



Schweizerische Eidgenossenschaft
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Swiss Agency for Development
and Cooperation SDC



FOLLOW-UP STUDY ON THE VALUE OF INVESTMENT MADE BY MINERS AND TRADERS INTO LOCAL ECONOMIC SECTOR AND THEIR CONTRIBUTION TO ECONOMIC GROWTH IN ASM DEPENDENT PROVINCES

Final report

December 2016

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ABBREVIATIONS

ASM	Artisanal, small-scale miner
BoM	Bank of Mongolia
CSO	Civil Society Organization
DR	Document Review
EITI	Extractive Industries Transparency Initiative
GDP	Gross domestic product
MT	Mineral trader
MoF	Ministry of Finance
NGO	Non-government organization
SDC	Swiss Development Cooperation
SAM	Sustainable Artisanal Mining Project
SS	Sample size
SSI	Semi-Structured Interview
SMB	Small and medium business
SME	Small and medium entrepreneur
ToR	Terms of Reference

EXECUTIVE SUMMARY

This study was commissioned by the Sustainable Artisanal Mining (SAM) Project; implemented by the Swiss Development Cooperation in 2016. The goal of this study was to evaluate the economic contribution made by artisanal miners in five soums of two aimags such as Khovd, Uvs; and in the 12 soums that were covered in the baseline study of 2015.

The economic impacts of the artisanal miners were classified as direct, indirect and induced. The direct effects cover expenditures of money and capital in relation to the extraction and sales of minerals; as well as taxes, material supplies and capital investment. The indirect effects include expenditures by businesses and herders supplying goods and services to artisanal miners and minerals traders. The induced effects refer mainly to the procurement by artisanal miners and minerals traders of goods and services for their household consumption, and local governments' interventions addressing miners and traders.

Semi-structured interviews were used during data collection; and conducted with representatives of the various stakeholders, including artisanal miners (147), herders (50), SME operators (33), minerals traders (28), artisanal mining NGOs (16) and administrative staff (of 17 soums).

The following table summarizes the main results of the follow-up study in 2016; that is, economic contributions made by the artisanal mining sector to the local economy.

Table 1 Economic contribution from artisanal mining sector, and multiplier; soums

Economic contribution, (MNT, thousands)						Multiplier
Aimags	Soums	Direct impact	Indirect impact	Induced impact	Total	
Bayankhongor	Bayan-Ovoo	606,930.0	1376.2	476,960.5	1,085,266.7	1.79
	Bumbugur	62,034.0	8462.0	71,277.1	141,773.1	2.29
Darkhan-Uul	Shariin gol	504,699.0	47980.8	1,437,485.5	1,990,165.3	3.95
Dornogobi	Airag	211,545.0	14005.3	164,010.2	389,560.5	1.85
Dundgobi	Huld	283,533.0	11206.0	265,720.3	560,459.3	1.98
	Ulziit	118,705.0	3800.9	160,374.2	282,880.1	2.38
Gobi-Altai	Yesunbulag	1,166,776.0	23068.8	1,062,541.6	2,252,386.4	1.93
Selenge	Mandal	3,497,150.0	45616.2	243,643.3	3,786,409.5	1.08
Tuv	Zaamar	1,105,407.0	12348.7	280,347.1	1,398,102.8	1.26
	Bornuur	309,269.0	2688.0	179,749.5	491,706.5	1.59
Sub-Total		7,866,048.0	170,552.9	4,342,109	12,378,710.2	1.57
Khovd	Bulgan	811,648.0	63487.5	717,552.1	1,592,687.6	1.96
	Uyench	276,577.0	18257.6	76,895.3	371,729.9	1.35
	Tsetseg	1,543,795.0	40117.8	1,302,375.7	2,886,288.5	1.87
Uvs	Tarialan	120,180.0	4117.0	159,897.8	284,194.8	2.36
	Umnugobi	310,490.0	20946.4	516,944.8	848,381.2	2.73
Sub-Total		3,062,690.0	146,926.3	2,773,665.7	5,983,282	1.95
Total		10,928,738	317,479	7,115,775	18,361,992.2	1.68

Source: Follow-up study result

Note: Above result calculated impacts from all formal, informal miners and mineral traders in soums.

The following table shows the changes during the past year; comparing the latest (2016) follow-study results with those of the 2015 baseline.

Table 2. Changes in contribution from artisanal mining sector; 2015 to 2016

Total economic contribution, (MNT, thousands)				Multiplier	
	2015 baseline study	2016 follow-up study	Changes	2015	2016

Total amount	10,446,499.4	18,361,992.2	7,915,492.8	1.64	1.68
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Sources: Baseline and follow-up study result

The results of the 2015 baseline study showed a contribution of MNT 10.4 billion from ASMs and mineral traders in the target soums. This number increased to 18.3 MNT billion in 2016 follow-up study; an increase of 7.9 billion MNT. Moreover, the economic multiplier in the target soums had increased by 1.68.

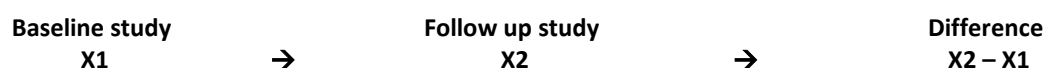
1 BACKGROUND TO THE STUDY

1.1 Study purpose

The purpose of this study was to define the current value of investments – to local economies - made by miners and minerals traders in SAM-targeted aimags; and to make an assessment of the change in the value of investments since 2015. In order to do so, this study aimed to determine the following conditions:

1. Economic contributions by ASMs and minerals traders to the local economy
2. Investment types, and the share made by ASMs to the local economy
3. Potential beneficiaries of the ASMs’ contributions to the local economy
4. Potential income diversification means of the ASMs

The design of the study was therefore a ‘before and after’ type of evaluation. As such, the 2015 baseline study was made at the beginning of the project, with the 2016 follow-up study (the subject of this report) undertaken using the same methodology as the 2015 baseline study. Such a procedure enabled researchers to evaluate changes and improvements during the project process.



1.2 Scope of work and sample

Secondary, statistical data of the artisanal mining sector are very rare (both nationally and locally) so a sample of participants from within the ASM sector was used to gather primary data, by conducting semi-structured interviews in nine selected aimags (during November 2016). The nine targeted aimags were selected through consultation with SAM project officers. Changes – since the 2015 baseline study – included adding Bulgan, Tsetseg and Uyench soums (Khovd aimag) and Tarialan and Umnugobi soums (Uvs aimag) and dropping Biger soum (Gobi-Altai aimag) and Orkhontuul soum (Selenge aimag). Participants included representatives from among: miners, herders, minerals traders, local businesses, local artisanal mining NGOs, and local government officials. The following table shows the number of respondents by location and type.

Table 3 Respondents

Aimag	Soum	Formal ASM	Informal ASM	Minerals traders	NGOs	Local officials	SMEs	Herders	Total
Bayankhongor	Bayan-Ovoo	5	4	2	1	1	2	3	18
	Bumbugur	5	4	2	1	1	2	3	18
Darkhan-Uul	Shariin gol	4	4	2	1	1	2	4	18
Dornogovi	Airag	10	10	2	2	1	4	6	35
Dundgovi	Khuld	8	2	1	1	1	2	3	18
	Ulziit	10	0	1	1	1	2	3	18
Govi-Altai	Yusunbulag	10	9	4	2	1	4	6	36
	Biger	NA	NA	NA	NA	NA	NA	NA	NA
Khovd	Bulgan	5	0	2	1	1	1	2	12
	Uench	2	3	2	1	1	1	2	12
	Tsetseg	3	3	1	0	1	2	2	12

Selenge	Mandal	5	4	1	1	1	2	4	18
	Orkhontuul	NA	NA	NA	NA	NA	NA	NA	NA
Tov	Zaamar	5	5	2	1	1	2	3	19
	Bornuur	5	4	2	1	1	3	3	19
Uvs	Tarialan	5	4	2	1	1	2	3	18
	Umnugovi	4	5	2	1	1	2	3	18
Total		86	61	28	16	15	33	50	289

Respondents were selected using the following methods:

-) Miners were selected randomly, from among miners at the mine site
-) Traders were selected and contacted with the assistance of the local NGO
-) Businesses were selected by visiting the mine site and nearby (or onsite) selected business. If there were no business at the mine site the researchers chose, a business from the nearest soum centre was used. The businesses included in the study were small grocery stores
-) In selecting herders the field researchers attempted to choose those nearest to the mine site
-) Artisanal mining NGOs were selected for each soum. NGOs' details were provided by the 'ASM National Federation' - the national artisanal mining NGO
-) Relevant government officials were selected after explaining to the office manager the information required.

