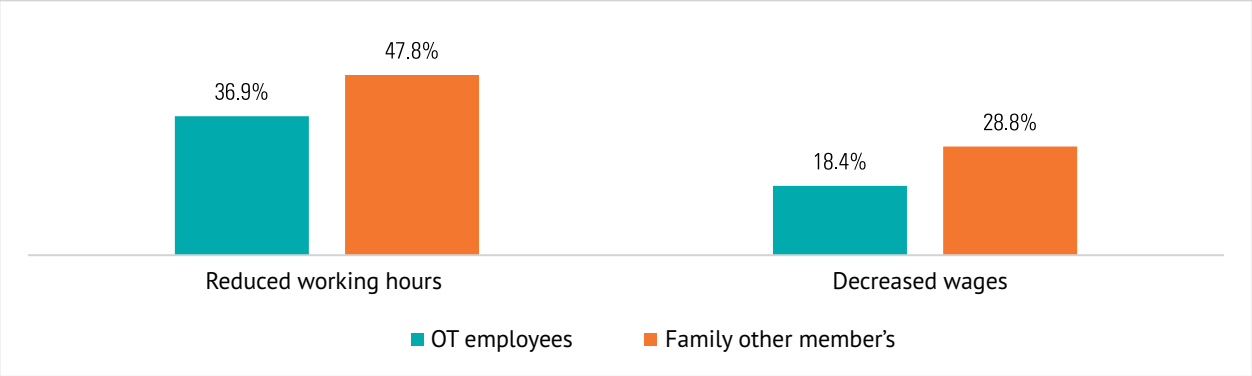

When reasons for decline of income of other household members were clarified, 47.8 percent reported reduced working hours, 29 percent stopped their private business or their profits declined, 28.8 percent reported lower salaries, which were the prevailing reasons.

*Figure 4.14. Reasons for decline of income of other household members by percent*



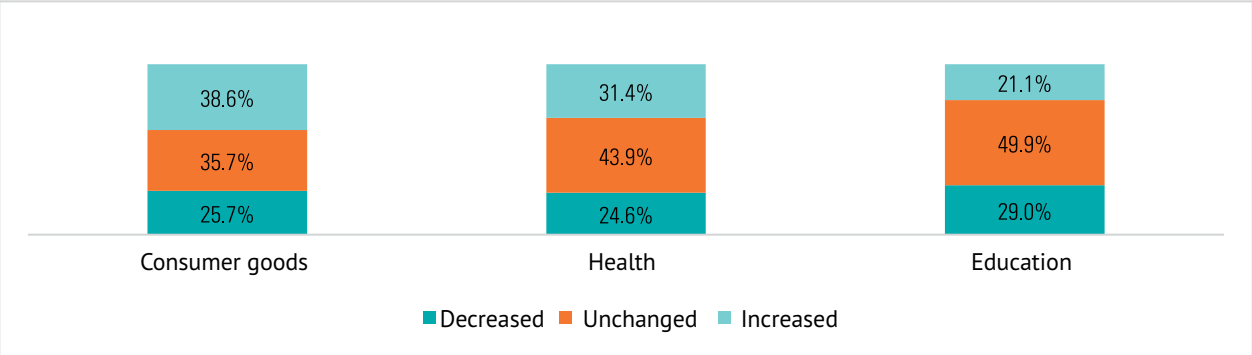

When the reasons for decline of the OT staff income and income of other household members were compared, shorter working hours and lower salaries was less often the reason for the OT staff compared to that of staff employed in different other sectors. It can be concluded that during the COVID-19 pandemic the OT staff compared to the staff of other sectors had relatively lower risks related to workplace organization.

*Figure 4.15. Reasons for reduced income by household members and OT staff*




Due to the pandemic impact consumption of household goods declined by 25.7 percent, that of healthcare products by 24.6 percent, and expenditures on education reduced by 29 percent, overall, household consumption and procurement declined.

*Figure 4.16. Changes in the household procurement, 2020/2019, by percent*




Following positive changes in their livelihoods after they started working for the OT company were mentioned by respondents:

- Stable income, higher salaries, improved livelihood and savings;
- Opportunities for in-service learning, upgrading knowledge and skills, further progress;
- Learning good practices for safe operations;
- Gaining deeper knowledge about ethics, planning, mutual respect;
- Friendly environment, friendly staff

## 4.2. 4.2 THE OT CONTRIBUTION TO EMPLOYMENT AND EDUCATION IN MONGOLIA AND THE COVID-19 PANDEMIC IMPACT

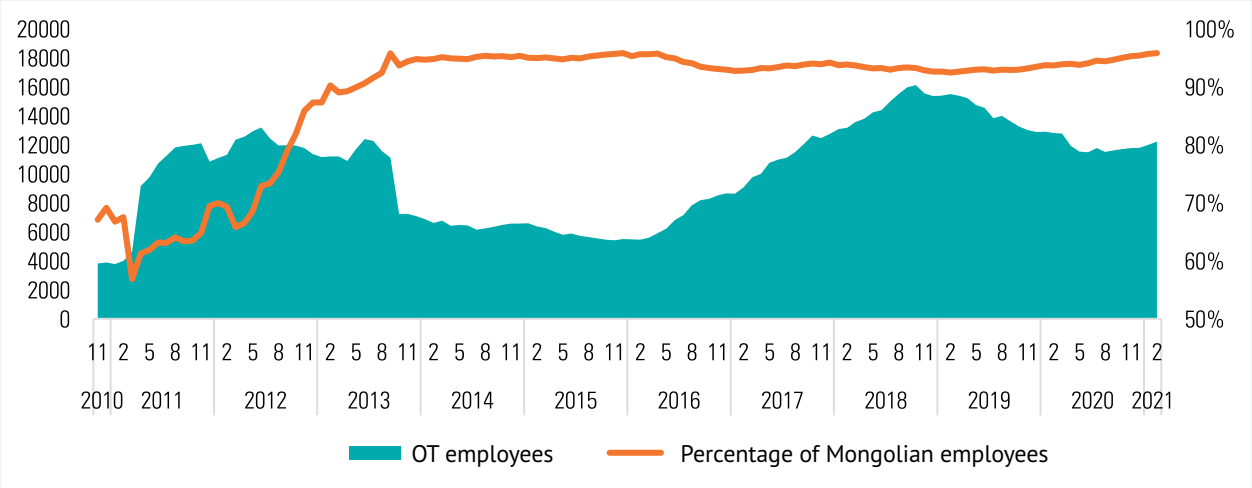
**The OT company contribution to employment**

On October 6, 2009, the Government of Mongolia signed an Investment Agreement with the OT company and works on the mine development started in 2010. With the launch of the project the demand for workforce increased, especially for professionals in the mining sector and a need arose to train workforce with new skills. According to provisions on labor relations, employment and training included in the eighth chapter of the agreement, work on training of skilled Mongolian workers with a capacity to compete on the global market has started.

In 2015, the OT company revised its vision and determined it as "National wealth to enduring value, knowledge and skills", which demonstrated that among the main objectives of the company, special attention is paid to development of its workforce, upgrading of talents and skills of their workforce.

As of December 2020, 12,364 staff were employed by the OT. Of them 2,852 workers were the Umnugovi aimag residents, which accounted for 26.8 percent of total staff. The goal stated in the provision 8.4 of the OT project investment agreement was exceeded and citizen of Mongolia accounted for 95.42 percent of total workforce.

*Figure 4.17. OT company workforce*



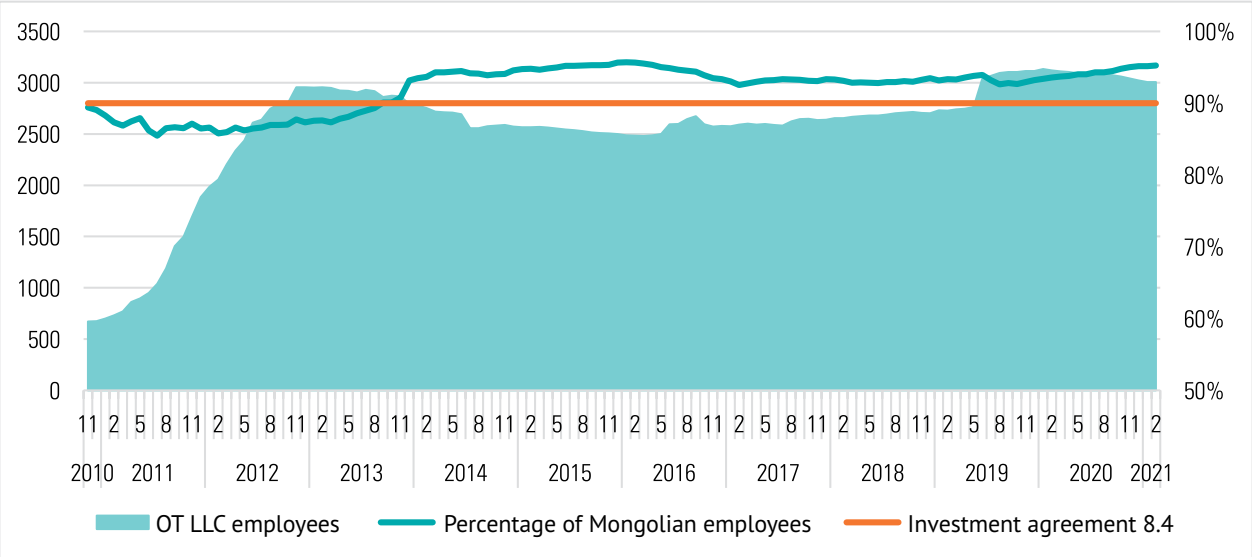

*Source: OT company*

The OT company took certain commitments for mitigation and control of negative impact of the mine on the society, economy and natural environment of the country. In order to realize the commitments, in the first place it makes a positive impact on employment in general by providing support to local employment. For instance, in order to provide for the long-term sustainable development, minerals such as copper and gold are extracted, processed and supplied to the global market, which provides added value and efficiency and makes a contribution to social and economic development of Mongolia.

On July 28th 2010, the OT company laid a foundation of a copper and gold production plant worth 1.2 billion US dollars. On January 31, 2013, it produced the first copper concentrate and on July 9th 2013, the first shipment of copper concentrate was made. At the peak of this development work, the OT company employed 2,955 full-time staff, and the number of workers from contractor companies reached 17,426; the number of construction workers in November 2011 reached 14,760.

Workplaces of the OT staff have been relatively stable. Starting from September 2013, according to the investment agreement, of total staff over 90 percent were citizen of Mongolia. Since then, this figure has increased continuously and by 2020, of total workers, 95.17 percent or 2,877 of the staff were Mongolian citizen.

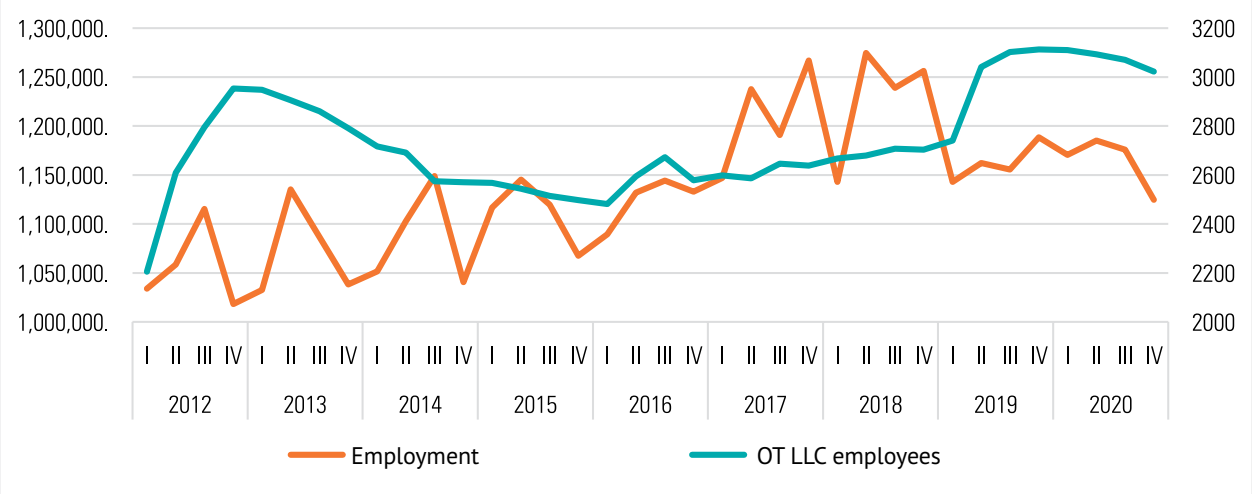
*Figure 4.18. The OT company staff and the share of Mongolian workers, by months*




*Source: OT*

According to employment data of Mongolia, since January 2019 employment has decreased sharply due to the COVID-19 pandemic impact and fell down again in the third quarter of 2020. However, the number of staff employed by the OT company started increasing since the first quarter of 2019, the company operations remained stable regardless of the COVID-19 pandemic and the plans were realized.

*Figure 4.19. Total Mongolian employed and the OT company staff, by quarters*

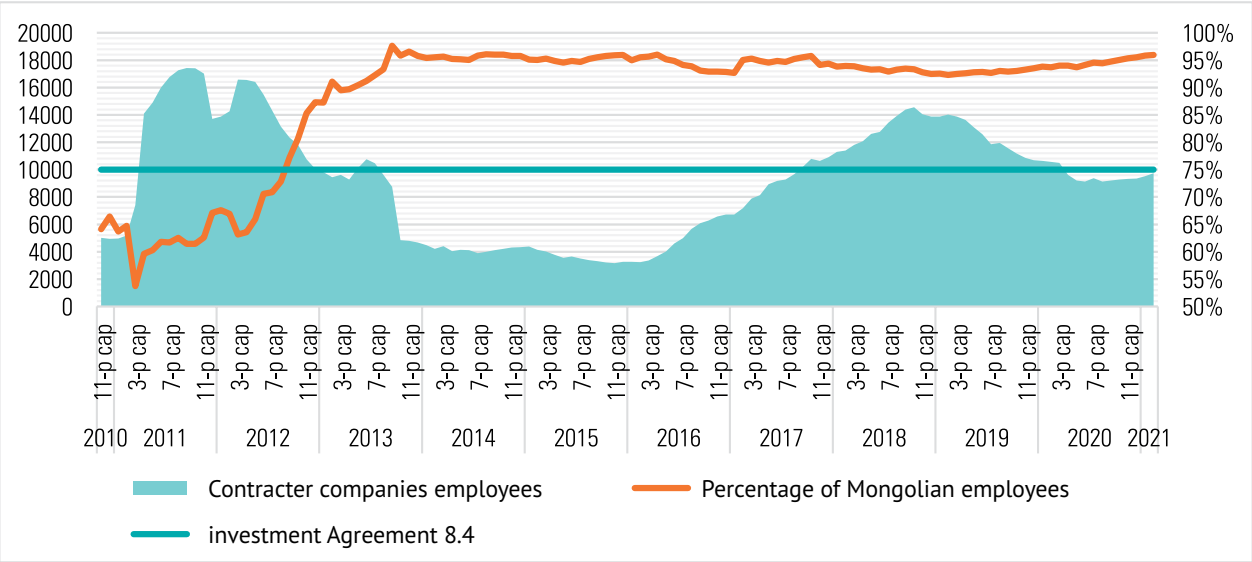



*Source: NSO, OT, 2021*

As for the contracted workers employed by the OT company, their workplaces were not as stable since it depended on development works on the project. Since 2013, the Government of Mongolia suggested work on amendments to be made in the Investment Agreement related to the future development, which led to slowdown of works, so in the period of 2013-2016 the number of workplaces of contractor companies decreased to 3,158.

An agreement on development and financing of the underground mine in the frame of the OT project was signed on May 16th, 2015, and the second stage of the OT project started. With the launch of the underground mine project, a new technology of block caving, which is used in a few mines worldwide, was introduced and Mongolian workers were trained to become highly skilled specialists capable to compete at the global market. By 2020, of total contracted workforce, 95.5 percent were made up by the citizen of Mongolia.

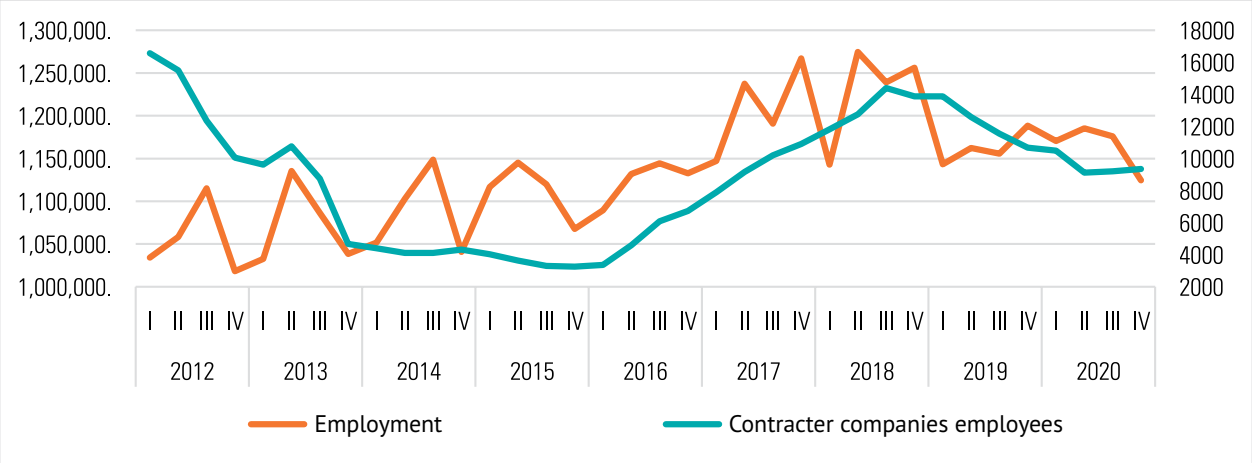
*Figure 4.20. Total Mongolian employed and the share of the contractor company workers, by months*




*Source: NSO, OT, 2021*

Starting from the fourth quarter of 2019, the number of contractor company staff at the OT company has declined, which was related to the COVID-19 pandemic impact and the project implementation conditions. The number of the workers declined steadily until the second quarter of 2020. Due to the COVID-19 pandemic impact, the risk among the contracted company workers was higher compared to the workers at other levels (See Table 4.2).

*Figure 4.21. Total Mongolian employed and the share of the contractor company workers, by quarters*



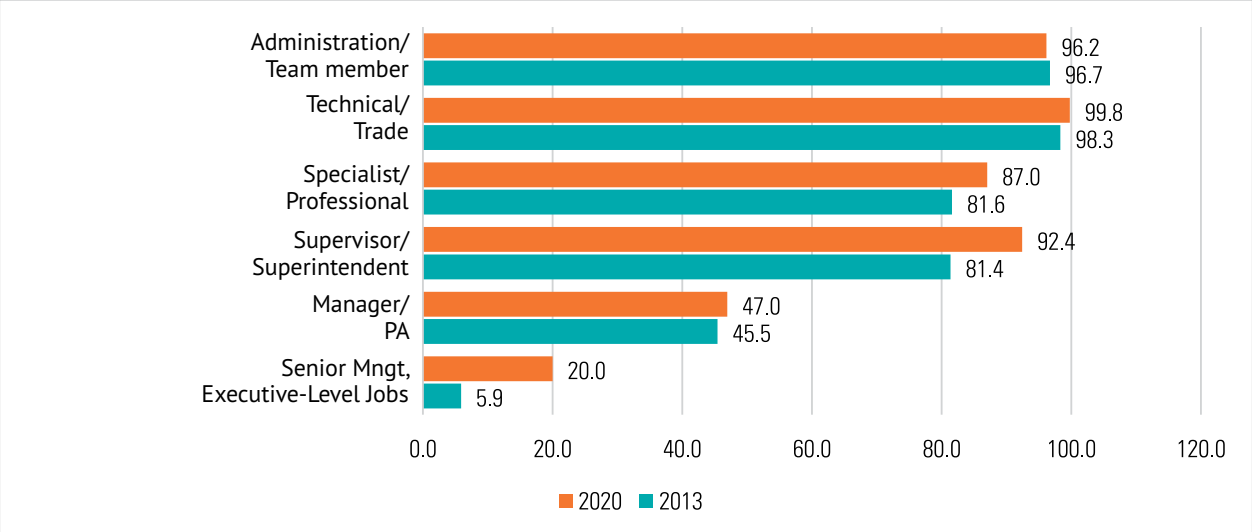

*Source: NSO, OT, 2021*

According to provisions 8.11, 8.12, 8.13 of the OT project Investment Agreement, the number of engineers and technical staff should be raised and a plan should be developed to train staff in this field.

When the total staff of the OT project was examined by their positions, in the period of the past 7 years the share of Mongolian staff at the management and executive levels increased by 14.1 points, which demonstrated improving management skills of the Mongolian staff.

If the higher level management and the executive level staff, managers, supervisors/superintendents are all viewed as the management level staff, we can see that the share of Mongolian staff increased from 72.4 percent to 81 percent compared to that in 2013. If specialists/ professionals and technical and trade staff are included in the engineering- technical staff, their number increased from 91.8 to 94.3 percent in the past 7 years. According to the investment agreement, over 70 percent of engineers and technical staff should be citizen of Mongolia, and that goal was exceeded.

*Figure 4.22. The share of Mongolian staff, by official positions*




*Source: OT*

The COVID-19 pandemic made a negative impact on the mining sector as well as on other economic sectors. Due to the COVID-19 pandemic impact many flights, international as well as within the country, were cancelled or delayed; many staff that were working away from home had to work for extended rosters, expatriate staff had to live far from their families for many months or could not get to their workplace and many other different challenges were faced. Regardless of that, the OT company successfully planned their activities and was able to exceed the plan for copper and gold production in 2020.

Because of the global pandemic, the staff was required to work online from home during public lockdowns and due to that many small and big mining companies had to slow down their activities and some went into the stagnant state. Advances in technology and the Internet have made it possible for many workers to work remotely, but the opportunity was not suitable for all jobs and did not serve all sectors of the economy equally. The Warley company, responsible for underground mine construction projects, introduced a methodology to carry out the commissioning process remotely, in cooperation with foreign experts with use of new, progressive technologies.

The commissioning of the building is a highly professional and responsible job, where each electrical wire and valve is carefully tested to ensure that it is working in accordance with the standards, and an expert is required to monitor the process. Therefore, the underground mining project team successfully tested the VuzixM400 camera on glasses and iPad tablets with the e-conference applications Zoom and Vuforia Chalk to interact directly with the on-site staff and experts from the other corners of the world, get instructions from them and save thousands of dollars.

The OT company organized numerous training programs to upgrade skills of Mongolian staff, and development of the underground mine continued uninterrupted during the COVID-19 pandemic.

As a result, young Mongolian professionals moved to the management level, and many important projects that will make a significant contribution to the national economy in the future made a steady progress. Construction and assembly of a crusher located at the depth of 1,300 meters, of a conveyor to surface for underground ore hauling and transportation of other materials, works on excavation and anchoring in the underground mine have been completed.