1.3 Study procedure

The study covered the following stages:

-) Development of questionnaire. Interview questions were updated after consulting with the client.
-) Literature review study. In order to identify the number of ASMs, and to calculate the amount of taxes and fees they paid, researchers collected additional information from local administrations and ASM NGOs.
-) Primary data collection. Data were collected by interviews from small-scale mining participants according to a pre-designed plan and methodology.
-) Analysis. Based on collected primary data and literature review, researchers evaluated the economic contributions made by the small-scale mining sector to the local economy of each soum; and the type of contribution. Then, researchers compared the 2016 follow study results with those of the 2015 baseline.
-) Reporting. Was completed in English and Mongolian, outlining findings of the study
-) Presentation of the findings. Was made in a workshop for SAM project staff

1.4 Analysis framework

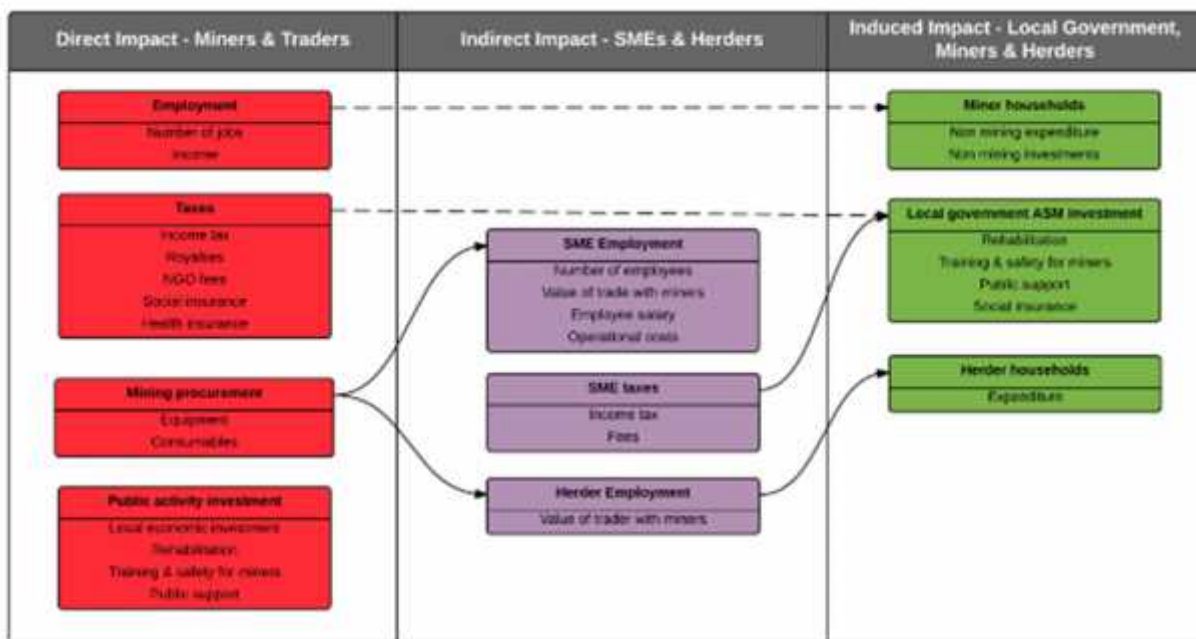
Economic Impact

We make an assessment on economical impact of artisanal mining operation according to the standard procedure that uses in any one sector of the economy. For example, we considered economic impact of artisanal mining on country's economical development in following frames:

-) Direct impact - sum of the changes created in revenues: collections by local government, procurement expenditures of miners and traders, salaries of employees and other expenditures for public activities.
-) Indirect impact - taxes paid, procurements made and jobs created by suppliers as a result of their business with miners and traders (SME and herders).
-) Induced Impact - additional consumer spending that occurred as employees, suppliers and others spent their incomes in the local economy; and additional government procurements that happened as miners, traders and their suppliers paid taxes.

The types of activities that make up these impacts in the artisanal mining are outlined in Figure 1.

Figure 1 Data analysis methodology



Complementary Data

In addition to the above quantified impacts, researchers collected and presented complementary data in order to put the monetary values into context; such as:

Direct impacts

-) Ratio of formal and informal miners;
-) Gender ratio of miners;
-) Employment status of other household members of miners and traders;
-) Seasonal changes in mining and trading activities;
-) Minerals commodity prices (according to miners) ;
-) Traders' marginal profit;
-) Effects of tripartite agreements (between miners, traders and NGOs) on investment in public activities;

Indirect impacts

-) Secondary jobs of SME owners;
-) Seasonal changes in business activities and trade with miners;

-) Change in income due to mining activities;
-) Miners' preferred method (e.g. cash or credit) for purchasing goods;

Induced impacts

-) Household level of expenditures; of miners, traders, and herders

1.5 Limitations of the study

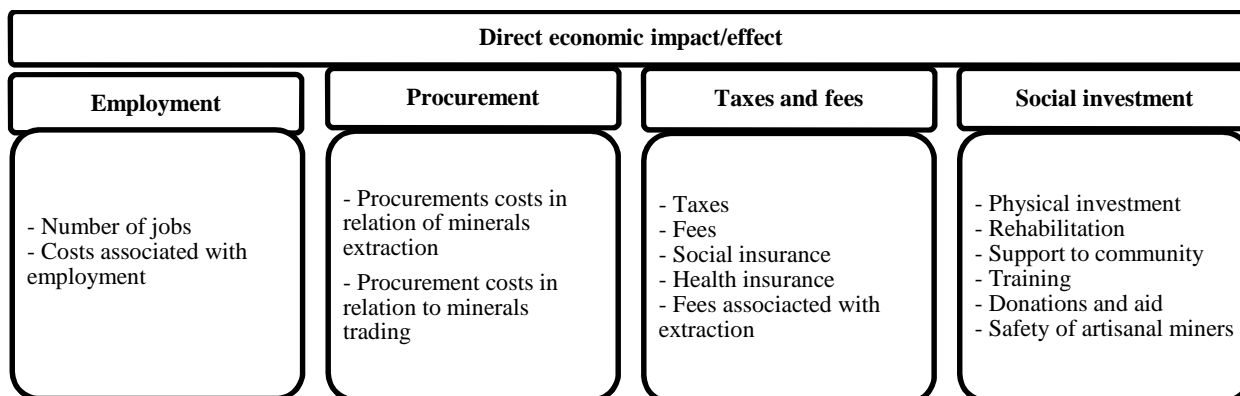
-) The study covered only SAM-targeted aimags, so that the result cannot define contributions made by the artisanal mining sector on other provincial and national economies. Thus, reported contributions only apply to targeted provinces.
-) Due to budget limitations of the study, relatively small numbers of artisanal miners, minerals traders, local small business owners and herders were involved. So it would be a mistake to determine economical contributions (as a whole) of this sector from the results of this study alone, or to make more general comparisons among other aimags and soums.
-) In order to calculate the contribution made by the artisanal mining sector, researchers took the total number of ASMs and traders provided by soum administrative staff and ASM NGOs. However, it should be noted that the numbers of informal ASM and mining traders used might not be reliable.
-) It is impossible to measure exactly the proportion of contributions made by the artisanal mining sector to the economies of soums. Although, researchers tried to gather the necessary information from the National Statistical Office of Mongolia and local administrative, they could not collect enough. In the case of the National Statistical Office of Mongolia, it currently does not take economic growth at the soum level into account. In the case of the local administration, there are no statistical production records on the soum level economy.

However, this assessment is important, because it is a measure of artisanal mining's contributions in monetary terms.

2 DIRECT ECONOMIC IMPACT

This section describes the direct effects/contributions of artisanal miners and minerals traders to the local economy. The direct economic effect is that contributed by artisanal miners and minerals traders in relation to employment, procurements for mineral extraction and sales, taxes and fees paid to the local government, and investments for the community and local development. The following figure shows components of the direct economic effect and factors required to calculate these components.

Figure 2 Direct economic effect and its components



The next sub-sections give more detail and findings of each component of the direct economic effect.

2.1 Employment

The direct economic effect of employment was measured by the total number of jobs that artisanal miners and minerals traders created in the economy, and the costs related to employment. However, since artisanal miners and minerals traders are individual entrepreneurs, they do not always hire other people and incur salary costs. Therefore, costs related to employment were represented by the monthly income of artisanal miners and minerals traders and the salary costs that they incurred (if they hired someone).

2.1.1 Number of jobs created by artisanal miners and minerals traders

Data from artisanal mining NGOs which operated in 15 target soums showed the total jobs created by artisanal miners and minerals traders. On 15 November 2016, there were 3,169 formal artisanal miners, 5,745 informal artisanal miners and 74 minerals traders in the 15 soums. The following table shows the numbers of artisanal miners and minerals traders for 2015 and 2016.

Table 4 Formal and informal artisanal miners and minerals traders, baseline vs. 2016 follow-up (numbers)

Location		2015 Base-line study				2016 Follow-up study				Baseline total ASM and Trader	Follow up total ASM and Trader
		ASMs			Traders	ASMs			Traders		
Aimag	Soum	Formal	Informal	Total		Formal	Informal	Total		Traders	
Bayankhongor	Bayan-Ovoo	550	280	830	2	525	500	1,025	2	832	1027
	Bumbugur	45	50	95	12	45	45	90	8	107	98
Govi-Altai	Yusunbulag	400	750	1,150	5	400	650	1,050	7	1,155	1,057
Dornogovi	Airag	125	40	165	4	125	40	165	4	169	169
Dundgovi	Khuld	350	300	650	1	380	0	380	1	651	381
	Ulziit	280	108	388	4	120	0	120	1	392	121
Darkhan-Uul	Shariin gol	346	500	846	5	300	400	700	6	851	706
Selenge	Mandal	500	400	900	4	500	2,500	3,000	5	904	3,005
	Orkhontuul(6)	120	180	300	1	-	-	-	-	301	-
Tuv	Zaamar	168	100	268	20	168	200	368	20	288	388
	Bornuur	83	65	148	4	126	180	306	2	152	308
Subtotal1		2,967	2,773	5,740	62	2,689	4,515	7,204	56	5,802	7,260
Khovd	Bulgan(a)	-	-	-	-	100	250	350	5	-	355
	Uench(a)	-	-	-	-	25	150	175	1	-	176
	Tsetseg(a)	-	-	-	-	155	550	705	3	-	708
Uvs	Tarialan(a)	-	-	-	-	100	50	150	4	-	154
	Umnugovi(a)	-	-	-	-	100	230	330	5	-	335
Subtotal2		-	-	-	-	480	1,230	1,710	18	-	1,728
Total		2,967	2,773	5,740	62	3,169	5,745	8,914	74	5,802	8,988

Source: Information provided by ASM NGOs

Note: (a) – Soums added to the 2016 follow-up study, (6)- Soums not included in the 2016 follow-up study

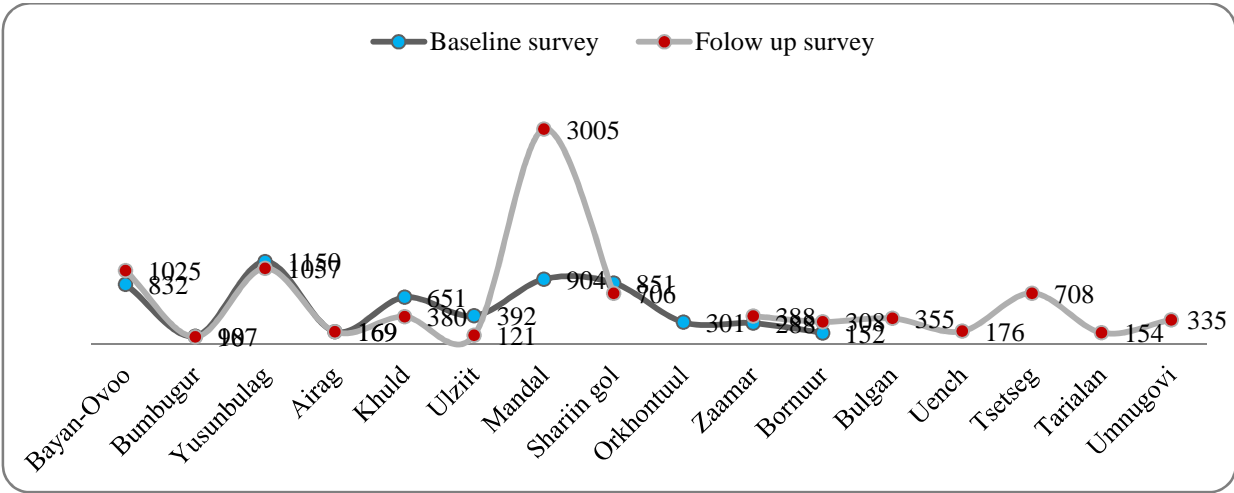
1 For the soums covered in the 2015 baseline study

2 For the soums added in the 2016 follow up study

Comparing the soums covered in the 2015 baseline study³, the number of artisanal miners and minerals traders had increased by 1,759 in these soums. The number of artisanal miners and traders in four soums increased; one soum had no change; and the numbers of artisanal miners and minerals traders reduced in five soums (see following figure). The biggest change in the number of miners and traders occurred in Mandal soum due to the discovery of the new Gatsuurt deposit. Currently, the number of informal miners has reached 2,500 in Mandal.

For the newly added five soums in the follow-up study, 1,710 miners and 18 traders were operating.

Figure 3 Number of all artisanal miners and minerals traders, baseline vs. 2016 follow-up



Source: Result of follow-up study

For soums with notable changes in artisanal miners numbers in 2015 and 2016, the respective soum NGO provided the following comments:

-) Khuld soum (Dundgobi aimag): The NGO in Khuld soum is growing, and membership is increasing; miners having informal status in particular are joining the NGOs. On the other hand, informal miners could not operate due to the objections of the local government, NGOs and residents.
-) Ulziit soum (Dundgobi aimag): Last year the local NGO included temporary artisanal miners in its membership; but only permanent artisanal miners were registered as members in 2016, so the number of registered artisanal miners declined drastically. Moreover, informal miners could not operate due to the objections of local government, NGOs and residents.
-) Mandal soum (Selenge aimag): Compared to the baseline study, the number of informal miners was not changed. However, the numbers of informal miners reached 2,500 due to the discovery of the Gatsuurt deposit.
-) Bornuur soum (Tuv aimag): The local NGO was changed and re-structured in November 2015, which led to re-registration of members and an increase of registered artisanal miners.

In conclusion, artisanal miners and minerals traders of the 15 soums which participated to the 2016 study gave a total of 8,988 jobs. However, for the 10 soums⁴ that responded to the baseline study, the

³ Bayan-Ovoo, Bumbugur, Yusunbulag, Airag, Khuld, Ulziit, Mandal, Shariin gol, Zaamar and Bornuur (Orkhontuul was excluded because it was not studied in the 2016 follow-up)

⁴ Bayan-Ovoo, Bumbugur, Yesunbulag, Airag, Khuld, Ulziit, Mandal, Sharyn-Gol, Zaamar, Bornuur (Orkhontuul soum was excluded from the study)

number of formal miners in these soums decreased by 158, while the number of informal miners fell by 1,922. In addition, the number of traders in these soums decreased by five. Totally, there were 1,759 more jobs related to artisanal mining in these soums. The figures below show the changes in formal and informal artisanal miners numbers in the 10 soums. As for formal miners, the highest rise was in Bornuur (43), the biggest decrease was in Ulziit (160). And for informal miners, in Mandal soum, the increase rate was highest (a rise of 2,100) while Khuld soum had the largest decrease (300).

Table 5 Changes in the number of formal and informal artisanal miners, baseline vs. 2016 follow-up (number)

Aimag	Soum	Formal ASMs	Informal ASMs	Traders	Total change
Bayankhongor	Bayan-Ovoo	-25	220	0	195
	Bumbugur	0	-5	-4	-9
Darkhan-Uul	Shariin gol	-46	-100	1	-145
Dornogovi	Airag	0	0	0	0
Dundgovi	Khuld	30	-300	0	-270
	Ulziit	-160	-108	-3	-271
Govi-Altai	Yusunbulag	0	-100	2	-98
Selenge	Mandal	0	2,100	1	2,101
Tuv	Zaamar	0	100	0	100
	Bornuur	43	115	-2	156
Total change		-158	1,922	-5	1,759

Source: Result of follow-up and baseline study

Employment of artisanal miners' and minerals traders' households. There were a total of 614 members in the respondent artisanal miners' households, of whom 372 people (61%) were of working age. Of all working-age people, 267 (72%) were currently employed.

Half of all minerals trader household members of working age were employed. In 36% of households, a single working age member was employed, 10% had two employed members, 3% had three employed members and 1% had four employed members. The following table shows comparative data on the number of employment-age members and employed members.

Table 6 Artisanal miners' households employment-age (and total) members (n=147)

	Employed members in a household						
		1	2	3	4	Total	
Number of working age members in a household	1	7				7	5%
	2	29	57			86	59%
	3	6	18	8		32	22%
	4	2	7	5	1	15	10%
	5	0	3	2	0	5	3%
	6	0	2	0	0	2	1%
	Total	44	87	15	1	147	100%
	30%	59%	10%	1%	100%		

Source: Follow up study result

Note:






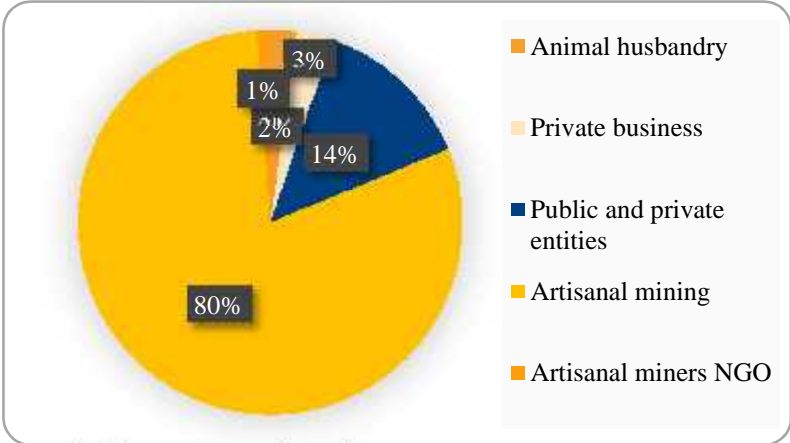
	All working age members employed		Three working age members are not employed
	A single working age member is not employed		Four working age members are not employed
	Two working age members are not employed		

Table 6 shows that 30% of artisanal miner households had one member employed, 59% two members employed, 10% three members, and 1% four members; with an average of 1.8 persons employed (maximum four and minimum one).