Most importantly, young Mongolian professionals have gained a wealth of expertise on making independent decisions at difficult times and successfully carrying out important projects in a safe way. In addition, for the first time, a team of Mongolian specialists successfully completed regular maintenance works of the Concentrator in a safe, high-quality and timely manner, which illustrated improved skills and expertise of Mongolian engineers and technical staff.

**Contribution to the education sector**

The OT company has invested more than 120 million USD in implementation of multi-stage projects and programs in the education sector according to the investment agreement.

According to the provision 8.13 of the OT project investment agreement, since 2010 the OT company

provided 79.809 million US dollars' worth support to the vocational education sector. Thus, one school and four TVET colleges, in total 15,649 students became project beneficiaries, strengthened their professional skills and are now employed by the OT and other companies, making contribution to the national development.

*Table 4.3. Investment in the TVET sector*

| № | Investments | Budget, million USD | Benefits |
|---|---|---|---|
| 1 | School buildings | 27.0 | Polytechnical colleges from Dalanzadgad, Darkhan, Dornod and Choir, German-Mongolian Institute for Resources and Technology, Khanbogd Technical Training Centre |
| 2 | Equipment donation | 3.9 | TVET |
| 3 | 3300 Scheme | 36 | Over 13000 unemployed citizens got involved in vocational training and awarded with certificates of completion |
| 4 | Apprenticeship program | 3.5 | 298 citizens got involved |
| 5 | TVET Teacher Training | 5.4 | 1900 teachers received Australian special training. Out of them, 120 teachers visited Australia to gain experience. |
| 6 | Pre-employment | 0.61 | 251 locals got involved in vocational training and awarded with certificates met with the standards of Australia and Mongolia |
| 7 | Pre-apprenticeship | 1.7 | Citizens of Umnugovi province were trained at the Australian Certificate Level II and awarded with professional certificates for an electrician, a mechanician and a welder. 190 citizens got involved in the following Level III training which gives an opportunity to participate in the Oyu Tolgoi internship program |
| 8 | Pilot program | 0.02 | |
| 9 | 3D program | 1.54 | Polytechnical colleges from Dalanzadgad, Darkhan and Dornod were included. |
| 10 | World Skills | 0.139 | 10 people got trained in the preparation for World Skills Competition. In 2017, Janlav-Oidov, representing Mongolia, competed in the welder's class and won the special place for the first time in World Skills Competition that was held in Abu Dhabi. |
| | Total investment | 79.809 | |

*Source: OT*

One of important contributions provided by the OT company to development of vocational education and training is initiating and implementing a model technical vocational 3D school project. The project implementation made a valuable contribution to professional training in the Darkhan, Dornod, Dalanzadgad Polytechnic colleges. A number of activities were organized in the frame of the project and some of the results and successes to be mentioned here:

- A German national development expert, who provided everyday consultations to the lecturers, was employed at the above-mentioned institutions.
- A methodology of teaching theoretical and professional practical classes has improved and lecturers acquired skills to train students according to international standards.
- Based on demand, an opportunity to offer short-term training to business entities, lecturers of other TVET colleges and general public was open.
- In order to prepare students for work in the industry, the OT company provided support in providing conditions for installation of special model training equipment for practice.
- 43 lecturers of the abovementioned 3 colleges enrolled in the Australian National Certificate level 3 program. They acquired a consolidated understanding of and knowledge on safety proceedings

and were awarded an internationally recognized specialization certificate.

- The OT company implemented the OHSAS 18001 standard at the Dornod Polytechnic college and provided support in developing a model training center on workplace safety, so the college became the first training institution that introduced the safety standards.
- In the frame of the 3D project, the OT implemented a lecturer academic exchange program, which gave an opportunity to lecturers to exchange best practices, to share their experience, thus leading to strengthening of the lecturer's capacity.

The OT provided 139.0 thousand USD in support and training facilities for participants in the World Skills Competition. As a result, Janlav-Oidov represented Mongolia in the welding competition in Abu Dhabi in 2017, and for the first time a Mongolian national was awarded a Special Place. The program supported knowledge and skills development of the Mongolian workforce, and introduction of specialized technical training, particularly in the areas of mining and construction.

Since 2010 the OT has spent 4.3 million USD on scholarships for students and youth, thus making investment to improve professional knowledge and skills of 2,097 students and youth. In addition, 641 students and young people are enrolled in the Gobi Scholarship and New Graduates Program. 75 graduates of these programs are presently employed as full-time OT staff, making use of the knowledge they have acquired, while other students have been able to work in their respective fields.

*Table 4.4. Scholarships for students and youth*

| № | Programme | Total investment, thousand USD | Number of high school and university students attended | Oyu Tolgoi employee |
|---|---|---|---|---|
| 1 | Youth development programme (2013-2020) | 264.3 | 1170 | - |
| 2 | Domestic scholarship programme (2010-2020) | 833.4 | 345 | 23 |
| 3 | International scholarship programme (2012-2020) | 2809.7 | 39 | 21 |
| 4 | Internship programme (2010-2020) | 425.1 | 543 | 31 |
| 5 | Gobi scholarshop programme (2005-2020) | - | 527 | - |
| 6 | Graduate excellence path programe (2015-2017) | - | 114 | - |
| | Total | 4,332.5 | 2738 | 75 |

*Source: OT*

Since 2013 the OT has implemented a Youth development program. The program aims to develop young people from their high school years and has a direct impact on personal development. Fifteen of the students enrolled in the Youth Development Program received foreign scholarships, which is a testament to the program effectiveness.

Within the framework of the domestic scholarship program, 247 students of the Mongolian University of Science and Technology, 75 students of the National University of Mongolia, 6 students of the Mongolian University of Life Sciences (Agriculture), 4 students of the Mongolian National University of Medical Sciences, and the remaining 13 students of other universities were awarded scholarships. By the study fields, training of specialists such as mining engineers, electrical engineers, construction engineers, geology and geotechnology engineers, chemistry specialists, mining technology operators, mechanical engineers and environmental engineers has been supported. Seven percent of the students enrolled in the domestic scholarship program became full-time OT employees, and 12 of these students received international scholarships and continued their studies.

Under the Foreign scholarship Program, 9 students studied at the British Columbia University, 1- at the University of Toronto, 1 - at McGill University, 1 - at the Colorado Mining School, 5 - at the University of Utah, 1 - at the University of Wisconsin-Madison, 2 - at the University of Illinois, and one at the University of California, Berkeley, 3 students went to the Cortin University in Australia, 4 students - to the University of Queensland, and 1 student studied at the University of Adelaide, majoring in mining, engineering, and technology. 53.8 percent of the students who graduated abroad became full-time OT employees.

Under the internship program, 543 students have undertaken internship at OT in different fields in line with their specialization, and 5.7 percent of them became full-time OT employees. Eight of these students have received international scholarships and are continuing their education abroad. Many of students and young people studying mining and engineering in Mongolia have benefitted from these programs, which the OT offers to improve the skills of students and youth. Furthermore, the OT is one of the largest companies in the country, that makes a valuable contribution to training specialists in demand on the Mongolian labor market and encouraging young people to study in this field.

Along with offering scholarships to support students and youth, the OT cooperates with educational institutions to develop curricula on necessary mining specialties. The OT agreed to provide $ 2.75 million in funding for a project to develop a mining geotechnics program and establish an international research center in partnership with Rio Tinto and the Mongolian University of Science and Technology. Currently, 25 students are enrolled in the geotechnics program. Within the framework of this joint program, there is an opportunity to train specialists in modern laboratories, as in other universities around the world.

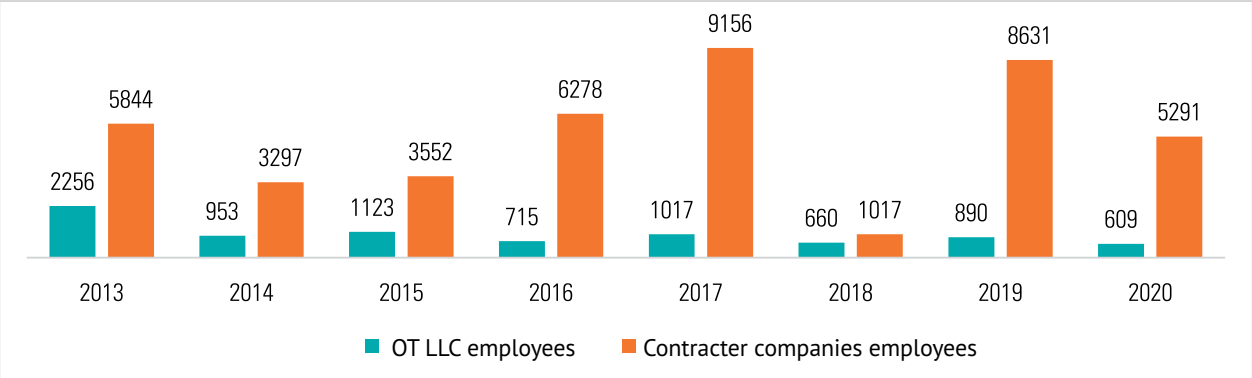
**Training on upskilling the workforce**

Since personal development affects development of the organization, strengthening skills and building knowledge of employees has a direct impact on the OT development.

The OT mission and values clearly show a focus on safety, so any risky activity is halted immediately. As a result, the All Injury Frequency Rate (AIFR) was 0.15, which allowed the OT to maintain its position as one of the safest performers across the Rio Tinto group.

All organizations and individuals that are employed by the OT are covered by the safety training. In the period between 2013-2020, in total 8233 OT staff and 52066 staff of contractor companies were trained.

*Figure 4.23. The number of staff covered by the safety training*

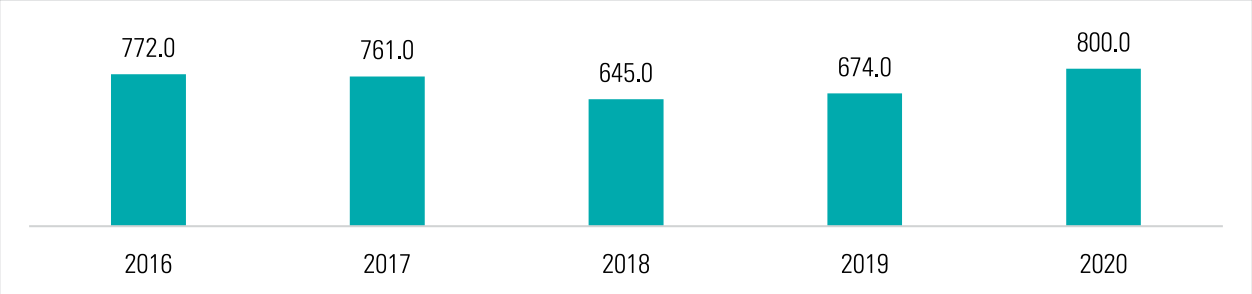



*Source: OT*

In the period between 2016-2020, the OT company spent 3,652.0 thousand USD on safety training. In 2020 alone 800 thousand USD was spent on it, which accounted for 21.9 percent the above total costs. Along with leading across the Rio Tinto group on the safety of operations, the OT staff fully realized sig-

nificance of safety on their lifestyle. According to the survey conducted among the OT staff, when asked about positive changes that took place in their lives since starting to work for the OT company, 5.7 percent of respondents mentioned safe operations.

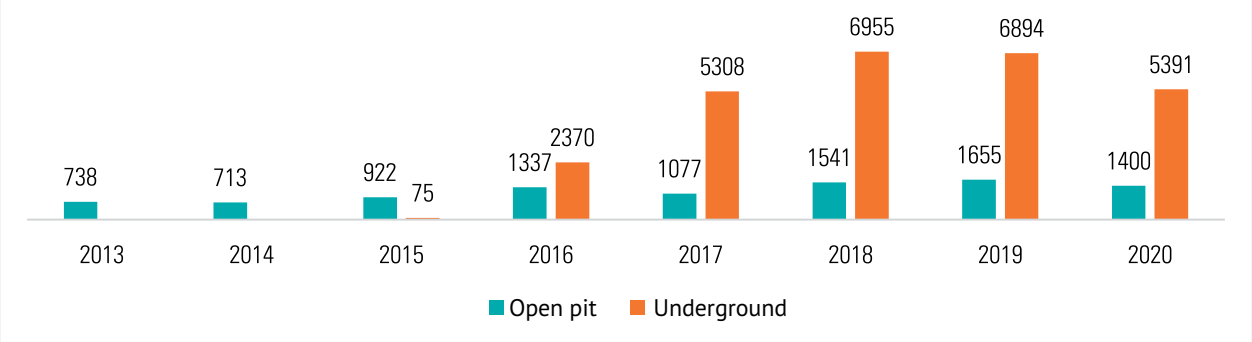
*Figure 4.24. Costs of safety training, in thousand US dollars*




*Source: OT*

While 9,383 staff were covered by the open pit operations training at the OT company since 2013, 26,993 staff were covered by the training on the underground mine operations since 2015.

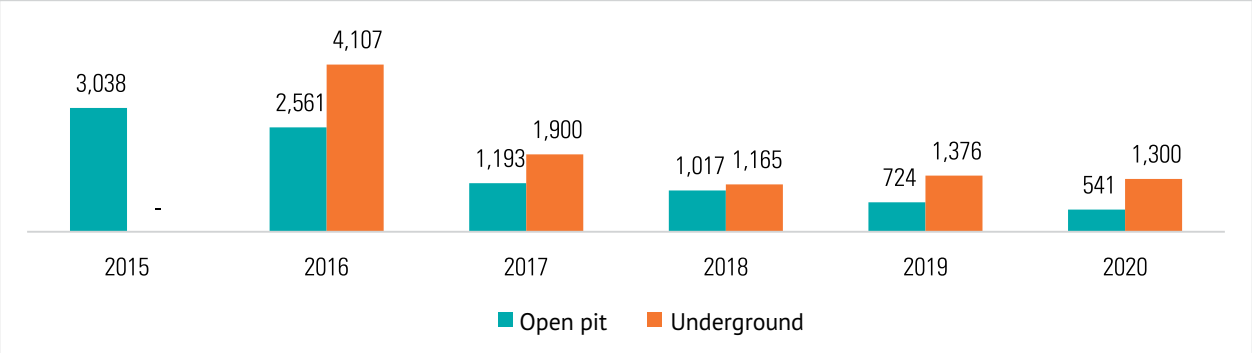
*Figure 4.25. The number of staff covered by the training on the open and underground mine operations*




*Source: OT*

9,074 million US dollars were spent on the open mine operations training since 2015 and 9,848 million US dollars were spent on training of the underground mine operations since 2016. Since 2015, 18,922 million US dollars were spent on training on the open and underground mine operations and 34,750 staff were trained, making average training worth 544.5 US dollars per staff.

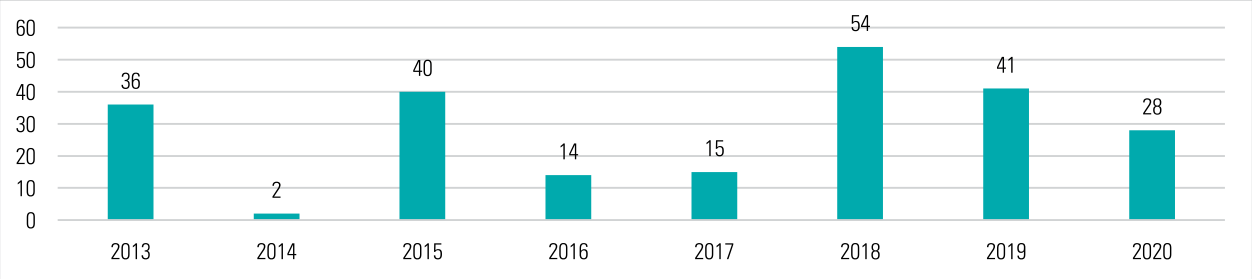
*Figure 4.26. Costs of training on open and underground mine operations, in thousand US dollars*




*Source: OT*

Specialization training was organized to upgrade the staff skills. Since 2013, 4.816 million US dollars were spent on training of 230 staff, which makes in average 20,939 US dollars per employee.

*Figure 4.27. The number of staff covered with specialization training*




*Source: OT*

The OT company established an Underground Mine Rescue Services team to provide safety of the staff, that included 113 people in the period of 2015-2020.

Since 2013, the OT company conducted training to upgrade their staff skills to provide knowledge on safe operations in the open and underground mine operations, specialization training and the underground mine rescue procedures, in which 98,890 staff participated and 27,039 million US dollars were spent. It made an invaluable contribution to training of highly skilled Mongolian staff recognized at the international level. During the COVID-19 pandemic, the training system operated uninterrupted.

## 4.3. THE COVID-19 PANDEMIC IMPACT ON EMPLOYMENT IN THE GLOBAL COPPER INDUSTRY

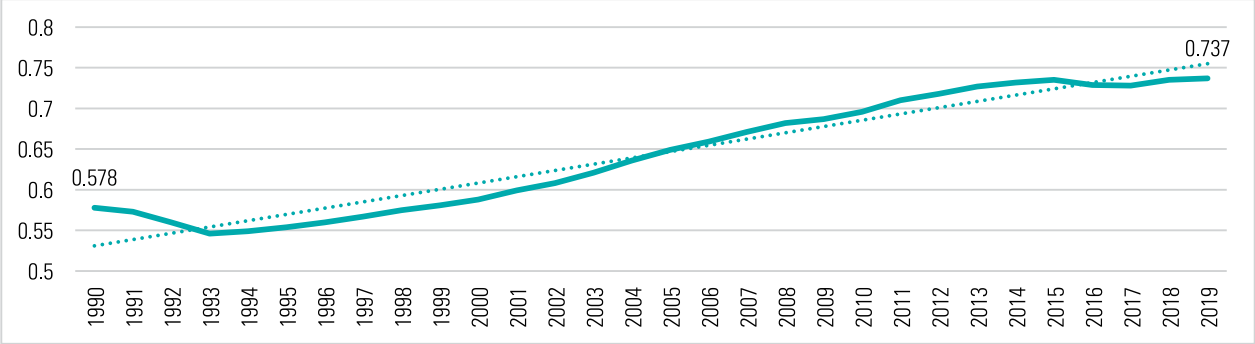
For countries with natural resources, the mining sector and appropriate use of its wealth and resources can give support in alleviation of poverty and accelerate the economic and social development of the country.

In such countries as the USA, Sweden, Canada and Australia, the mineral wealth was used to ensure sustainable economic development. At present these countries rank high in the Human Development Index. For Canada and Australia, the mining sector has become the main basis for economic development in the last hundred years. Botswana is one of developing sub-Saharan African countries, which is developing rapidly in the last decade utilizing their natural resources and has the highest Human Development Index in its region. However, it is also one of African countries, which is the most dependent on mining. Chile, which is a Latin American country dependent on mining, is also a country, which is developing the most rapidly in the last two decades in the region. In addition, it is also leading in its region by the Human Development Index (McMahon & Moreira, 2014). As of 2019, Chile ranked the 43rd in the world by its Human Development Index and the first in its region (UNDP, 2020).

In Peru and Brazil, the Human Development Index increased by 26.8 percent and 24.8 percent between 1990 and 2019, with most of the change occurring between 1990 and 2000, while in Chile the HDI index has grown steadily.

The Mongolian HDI has been growing steadily since 1993, and as of 2019, it reached 0.737, putting Mongolia 99th out of 189 countries in the world.

*Figure 4.28. Mongolian HDI, 1990-2019*




*Source: UNDP 2020. Human Development Report*

Between 1990 and 2019, Mongolian Human Development Index increased by 27.5 percent, from 0.578 to 0.737. During this period, the life expectancy at birth, which is a component of the Human Development Index, increased by 9.6 years, the average length of schooling grew by 2.6 years, the length of schooling increased by 4.0 years, and Gross National Product per capita went up by 134.5 percent[30] .

According to periodic human development reports, Mongolia has made significant progress in the Human Development Index, and in 2015, for the first time, joined the ranks of countries with the highest levels of human development. Providing people with access to education and creating conditions for a long and healthy life are two important dimensions of human development. One clear proof of support for human development by OT is its focus on improving the knowledge and skills of its employees in order to develop the national workforce to the international level.

When advancement in human development in Mongolia is compared to that in Chile, Peru, Brazil, and Kazakhstan, which have large copper mines, the growth of the Mongolian human development indicators by 27.5 percent between 1990 and 2019 was the highest. The majority of progress in Mongolian human development took place between 2000 and 2010, increasing by 18.4 percent.

*Table 4.5. HDI changes, in percent, by selected countries*

| Country | 1990-2000 | 2000-2010 | 2010-2019 | 1990-2019 |
|---|---|---|---|---|
| Mongolia | 1.7 | 18.4 | 5.9 | 27.5 |
| Chile | 7.1 | 6.2 | 6.0 | 20.5 |
| Peru | 10.8 | 6.2 | 7.8 | 26.8 |
| Brazil | 11.7 | 6.1 | 5.2 | 24.8 |
| Kazakhstan | -0.7 | 11.5 | 8.0 | 19.6 |

*Source: UNDP 2020. Human Development Report*

The mining sector is accounting for a major part of the total national revenue in most developing countries, but because of the major investment that is required in this sector, it cannot become a direct major employer. According to the International Council on Mining and Metals survey the mining sector solely accounts for 1-2 percent of total employment in any country[31].

The International Copper Alliance calculated that 100 USD invested in economy by the copper industry provides an opportunity to generate additional 36 USD in other industries and one work place in the mining sector creates other 3.7 new workplaces in other sectors (IGF 2020).

30

31 ICMM (2016). Role of mining in national economies (3rd edition)

The existence of the mining sector is based on stable, predictable market conditions and a sustainable supply network. When there is a major problem in the global economy, an unclear situation appears, there are problems in production and productivity and major losses are experienced by the staff, suppliers and the local economies.

In order to contain the spread of the pandemic many governments in different countries introduced abrupt lockdowns, which directly affected markets, supply chains and employment. When the impact of the COVID-19 pandemic on workplaces and salaries and wages was examined with regard to working conditions:

- Some of the mining staff are considered "essential" staff, because they are responsible for work that is crucial for sustainable operations of the mine. This staff keeps their workplaces and salaries.
- The staff, who has an opportunity to work online, also keeps their workplaces and their salaries.
- All other staff that is not included in the above mentioned 2 categories are temporarily dismissed. If there is no agreement to protect them in these conditions, they have the highest risk to lose their income source.

According to the ILO survey, in 2020, on the global scale due to the COVID-19 pandemic impact, the amount of working hours decreased by 8.8 percent, which equals to 255 million full-time workers. When evaluating risks of economic sectors, the survey put the mining and extractive sectors as the medium risk ones. Although the amount of working hours decreased by 2.4 and 1.6 percent in the second and third quarters of 2020, there was a positive trend for employment to increase by 3.6 and 2.8 percent[32].