Researchers looked at how many employed household members worked in certain jobs, particularly how many worked as artisanal miners. 80% of all employed members (231) ran artisanal mining operations; of these, 147 were artisanal miners who were interviewed for the study, while 66 were family members of artisanal miners. In other words, there was an average of 1.5 artisanal miners in all respondent households

Figure 4 Jobs in which employed household members work

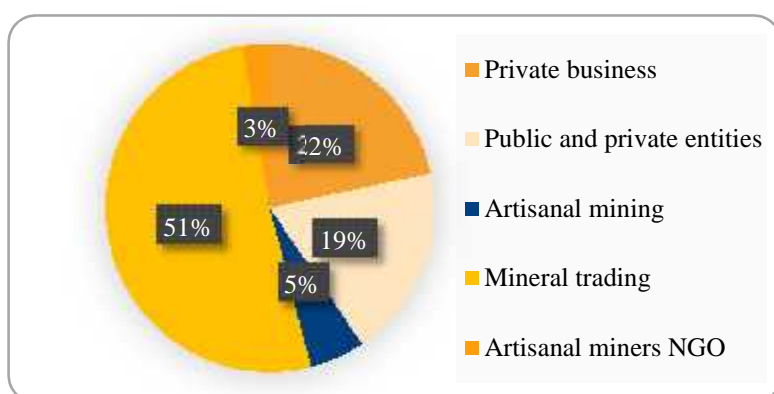


14% of members were employed either by the government or the private sector, 3% ran private businesses and 2% tended animals. Most household members involved in minerals extraction prepared meals for the miners and mined with their families. There were 113 people in respondent artisanal miners'

households: 66% are of employment age; 37% of employment age members (49%) were currently employed. Of the minerals traders' households, 71% had one employed member, 25% had two, and 4% had three members employed. In this type of household, an average of 1.3 persons were employed (with a maximum of three and a minimum of one).

The following is the type of work they do, and how many family members run artisanal mining.

Figure 5 Occupation of employed members in mineral trader



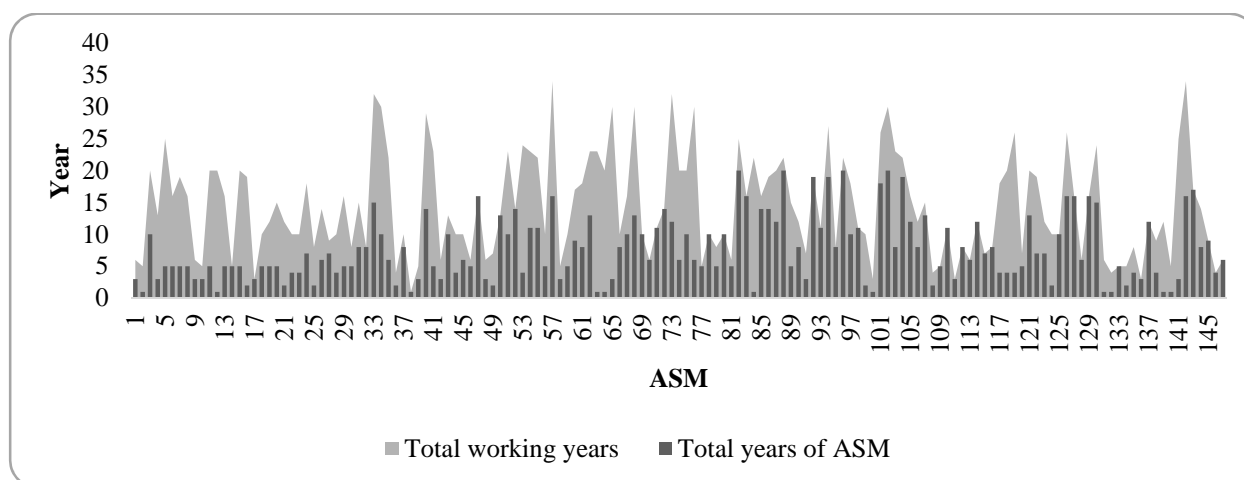
51% of all employed members were engaged in artisanal mining, 22% ran a private business and 19% worked for either private or public agencies.

The study covered 147 artisanal miners and 28 minerals traders; another 66 members of 147 artisanal miners are also engaged in artisanal mining, giving a total of 241 people at

work in this sector.

Total years worked, duration of artisanal mining and minerals trading. 41% of respondent artisanal miners had worked (including artisanal mining) for up to 10 years, 37% for 11- 20 years and 22% for over 20 years; the average experience for respondents in artisanal miners was 14 years: with a maximum of 34 years and a minimum of one year. 18% of respondent artisanal miners had spent a quarter of their total working life in artisanal mining, 31% had spent half, 17% three-quarters and 34% had spent almost all their working years as an artisanal miner; 26% had never worked at any other job. The following figure shows the total working years and total years as an artisanal miner.

Figure 6 Total working years of artisanal miners & duration working as artisanal miners (n=147)



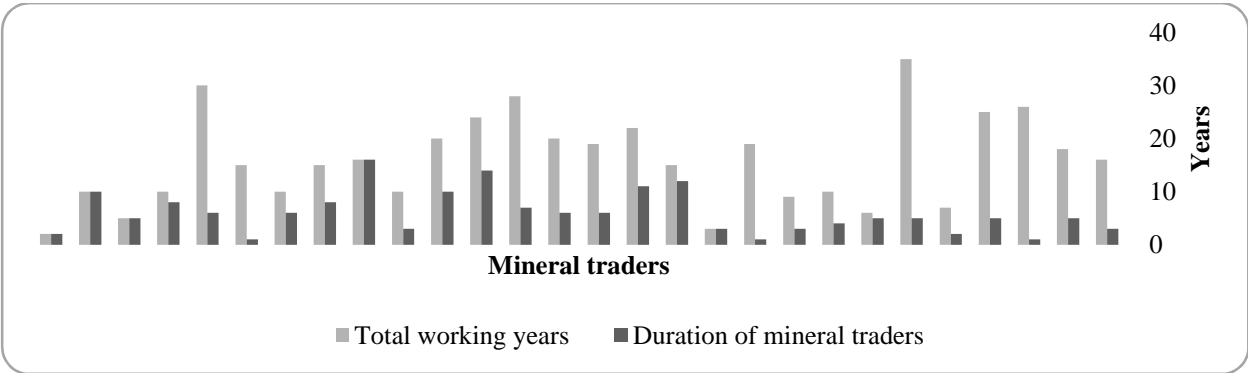
Source: Sample study result

Respondent artisanal miners had been involved in artisanal mining for an average of eight years: with a maximum of 20 years and minimum of one year; 47% of artisanal miners had been at work for 1-5 years, 27% for 6-10 years, 16% for 11-15 years and 11% for 16-20 years.

Among respondent minerals traders, 31% had been at work (total including artisanal mining) for up to 10 years, 36% for 11- 20 years, and 25% for over 20 years. The respondent artisanal miners had been at work (totally, including minerals trading) for an average of 16 years: with a maximum 35 years and minimum two years. 29% of all minerals traders had spent a quarter of their working life in mineral trading, 32% had spent half their working years, 11% three-quarters and 29% had spent almost their whole working life as a minerals trader. 18% had worked only as a minerals trader, with no other job.

The following figure shows the total years of work by artisanal miners and the number of years by artisanal miners.

Figure 7 Duration of minerals traders’ and artisanal mining operation (n=28)



Source: Follow up study result

Respondent minerals traders had been involved in minerals trading for an average six years: with a maximum 16 years and a minimum of one year; 54% of traders had been at work for 1-5 years, 32% for 6-10 years and 14% for 11-16 years. The table below presents descriptive statistics for total years of operation and total years of artisanal miners and minerals traders’ operations.