A study on the impact of the COVID-19 pandemic on employment in the mining sector by the International Institute for Sustainable Development evaluated the development phase as high risk and the mining and processing phase as above average risk. Depending on the operation of the mine, there is a high risk to the staff of contractor companies during the development phase.

Underground mines are at high risk, because elevators carry a large number of workers, creating an environment in which the virus spreads rapidly. Some mines in South Africa focused on the maintenance and operation of underground mines in order to protect workers in the first place. In Poland, underground mine development has been suspended following a COVID case at a mine site.

*Table 4.6. Risk mapping of mining companies' staff*

| | Exploration | Construction | Extraction/ operation | Mining processing | Closure and de-commissioning |
|---|---|---|---|---|---|
| Labour intensity | Construction | Extraction/ operation | Mining processing | Closure and decommissioning | MID-TO HIGH-TECH LOW JOB |
| Direct employees | | | | | |
| Highly skilled | | | | | |
| Technical | | | | | |
| Low-skilled | | | | | |
| Contractors | | | | | |
| | | Low | Low-med | Med-high | High |

Although countries did not put ban on the mining activities, the population mobility and supply were restricted, which caused delay of projects. For example, a 15-day lockdown was introduced in Peru due to

32 ILO (2021). ILO Monitor: COVID-19 and the world of work (7th edition)

the pandemic and in order to protect the staff, of total 10,000 construction workers 8,000 were temporarily discharged from work. There was a wait for the safe conditions to continue work on the Anglo-American Quellaveco copper project, which brought the project to standstill for months.

In Chile, some measures were taken to prevent the spread of the COVID-19 pandemic and a special regulation was introduced for the mining workers to work in shifts, 1 week of work and 1 week of restriction. Moreover, the contracted workers and suppliers were not contacted directly and staff were provided an opportunity to work online. Due to the pandemic the number of workplaces in the mining sector in Chile has reduced dramatically.

In Mongolia, the OT underground mine project development has been delayed due to disruptions in communication with the staff, construction workers and technicians. However, the underground mine development has continued uninterrupted, work was implemented with use of advanced technology by Worley company in charge of the underground mine.

Due to the pandemic impact following risks directly threaten employment:

- Quarantine will have a negative impact on employment, productivity and future investment plans;
- Due to the spread of new waves of the virus policies restricting economic growth might be developed and new lockdowns imposed;
- Small and medium-sized mining companies face credit constraints leading to reduced operations and investments;
- Bankruptcy of small and medium enterprises puts local supply chains at risk and affects jobs;
- Declining investors' confidence in the global economic outlook;
- A sharp drop in the prices of a wide range of consumer goods due to global demand and uncertainty in the supply of raw materials;

The COVID-19 pandemic showed very clearly all mistakes and shortages at the labor market. In Australia, in order to contain the spread of virus, mobility within the country was limited, so many mining companies had to reduce the number of their contracted workers that commuted from home to work. This situation brought 2 major changes at the present model of employment:

- The number of staff employed from the local area goes up;
- Some workplaces will be automated and the number of workforce will go down.

**Chapter conclusions**

As of the 4th quarter of 2020, the Mongolian mining sector accounted for 24.5 percent of GDP and 3.9 percent of total employment. As of December 2020, the OT company employed 12,364 people. 2,852 people from the Umnugovi aimag are employed, which makes up 26.8 percent of the total labor force. In total, Mongolian citizen make up 95.42 percent of the total staff, which exceeds the number stated in the article 8.4 of the OT Project Investment Agreement. Of total staff employed by the OT 55.9 percent were young people aged 25-34, so the share of young people in the OT was higher compared to the average in the industry.

In order to evaluate the COVID-19 pandemic impact on OT employment 1,720 fulltime OT staff and staff from contractor companies were covered by a random survey. The survey data showed that 86.2 percent of the OT project staff were skilled professionals. By location, of the staff covered by the survey, 73.3 percent were from Ulaanbaatar, 12.1 percent were from the Umnugovi aimag, 5.8 percent were from the Darkhan-Uul aimag, 4.1 percent were from the Orkhon aimag. The remining respondents were from other aimags. Of total staff 52.9 percent were the sole bread winners for the family. They sustained in average 3 people on their salary.

As of the 4th quarter of 2020, the average salary of employees in Mongolia was 1328.1 thousand MNT, the average salary in Ulaanbaatar was 1423.2 thousand MNT, and in Umnugovi aimag it was 1395.0 thousand MNT. Of total OT company staff 73.9 percent receive salaries above the national average, i.e. above 1.5 million MNT. When a correlation between the previous and the present salaries of the staff was examined, the correlation coefficient was 0.349, which is positive, with weak dependence, i.e. the amount of the previous salary had a weak dependence on the present salary.

Due to the COVID-19 pandemic, changes disrupted the lives of population and they faced a need to adapt to this change and carry on with their lives. The household income of OT employees increased in 2020 compared to 2019. Incentives and support provided by the organization also helped keep household incomes stable.

Due to the COVID-19 pandemic impact 60.8 percent of household members of the OT staff had shorter working hours and 25.3 percent had lower salaries, which affected decline of the livelihood.

Of the OT staff 65.3 percent participated in upgrading training and continue to advance their skills and knowledge. In 2020 one staff participated in 4 training at the most.

While employment in Mongolia declined due to the COVID-19 pandemic, the number of OT employees increased and operations remained stable in 2020 regardless of the pandemic. One example was direct interaction of the on-site staff with experts from the other corner of the world, which gave an opportunity to get instructions from them and save thousands of dollars. As a result, many important projects that will make a significant contribution to the national economy in the future made a steady progress. Construction and assembly of a crusher located at the depth of 1,300 meters, of a conveyor to surface for underground ore hauling and materials transportation, works on excavation and anchoring in the underground mine have been completed.

Since the launch the OT company has invested more than 120 million USD in implementation of projects and programs in the education sector, of which 79.809 million US dollars' worth support was provided to the vocational education sector. The OT provided 139.0 thousand USD in support and training facilities for participants in the World Skills Competition, 4.3 million USD was spent by OT on scholarships for students and youth, thus making investment to improve professional knowledge and skills of 2,097 students and youth. In addition, 641 students and young people are enrolled in the Gobi Scholarship and New Graduates Program. The OT agreed to provide 2.75 million USD in funding for a project to develop mining geotechnics program and establish an international research center in partnership with Rio Tinto and the Mongolian University of Science and Technology.

In the period between 2016-2020, the OT company spent 3,652.0 thousand USD on safety training. In 2020 alone 800 thousand USD was spent on it, which showed an increase of 15.8 percent compared to the year before the pandemic.

As a result of numerous training programs to upgrade skills of Mongolian staff organized by the OT company, development of the underground mine continued uninterrupted during the COVID-19 pandemic. Mongolian professionals make independent decisions at difficult times and successfully carry out important projects. A team of Mongolian specialists successfully completed regular maintenance works of the Concentrator in a safe, high-quality and timely manner, which illustrated improved skills and expertise of Mongolian engineers and technical staff. With start of the underground mine development, a technology of block caving was introduced and staff with new skills has been trained.

The example of leading copper producers, such as Chile and Peru, has shown that mobility restrictions due to the COVID-19 pandemic led to stagnation of economic activities and made a negative impact on employment. According to the International Labor Organization, a trend is observed for employment to

decline. Therefore, in order to maintain sustainable production by the way of risk identification and response measures, it is important to develop a COVID-19 pandemic action plan, take mitigation measures, and secure workplaces. In Chile, the pandemic has led to a sharp decline in jobs. In Peru as well, reduction of the number of employees is a result of the pandemic impact.

**Future trends**

The OT company will move to normal post-pandemic conditions as it adapts its operations to the COVID-19 pandemic and market challenges.

As of the fourth quarter of 2020, Mongolian employees at OT accounted for 95.4 percent of the total workforce. other mining companies can implement. Good practices of upgrading their skills and knowledge to the required level, replacing expatriate staff, making decisions independently, strictly following safe operations guidelines can be fully adopted by other mining companies.

The OT's contribution to Mongolian human development is not limited to the company's employees, but makes an impact at the local and national level. Thus, keeping the trend of commitment to long-term development of Mongolia through advancing human development will help maintain its positive impact on employment.

The OT employment has remained normal during the COVID-19 pandemic. Taking preventive and protective measures in order to contain the spread of infection, dissemination of information on occupational safety and hygiene, establishing communication, being sensitive to current problems and securing workplaces will help reduce the social and economic impact of the pandemic. Employees and employers are taking preventive measures to strengthen the capacity of their colleagues, which provides them with an opportunity to follow international occupational safety and hygiene standards.

Due to the COVID-19 pandemic, the current employment model is likely to change in directions of increased recruitment of local residents or automation of some jobs and reduction of the workforce. In line with these changes, there is a need to focus on strengthening the local capacity and upskilling the local staff.

While employment in Mongolia has declined due to the COVID-19 pandemic, the OT has been able to continue regular operations in 2020 without being affected by the pandemic.

# V. THE OT IMPACT ON LOCAL DEVELOPMENT

## 5.1 THE OYU TOLGOI IMPACT ON THE GDP OF UMNUGOVI AIMAG

The Oyu Tolgoi made an investment of many million US dollars since signing the Oyu Tolgoi investment agreement in 2009, which led to major changes in the economic structure of Umnugovi aimag. Although mining accounted for a large share of economy, with stabilization of the production activities the share of other economic sectors started increasing as well.

In the first years of the OT project implementation, the share of mining in GDP was quite high. However, later it decreased, while other sectors such as livestock breeding, the power industry, construction, trade, transport, financial and other services and industries have grown continuously. It can be concluded that in a certain period of time the multiplier effect affected other sectors and development spread evenly across the industries.

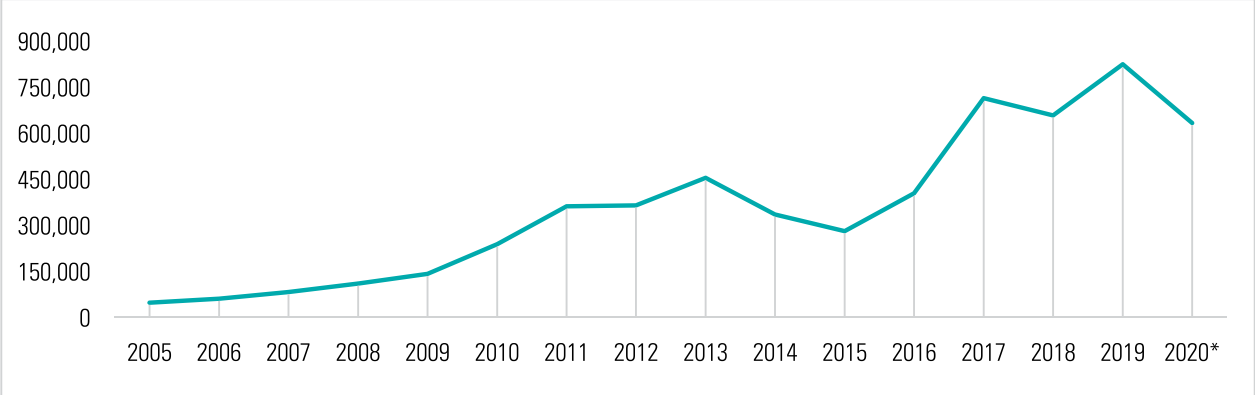
*Table 5.1. Structure of the GDP of Umnugovi aimag by sectors, in percent*

| Sector | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Agriculture, forestry and fishing | 14.6 | 12.8 | 17.8 | 19.3 | 28.5 | 32.8 | 22.5 | 14.7 | 19.8 | 17.61 | 21.91 |
| Crop | 0.2 | 0.1 | 0.1 | 0.2 | 0.4 | 0.6 | 0.5 | 0.2 | 0.3 | 0.21 | |
| Livestock | 14.1 | 12.7 | 17.7 | 19.1 | 28.1 | 32.1 | 21.9 | 14.5 | 19.6 | 17.4 | |
| Other | 0.3 | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | 0. | |
| Industry | 71.7 | 67.7 | 56.6 | 59.9 | 33.8 | 20.9 | 42.9 | 57.5 | 48.1 | 46.62 | 43.61 |
| Mining and quarrying | 69.5 | 64. | 38.9 | 47. | 13.6 | 7.7 | 37.2 | 52.4 | 29.7 | 23.93 | |
| Manufacturing | 1.9 | 4.2 | 14.2 | 9.6 | 14.2 | 6. | 4.2 | 4.2 | 8.7 | 5.1 | |
| Electricity, gas, steam, | 0.1 | -0.6 | 3.3 | 3.2 | 4.6 | 5.5 | 0.7 | 0.5 | 1.3 | 0.74 | |
| Construction | 0.2 | 0.2 | 0.2 | 0.2 | 1.4 | 1.7 | 0.9 | 0.4 | 8.4 | 16.85 | |
| Service | 13.7 | 19.5 | 25.6 | 20.8 | 37.6 | 46.3 | 34.7 | 27.8 | 32.1 | 35.77 | 34.48 |
| Accommodation and food service | 3.5 | 3.4 | 4. | 3.6 | 6.3 | 7.4 | 6.6 | 4.8 | 5.1 | 8.41 | |
| Transportation and information communication | 1.3 | 8.6 | 9.7 | 4.9 | 7.7 | 7.7 | 5.2 | 3.4 | 7.4 | 8.19 | |
| Finance and insurance | 3.8 | 3.3 | 5.6 | 5.5 | 8.3 | 10.2 | 7.6 | 10.6 | 8. | 7.52 | |
| Other service activitites | 5.1 | 4.1 | 6.3 | 6.8 | 15.4 | 21.1 | 15.3 | 9. | 11.5 | 11.65 | |

*Source: NSO, * calculations made by a researcher with use of data on growth and decline of industries in Umnugovi aimag in 2020*

Due to the impact of the COVID-19 global pandemic, certain changes in the aimag GDP could be observed in 2020. Quarantine and border restrictions that were introduced in Mongolia due to pandemic affected production and service industries, structures of which have changed compared to previous years. The agricultural sector, which suffered the least from the COVID-19 pandemic impact expanded its structure and reached the level it was at before the OT underground mine investment made in 2016.

*Figure 5.1. The GDP of the Umnugovi aimag. in mln MNT*




*Source: NSO, * calculations made by a researcher with use of data on growth and decline of industries in Umnugovi aimag in 2020*

With decreasing investment in the OT project the GDP of Umnugovi aimag declined in the period between 2013-2015. However, due to launch of the underground mine project it started growing intensively.

Due to the Covid -19 pandemic, the GDP of Umnugovi aimag decreased by 23.2 percent, which is still 4 times higher compared to the national average. The main reason for this is that the industry that accounts for a high share of GDP of the aimag reached 62.9 percent with a 37.1 percent decline.

When illustrating contribution made by the OT company in the budget revenue of Umnugovi aimag, in the third column we showed the Umnugovi aimag budget revenue without the amount of payments made by Oyu Tolgoi company to the Umnugovi aimag and its share in the Umnugovi aimag budget revenue; in the 4th column we showed the amount of taxes paid to Umnugovi aimag by the Oyu Tolgoi company in comparison to the Umnugovi aimag budget revenue before launch of OT operations; in the 5th column we showed the taxes paid by OT to Umnugovi aimag and the ratio of the budget revenue of Umnugovi aimag before launch of OT operations in the aimag.

While the Umnugovi aimag budget revenue continuously grew until 2018, it declined in 2019 and 2020. Although the budget revenue reduced in 2020 due to the COVID-19 pandemic impact, the amount of taxes, fees and payments made by Oyu Tolgoi to the aimag budget has grown continuously. The OT company and the amount of taxes and payments made by it to the aimag budget has grown year by year and in 2018, 2019, and 2020 it reached 31 percent, 43 percent and 47 percent respectively. If this trend continues in the future, in 2021, 50 percent of the aimag budget will be made up by the OT company payments.

If the OT was not implemented, by the average of 2010-2020 the budget revenue of Umnugovi aimag would[33] have lost 46 percent. If the OT operations started, but major capital investment was not made, in the period of 2013-2017 the budget revenue of Umnugovi aimag would have lost in average 55 percent [34]. If this indicator is examined by 2019 before the COVID-19 pandemic, it equaled 77 percent and in 2020, it was 88 percent, which showed how great was contribution of the OT company in the aimag budget.

33 (6%+6%+14%+51%+42%+69%+53%+59%+45%+77%+88%)/11=46%

34 (51%+42%+69%+53%+59%)/5=55%

*Table 5.2. Contribution of the OT company to the budget revenue of Umnugovi aimag, in mln MNT*

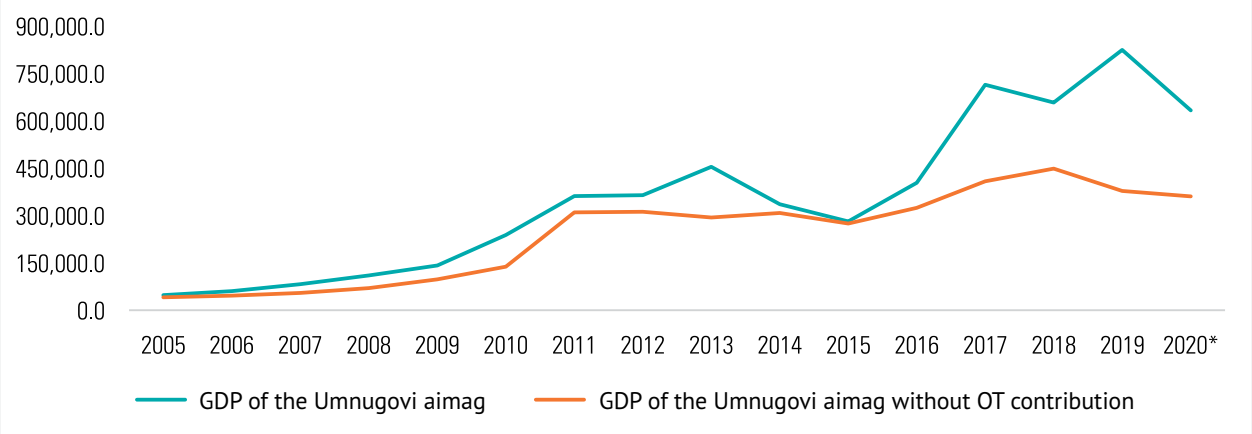
| Year | Budget revenue of Umnugovi aimag, mln.MNT (I) | Budget revenue of Umnugovi aimag, without impact of the OT company, mln.MNT (III)=(I)-(II) | Share (I)/(II) (IV) | Ratio (II)/(III) (V) |
|---|---|---|---|---|
| 2000 | 794 | 794 | 0% | 0% |
| 2001 | 1,250 | 1,250 | 0% | 0% |
| 2002 | 1,536 | 1,536 | 0% | 0% |
| 2003 | 893 | 893 | 0% | 0% |
| 2004 | 1,646 | 1,646 | 0% | 0% |
| 2005 | 2,255 | 2,255 | 0% | 0% |
| 2006 | 4,211 | 4,211 | 0% | 0% |
| 2007 | 7,911 | 7,911 | 0% | 0% |
| 2008 | 13,672 | 13,672 | 0% | 0% |
| 2009 | 24,862 | 24,862 | 0% | 0% |
| 2010 | 40,858 | 38,622 | 5% | 6% |
| 2011 | 108,963 | 102,728 | 6% | 6% |
| 2012 | 109,453 | 95,811 | 12% | 14% |
| 2013 | 102,514 | 67,865 | 34% | 51% |
| 2014 | 107,951 | 76,176 | 29% | 42% |
| 2015 | 94,645 | 55,923 | 41% | 69% |
| 2016 | 114,508 | 75,033 | 34% | 53% |
| 2017 | 147,722 | 92,846 | 37% | 59% |
| 2018 | 163,718 | 112,827 | 31% | 45% |
| 2019 | 135,630 | 76,633 | 43% | 77% |
| 2020 | 128,900 | 68,679 | 47% | 88% |

*Source: Umnugovi amag statistics, OT*

In developing an estimation of GDP of Umnugovi aimag without the OT project implementation, factors that affected GDP were selected and a regression model was evaluated with calculations made by researchers.

The blue line in the figure shows the nominal GDP of Umnugovi aimag and the pink line represents the nominal GDP of the aimag without impact of the OT company from the regression model.

*Figure 5.2. The GDP of the Umugovi aimag, comparison of one with and without impact of the OT company*




*Source: NSO, OT, * calculations made by a researcher with use of data on growth and decline of industries in Umnugovi aimag in 2020. The GDP without OT computed by the researcher*

It can be seen that since 2017, with escalation of the underground mine development, the OT company impact on the GDP of the aimag has increased. Without the OT impact the GDP of the aimag would have been 1.8 times lower in the period between 2017-2020.

If the OT company impact was not taken into account, in 2019, the year before the COVID-19 pandemic, the aimag GDP would have been by 2.18 times lower. And in 2020, with the start of the COVID-19 pandemic, it would have been 1.76 times lower.

*Table 5.3. Economic growth with and without Oyu Tolgoi development*

| Year | Economic growth of Umnugovi aimga | Economic growth of Umnugovi aimag without Oyu Tolgoi |
|---|---|---|
| 2001 | 0.6% | -4.1% |
| 2002 | -20.4% | -22.4% |
| 2003 | 3.2% | 16.1% |
| 2004 | 44.7% | 17.2% |
| 2005 | 26.6% | 22.1% |
| 2006 | 3.5% | 11.8% |
| 2007 | 20.5% | 14.0% |
| 2008 | 9.1% | -2.4% |
| 2009 | 23.1% | 7.5% |
| 2010 | 19.1% | 2.6% |
| 2011 | 27.5% | 16.5% |
| 2012 | -11.3% | 27.1% |
| 2013 | 19.2% | 14.6% |
| 2014 | -37.5% | -22.5% |
| 2015 | -19.4% | -26.2% |
| 2016 | 34.0% | 19.7% |
| 2017 | 47.6% | 2.3% |
| 2018 | -15.08% | -0.58% |
| 2019 | 14.65% | -22.34% |
| 2020 | -26.70% | -12.69% |
| Дундаж | 8.15% | 2.9% |

*Source: NSO, researchers' calculations*

Without long -term OT company participation, the economic growth of Umnugovi aimag would have averaged 2.9 percent in 20 years. However, with launch of the OT project, the economic growth of the aimag reached 8.15 percent. If the growth is viewed by periods, there will be a difference between different periods.

## 5.2. THE IMPACT OF OYU TOLGOI ON THE REGION

By regional classification the Umnugovi aimag is a part of the Central region in Mongolia. Total nvestment made by the Oyu Tolgoi, procurement, paid taxes, fees and payments raised the GDP of Umnugovi aimag, the GDP per capita in the aimag has grown, which, in its turn, added to the growing scope of Umnugovi in the region. While in 2000, the share of GDP of Umnugovi aimag in the GDP of the Central region was 10.73 percent, just ahead of the Govisumber and Dundgovi aimags, by 2019 the Umnugovi aimag became one with leading economy within the region.

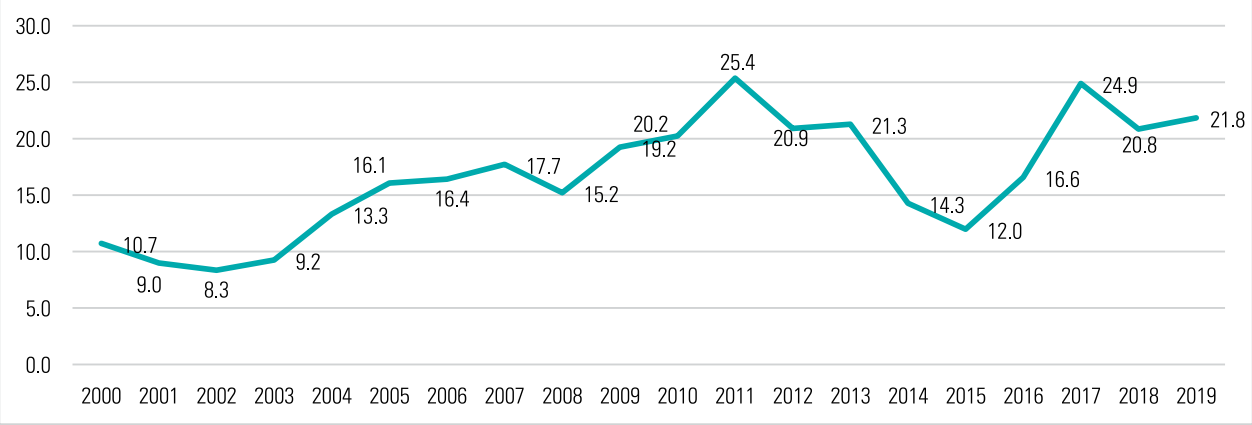
*Table 5.4. Share of the Central region aimags in the regional GDP*

| Aimag | 2000 | 2005 | 2010 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| Central region | 11.63 | 9.8 | 12.09 | 10.14 | 10.19 | 10.3 | 9.74 | 10.13 |
| Dornogovi | 11.45 | 9.56 | 8.98 | 11.13 | 11.16 | 10.31 | 11.67 | 10.78 |
| Dundovi | 9.11 | 12.79 | 5.89 | 10.12 | 9.27 | 8.99 | 10.4 | 10.15 |
| Umnugovi | 10.73 | 16.07 | 20.23 | 11.98 | 16.57 | 24.89 | 20.84 | 21.84 |
| Selenge | 25.36 | 19.59 | 33.5 | 24.47 | 22.77 | 20.84 | 21.85 | 21.25 |
| Tuv | 22.48 | 20.07 | 15.02 | 23.11 | 20.93 | 17.78 | 18.83 | 17.97 |
| Darkhan-Uul | 18.01 | 18.42 | 13.88 | 15.64 | 15.88 | 14.27 | 13.58 | 15.03 |
| Govisumber | 2.86 | 3.5 | 2.49 | 3.57 | 3.42 | 2.92 | 2.82 | 2.99 |

*Source: NSO*

With start of investment made by the OT, the economic growth of Umnugovi aimag accelerated, and the share of its GDP in the GDP of the Central region increased until the end of 2011. In a certain period, its share declined, but since 2017, with the start of the underground mine development, the share started increasing again as you can see from the Figure 5.3.

*Figure 5.3. The share of the Umnugovi aimag in the GDP of the Central region*




*Source: NSO*

If we look at the GDP per capita, in 2019, the year before the COVID-19 pandemic, the Umnugovi aimag took the 3rd place after Orkhon aimag and Ulaanbaatar at the national level (20316.9, 16960.1, 11870.5 repectively).

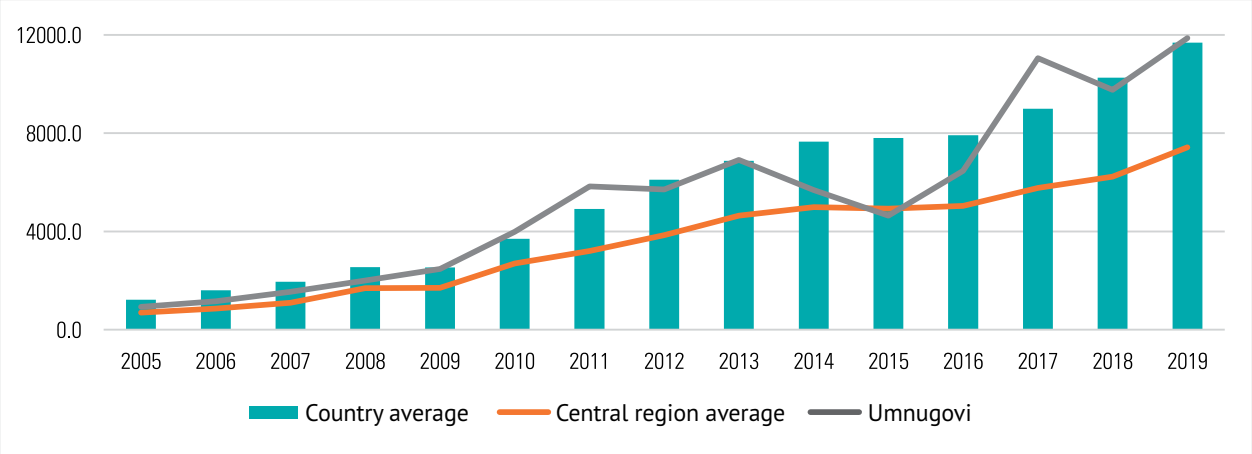
*Table 5.5. GDP per capita in the Central region (thousand MNT)*

| Аймаг | 2000 | 2005 | 2010 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| Total | 522.2 | 1223.0 | 3697.6 | 7810.3 | 7910.0 | 8999.1 | 10259.8 | 11680.6 |
| Central region | 321.7 | 694.0 | 2688.9 | 4927.8 | 5033.2 | 5772.0 | 6223.1 | 7423.4 |
| Dornogovi | 322.9 | 545.8 | 1838.9 | 4127.7 | 4197.8 | 4392.0 | 5347.8 | 5840.9 |
| Dundovi | 253.1 | 831.9 | 1759.6 | 5375.6 | 5041.0 | 5618.8 | 7044.6 | 8199.1 |
| Umnugovi | 327.5 | 930.0 | 3988.4 | 4647.9 | 6463.1 | 11050.8 | 9762.2 | 11870.5 |
| Selenge | 362.9 | 613.1 | 4156.4 | 5472.2 | 5254.7 | 5553.3 | 6325.7 | 7398.9 |
| Tuv | 322.9 | 703.0 | 2121.8 | 6034.9 | 5592.8 | 5450.8 | 6272.1 | 7241.7 |
| Darkhan-Uul | 293.5 | 626.4 | 1815.4 | 3766.1 | 3921.9 | 4061.4 | 4157.3 | 5499.6 |
| Govisumber | 333.1 | 872.3 | 2269.6 | 5200.3 | 5015.0 | 4890.7 | 5110.4 | 6463.8 |
| Ulaanbaatar | 884.9 | 1852.4 | 5398.5 | 11251.7 | 11519.7 | 12940.7 | 15031.0 | 16960.1 |

*Source: NSO*

GDP per capita in Umnugovi aimag has fluctuated greatly in relation to investment by the OT company.

*Figure 5.4. GDP per capita in Umnugovi aimag (thousand MNT)*



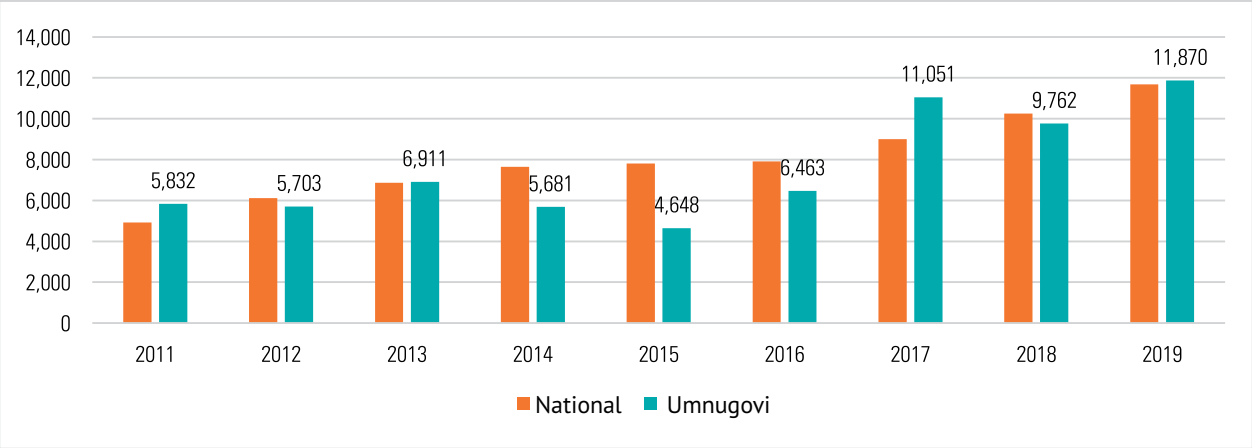

*Source: NSO*

The GDP per capita in Umnugovi aimag compared to the average of the Central region was higher in all years except the 2015; compared to the national average, it was close to the national average or exceeded it.

## 5.3. THE OT IMPACT ON THE LOCAL DEVELOPMENT DURING THE PANDEMIC

Due to the fact that a number of major mining projects are being implemented in Umnugovi aimag, this aimag is one of the leading aimags in the country by its social and economic development. In 2011 the GDP per capita in our country equaled 4.9 million MNT, while in 2019 it grew to 11.7 million MNT. As for Umnugovi aimag, its GDP per capita, which equaled 5.8 million MNT in 2011 grew to 11.9 million MNT in 2019, which shows growth relatively similar to the national average.

*Figure 5.5. GDP per capita in Umnugovi aimag and in Mongolia, 2011-2019*




*Source: Researchers, NSO data*

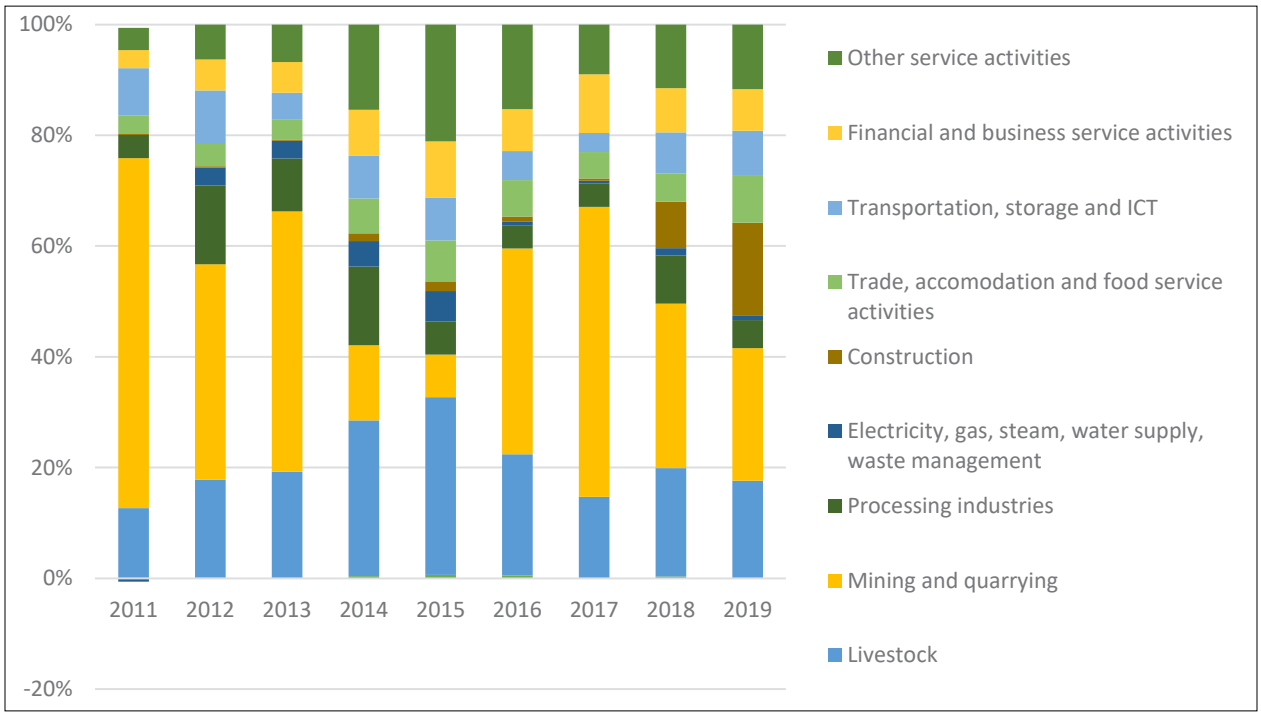
Experience of many countries worldwide shows that with implementation of major mining projects, everyone benefits through the budget revenue of the given country, or area, the share of the government in the project, the trade and procurement in local areas, development of infrastructure, employment and local participation.

On the basis of primary and secondary data we aimed to calculate the OT company impact on non-mining businesses of Umnugovi aimag by the way of local procurement and local participation. Following the start of mining projects in Umnugovi aimag, the number of suppliers and business entities that provided products and services necessary for their activities has increased sharply starting from 2011. The number of companies that are registered in Umnugovi aimag increased from 1,063 to 1,750 in the past 5 years. When these companies were examined by sectors, there were 683 wholesale and retail trade companies, 141processing factories, 165 transportation and warehouse companies, and 71 construction companies[35] .

Local development is measured not only by GDP per capita, but also by different other micro-economic indicators, which include the growing number of businesses that are operating in different economic sectors in the local area, the growing number of staff that are employed in these sectors and the growth of average salaries for the workers, which can illustrate the quality of life. Due to the fact that the number of businesses operating in the aimag has grown, the structure of economic activities in the GDP of the aimag has also changed. Although the scope of other financial and business activities has been expanding in the past years, it has shrink slightly due to the pandemic National Statistics Office.

35 www.1212.mn

*Figure 5.6. The structure of economic sectors providing for the GDP of Umnugovi aimag, 2011-2019*




*Source: www.1212.mn*

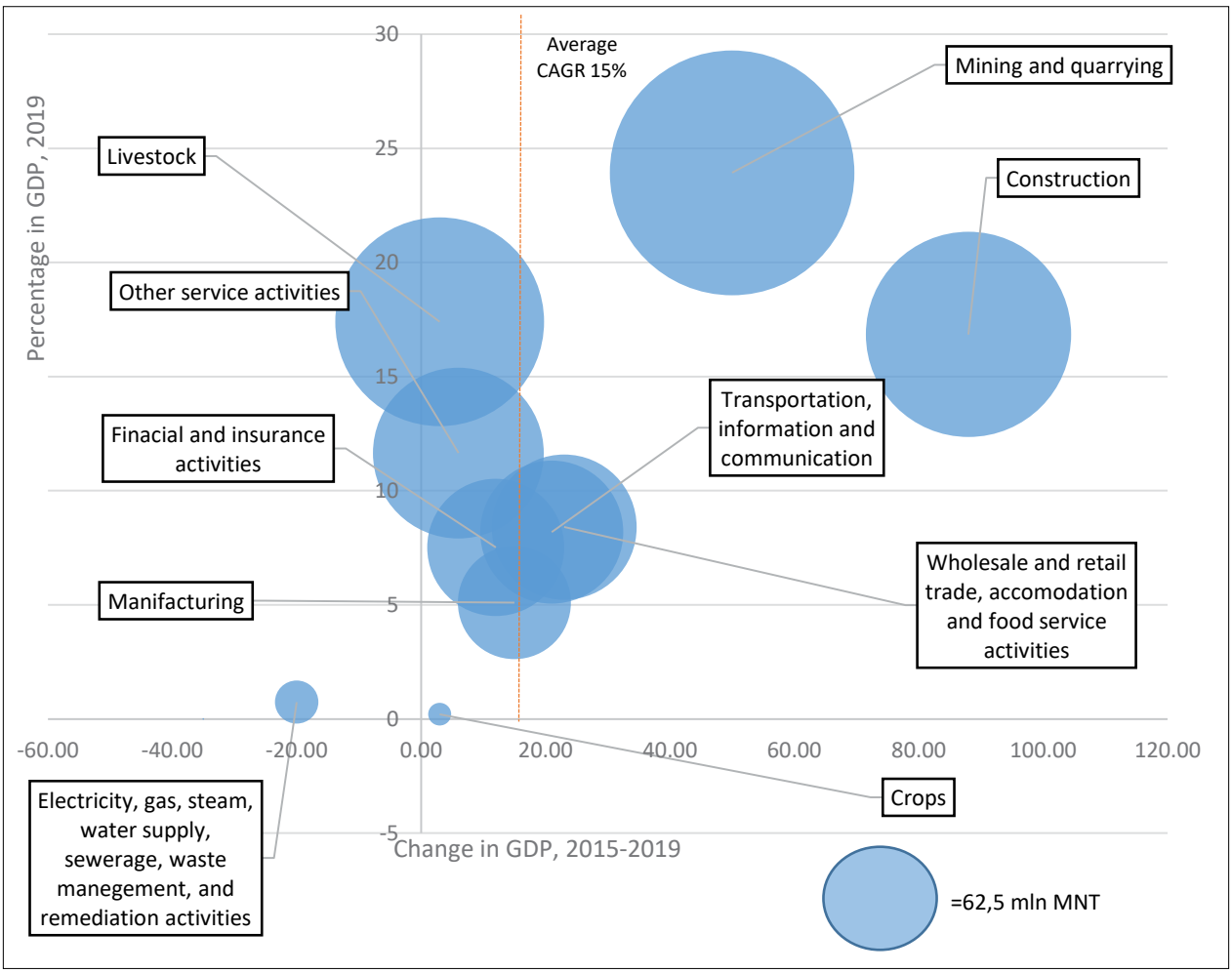
The National Statistics Office (NSO) makes evaluation of the volume of processing and production and services in aimags in the frame of 11 sub-sectors based on the market prices. In the period of 2011-2019, along with production of leading mining industry, the impact of livestock breeding on the GDP has increased. Finances, business services, transportation, communications and trade, hotels and catering included in the services sector had a relatively stable growth making up to 5-10 percent in GDP of Umnugovi aimag. While production of mining and livestock breeding industries that had the most important impact on GDP in the period before the pandemic declined, the growth of construction remained stable[36] .

The average meaning of the compound annual growth rate The GDP for the Umnugovi aimag economic sectors was 15 percent. In other words, in the period between 2015-2019 the economic sectors of this aimag had in average a 15 percent growth. Figure 5.8 shows the share of the sector in the GDP of Umnugovi aimag on the vertical axis as of 2019, and on the horizontal axis as a compound annual growth in the sectors in 2015-2019. The volume of production as of 2019 is shown by the size of bubbles. In the frame of this aimag, the highest indicator of SAGR or 88 percent was in the construction sector, which made up 17 percent of GDP. The compound annual growth of mining industry was 50 percent, that of trade and services sector was 23 percent and the growth dynamics of transportation and communications was 21 percent. As for livestock breeding and agriculture, crop cultivation, its growth equaled 6 percent. The growth of power and energy sector was 20 percent, which attracted our attention.

The above analysis is based on data of the NSO's annual statistics on the GDP of Umnugovi Aimag at market prices in 3 sectors and 11 sub-sectors. In order to eliminate the effects of inflation in this analysis, current prices was adjusted by CPI of Umnugobi aimag to the 2015 as a base year.

36 Эдийн засгийн бүх төрлийн үйл ажиллагааны салбарын ангилал

*Figure 5.7. Dynamics of changes in economic sectors providing for the GDP of the Umnugovi aimag, 2015-2019*



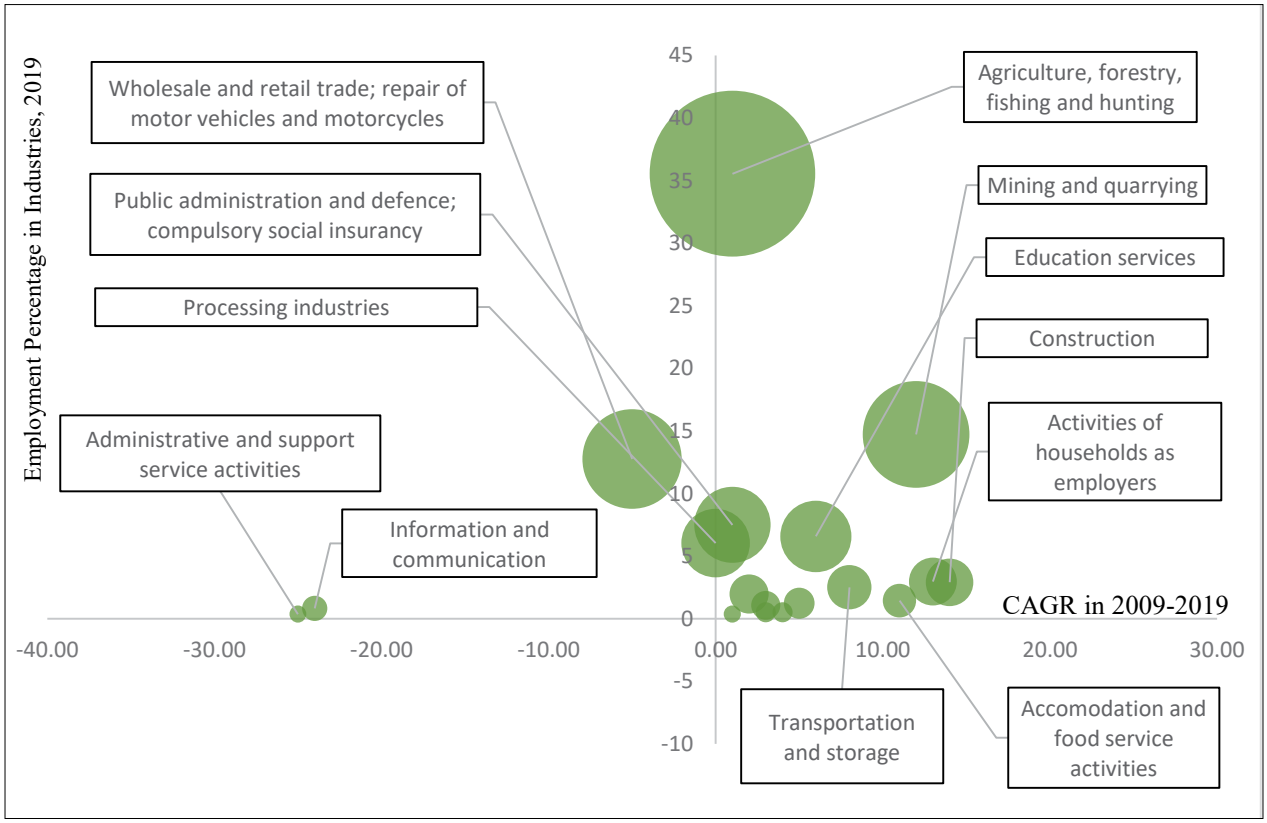

*Source: Researchers*

Transportation, information and communication; financial and business activities; trade, hospitality and catering services are expected to grow at an average annual rate.