Table 7 Artisanal miners’ and minerals traders’ operations

Statistics	ASMs (n=147)		Traders (n=28)	
	Total working years	Duration of work as ASM	Total working years	Duration of work as minerals trader
Average	14	8	16	6
Median	13	6	16	5
Most frequent value	10	5	10	5
Highest value	34	20	35	16
Lowest value	1	1	2	1
1-5 years (%)	13	47	11	54
6-10 years (%)	29	27	28	32
11-15 years (%)	16	16	11	14
16-20 years (%)	22	11	25	-
20+ years (%)	22	-	25	-

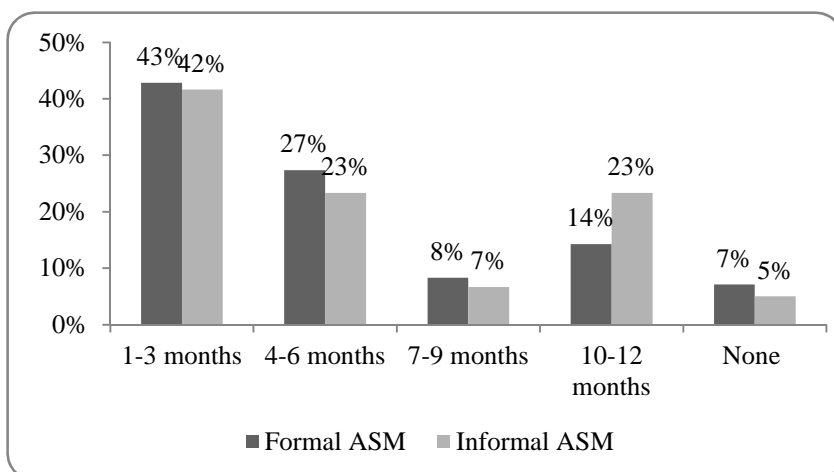
Source: Follow up study result

Total duration of operations of artisanal miners and minerals traders in 2016. Respondent artisanal miners had carried out mining operations for about five months in 2016 (maximum 12 months). 6%5 of respondents had undertook no mining activity in 2016. Formal artisanal miners carried out extraction for an average of 4.6 months while informal artisanal miners worked for an average of 5.2 months.

42% of all artisanal miners worked for 1-3 months, 26% for 4-6 months, 8% for 7-9 months and 18% for 10-12 months. Figure 8 compares the total duration of extractive operations of formal and informal miners.

5 There are a total of 9 artisanal miners, of which 6 are formal and 3 are informal.

Figure 8 Duration of extraction by formal and informal artisanal miners, 2016



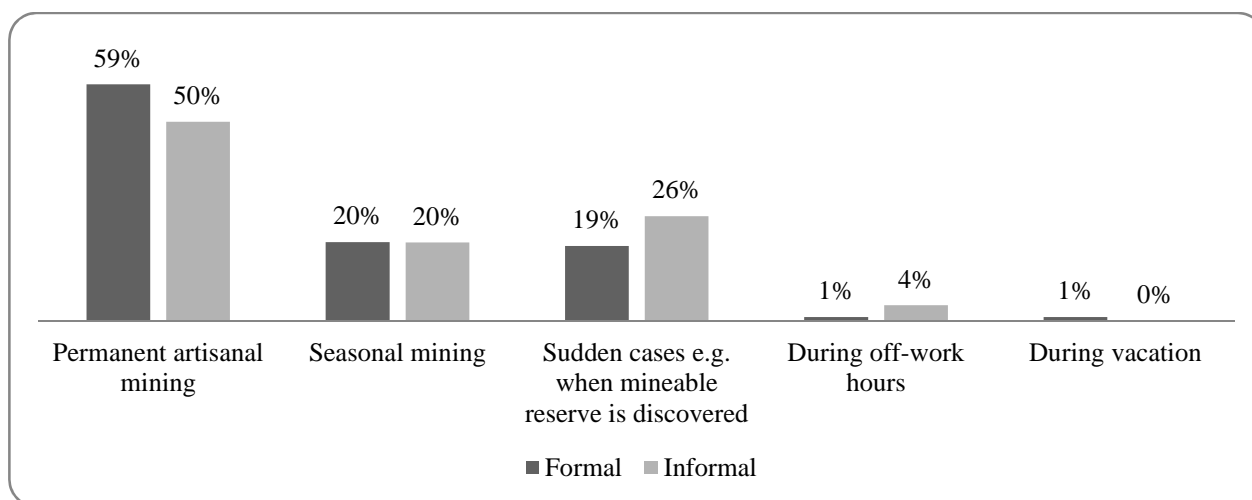
Whether formal or informal, 70% of all artisanal miners had run extraction for about six months a year.

Minerals traders who responded to the study said they traded minerals for an average of about 5.5 months in 2016, with a maximum of 12 months. Two minerals traders sold no minerals at all in 2016. 32% of minerals

traders had sold minerals for about 1-3 months, 25% for 4-5 months, 18% for 7-9 months and 18% all year.

55% of respondent artisanal miners mined regularly, 35% on a seasonal basis⁶ and 22% extracted minerals ad hoc or when a deposit was found. The other 3% worked only in their free time (including weekends). The following figure shows comparative data on when formal and informal miners ran mineral extraction/artisanal mining.

Figure 9 Operating periods of formal and informal artisanal miners



Source: Follow up study result

Figure 9 shows no major difference between formal and informal artisanal miners; both exhibit a lot of permanent mining, and both groups become active as potential emerges.

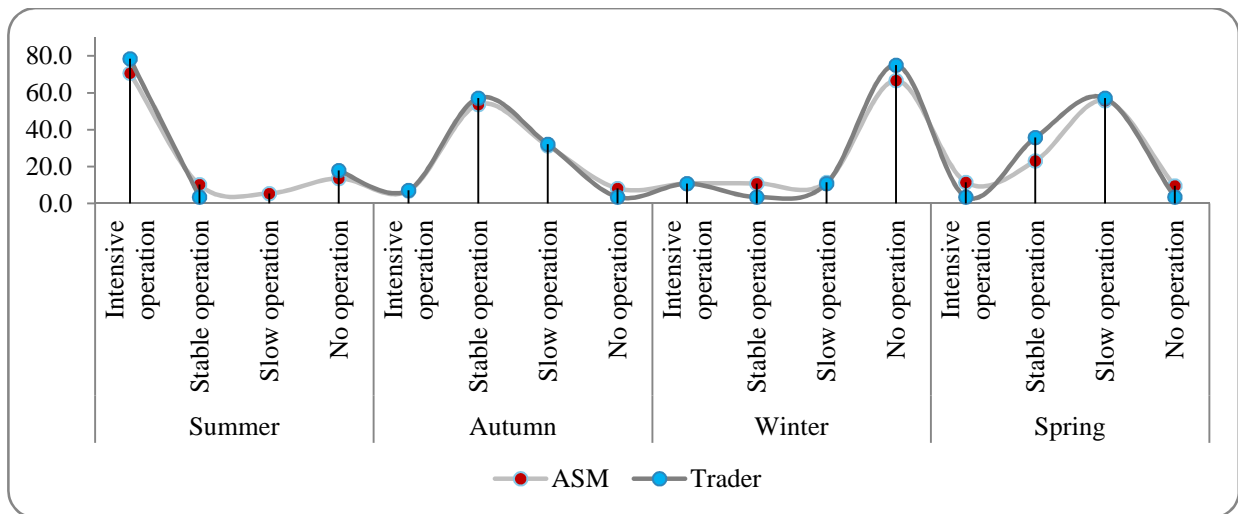
34% of respondent minerals traders said they bought and sold minerals all year, 47% seasonally, 13% only when there was a sudden supply (when a reserve was discovered) and 6% only as a secondary supplemental work in addition to their regular jobs.

Artisanal mining and minerals trading were heavily dependent on the season. In this study, researchers assessed how the seasons influence artisanal mining and minerals trading (see Figure 10). The assessment reveals that seasonal cycles of artisanal mining and minerals trading almost coincide; mining

⁶ Most seasonal artisanal miners (57%) work in summer, 23% work in spring and 20% on winter.

and trading are active in summer, stabilize in autumn, stagnate in winter and start again (stunt) in spring.

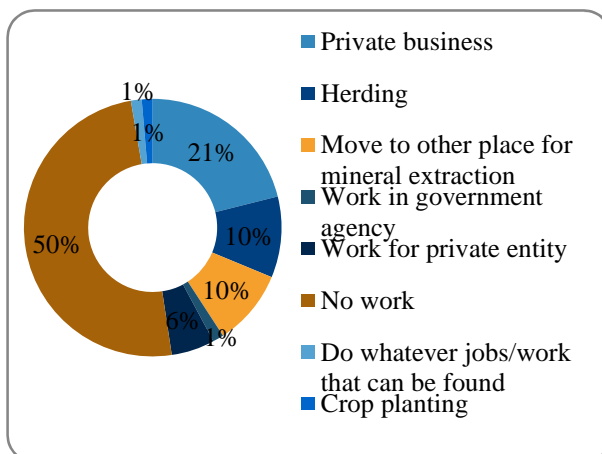
Figure 10 Seasonal characteristics of artisanal miners and minerals traders



Source: Sample study result

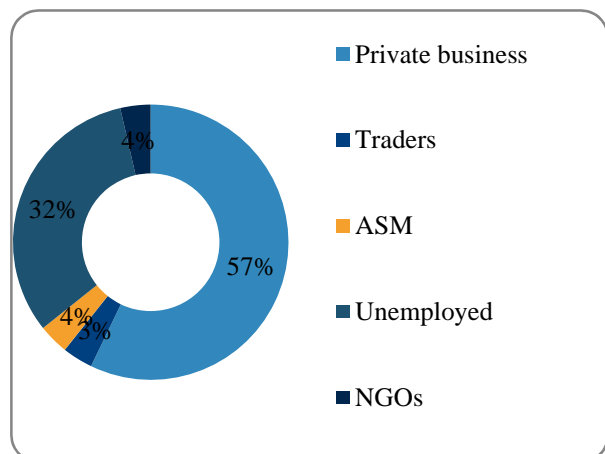
When mining slows down or stops, half of the artisanal miners do no work while the other half have other jobs: over 20% run private businesses, 10% herd animals, and 10% travel to other areas to continue artisanal mining. Of minerals traders, 32% do nothing at this time, and 57% run private business.