While the above figure represented growth of economic sectors in the aimag by the production volume, newly created workplaces in the sector, the growing number of workers, employment in the industry is the next indicator of local development. As for Umnugovi aimag, in 2019, 2.66 percent of total employed workforce in our country or 30517 people worked in this aimag. As of 2019, of total employed 31 percent were engaged in agriculture, 14 percent - in mining, 10 percent - in wholesale and retail trade, 7.3 percent were engaged in transportation and warehouse activities.

The compound annual growth rate of employment was the highest in construction with 13 percent, mining – 12 percent, household production as employers -13 percent, transportation and warehouse activities – 8 percent. Although the number of workers engaged in agricultural activates was high, this number does not grow. In the period between 2009-2019 growth of the number of employed in agriculture, processing industry, in energy industry, gas, steam and air-conditioning sectors was close to 0, i.e., the CAGR lacked. The compound annual growth rate was negative in following sector, namely, -5% in retail and wholesale trade, -24% in communications industry, -25% in management and support services industry.

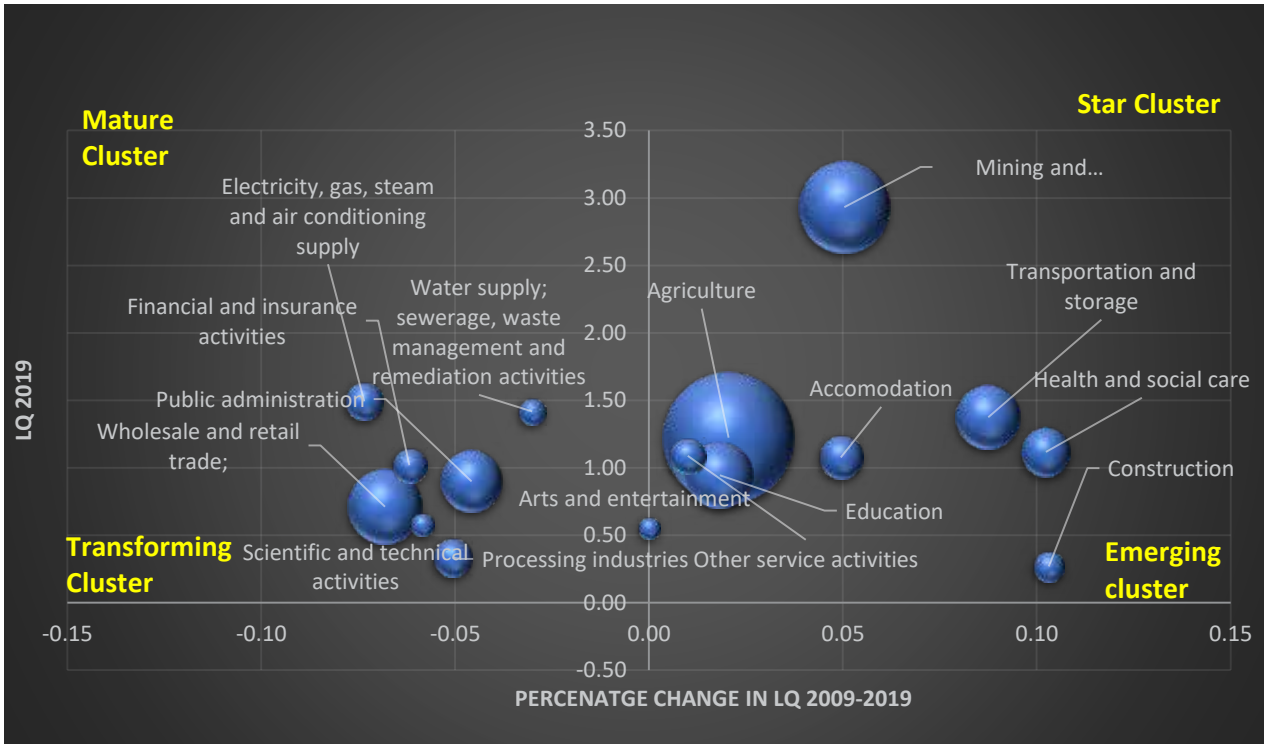
*Figure 5.8. The compound annual growth rate of employed in economic sectors in the Umnugovi aimag, 2009-2019*




*Source: Researchers*

The development level of clusters in Umnugovi aimag in the last decade was shown with use of the Location Quotient (LQ) as mature, transforming, emerging and star clusters.

*Figure 5.9. Diversification of economy in Umnugovi aimag, cluster analysis, 2000-2019*



*Source: Researcher*

In the period between 2009-2019 a construction cluster emerged and has developed rapidly in Umnugovi aimag. By the growth speed and absorption of workforce agriculture, mining, transportation, warehouse, hospitality industry, catering and healthcare, the social welfare sectors are included in the category of "star" clusters at the aimag level. There is a sufficient number of employees in these sectors, so a strategy of further strengthening competitiveness can be implemented. However, non-economic sectors are in changing clusters and include such sectors as wholesale and retail trade, processing factories, infrastructure including power, electricity, gas, water supply and other sectors. Employment needs to be supported in these sectors since the employment level has not yet stabilized.

When the given region or a cluster is compared to the national level, the LQ represents the level of economic activity in the given region (LQ≥1). It illustrates whether economic sectors in Umnugovi aimag were at a competitive level (lines highlighted in yellow) as of 2019. When the meaning of LQ nears 1, economic activity in the given aimag reaches the regional or national level.

*Table 5.6. Economic activity in Umnugovi aimag, 2019*

| Industries (2019) | Dornogovi | Umnugovi | Govisumber | Orkhon |
|---|---|---|---|---|
| Agriculture, forestry, fishing and hunting | 1.17 | 1.22 | 1.18 | 0.21 |
| Mining and quarrying | 0.89 | 2.93 | 3.09 | 3.88 |
| Processing industries | 0.82 | 0.34 | 0.55 | 1.58 |
| Electricity, gas, steam and air conditioning supply | 1.06 | 1.49 | 2.03 | 0.70 |
| Water supply; sewerage, waste management and remediation activities | 1.49 | 1.42 | 1.58 | 1.43 |
| Construction | 0.18 | 0.27 | 0.28 | 1.00 |
| Wholesale and retail trade; repair of motor vehicles and motorcycles | 1.12 | 0.71 | 0.76 | 1.22 |
| Transportation and storage | 2.62 | 1.38 | 1.16 | 0.89 |
| Accomodation and food catering activities | 0.74 | 1.08 | 0.47 | 0.91 |
| Information and communication | 0.00 | 0.02 | 0.19 | 0.68 |
| Financial and insurance activities | 0.52 | 1.02 | 1.03 | 0.44 |
| Real estate activities | 0.00 | 0.00 | 0.00 | 0.00 |
| Professional, scientific and technical activities | 0.00 | 0.58 | 0.53 | 0.11 |
| Administrative and support service activities | 0.02 | 0.04 | 0.13 | 0.90 |
| Public administration and defence; compulsory social insurance | 0.61 | 0.90 | 1.09 | 0.90 |
| Education services | 0.59 | 0.94 | 0.98 | 1.57 |
| Activities of households as employers | 1.31 | 1.12 | 0.12 | 0.56 |
| Arts, entertainment and recreation | 1.49 | 0.56 | 0.00 | 0.60 |
| Other service activities | 1.29 | 1.09 | 2.02 | 1.39 |
| Activities of households as employers | 7.51 | 0.00 | 1.83 | 0.00 |

*Source: researchers*

In connection with the OT company development economic activity in Umnugovi aimag supported local procurement meeting the international requirements. As a result, the quality and standards of products and services provided by aimag businesses have improved, the scope of activities has expanded and their competitiveness has improved as well. With growing competitiveness of the OT supplier companies at the aimag level, local employment has grown and makes a positive impact on the livelihood level and diversification of economy.

**Chapter conclusions**

Growth and decline of the Umnugovi aimag GDP and budget revenue is closely connected to the OT operations. As the survey findings showed, without the OT impact the GDP of the aimag would have been 1.8 times lower in the period between 2017-2020.

If the OT company impact was not taken into account, in 2019, the year before the COVID-19 pandemic, the aimag GDP would have been by 2.18 times lower. And in 2020, with the start of the COVID-19 pandemic, it would have been 1.76 times lower.

If the OT was not implemented, by the average of 2010-2020 the budget revenue of Umnugovi aimag would have lost 46 percent. If this indicator is examined by 2019 before the COVID-19 pandemic, it equaled 77 percent and in 2020, it was 88 percent, which showed how great was contribution of the OT company in the aimag budget.

When development of economic sectors of Umnugovi aimag is examined, the agricultural sector takes up a large position like in other aimags of our country, but the volume of production and the number of employees has not grown, which shows that the labor force is leaving this sector. Mining, construction, wholesale and retail trade, hospitality industry, catering, transportation and warehousing are growing rapidly. The processing industry growth is moderate.

The clustering process in Umnugovi aimag showed that following mining development such support industries as construction, transportation and warehousing, hospitality and catering reached high level of development.

Due to implementation of major mining projects in Umnugovi aimag, the level of economic diversification is higher compared to other aimags, and a foundation is laid for it to become a major regional processing, transportation and logistics development center.

**Future trends**

Due to increasing volume of production and growing population of Umnugovi aimag, there is a need to boost energy production.

It is necessary to further support development of processing industry that accompanies mining industry, and to develop local manufacturing of mining equipment and spare parts, promote garment and food industries utilizing the cluster development model.

On the basis of expanding transportation and warehouse industries as well as growing hospitality and catering sector, there is an opportunity to develop of a tourism industry with local participation.

Although the number of companies operating in Umnugovi aimag is growing, micro and small businesses are prevailing among them, so it is appropriate to use such economic instruments as financing and tax incentives to strengthen their capacity, enhance cooperation, and develop local processing industries.

It is important to pay attention to the fact that employment in some sectors has not reached a stable level, and support employment in such sectors in order to increase its competitiveness.

# VI. THE COVID-19 PANDEMIC IMPACT ON OT SUPPLIERS

## 6.1. THE COVID-19 PANDEMIC IMPACT ON THE OT SUPPLIERS

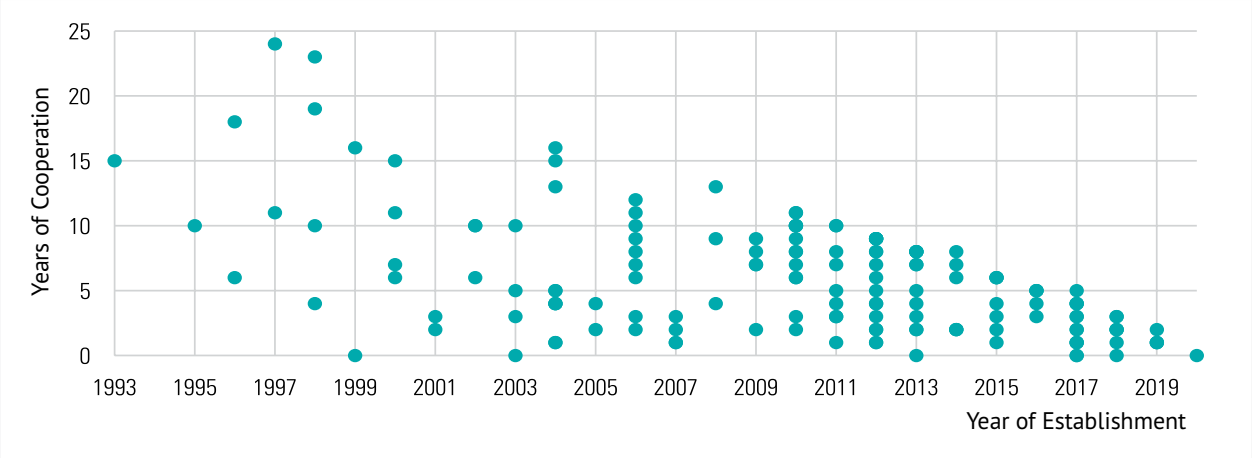
In order to evaluate the COVID-19 pandemic impact on cooperation between the OT company and suppliers, a random survey was conducted online. The survey aimed to determine direct, indirect and induced impacts on the OT suppliers during the COVID-19 pandemic. The survey covered in total 156 business entities that cooperate with the OT company. Since 2 of the entities refused to answer the questionnaire, in total, 154 organizations' data were processed[37] .

*Figure 6.1. The year of establishment of supplier companies*


Of total organizations, 11 percent (17 entities) were established before 2000, 36.4 percent (56 entities) were established in the period between 2001-2010, 33.1 percent (51 entities) were set up in 2011-2015 and 19.5 percent (30 companies) were new companies established in the past 5 years. The oldest organization that cooperated with the OT, the "processing factory" i.e. an entity engaged in food processing activities, was established in 1956, the youngest organization was an entity that is engaged in domestic wholesale and retail trade and services established in 2020.

When the general pattern of OT cooperation is examined, there is a trend for long-term partnerships with long-term partners. Expertise and long history of operations is an influential factor in cooperation with OT.

*Figure 6.2. The year of establishment of suppliers, duration of cooperation*




37 The survey was conducted by random sampling and the required sample size was 90. The key indicators were the percentage of all enterprises that did not discharge employees, and the results of the NSO's "Phase 3 Surveillance Survey on the Impact of Coronavirus (Covid-19) Prevention and Quarantine measures on Business Activities" were used. The probability of not answering the survey questions was estimated at 20 percent, and the error limit was estimated at 99 percent with a probability of not exceeding 9 percent.

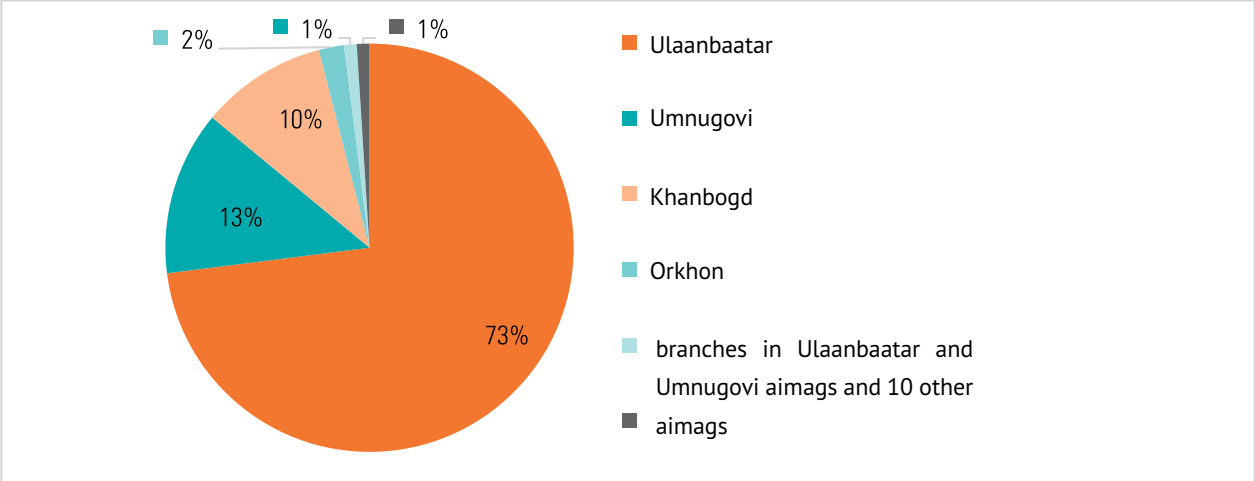
A business entity established in 1936 has cooperated with the OT company for 5 years. There are 96 companies that cooperated with the OT company for over 5 years, of them, 33 companies have cooperated for 10 or over years with the OT. The OT company affected suppliers enabling them to keep stable workplaces in the long term. The below table showed the OT company suppliers that cooperated with the OT for over 10 years by the kinds of services provided.

*Table 6.1. Supplier organizations, by kinds of products and services and years of cooperation with the OT company*

| Environmental monitoring and geology | 24 years |
|---|---|
| Supply and repair of vehicles, equipment and tools | 23 years |
| Security service | 16 years |
| All kinds of electricity, heating and water supply services | 15 years |
| Construction and related activities | 15 years |
| Food supply | 10 years |
| Supply of electrical goods and furniture | 11 years |
| Bio toilet services | 12 years |
| Supply of work clothes and protective equipment | 10 years |
| Financial, insurance and consulting services | 10 years |

By location, of total entities covered by the survey, 23 percent of suppliers were registered in Umnugovi and Khanbogd soums, the majority of suppliers, i.e. 73 percent, were made up by companies registered in Ulaanbaatar city. Of suppliers, 1 in every 4 entities had the aimag or the soum affiliation.

*Figure 6.3. The suppliers' tax registration places (by percent)*



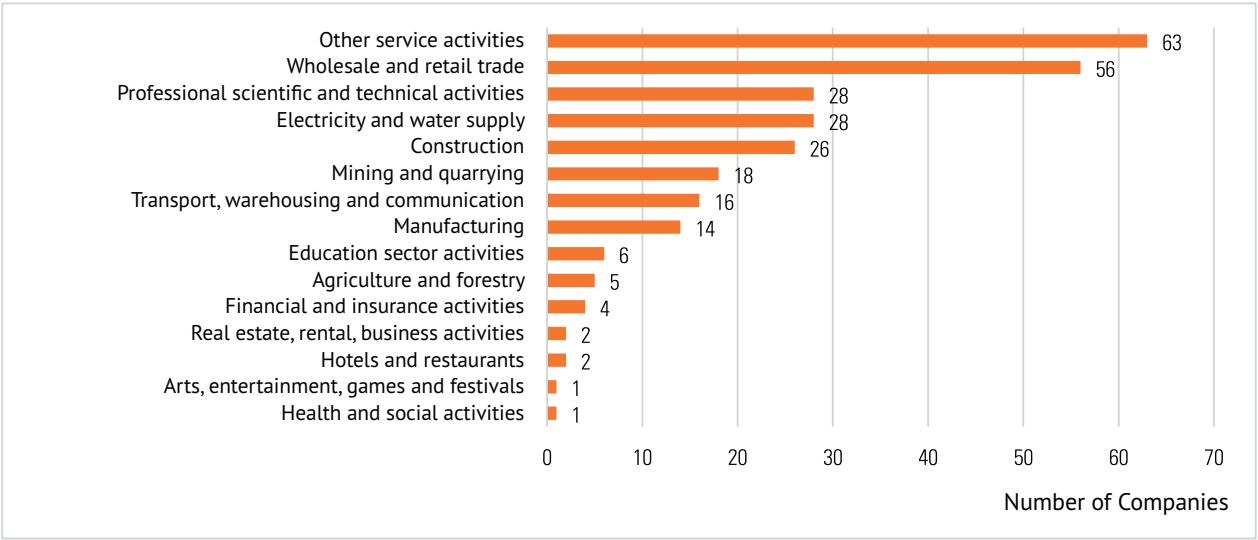

By the form of liability, of suppliers covered by the survey 1 was self-employed, 1 was registered as an NGO and the rest or 152 were companies. Of total entities, 92.3 percent or 142 were domestic companies, 5.1 percent or 8 of them were foreign companies and 2.6 percent or 4 were joint ventures.

*Table 6.2. Companies by the form of liability and investment*

| | Foreign | Domestic | Joint | Total |
|---|---|---|---|---|
| Company | 8 | 140 | 4 | 152 |
| NGO | 0 | 1 | 0 | 1 |
| Self employed | 0 | 1 | 0 | 1 |
| Total | 8 | 142 | 4 | 154 |

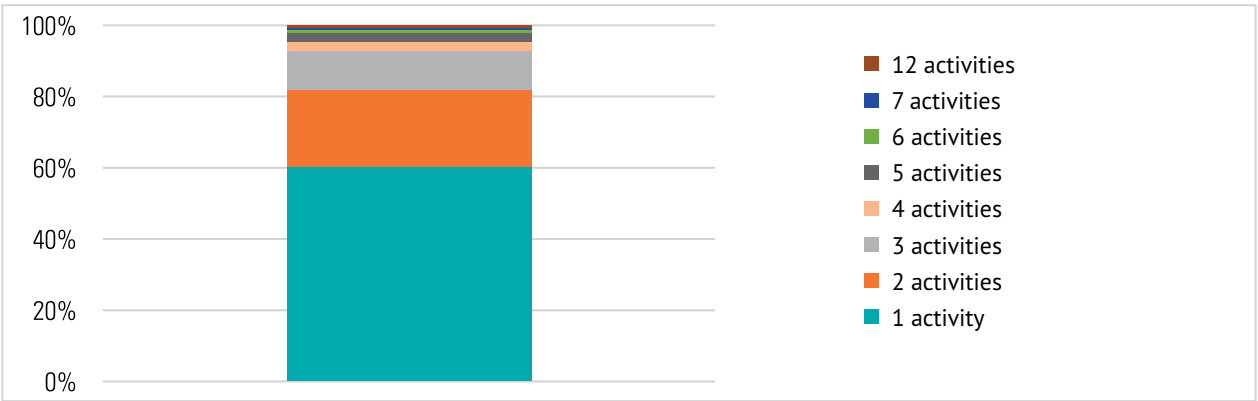
When classified by the kinds of their activities, the majority of the companies were engaged in wholesale and retail trade and provision of other services, followed by companies operating in the power, water supply industries, professional research and technical companies, construction, mining and extraction, transportation and warehouse companies. While 1 self-employed entity that cooperated with the OT provided translation and interpretation services, the 1 NGO provided press information monitoring services and translation services as well.