Figure 11 Jobs/work that artisanal miner's do during slow-downs or cessation of mineral extraction



Source: Sample study result

Figure 12 Jobs that miners and traders do during slow-downs or cessation in mining



Secondary jobs of artisanal miners and minerals traders. 26% of respondent artisanal miners said they had another job, 74% had no second job during the off-season. Of all formal and informal miners, 26% of both groups had a second job. Of minerals traders, 64% had a second job while 36% engaged only in minerals trading. The following figure shows jobs/work of artisanal miners and minerals traders. Those with a second job mainly ran private business, as shown in the figure.

Figure 13 Jobs of artisanal miners (artisanal miners with second jobs, SS=38)

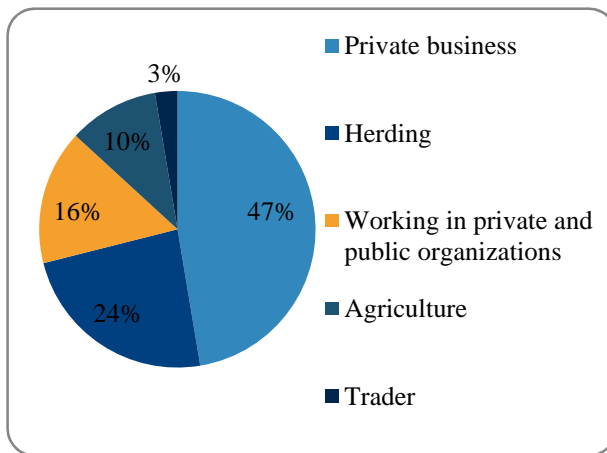
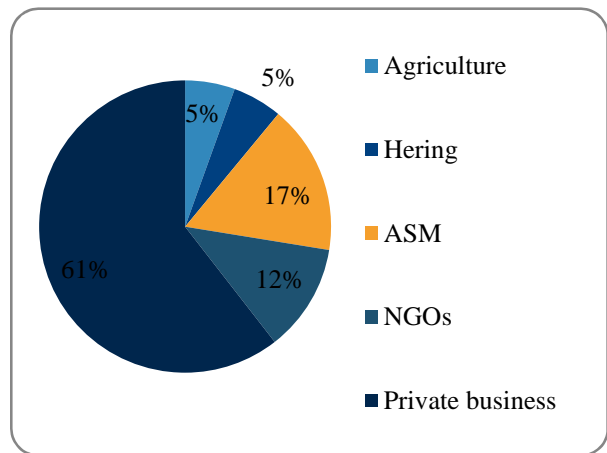


Figure 14 Jobs of minerals traders (minerals traders with second jobs, SS=18)



Source: Follow up study result

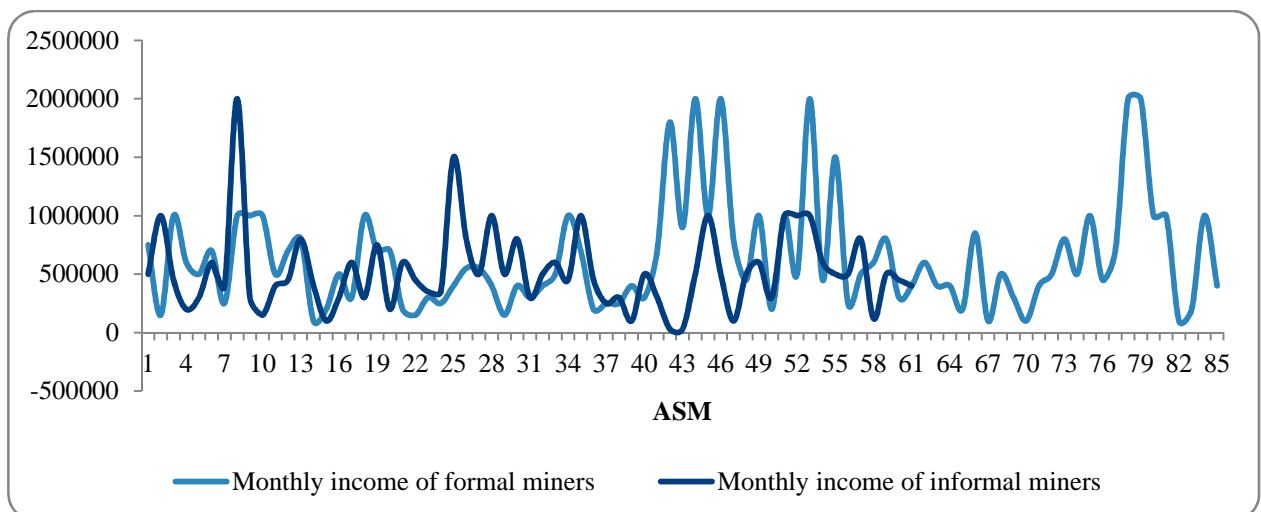
2.1.2 Income generated from artisanal mining operations

Income of artisanal miners

Average monthly income of artisanal miners. In 2016, respondent artisanal miners generated an average income of about MNT 595,750 per month, with a maximum of MNT 2 million and minimum MNT 30,000. 29% of artisanal miners generated a monthly average income of MNT 300,000 or less, 31% earned MNT 300-500,000, 12% earned MNT 500-700,000, 8% earned MNT 700-900,000, 14% earned MNT 900-1,100,000 and 6% earned over MNT 1.1 million.

The following figure shows income that formal and informal artisanal miners generated from extraction. The income of formal artisanal miners was higher than of informal miners. Formal artisanal miners generated about MNT 644,117 monthly (on average) from mining, while informal miners generated about MNT 528,360. So formal artisanal miners earned about MNT 115,000 more than informal counterparts.

Figure 15 Dynamics of monthly income of formal and informal artisanal miners



Source: Follow up study result

147 respondent artisanal miners generated MNT 91.98 million in revenue per month from artisanal mining; 1 gramme of gold fetched about MNT 67,700, 1 kg of tungsten about MNT 10,000 and 1 tonne of fluorspar about MNT 110,890.

The following table shows prices for minerals sold by artisanal miners compared with baseline study findings, for each soum. Unlike the baseline study, mineral prices rose in all soums except Ulziit and Sharyn-Gol; in Khuld and Bornuur soums, mineral selling prices rose by over 50%.

Table 8 Prices for minerals sold by ASMs, baseline vs. 2016 follow-up

Location		Mineral	Quantity	Average price		Change (%)
Aimag	Soum			2015 Baseline	2016 Follow-up	
Bayankhongor	Bayan-Ovoo	Gold	Gramme	56,133	60,013	7
	Bumbugur	Gold	Gramme	56,000	60,570	8
Darkhan-Uul	Shariin gol	Gold	Gramme	56,500	73,000	29
Dornogovi	Airag	Fluorspar	Tonne	83,571	132,700	59
Dundgovi	Khuld	Fluorspar	Tonne	49,375	27,500	-44
	Ulziit	Fluorspar	Tonne	60,480	56,375	-7
Govi-Altai	Yusunbulag	Gold	Gramme	60,330	71,226	18
	Biger	Gold	NA	101,818	143,300	41
Khovd	Bulgan	Gold	Gramme	-	60,000	-
	Uench	Gold	Gramme	-	10,000	-
	Tsetseg	Gold	Gramme	-	57,444	-
		Wolfram	Kilogramme	-	71,000	-
Selenge	Mandal	Gold	Gramme	53,000	71,850	36
	Orkhontuul	Gold	Gramme	54,750	83,444	52
Tuv	Zaamar	Gold	Gramme	-	55,000	-
	Bornuur	Gold	Gramme	-	58,000	-
Uvs	Tarialan	Gold	Gramme	56,133	60,013	7
	Umnugovi	Gold	Gramme	56,000	60,570	8

Source: Sample study result

Most artisanal miners extracting gold in the 2016 follow-up study said they sold gold to a minerals trader in their respective soum; 65% sold to soum-based minerals traders, 28% to Aimag centre's traders, 7% to Ulaanbaatar traders. As for artisanal miners extracting fluorspar, 51% sold to soum-based minerals traders, 5% to aimag centre's traders, 30% to soum's business entities and 9% sold to the aimag's business entities.

Total household income of artisanal miner household and income from mining. In 2016, artisanal miners' households responding to the study had an average monthly income of MNT 1,032,260; quite similar to the national average (MNT 1,047,300 in 2015). Since the baseline study⁷ the average monthly income of artisanal miner households rose by MNT 261,656.

Artisanal miner households generated a maximum of MNT 6.7 million month, with a minimum of MNT 100,000. 10% of respondent households generated under MNT 300,000, 20% MNT 300-500,000, 20% MNT 500-700,000, 11% MNT 700-900,000, 12% MNT 900-1100,000, 14% MNT 1.1-1.6 million and 14% generated over MNT 1.6 million a month.

All respondent households generated a total of MNT 151.7 million income a month, 66% from artisanal mining, 15% from salaries, 13% from private business, 4% from pensions and 2% from welfare allowances.

⁷ Monthly average household income for respondent artisanal miners was MNT 770,604.

In addition, 30% of respondent artisanal miner households had a salary income, 21% had private business income, 15% received welfare allowances, and 12% had a pension. Figure 16 shows the types of income earned by artisanal miner households; 38% of households of respondent artisanal miners generated 91% or more of their income only from artisanal mining. Figure 17 shows the percentage of artisanal mining income in overall household income.

Figure 16 Types of incomes of households of artisanal miners (%)

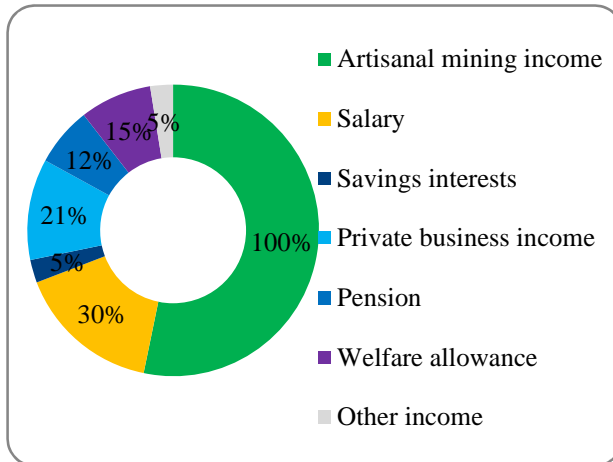
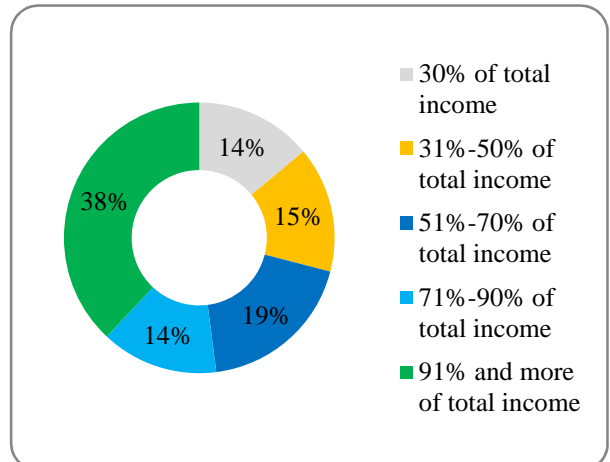


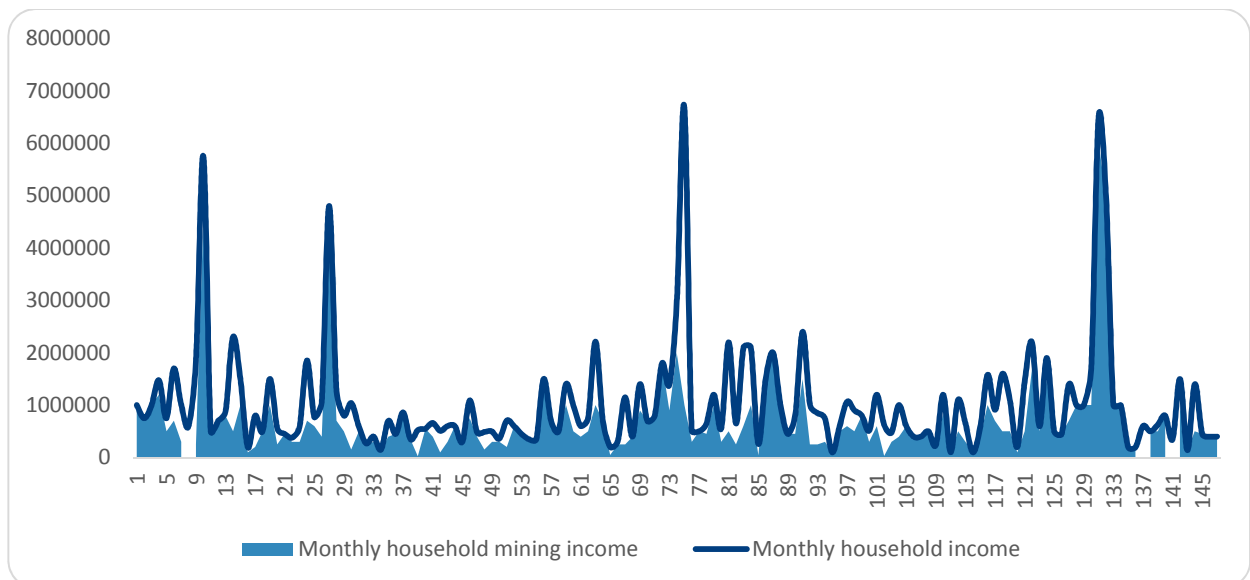
Figure 17 Artisanal mining income in the overall household income (%)



Source: Sample study result

Figure 17 shows that over 70% of artisanal miner households earned over half of their household income from artisanal mining. The following figure shows total monthly income and income from artisanal mining.

Figure 18 Monthly household income from artisanal mining and total household income, MNT



Source: Sample study result

The following table describes monthly artisanal miner household income and income types.

Table 9 Descriptive statistics for household income and income types, MNT/month

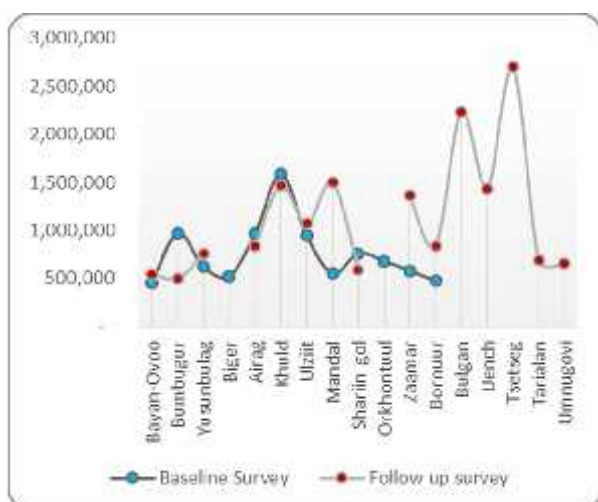
Statistic	Artisanal mining (147 HHs)	Salary (44 HHs)	Savings rate (7 HHs)	Private Business (31 HHs)	Pension (18 HHs)	Welfare allowance (22 HHs)	Other income (7 HHs)	Total household income
Average	693,542	502,852	108,658	622,581	322,056	137,636	138,571	1,032,262
Median	500,000	455,000	45,000	400,000	250,000	80,000	100,000	700,000
Mode	500,000	600,000	-	300,000	250,000	60,000	80,000	1,000,000
Maximum	6,000,000	1,500,000	350,000	5,000,000	800,000	600,000	300,000	6,700,000
Minimum	25,000	50,000	1,950	100,000	20,000	20,000	60,000	100,000

Source: Sample study result

Compared to the 2015 baseline study, monthly household incomes rose by MNT 261,656 and artisanal mining monthly income rose MNT 191,913. The highest growth in monthly household income and artisanal mining income belonged to high income households and soums included in the study, but also household income in 6 soums were increased which were responded to the baseline study. Household income in Mandal soum rose a factor of 4.4 and Zaamar soum by 2.3. Household income rose 65% in Yesunbulag soum, 20% in Bornuur soum, 17% in Ulziit soum and 0.4% in Bayan-Ovoo soum.

Monthly household income and artisanal mining income fell in the other four soums: by 33% in Bumbugur soum, 24% in Sharyn-Gol soum, 17% in Khuld soum, and 8% in Airag soum. Shortages of licensed land or degraded reserves in existing fields were the key reasons for the fall in Sharyn-Gol, Bumbugur and Airag soums. In Khuld soum, local artisanal miners had permission, but were unable to sell fluorspar as there were no minerals traders or businesses with license to buy minerals; so affecting incomes.