*Figure 6.4. Kinds of activities of suppliers*




When the supplier entities were viewed by the scope of their activities, there were 93 organizations – 61 percent engaged in only one kind of activity, 33 companies- 22 percent were engaged in 2 kinds of activities, and there were one each of companies that provided 6, 7 or 12 kinds of services and products. The entity that was engaged in 12 different kinds of activities provided consulting and engineering design services to the OT company

*Figure 6.5. The scope of activities of suppliers*



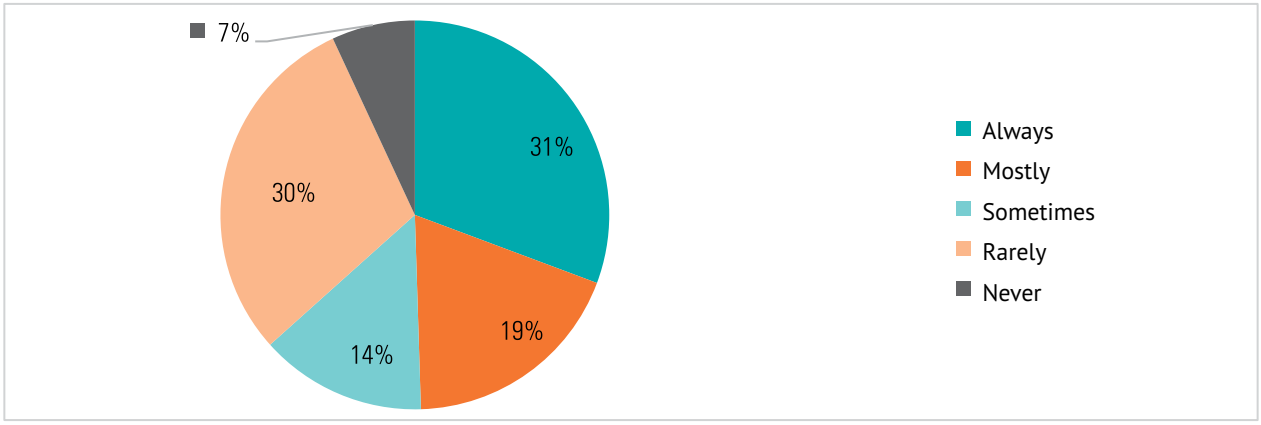
Major products and service provided by these 154 suppliers to the OT company are shown and ranked from the most often provided products and services to the least provided services, as follows:

1. Supply and maintenance of automobiles, technical equipment, tools
2. Supply of working clothes, protective equipment
3. Financial and insurance services, consulting services
4. All kinds of power, heating and water supply services
5. Supply of foodstuff
6. Research and training services
7. Construction, assembly and other related services
8. IT, communications and server services
9. Environmental monitoring services
10. Human resources
11. Electronic products and furniture supply
12. Waste management, waste water and bio-toilet services
13. Supply of fuel for mining companies
14. Printing services
15. Supply of chemical re-actives and other substances
16. Foreign trade and product trade
17. Transport and logistics services
18. Restaurant services, all kinds of receptions
19. Security services
20. Other services including hairdressers' and beautician services
21. Transportation services
22. Cleaning services

Of these entities, 120 supply their products and services in Ulaanbaatar, 93 in the given local area, 42 provide products and services for the neighboring and regional aimags, 14 provide for the international market, 5 provide products and services at the national level, and only 7 supply only to the OT company. Of 7 entities that provide products and services only to the OT, 4 supply equipment, metal products and materials, while the rest are responsible for cleaning services, human resource management, geological mapping services.

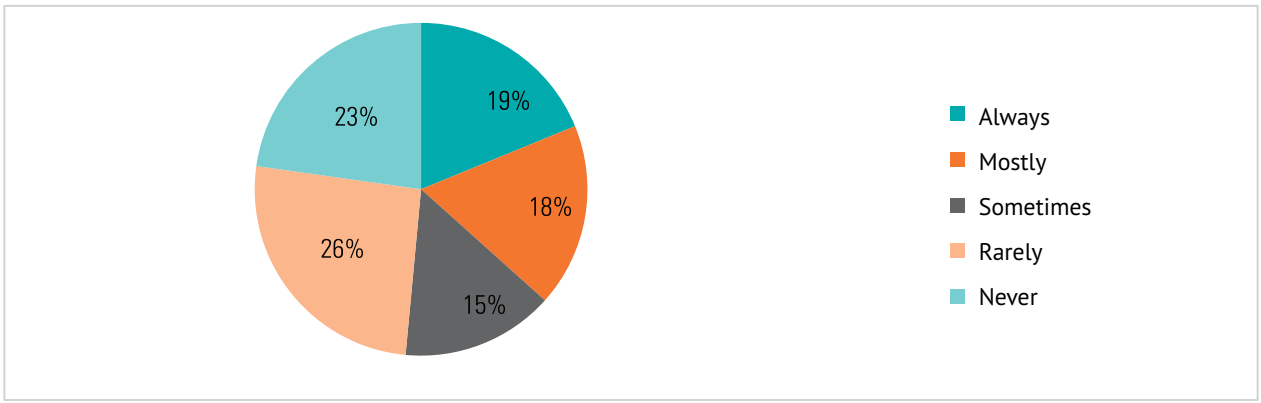
Of survey respondents 50 percent reported regular cooperation with other companies in order to increase their sales, and 44 percent occasionally worked with other companies. Those who never cooperated with others were the self-employed translator and entities that provided products and services only to the OT company.

*Figure 6.6. Cooperation with other companies in order to increase the sales (by percent)*




While 49 percent of suppliers reported not cooperating with other companies in their own industry in the past year, 37 percent had regular cooperation with other companies (answered "always", "usually"). It can be concluded that cooperation between companies that were engaged in the same kind of activities was weak and co=dependence was low.

*Figure 6.7. Cooperation with other companies in their industry in the past 1 year (by percent)*




When changes in sales revenue of suppliers were examined on the basis of sales revenue data of 131 business entities[38] that cooperated with the OT in the past 3 years, the activities of entities with sales revenues of up to 10 million MNT included supply of food products, translation and interpretation services, hair dresser services and consulting services. When suppliers with profits over 50 billion MNT were examined, main directions of their activities included supply of spare parts for equipment, construction and assembly products and equipment, supply of metal products for the underground mine fixtures, geophysical surveys and services.

*Table 6.3. Sales revenue of suppliers to the OT project*

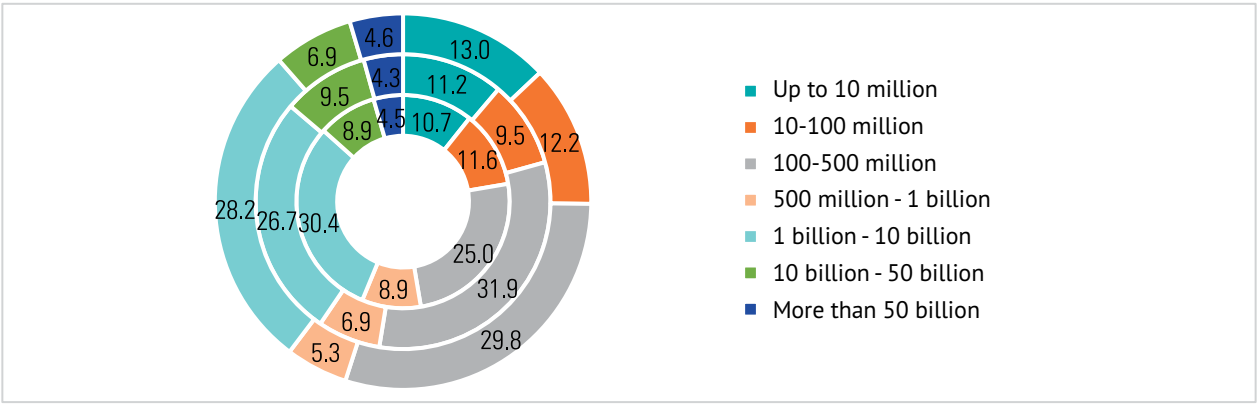
| Revenue /MNT/ | 2018 | 2019 | 2020 |
|---|---|---|---|
| Up to 10 million | 12 | 13 | 17 |
| 10-100 million | 13 | 11 | 16 |
| 100-500 million | 28 | 37 | 39 |
| 500 million - 1 billion | 10 | 8 | 7 |
| 1 billion - 10 billion | 34 | 31 | 37 |

38 Since for business entities that cooperated with the project for 1 or 2 years did not have the data on their sales profit, they were also excluded from the given year.

| | | | |
|---|---|---|---|
| 10 billion - 50 billion | 10 | 11 | 9 |
| More than 50 billion | 5 | 5 | 6 |
| Number of Companies | 112 | 116 | 131 |

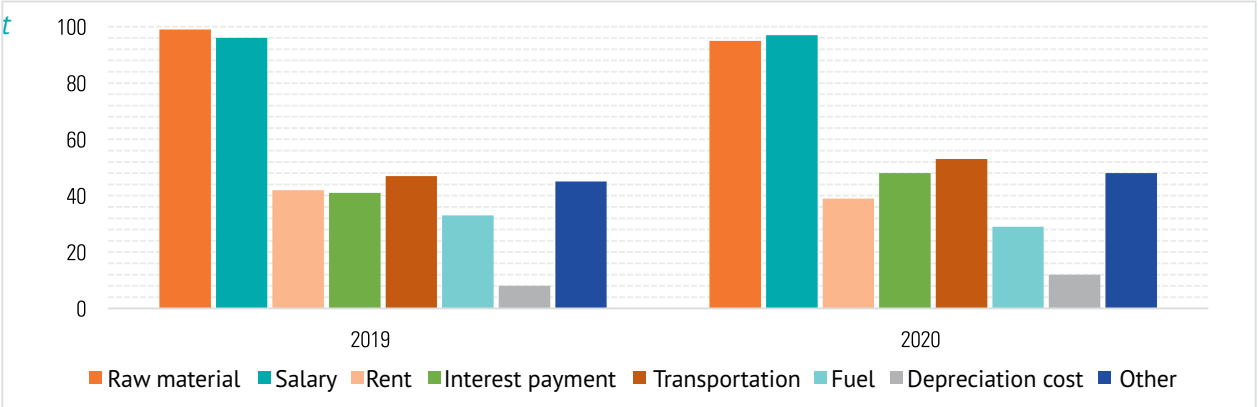
When the sales revenue gained by the suppliers from the OT project in the past 3 years was compared, entities with profits of 100-500 million MNT and entities with annual profits from 1-10 billion MNT accounted for nearly 60 percent of entities. The share of business entities with sales revenue of up to 100 million MNT has increased. While in 2020 there were 50 entities, which profit from the OT company decreased, that of 68 entities increased compared to previous years. Entities, who reported decreased profit, have worked with the OT company for 2-18 years and with regard to the direction of their activities, there was no dependence observed there. There were 15 suppliers, whose profit increased twice or more compared to the 2019 profit. Activities that these entities were engaged in were assembly and maintenance of power lines, environmental auditing services, geological consulting services, supply of electronic equipment and spare parts and supply of heavy duty sacks.

*Figure 6.8. Sales revenue derived from the OT company, in MNT, by percent (2018-2020)*




As for the entities, covered by the survey, expenditures that viewed the highest growth in the past 2 years were raw materials, salaries and transportation costs. Due to rising exchange rates of US dollars and Chinese yuan, prices for raw materials at the domestic market has grown.

*Figure 6.9. Kinds of expenditures that have grown the most in the past 2 years*

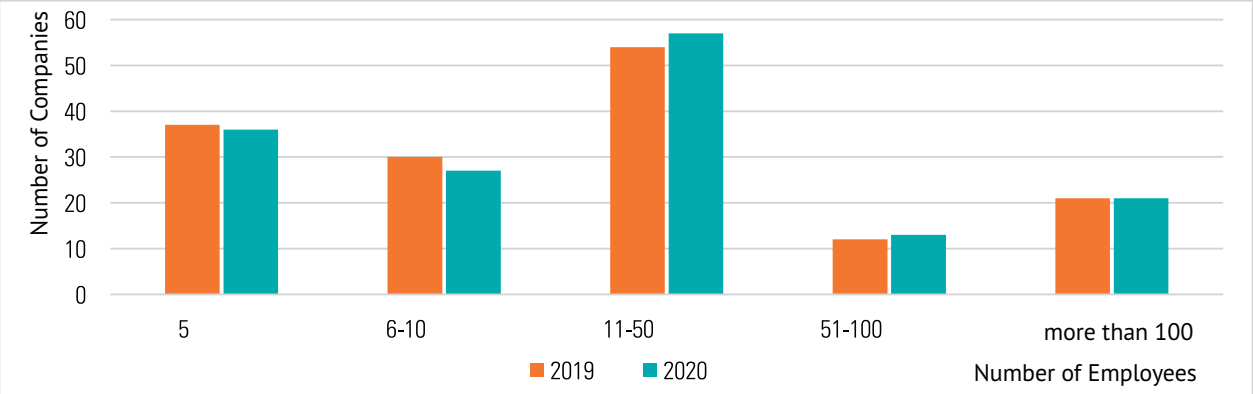



Of suppliers 30 percent reported lack of any changes in their range of products, or kinds of activities and services provided, 29.5 percent reported slight changes, and 40 percent answered that many changes, sufficient changes took place. Due to the global COVID-19 pandemic quarantine was imposed and borders were closed last year, which caused 70 percent of organizations to introduce some changes in their

product range and services.

When the number of staff in the OT supplier entities in 2019 was compared to that in 2020 the majority (121 organizations) employed up to 50 staff and 21 entities employed 100 and over staff.

*Figure 6.10. The number of staff*



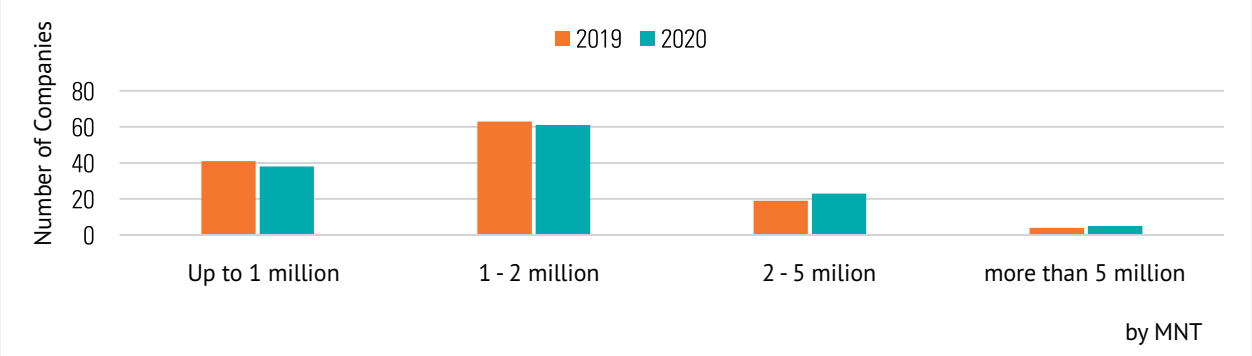

In the period between 2019-2020 there were 66 entities that increased the number of their staff, 44 entities that had to downsize and 44 entities that did not make any changes. When the entities that downsized were studied by the kinds of their activities, they were in construction and assembly, supply of electronic equipment, trade, security and supply of household goods.

*Table 6.4. Kinds of activities, products and services provided to the OT, the number of staff*

| Type of activities | Goods and services supplied to OT | Number of employees in 2019 | Number of employees in 2020 | Changes in the number of employees |
|---|---|---|---|---|
| Mining, Extraction, Electricity, Water Supply, Construction | General construction contractor | 500 | 430 | -70 |
| Other service activities | Security service | 380 | 345 | -35 |
| Manufacturing | Steel melting | 210 | 180 | -30 |
| Wholesale and retail trade | Fuel supply | 234 | 210 | -24 |
| Other service activities | Human resources | 440 | 350 | -90 |
| Construction, Wholesale and retail | Construction | 400 | 300 | -100 |
| Construction | Engineering activities | 86 | 42 | -44 |
| Professional scientific and technical activities | Professional certified translation services | 50 | 20 | -30 |
| Electricity and water supply | Electrical installation | 130 | 40 | -90 |

In general, businesses engaged in wholesale and retail trade, construction, training and consulting services, security services had to downsize. Staff of nearly half of supplier entities (63 entities) received monthly salaries in the 1-2 million MNT range.

*Figure 6.11. Average monthly salary of the OT suppliers' staff (MNT)*




While the average salary of the OT suppliers' staff equaled 1930561 MNT in 2019, in 2020 it went down by 179876 MNT to 1750685 MNT. However, it was still higher than the national average.

*Table 6.5. Data on salaries of the suppliers' staff (MNT)*

| | 2019 | 2020 |
|---|---|---|
| Lowest salary | 420000 ₮ | 420000 ₮ |
| Highest salary | 18028521 ₮ | 19501726 ₮ |
| Mode salary | 1200000 ₮ | 1500000 ₮ |
| Mean salary | 1930561 ₮ | 1750685 ₮ |

The highest salaries were received by the staff of entities that provided mapping and surveying, geological and geotechnical measurements and recording services. By 2020, some salaries went up, but the average salary decreased.

*Figure 6.12. Salary distribution in 2019 (MNT)*

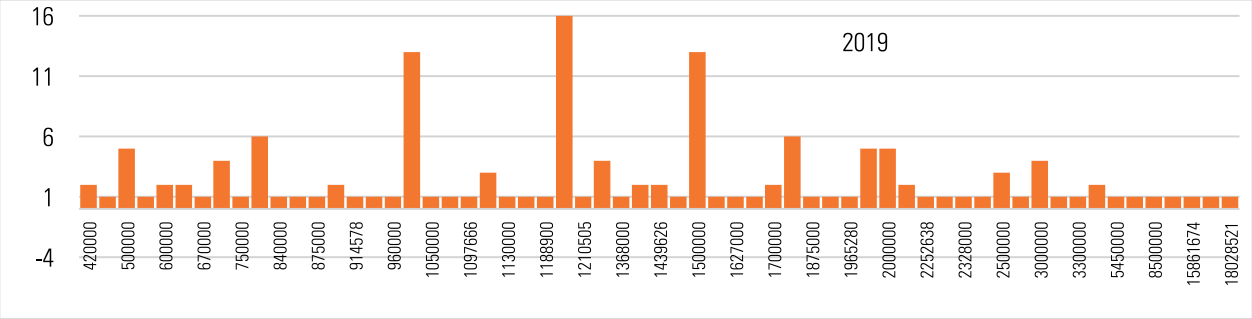
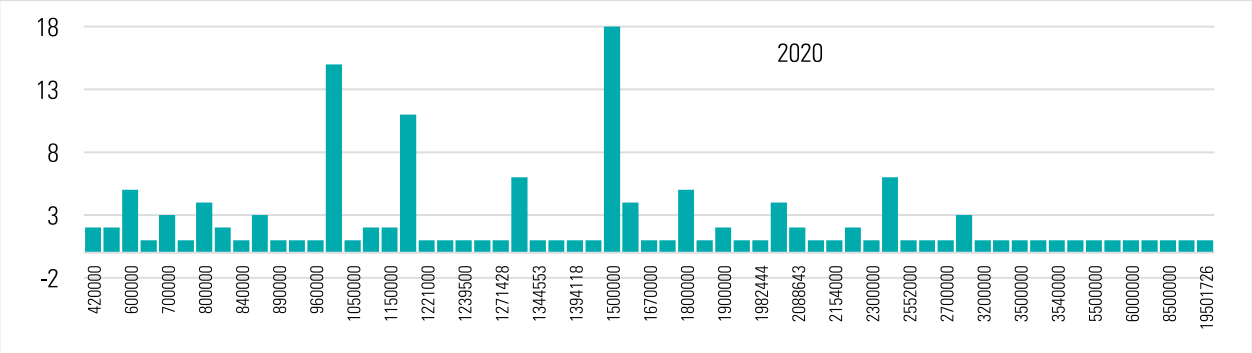



*Figure 6.13. Salary distribution in 2020 (MNT)*



There were 11 entities where the amount of salaries has decreased by absolute meaning, 48 entities where it did not change and 68 entities, where the salaries increased. The COVID-19 pandemic did not have much impact on the salaries of the suppliers' staff. 92.9 percent of survey respondents viewed that cooperation with the OT company affected strengthening of skills and capacity of their staff, and 7.1 percent did not know. It can be concluded that the OT has made a positive impact on strengthening of capacity and skills of the staff in supplier entities. Nearly half of the entities reported regularly sending their staff to training, 32.1 percent sometimes sent their staff to training, 9.6 percent temporarily sent them for training and 5.8 percent occasionally let the staff participate in training.

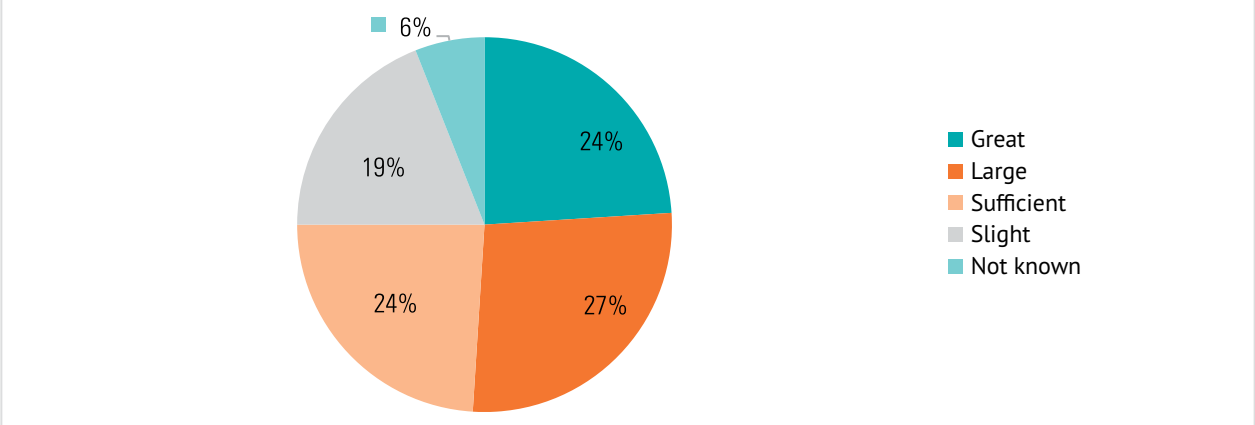
In 2020, the supplier entities sent their staff to training on:

- Safety operations training (104 entities)
- The quality standards training (68 entities)
- Professional training (119 entities)
- Auditing training (11 entities)
- Personal development training (6 entities)
- Foreign language training (1 entity)
- Training related to the COVID pandemic (1 entity)

In 2019, the supplier entities paid in average 55,643,396 MNT for social insurance, in 2020 they paid 41,866,923 MNT of social insurance. The reason for the decrease in the amount of social insurance paid in 2020 was related to the measures taken in relation to the COVID-19 pandemic, namely, premium to be paid by the entity and the employee was decreased by 5 percent. In 2020, the amount of social insurance paid by 47 entities increased. As for the VAT, the amount of VAT paid by 75 entities (49 percent) increased in 2020. In addition, the amount of corporate income tax paid by 66 supplier entities increased by its absolute meaning.

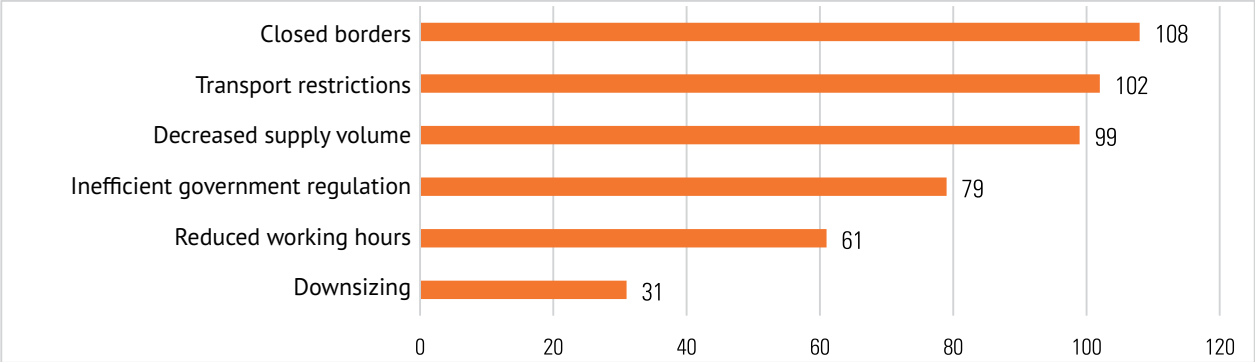
Of suppliers, 75 percent reported great, large, sufficient changes in the OT procurement during the COVID-19 pandemic, while 19 percent mentioned slight changes and 6 percent did not know. When 37 suppliers, who reported big changes in the OT procurement, were viewed by the field of their activities, they were mostly entities engaged in wholesale and retail trade, and institutions engaged in providing professional academic and technical services. Income decreased in 32 percent of these entities, but increased in 40 percent of them.

*Figure 6.14. Changes in the OT procurement due to the COVID-19 pandemic impact (by percent)*



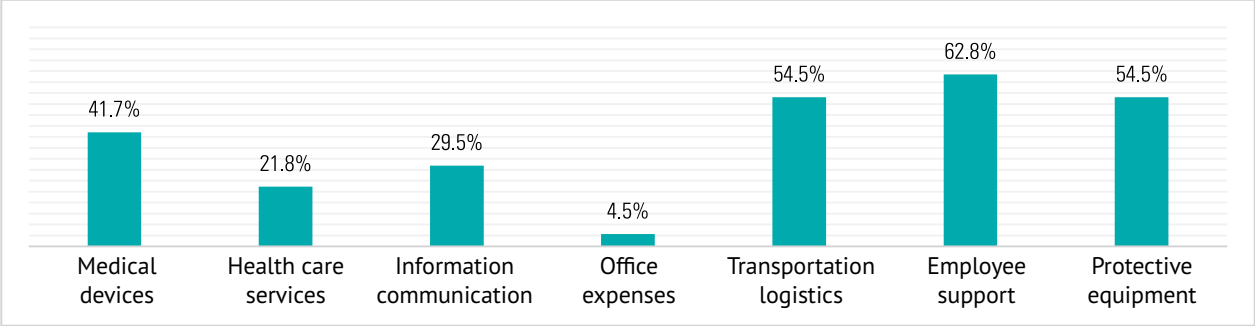
Of the most influential factors that made the largest negative impact on regular business activities during the COVID pandemic were border closures, transportation restrictions. Along with this, there were such problems as standstill due to lockdowns, reduced OT budget, revoked projects, rising prices for raw materials, shortage of the workforce due to extended rosters, that had the greatest impact.

*Figure 6.15. Factors that made the greatest impact on businesses during the COVID-19 pandemic*




Of expenditures that rose the most during the COVID-19 pandemic support provided to the staff (62.8 percent of total respondents), expenditure on protective equipment (54.5 percent), expenditure on healthcare products (41.7 percent) were reported. Other answers mentioned rising prices of raw materials and loan interest payments due to the pandemic.

*Figure 6.16. Kinds of expenditures that rose the most during the COVID-19 pandemic (by percent)*




During the pandemic 84 percent of the OT procurement agreements (with 130 entities) remained unaltered. However, 16 percent, i.e. 24 entities reported some changes in their agreement.

*Table 6.6. Reasons for amendments in the agreements (by numbers)*

| Reasons | Number of Companies |
|---|---|
| The contract period has changed | 8 |
| The contract was terminated | 4 |
| The amount of services specified in the contract has decreased | 4 |
| The prices of the goods specified in the contract have changed | 4 |
| The number of contracts has decreased | 2 |
| A new cooperation agreement has been signed | 1 |
| Not expressed the reason | 1 |

Of total suppliers, 81 percent reported lack of any negative situation in cooperation with the OT during the COVID-19 pandemic. As for entities that faced negative situations, they were as follows:

1. Due to lockdowns and travel restrictions because of the pandemic, there were problems in trans portation, ordered products were not delivered in time and delay in supply took place.
2. Some contracted works were postponed and agreements were cancelled, which negatively af fect ed the companies' budgets.
3. Because of new conditions that were not reflected in the agreement, such as standstill and flight cancellations, the organizations had to bear these additional costs.
4. The work schedule of the mining staff became unstable.
5. There was a need to work online.
6. There was no possibility to go to work on the mine site or organize meetings with local resi dents, which led to delay in implementation of some works

85% of suppliers covered by the survey reported some positive impact on their activities due to cooperation with the OT company. The answers were ranked by their percentage:

- The quality and standards of operations have improved;
- The scope of sales and income have increased;
- The number of staff has increased, they upgraded their skills and their livelihood has improved;
- The activities of companies have expanded, the reputation has grown, the production range and productivity have grown, which affected development of the domestic market;
- Sustainable workplaces were created;
- Work safety and security rules and regulations were followed strictly;
- Business ethics have improved;
- A positive effect is being made on the local development;
- With expertise gained from cooperation with the OT, companies started providing services to other mining companies.

When negative aspects of cooperation with the OT were clarified, following answers were given:

- Delays in payment or a long wait for the payment leads to the growing costs of loan interests,
- "Criteria for the tender bidding are not clear", "long wait for the bidding results", "no understanding of reasons the companies were not selected", "the selection process sometimes seems unfair",
- Some companies were not able to make a long-term agreement with the OT company,
- "The procurement system is organized in a very ineffective and cumbersome way. Efforts of many suppliers are wasted", "Too many suppliers work on one offer of the price, while high costs related to salaries and supply, little profit behind it are not taken into account"
- Although we are making calculations on each of the product before making offers on the price of each of the range of products bought from one producer, sometimes the price for small, low-cost product is calculated with use of the average pricing method. However, the smallest product with the lowest price is given a separate PO. If products bought from one producer /ITEM/ are not separated and one PO is given, it will be more effective for the buyer as well as the supplier;
- A fact that one product of the same brand is separated during the long-term procurement bidding and is given to several companies leads to rising costs of the product and inability to supply

## 6.2 ANALYSIS OF THE MULTIPLIER EFFECT

The multiplier impact resulting from the OT's operations was calculated according to the methodology used in the 2012 survey of the Oyu Tolgoi Multiplier Impact on the Mongolian Economy.

**Direct effect**

The survey determined the direct impact of the OT by the sum of income accumulated in the national budget and changes in salaries and wages of the OT staff. The direct impact of the OT company was calculated on the basis of taxes, fees and payments made to the national budget in 2019 and 2020 and the company employment costs related to it.

The consolidated budget of Mongolia is comprised by the national budget, the local budget, the Human Development Fund budget and the Social Security Fund budget. In 2020, the OT company paid taxes, fees and payments to the national budget in the amount of 394.1 billion MNT, which was 2.22 percent lower compared to the previous year. Due to the pandemic impact, the amount of the corporate income tax, taxes from foreign payments, the VAT payments of the OT company decreased. The amount of taxes paid in the local area decreased by 2.9 percent and equaled 82.1 billion MNT.

*Table 6.7. Taxes, payments made to the national budget, in million MNT*

| Taxes and payments | 2019 | 2020 |
|---|---|---|
| Royalties for the use of mineral resources | 188,722.7 | 195,599.6 |
| Income tax | 1,201.5 | 608.4 |
| Tax withheld from foreign payments | 37,053.0 | 23,641.3 |
| VAT / deducted from non-residents / | 64,761.9 | 49,912.3 |
| Customs duties and VAT | 63,368.9 | 72,168.3 |
| Exploration and mining license fee | 595.9 | 633.2 |
| Other tax payments and fees | 47,332.7 | 51,536.8 |
| Taxes paid to the state budget | 403,036.6 | 394,099.9 |

The OT company implemented numerous programs directed towards support of employment and makes payments to the Employment Promotion Fund according to the law. The Employment Promotion Fund aims to increase the number of workplaces at the market, to strengthen the workforce capacity and to provide necessary services to unemployed citizen. In evaluating contribution of the OT company in employment promotion, we looked at the amount of payments made to the Employment Promotion Fund and support of vocational education as indirect investment. The payments made to the Employment Promotion Fund were computed as a sum of payments for the staff approvals, visas and workplace programs.

*Table 6.8. Taxes, fees, payments made to the local budget, in million MNT*

| Taxes and payments | 2019 | 2020 |
|---|---|---|
| Land, water, road and sand use fees | 18,869.8 | 16,180.9 |
| Real estate tax | 19,280.8 | 21,214.1 |
| Vehicle tax | 91.7 | 61.9 |
| PIT - salary, deducted from citizens | 46,074.2 | 44,586.5 |
| Other tax payments and fees | 218.7 | 6.7 |
| Taxes paid to local budgets | 84,535.2 | 82,050.1 |

The OT company spent in total 6.5 billion MNT in support of employment, which increased by 31.7 percent compared to 2019. If the components of the payments are examined, the amount paid to the Employment Promotion Fund increased by 22.4 percent and reached 4.6 billion MNT. Investment in the vocational education sector increased by 61.6 percent equaling 1.9 billion MNT.

*Table 6.9. Payments and investment in employment promotion, in million MNT*

| Payments and investments | 2019 | 2020 |
|---|---|---|
| Payments to the Employment Promotion Fund | 3,744.0 | 4,583.0 |
| Investment in vocational education | 1,164.1 | 1,880.7 |
| Total | 4908.1 | 6,463.7 |

In 2020, the OT company spent 83.5 billion MNT on the healthcare and Social insurance contribution of their staff, which increased by 26.2 percent compared to 2019. The share of payments and fees paid by the OT company to the budget, increased the in total by 1.3 percent and reached 566.1 billion MNT.

*Table 6.10. Total taxes, fees, payments to the budget*

| | 2019 | 2020 | Нийт |
|---|---|---|---|
| Taxes paid to the state budget | 403,036.6 | 394,099.9 | 797,136.5 |
| Taxes paid to local budgets | 84,535.2 | 82,050.1 | 166,585.3 |
| Payments and investments in employment promotion | 4908.1 | 6,463.7 | 11,371.8 |
| Social and health insurance | 66,151.9 | 83,451.7 | 149,603.6 |
| Total | 558,631.8 | 566,065.4 | |

Due to the pandemic impact, the amount of payments to the national and local budgets by the OT company increased, and the investment made in that period in employment promotion and the social insurance and healthcare insurance premium payments also increased. Although slight changes were made in the structure of fees and payments made to the budget by the OT company, in general, the company operated in a sustainable way during the pandemic period.

As of the end of 2019, 3113 national and international staff was employed by the OT company. At the end of 2020, the number of staff decreased by 2.9 percent and went down to 3023. The OT company paid social insurance and healthcare insurance premiums in the amount of 66.2 billion MNT in 2019 and 83.5 billion MNT in 2020. The salary and wages fund were computed based on the social insurance and healthcare insurance.

*Table 6.11. The direct impact of the OT company*

| | | 2019 | 2020 |
|---|---|---|---|
| Tax impact, million MNT | Number of employees | 487,571.8 | 476,150.0 |
| Employment impact | Salary fund | 3113 | 3023 |
| | | 264,607.6 | 333,806.8 |

Although some changes were made in the percentage of the Social insurance contribution due to the COVID-19 pandemic, we made our calculations based on the Social insurance contribution as 10 percent paid by an individual and 11-13 percent - by the employer entity, the healthcare insurance was computed as 2 percent paid by the individual and 2 percent-by the employer entity, which in total came to 25-27 percent deducted from a salary. As a result, the salary fund in 2019 equaled 264,607.6 million MNT and 333,806.8 million MNT in 2020.

**Indirect impact**

The indirect effect of the OT project was determined on the basis of the taxes paid by supplier entities and the salary expenditure for the staff of the given entities. We assumed that the amount of taxes paid by suppliers covered by the survey was that paid only as a result of cooperation with and supply to the OT company. The total staff of supplier entities was also viewed as all participating in work and cooperation with the OT company and thus indirect impact was calculated.

Of 154 businesses covered by the survey, in total data of 23 entities were not included due to different reasons such as lack of declaring sales revenues from cooperation with the OT company, short duration of cooperation with the company such as cooperating for the first year or cooperating with up to 3 years, but still not declaring their profit. In total, data from 131 suppliers were the basis for calculation of the multiplier impact of the OT company on the economy.

*Table 6.12. Sales revenue of suppliers, in million MNT, 2019*

| № | Sales revenue | Number of Suppliers | Percentage of survey sample |
|---|---|---|---|
| 1 | Up to 10 million | 26 | 19.8 |
| 2 | 10-100 million | 11 | 8.4 |
| 3 | 100-500 million | 36 | 27.5 |
| 4 | 500 million - 2 billion | 26 | 19.8 |
| 5 | 2 billion - 10 billion | 18 | 13.7 |
| 6 | 10 billion - 50 billion | 11 | 8.4 |
| 7 | More than 50 billion | 3 | 2.3 |
| | Total | 131 | 100 |

When the OT partner businesses were classified by their sales revenues, 75.6 percent of suppliers had profits up to 2 billion MNT and 10.7 percent of suppliers had profits over 10 billion MNT. While in 2018, sales revenue of suppliers that cooperated with the OT company equaled 648.2 billion MNT, in 2019 it fell down to 616.5 billion MNT, but increased by 5.2 percent in 2020 reaching 648.2 billion MNT.

The total tax impact was calculated based on the sum of the social insurance, VAT and income taxes paid by the OT suppliers. In 2019, suppliers covered by the survey paid in total 109.2 billion MNT worth of taxes, of which social insurance accounted for 23.5 percent, VAT – for 44.5 percent and income tax – for 32.0 percent.

*Table 6.13. Taxes, fees paid by suppliers, in million MNT*

| | 2019 | Percentage | 2020 | Percentage |
|---|---|---|---|---|
| Social insurance contribution s | 25,643.3 | 23.5 | 25,163.9 | 26.4 |
| VAT | 48,632.3 | 44.5 | 42,232.1 | 44.2 |
| Income Tax | 34,909.6 | 32.0 | 28,073.1 | 29.4 |
| Total | 109,185.2 | 100 | 95,469.2 | 100 |

Of 95.5 billion MNT of taxes paid by the OT suppliers to the national budget in 22020, the social insurance made up 26.4 percent, the Value Added Tax accounted for 44.2 percent and the income tax comprised 29.4 percent. Due to the pandemic impact, the total amount of taxes and premium paid by the suppliers in 2020 was lower by 12.5 percent compared to the previous year.

While in 2019 the OT suppliers employed in total 8001 persons, in 2020 they downsized to 7955 staff. The salary fund of supplier organizations was calculated on the basis of the quantitative data on number of the total staff in each organization and the average salary of the staff.

*Table 6.14. Suppliers' expenditure on salary, in million MNT*

| | 2019 | 2020 |
|---|---|---|
| Salary fund | 147,150.8 | 159,866.1 |

The number of total staff employed by each supplier was multiplied by the average monthly salary in each organization, so the average total monthly salary expenditure was found. Then it was computed by a year and the total salary fund was determined.

*Table 6.15. Indirect impact of the OT company*

| | Million MNT | 2019 | 2020 |
|---|---|---|---|
| Taxes | Social insurance contribution s | 25,643.3 | 25,163.9 |
| | VAT | 48,632.3 | 42,232.1 |
| | Income Tax | 34,909.6 | 28,073.1 |
| | Total | 109,185.2 | 95,469.2 |
| Employment | Number of employees | 8,001 | 7,955 |
| | Salary fund | 147,150.8 | 159,866.1 |

While in 2019 the OT suppliers paid in total 137.2 billion MNT worth of salaries to their staff, in 2020 they paid to their staff 159.9 billion MNT.

**The induced impact**

The induced impact of the OT company was calculated on the basis of consumer costs and taxes paid by the suppliers in the process of spending their profit made from the Oyu Tolgoi company in national economy. The present survey determined the induced impact of VAT tax paid by the OT suppliers and the salary expenditures of business entities that provided products and services only to the OT company.

It was assumed that the impact of the OT on the household consumption was determined by the increasing national budget that grew as a result of VAT payments and led to an induced impact on the economy.

*Table 6.16. VAT paid by suppliers, in million MNT*

| | 2019 | 2020 |
|---|---|---|
| VAT | 48,632.3 | 42,232.15 |

In order to determine this induced impact, taxes were calculated on the basis of data on the VAT payment of suppliers to the OT project.

The induced impact of the OT company on employment was computed on the basis of suppliers that provided products and services only to the OT company based on the number of their staff and salary expenditures.

*Table 6.17. The salary expenditures of suppliers that provide products and services only to the OT company, in million MNT*

| | 2019 | 2020 |
|---|---|---|
| Salary Fund | 5,344.3 | 7,989.9 |

There were 7 business entities that provided products and services only to the OT company. These entities employed 239 persons in 2019, but in 2020 they employed 307 persons.

*Table 6.18. Induced impact of the OT Company*

| | | 2019 | 2020 |
|---|---|---|---|
| Tax | VAT | 60,661.9 | 54,777.6 |
| Employment | Number of employees | 239 | 307 |
| | Salary fund | 5,344.3 | 7,989.9 |

While in 2019 the suppliers that provided products and services only to the OT company paid to their staff salaries worth 5.3 billion MNT, in 2020 they paid 7.9 billion MNT worth of salaries.

**The economic multiplier impact of the OT project**

By the sum of the direct, indirect and induced impact the multiplier impact of the OT company on the national economy of Mongolia was determined. In 2019, the OT company created in total 11353 workplaces in a direct, indirect and induced ways and in 2020, it kept 11285 workplaces and created new workplaces. As of 2019, in total 417.1 billion MNT and in 2020, 501.7 billion MNT was paid to the staff as salaries. In total, 657.5 billion MNT and 626.5 billion MNT worth of taxes was paid to the national budget in a direct, indirect and induced ways in 2019 and 2020 respectively.

*Table 6.19. Total impact on the economy*

| By billion MNT | | 2019 | | | | 2020 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Direct | Indirect | Induced | Total | Direct | Indirect | Induced | Total |
| Taxes | Total | 487.6 | 109.2 | 60.7 | 657.5 | 476.2 | 95.5 | 54.8 | 626.5 |
| Employment | Number of employees | 3113 | 8001 | 239 | 11353 | 3023 | 7955 | 307 | 11285 |
| | | 264.6 | 147.2 | 5.3 | 417.1 | 333.8 | 159.9 | 8.0 | 501.7 |
| Total | | 752.2 | 256.3 | 66.0 | 1074.5 | 810.0 | 255.3 | 62.8 | 1128.1 |

It shows how 1 MNT directly invested in the economy by the OT company is multiplied in the economy in indirect and induced ways and how many total MNT it creates.

*Table 6.20. The OT multiplier effect on the Mongolian economy*

| | | 2019 | | | | 2020 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Direct | Indirect | Induced | Total | Direct | Indirect | Induced | Total |
| Taxes | Total | 1.0 | 0.22 | 0.12 | 1.35 | 1.0 | 0.20 | 0.12 | 1.32 |
| Employment | Number of employees | 1.0 | 2.57 | 0.08 | 3.65 | 1.0 | 2.63 | 0.10 | 3.73 |
| | | 1.0 | 0.56 | 0.02 | 1.58 | 1.0 | 0.48 | 0.02 | 1.50 |
| Total | | 1.0 | 0.34 | 0.09 | 1.43 | 1.0 | 0.32 | 0.08 | 1.39 |

In 2019, the OT multiplier effect on the national economy was 1.43. 1 MNT invested by OT in the economy created value of 1.43 MNT in indirect and induced ways by procurement, tax spending, generation of new workplaces. Due to the pandemic impact in 2020, the OT multiplier effect reduced to 1.39.

**Impact on the SME**

If small entities with annual income up to 2 billion MNT were selected and viewed as SME, the multiplier effect is as follows.

*Table 6.21. Total impact on the economy*

| By billion MNT | | 2019 | | | | 2020 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Direct | Indirect | Induced | Total | Direct | Indirect | Induced | Total |
| Taxes | Total | 487.6 | 55.8 | 23.3 | 566.7 | 476.2 | 58.4 | 21.6 | 556.2 |
| Employment | Number of employees | 3113 | 6766 | 130 | 10009 | 3023 | 6780 | 194 | 9997 |
| | Salary fund | 264.6 | 135.7 | 4.9 | 405.2 | 333.8 | 146.5 | 7.5 | 487.8 |
| Total | | 752.2 | 191.5 | 28.2 | 971.9 | 810.0 | 204.9 | 29.1 | 1044.0 |

While in 2019, an indirect impact of total 191.5 billion MNT and an induced impact of 28.2 billion MNT was made on business entities that received sales revenue of up to 2 billion MNT from the OT company, in 2020, they had in indirect impact of total 204.9 billion MNT and an induced impact of 29.1 billion MNT.

*Table 6.22. The OT multiplier effect*

| | | 2019 | | | | 2020 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Direct | Indirect | In-duced | Total | Direct | Indirect | In-duced | Total |
| Taxes | Total | 1.0 | 0.11 | 0.05 | 1.16 | 1.0 | 0.12 | 0.05 | 1.17 |
| Employment | Number of em-ployees | 1.0 | 2.17 | 0.04 | 3.22 | 1.0 | 2.24 | 0.06 | 3.31 |
| | Salary fund | 1.0 | 0.51 | 0.02 | 1.53 | 1.0 | 0.44 | 0.02 | 1.46 |
| Total | | 1.0 | 0.25 | 0.04 | 1.292 | 1.0 | 0.25 | 0.04 | 1.288 |

While the multiplier effect on SME was 1.29 in 2019, i.e. 100 MNT invested by the OT company in the economy were multiplied to total of 129 MNT, creating an additional value, in 2020, the multiplier declined by 0.04 points and went down to 1.288.

**Chapter conclusions**

OThe scope of such activities as supply and maintenance of vehicles, technical equipment and tools; supply of work clothing and protective equipment; financial, insurance and consulting services; all types of power, heating and water supply services; food products supply; research and training services; construction and related activities; information technology and server services; environmental monitoring; human resource recruitment activities is expanding in the OT procurement.

Over the past three years, the OT suppliers with an annual revenues of 100-500 million and 1-10 billion MNT have accounted for about 60 percent of total suppliers. The number of suppliers with sales revenue of up to 100 million MNT has increased in the lpst 3 years.

While there were 50 organizations, whose revenues declined in 2020, revenues of 68 organizations increased compared to the previous year. The companies with decreased sales revenue have been cooperating with the OT for 2-18 years, and their field of activities was not directly related to the OT. There were 15 suppliers, whose revenue has doubled or increased several times since 2019. Areas of activities of these suppliers included power line assembly and maintenance, environmental audit services, geological consulting services, supply of electrical equipment and spare parts, and supply of heavy-duty sacks.

Of expenditures that rose the most during the COVID-19 pandemic, support provided to the staff (62.8 percent of total respondents), expenditure on protective equipment (54.5 percent), expenditure on healthcare products (41.7 percent) were reported. Other answers mentioned rising prices of raw materials and higher loan interest payments due to the pandemic.

The OT continues to have a positive impact on daily operations of its suppliers, their staff training, organizational culture, collaboration in business, and sustainability of workplaces.

Of the most influential factors that affected regular business activities of suppliers during the COVID pandemic were border closures and transportation restrictions due to lockdowns. It led to such problems as inability to deliver products and services on time, inability to implement their duties according to the contract.

Due to the pandemic, suppliers faced some problems such as: some contracts of suppliers with the OT have been postponed, there were changes in prices of products, changes were made on the amount of works and services agreed upon.

If during the COVID-19 pandemic the OT operations were not kept regular, a strong negative impact would have been made on businesses engaged in such industries as wholesale and retail trade, including businesses selling mining machinery and equipment and protective gear, temporary and full-time human resource service providers, and food processing and supply businesses.

In 2019, the supplier entities paid in average 55.6 million MNT for social insurance, in 2020 they paid 41.9 million MNT for social insurance. The reason for the decrease in the amount of social insurance paid in 2020 was related to the measures taken in relation to the COVID-19 pandemic, namely, premium to be paid by the entity and the employee was decreased to 5 percent. In 2020, the amount of social insurance paid by 47 entities increased. As for the VAT, the amount of VAT paid by 75 entities (49 percent) increased in 2020. In addition, the amount of corporate income tax paid by 66 supplier entities increased by its absolute meaning.

In 2019, a total of 657.5 billion MNT in taxes was collected in the state budget due to the direct, indirect and induced impact of the OT. In 2020, the OT and its suppliers paid a total of 626.5 billion MNT in taxes.

In 2019, the OT multiplier effect on the national economy was 1.43, in 2020, the OT multiplier effect reduced to 1.39. While the multiplier effect on SME cooperating with the OT was 1.292 in 2019, in 2020, the multiplier declined slightly and went down to 1.288.

**Future trends**

Of suppliers 30 percent reported lack of any changes in their range of products, or kinds of activities and services provided during the pandemic, 29.5 percent reported slight changes, and 40 percent answered that large changes, or sufficient changes took place, which illustrated fluctuations in the suppliers' business activities. It is necessary to take step-by-step measures to bring back suppliers into the regular conditions.

Of suppliers, 75 percent reported great, large, sufficient changes in the OT procurement during the COVID-19 pandemic, while 19 percent mentioned slight changes and 6 percent did not know. When 37 suppliers, who reported big changes in the OT procurement, were viewed by the field of their activities, they were mostly entities engaged in wholesale and retail trade, and institutions engaged in providing professional academic and technical services. Income decreased in 32 percent of these entities, but increased in 40 percent of them.

To secure further relatively stable cooperation with the OT suppliers during the pandemic, there is a possibility to work together to overcome some of the challenges and barriers in dealing with suppliers.

As Oyu Tolgoi continues to make a sustainable contribution to Mongolian budget revenues and social security premiums, strengthening the capacity of suppliers will make a valuable contribution to local, regional, and national economic recovery and value creation.

# CONSOLIDATED CONCLUSIONS

In the frame of the study on "The OT impact on the society and economy of Mongolia during the COVID-19 pandemic" the research team of the Economic Institute of the National University of Mongolia studied its impact on the macroeconomic level by analysis of GDP, FDI, exports, taxes and employment; the regional and local impacts were illustrated by an analysis of the OT employment, the Umnugovi aimag GDP, economic sectors' activities, and the OT suppliers' economic activities. In reviewing the "The OT impact on the society and economy of Mongolia during the COVID-19 pandemic ", the research team sought to identify direct, indirect, and induced impacts using descriptive and sample statistics, index estimates, and relevant economic analysis methods.

With regard to the fact that the global copper demand is going to continuously grow in the future related to progress in the renewable energy industry, electric and hybrid car production, urbanization, electrification and changes in the healthcare sector; that although copper reserves in Mongolia are not very large compared to the global reserves, in the future, with exploitation of the underground mine in Oyu Tolgoi, the Tsagaan Suvarga and other projects that are presently at the exploration stage, Mongolia has an opportunity to become a major global supplier in the copper market. By the mining contribution index, Mongolia is on the 3rd place in the world; according to the International Labor Organization survey, Mongolia ranked second in the world by the percentage of jobs created by the mining sector in total employment. Since there are many opportunities for the mining industry in our country to develop intensively in the future, contribution of this sector and its significance in support of employment and creation of new workplaces will be growing. It is important to increase mining contribution in the national economy in the future, to use it as an impetus for economic growth and development, to develop other economic sectors with support of this contribution, to develop a policy of diversification as in Chile and other countries.

Contribution of the copper industry to the budget revenue is on the rise and has remained stable during the COVID-19 epidemic. Large taxpayers such as the OT have a significant impact on sustainable financing of social programs developed by the Government of Mongolia and continued growth of budget investment.

The Mongolian copper industry levies royalties at 5 percent of the standard sales price, similar to the tax rate in copper industries in other developing countries, so it can be considered "competitive and commercially negotiable". Since the impact of copper prices on sales remains high, there is a need for a risk-prevention strategy.

As of December 2020, the OT had 12,364 employees. 1720 OT staff and staff from contractor companies participated in a random survey to determine the COVID-19 pandemic impact on OT employment. Regardless of the pandemic, the OT staff workplaces were kept stable. However, due to the COVID-19 pandemic impact household members of the OT staff had shorter working hours, had to work online, their businesses came to standstill, profits have fallen, which led to decline of the livelihood.

Growth and decline of GDP and budget revenue of Umnugovi aimag is closely related to the OT activities. If the OT was not implemented, by the average of 2010-2020 the budget revenue of Umnugovi aimag would have lost 46 percent. A fact that budget revenue of Umnugovi aimag has not changed by its total during the COVID-19 pandemic is directly related to fees and payments made by the OT company.

In 2020, the OT cooperated with 770 suppliers. 154 suppliers participated in the survey on the COVID-19 pandemic impact on cooperation between the OT and suppliers. Of expenditures that rose the most during the COVID-19 pandemic support provided to the staff, expenditure on protective equipment, expenditure on healthcare products were reported. Other answers mentioned rising prices of raw materials

and loan interest payments due to the pandemic.

The OT continues to have a positive impact on daily operations of its suppliers, their staff training, organizational culture, collaboration in business, and sustainability of workplaces. If during the COVID-19 pandemic the OT operations were not kept regular, a strong negative impact would have been made on businesses engaged in such industries as wholesale and retail trade, including businesses selling mining machinery and equipment and protective gear, temporary and full-time human resource service providers, and food processing and supply businesses.

During the COVID-19 pandemic, the OT and its suppliers paid a total of 626.5 billion MNT in taxes. The multiplier effect of the OT on the national economy went from 1.43 in 2019 to 1.39 in 2020. For SMEs cooperating with the OT, the estimated multiplier effect was 1,292 in 2019, which slightly decreased to 1,288 in 2020.

To sum up, Oyu Tolgoi has played an important role in the Mongolian economy during the COVID-19 pandemic, making significant contribution to exports, economic growth, tax collection, local development. In addition, the OT human resource training directed to the future and capacity building of the staff is bringing results. At a time when the global demand for copper is on the rise, Oyu Tolgoi and other Mongolian copper projects have a potential to make an even greater contribution to economic development of our country.

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https://www.industriall-union.org Перу: власти ответили на забастовку насилием и ареста

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# APPENDIX

## ANNEX 1. SURVEY QUESTIONNAIRE ON OT EMPLOYEES

EI NUM is an independent research institution that is conducting a research on behalf of Oyu Tolgoi LLC, on the impacts of Oyu Tolgoi project on society and the economy. This survey forms part of that research study.

**This survey contains questions regarding personal information. Please participate in the survey if you feel comfortable releasing this information. EI NUM is bound by the "Confidentiality Law of Mongolia" and will maintain private and business confident information and will not disclose to any third party**

The objective of this study is to assess the direct and indirect impacts of Oyu Tolgoi LLC employment on society, economy and livelihood in Umnugobi and Ulaanbaatar before and during COVID 19

**I would like to participate in the survey**

1. Yes → 101
2. No

| № | | Code | | Step |
|---|---|---|---|---|
| | **EMPLOYEE'S GENERAL INFORMATION FOR SURVEY** | | | |
| 101 | Age | 1 | 15-19 | |
| | | 2 | 20-24 | |
| | | 3 | 25-29 | |
| | | 4 | 30-34 | |
| | | 5 | 35-39 | |
| | | 6 | 40-44 | |
| | | 7 | 45-49 | |
| | | 8 | 50-54 | |
| | | 9 | 55-59 | |
| | | 10 | 60-64 | |
| | | 11 | 65 and more | |
| 102 | Sex | 1 | Male | |
| | | 2 | Female | |
| 103 | Resident in (by official registration) | 1 | Ulaanbaatar | |
| | | 2 | Umnugovi | |
| | | 3 | Khanbogd | |
| | | 4 | Other .....(write) | |
| 104 | Educational level | 1 | Non secondary | |
| | | 2 | High school diploma | |
| | | 3 | Vocational Training | |
| | | 4 | Bachelor | |
| | | 5 | Master/PhD | |
| 105 | Marital status | 1 | Married | |
| | | 2 | Not married | |
| 106 | Number of family members: *(Please indicate number of people that you live with)* | | ☐☐ | |
| 107 | Number of working age family members | | ☐☐ | |
| 108 | Number of employed family members | | ☐☐ | |
| № | | Code | | Step |
| | **EMPLOYMENT CONDITION** | | | |
| 201 | How many years in total have you been you working? | | ☐☐ | |
| 202 | How many years have you been in Oyu Tolgoi LLC? | | ☐☐ | |

| | | | | |
|---|---|---|---|---|
| 203 | Do you work in your professional field? | 1 | Yes | |
| | | 2 | No | |
| 204 | Please choose the department you work for | | | |
| 205 | Length of your employment contract | 1 | Unlimeted | |
| | | 2 | Limited | |
| 206 | How much is your current salary? | 1 | Up to 1.5 million | |
| | | 2 | 1.6 million - 3.5 million | |
| | | 3 | 3.6 million - 5.5 million | |
| | | 4 | 5.6 million - 8.0 million | |
| | | 5 | Over 8.0 million | |
| 207 | Do you attend to professional training? | 1 | Constantly | |
| | | 2 | Occationally | |
| | | 3 | Temporarity | |
| | | 4 | Incidentyly | |
| | | 5 | Other ..... (write) | → 210 |
| 208 | What kind of professional training did you attend in 2020? | A | Safety | |
| | | B | Open pit | |
| | | C | Underground | |
| | | D | Vocational | |
| | | E | Other ..... (write) | |
| 209 | Were you employed prior to Oyu Tolgoi LLC? | 1 | Yes | |
| | | 2 | No | → 301 |
| 210 | Nature of the previous organization that you worked for? | 1 | Seld employed | |
| | | 2 | Company | |
| | | 3 | Cooperative | |
| | | 4 | Parthnership | |
| | | 5 | SOE, LGE | |
| | | 6 | Public organization | |
| | | 7 | NGO | |
| | | 8 | Other | |
| 211 | How much was the monthly salary in your previous work place? | 1 | Up to 1.0 million | |
| | | 2 | 1.1 million - 1.5 million | |
| | | 3 | 1.6 million - 3.5 million | |
| | | 4 | 3.6 million - 5.5 million | |
| | | 5 | 5.6 million - 8.0 million | |
| | | 6 | Over 8.0 million | |

| № | | Code | | Step |
|---|---|---|---|---|
| | **HOUSEHOLD INCOME INFORMATION OF EMPLOYEES** | | | |
| 301 | How much is the average monthly income for your household? | 2019 | 1 Up to 1.5 million | |
| | | | 2 1.6 million - 3.5 million | |
| | | | 3 3.6 million - 5.5 million | |
| | | | 4 5.6 million - 8 million | |
| | | | 5 8.1 million - 11.0 million | |
| | | | 6 Over 11.0 million | |
| | | | 1 Up to 1.5 million | |
| | | | 2 1.6 million - 3.5 million | |

| | | | | | |
|---|---|---|---|---|---|
| | | 2020 | 3 | 3.6 million - 5.5 million | |
| | | | 4 | 5.6 million - 8 million | |
| | | | 5 | 8.1 million - 11.0 million | |
| | | | 6 | Over 11.0 million | |
| 302 | Do you and your family have the savings? | | 1 | Yes | |
| | | | 2 | No | → 304 |
| 303 | How was your family annual savings changed in 2020 compared with 2019? | | 1 | Increased | |
| | | | 2 | Decreased | |
| | | | 3 | Unchanged | |
| | | | 4 | Unknown | |
| 304 | Do your family have additional income source except wage? hint (livestock, crop, family production and etc) | | 1 | Yes | |
| | | | 2 | No | → 306 |
| 305 | If yes, what kind of income sources? (multiple choice) | | A | Livestock | |
| | | | B | Crop | |
| | | | C | Family production | |
| | | | D | Own company | |
| | | | E | Rental | |
| | | | F | Savings interest | |
| | | | G | Pension and care | |
| | | | H | Other | |
| 306 | Was your wage (payroll) changed due to Covid 19 pandemic in 2020 comprared with 2019? | | 1 | Yes | |
| | | | 2 | No | → 308 |
| | | | 3 | Don't know | → 308 |
| 307 | If yes, indicate reasons of changes? (multiple choice) | | A | Reduced working hours | |
| | | | B | Decreased wage | |
| | | | C | Benefited from tax exemption | |
| | | | D | Benefited from social insurance exemption | |
| | | | E | Supported by Unemployment Fund | |
| | | | F | Organizational support due to pandemic | |
| | | | G | Other (wrire) | |
| 308 | Were your family other member's income changed due to Covid 19 pandemic in 2020 comprared with 2019? | | 1 | Increased | → 309 |
| | | | 2 | Decreased | → 310 |
| | | | 3 | Don't know | → 401 |
| 309 | Reasons in increase? (multiple choice) | | A | The workload has increased | |
| | | | B | Increased wage | |
| | | | C | Benefited from tax exemption | |
| | | | D | Benefited from social insurance exemption | |
| | | | E | Benefited from unemployment insurance | |
| | | | F | Organizational support due to pandemic | |
| | | | G | Other .....(write) | |
| 310 | Reasons in decrease? (multiple choice) | | A | Decrease price of cashmere | |
| | | | B | limited access of border due to Government solution on Pandemic | |
| | | | C | Decreased profit and closed business | |
| | | | D | Reduced working hours | |

| | |
|---|---|
| E | Decreased wage |
| F | Workplaces were closed or laid off |
| G | It is no longer possible to send money from relatives in Mongolia and abroad, and remittances have decreased |
| H | Other .....(write) |

| № | Code | Step |
|---|---|---|

**HOUSEHOLD CONSUMPTION AND PURCHASE**

401 Was your family purchase changed in 2020 compared with 2019?

| № | Goods and services | Increased | Decreased | Unchanged |
|---|---|---|---|---|
| 1 | Consumer goods | | | |
| 2 | Health | | | |
| 3 | Education | | | |

402 How much did your family spend for education in 2019 and 2020? (MNT)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2019 | | | | | | | | |
| 2020 | | | | | | | | |

403 How much did your family spend for healthcare services in 2019 and 2020? (MNT)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2019 | | | | | | | | |
| 2020 | | | | | | | | |

404 Please share your thoughts on changes occurred in your life related to Oyu Tolgoi project, since you started working in Oyu Tolgoi project?

| Positive |
|---|
| |

| Negative |
|---|
| |

Date of the survey

| | | | |
|---|---|---|---|
| | | | |

Month Day

*Thank you very much for your patience.*

## ANNEX 2. SURVEY QUESTIONNAIRE ON OT SUPPLIERS

EI NUM is an independent research institution that is conducting a research on impacts of Oyu Tolgoi project on the society and economy where some of the information of this study is obtained through survey.

**This survey contains questions regarding personal information. Please participate in the survey if you feel comfortable releasing this information. EI NUM is bound by the "Confidentiality Law of Mongolia" and will maintain private and business confident information and will not disclose to any third party.**

The objective of this study is to assess the direct and indirect impacts of Suppliers on Oyu Tolgoi project through society, economy and livelihood in Umnugobi and Ulaanbaatar before and during COVID 19

**I would like to participate in the survey**

1. Yes → 101
2. No

| № | | Code | | Step |
|---|---|---|---|---|
| | **SUPPLIER'S GENERAL INFORMATION FOR SURVEY** | | | |
| 101 | When was established your firm? | | | |
| 102 | Where is registered your firm?<br>*(by General Taxation Authority)* | 1<br>2<br>3<br>4 | Ulaanbaatar<br>Umnugovi<br>Khanbog<br>Other .....(write) | |
| 103 | What a liiability form of your firm? | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8 | Seld employed<br>Company<br>Cooperative<br>Parthnership<br>SOE, LGE<br>Public organization<br>NGO<br>Other | |
| 104 | Firm's structure of the investment<br>*(Joint means that investvent consists of domestic and foreign legal entities)* | 1<br>2<br>3 | Domectic<br>Foreign<br>Joint | |
| 105 | How many years has your firm working with OT LLC? | | | |

| № | | Код | | Алхам |
|---|---|---|---|---|
| | **INFORMATION OF ECONOMIC ACTIVITIES OF SUPPLIER** | | | |
| 201 | Firm's economic activity through ISIC 3: | A<br>B<br>C<br>D<br>E<br>F<br>G<br>H<br>I<br>J<br>K<br>L<br>M | Agriculture, forestry<br>Mining and quarrying<br>Processing industries<br>Electricity and water supply<br>Construction<br>Accomodation and food service activities<br>Transportation and storage<br>Wholesale and retail trade<br>Financial and insurance activities<br>Real estate activities<br>Professional, scientific and technical activities<br>Education services<br>Health and social welfare | |

| | | | |
|---|---|---|---|
| | | N | Arts, entertainment and recreation |
| | | O | Other service activities |
| 202 | What are the three main products, services or works that your firm supply to Oyu Tolgoi project? | 1 | |
| | | 2 | |
| | | 3 | |
| 203 | Where has your firm sold products or services? Choose all the options that apply. | A | Local market |
| | | B | Neighbor aimag |
| | | C | Regional market |
| | | D | Ulaanbaatar |
| | | E | Foreign market |
| | | F | Where ..... (write) |
| 204 | Has your company had contacts that facilitated to increase your sales? | 1 | Always |
| | | 2 | Most of the time |
| | | 3 | About half of the time |
| | | 4 | Sometimes |
| | | 5 | Never |
| 205 | In 2020, has your firm contacts with other firms in your sector? (ex. common investment, joint projects, product development) | 1 | Always |
| | | 2 | Most of the time |
| | | 3 | About half of the time |
| | | 4 | Sometimes |
| | | 5 | Never |

206 What is your firm's sales revenue in the last 3 years from OT project?

| Year | Annual sales revenue made from OT project, million MNT |
|---|---|
| 2018 | |
| 2019 | |
| 2020 | |

207 Click the three types of the increased costs during the last two years.

(Multiple choice)

| | Type of Costs | 2019 | 2020 |
|---|---|---|---|
| A | Raw materials | | |
| B | Wage | | |
| C | Rent | | |
| D | Interest rate | | |
| E | Transportation | | |
| F | Fuel and gas | | |
| G | Depreciation | | |
| H | Other .....(write) | | |

| | | | |
|---|---|---|---|
| 208 | How much were changed your product types in 2020? | 1 | High |
| | | 2 | Moderately high |
| | | 3 | Medium |
| | | 4 | Low |
| | | 5 | Unchanged |

| № | | Code | | Step |
|---|---|---|---|---|
| | **EMPLOYMENT INFORMATION OF THE SUPPLIER** | | | |
| 301 | Total number of employees | 1 | 2019 | |
| | | 2 | 2020 | |
| 302 | What is the average salary of your firm? (MNT) | 1 | 2019 | |
| | | 2 | 2020 | |
| 303 | How much does the OT project impacts on employee's competence of your firm? | 1 | Major | |
| | | 2 | Significant | |
| | | 3 | Moderate | |
| | | 4 | Minor | |

| | | | | |
|---|---|---|---|---|
| | | 5 | None | |
| 304 | How often does your firm conduct in service training? | 1 | Constantly | |
| | | 2 | Occationally | |
| | | 3 | Temporarity | |
| | | 4 | Incidentyly | |
| | | 5 | Other ..... (write) | |
| 305 | What kind of professional traning did you attend in 2020? | A | Safety training | |
| | | B | Quality standard training | |
| | (multiple choice) | C | Professional training | |
| | | D | Audit training | |
| | | E | Other ..... (write) | |
| **№** | | **Code** | | **Step** |
| | **SOCIAL INSURANCE AND TAXATION** | | | |
| 401 | What is the payment amount to Social insurance in the last two year? *(in thousand MNT)* | 1 | 2019 | |
| | | 2 | 2020 | |
| 402 | What is the payment amount for VAT tax in the last two years? *(in thousand MNT)* | 1 | 2019 | |
| | | 2 | 2020 | |
| 403 | What is the payment amount for income tax in the last two years? *(in thousand MNT)* | 1 | 2019 | |
| | | 2 | 2020 | |
| **№** | | **Code** | | **Step** |
| | **PROCUREMENT AND PANDEMIC IMPACTS** | | | |
| 501 | In your opinion, how has the COVID-19 pandemic affected for your OT procurement? | 1 | Major | |
| | | 2 | Significant | |
| | | 3 | Moderate | |
| | | 4 | Minor | |
| | | 5 | Unknown | |
| 502 | What are the three biggest factors that have an impact on your business during the Covid 19 pandemic? | A | Reduction of working hours | |
| | | B | Laying Off Employees | |
| | | C | Decreased supply volumes | |
| | | D | Closed borders | |
| | | E | Transportation Restrictions and Regulations | |
| | | F | Inefficient Government Rules and Regulations | |
| | | G | Other .....(write) | |
| 503 | Which of the following are the three most common costs to your firm during a pandemic? | A | Medical Supply | |
| | | B | Medical Service | |
| | | C | IT | |
| | | D | Office supply /stationary | |
| | | E | Transportation and logistics | |
| | | F | Support for employees | |
| | | G | Security service | |
| | | H | Other ..... (write) | |
| 504 | Had your firm's procurement contract with Oyu Tolgoi LLC change due to the pandemic (in 2020) ? | 1 | Yes | |
| | | 2 | No | → 506 |
| 505 | If yes, which terms of contracts are changed? | | | |

| | | | | |
|---|---|---|---|---|
| 506 | Was there any negative impacts of working with Oyu Tolgoi LLC during Covid-19? | 1 | Yes | |
| | | 2 | No | → 508 |

507 If yes, what negative impacts are appeared in 2020?

| |
|---|
| |

508 What other changes have taken place in your firm since you started working with Oyu Tolgoi LLC? Hint: increase in sales, industry growth, risen number of employees, improved operating standards, etc.

| Positive changes |
|---|
| |
| **Negative changes** |
| |

*Thank you for taking the time to complete this survey.*

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