Figure 19 Average total monthly income of households; baseline vs. 2016 follow-up



Source: Sample study result

Figure 20 Average monthly income from artisanal mining; baseline vs. 2016 follow-up

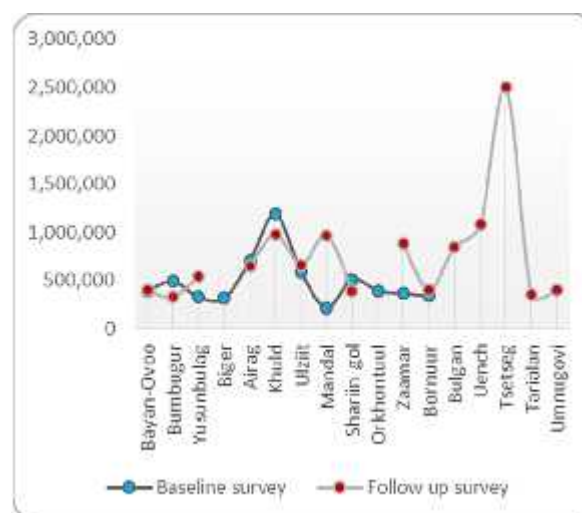


Table 10 shows aggregated data on monthly incomes of artisanal miner households and monthly household income from artisanal mining. Households of artisanal miners in the 2016 follow-up study generated a monthly income of MNT 147.3 million after taxes and fees, MNT 95.4 million of which came from artisanal mining. All 147 artisanal miners contributed MNT 95.4 million to the economy through their artisanal mining businesses (Table 9). It was important to identify the percentage of this contribution remaining in the local economy. As 90% of respondent artisanal miners were citizens of the soum where they worked, it is calculated that about MNT 85.8 million remained in the local economy.

When the 147 artisanal miner households income from mining (of MNT 95.4 million) is compared with the 96 artisanal miners' households total income, it was higher by MNT 48.9 million. The net income increase of MNT 30.4 million were from the 5 additional soums to the 2016 follow-up study, while the other MNT 18.5 million was due to changes in the number of artisanal miners in the soums (of baseline) and changes in the average monthly household income. As for soums covered in the baseline study, average monthly household income increased by MNT 138,944 from the baseline⁸ (Table 9).

⁸ Table 10: Average monthly household mining income was MNT 521,629 in the baseline study, while it became MNT 640,573 in the follow-up study.

Table 10 Monthly household income – total and artisanal mining; 2015 baseline vs.2016 2016 follow-up (MNT0)

Location		Baseline study-2015						Follow-up study-2016					
		Monthly household income from mining			Total monthly household income			Monthly household income from mining			Total monthly household income		
Aimags	Soums	Average	Total*	Net*	Average	Total*	Net*	Average	Total*	Net*	Average	Total*	Net*
Bayan-khongor	Bayan-Ovoo	395,125	3,161	2,937	457,750	3,662	3,396	396,875	3,175	2,893	542,001	4,336	4,054
	Bumbugur	490,286	3,432	3,358	974,286	6,820	6,700	330,000	3,300	2,795	498,001	4,980	4,475
Darkhan-Uul	Shariin gol	512,000	2,560	2,473	760,000	3,800	3,695	391,250	3,130	3,017	590,125	4,721	4,608
Dornogovi	Airag	701,674	11,227	11,058	967,874	15,486	15,230	645,556	11,600	11,429	835,800	16,700	16,529
Dundgovi	Khuld	1,185,913	9,487	8,979	1,585,251	12,682	11,943	980,000	9,800	9,185	1,463,002	14,600	13,985
	Ulziit	587,363	4,699	4,143	943,251	7,546	6,695	661,111	5,950	5,271	1,068,401	10,700	10,021
Govi-Altai	Yusunbulag	328,000	1,640	1,085	620,000	3,100	2,492	542,105	10,300	9,792	756,947	14,400	13,892
	Biger	316,364	3,480	3,887	523,637	5,760	6,124	-	-	-	-	-	-
Selenge	Mandal	219,083	1,315	1,291	548,332	3,290	3,259	966,667	8,700	8,644	1,501,883	13,500	13,444
	Orkhontuul	393,480	1,967	1,904	682,400	3,412	3,328	-	-	-	-	-	-
Tuv	Zaamar	366,750	2,934	2,849	578,750	4,630	4,454	879,500	8,795	8,356	1,362,500	13,600	13,161
	Bornuur	338,250	2,706	2,590	473,750	3,790	3,656	405,556	3,650	3,615	840,000	7,560	7,525
Subtotal 9		501,629	48,608	46,553	770,439	73,978	70,971	640,573	68,400	64,995	930,539	105,097	101,692
Khovd	Bulgan	-	-	-	-	-	-	850,000	4,250	4,058	2,233,200	11,200	11,008
	Uench	-	-	-	-	-	-	1,080,000	5,400	5,175	1,438,000	7,190	6,965
	Tsetseg	-	-	-	-	-	-	2,500,000	15,000	14,881	2,700,000	16,200	16,081
Uvs	Tarialan	-	-	-	-	-	-	355,556	3,200	2,891	686,167	6,176	5,866
	Umnugovi	-	-	-	-	-	-	400,000	3,600	3,454	651,111	5,860	5,714
Subtotal10		-	-	-	-	-	-	784,401	31,450	30,459	1,370,338	46,626	45,635
Total		501,629	48,608	46,553	770,439	73,978	70,971	693,542	99,850	95,454	1,032,262	151,723	147,327

Source: Baseline and Follow-up study result

Note: -average value; (a)-net amount refers to income after all taxes and fees are paid. * = thousands

9 For soums covered in the baseline study

10 For soums added in the follow up study

Total income from artisanal mining in the studied soums. This section offers findings of total income from artisanal mining at the soum level. Researchers used an average of artisanal miners' monthly income and the number of miners as provided by NGOs for each soum. Researchers used the average income of artisanal miners involved in the study from a soum to represent the soum's average income of artisanal miners.

Table 11 shows the total income of artisanal mining in the soums; baseline vs. 2016 follow-up. In the 15 soums included in the 2016 follow-up study, 8,917 artisanal miners generated MNT 5.7 billion net income per month from artisanal mining. Compared to the net income of 5,740 artisanal miners of 11 soums responding to the baseline study, that sum is higher by MNT 3 billion. Of this, MNT 1.65 billion was from the additional five soums for the 2016 follow-up study and other MNT 1.4 billion comes from changes in the number of artisanal miners in the baseline soums and changes in the average income from mining (Table 11).

Table 11 Total monthly income for artisanal miners from mining, at the soum level; baseline vs. 2016 follow-up (MNT)

Location		Baseline-2015				Follow up-2016			
		Average from mining (a)	Number of miners (b)	Monthly mining income		Average from mining(a)	Number of miners (b)	Monthly mining income	
Total*(c)	Net*(c)			Total*(c)	Net*(c)				
Aimag	Soum								
	Bayan-khongor								
	Bayan-Ovoo	395,125	830	327,953.7	327,952.3	418,750	1,025	429,218.7	393,026.5
	Bumbugur	490,286	95	46,577.2	44,827.3	325,000	90	29,250	24,197.5
DarkhanUul	Shariin gol	219,083	900	197,174.7	185,619.2	744,444	3,000	2,233,333.2	2,190,970.2
Dornogovi	Airag	1,185,913	650	770,843.4	768,154.6	560,000	380	212,800	183,596
Dundgovi	Khuld	587,363	388	227,896.8	227,888.6	695,000	120	83,400	75,249
	Ulziit	512,000	846	433,152.0	433,148.5	320,000	700	224,000	204,193.5
Govi-Altai	Yusunbulag	328,000	1,150	377,200.0	344,422.70	547,368	1,050	574,736.8	539,170.9
	Biger	701,674	165	115,776.2	115,775.7	601,053	165	99,173.7	93,538
Selenge	Mandal	393,480	300	118,044.0	118,042.6	-	-	-	-
	Orkhontuul	366,750	268	98,289.0	95,066.7	820,000	368	301,760	278,672.7
Tuv	Zaamar	338,250	148	50,061.0	50,060.7	400,000	306	122,400	119,681.2
	Bornuur	395,125	830	327,953.7	327,952.3	418,750	1,025	429,218.7	393,026.5
Subtotal11		501,629	5,740	2,762,968	2,710,959	566,645	7,204	4,310,072	4,102,296
Khovd	Bulgan	-	-	-	-	1,250,000	350	437,500	424,036.9
	Uench	-	-	-	-	720,000	175	126,000	118,138
	Tsetseg	-	-	-	-	1,333,333	708	943,999.7	927,196.5
Uvs	Tarialan	-	-	-	-	377,778	150	56,666.6	51,514.2
	Umnugovi	-	-	-	-	411,111	330	135,666.6	129,640.7
Subtotal12		-	-	-	-	822,058	1,713	1,699,833	1,650,526
Total amount		501,629	5,740	2,762,968	2,710,959	595,750	8,917	6,009,905.5	5,752,822.1

Note: - average value; (a)- Average income of artisanal miners; (b)- Number of formal and informal artisanal miners. Source: NGOs; (c)- Average income from artisanal mining multiplied by the number of artisanal miners; (d)- net amount refers to amount after all taxes and fees are paid. * = monthly.

11 For soums covered in the baseline study

12 For soums added in the follow up study

Returns of artisanal mining operations. 61% of respondent artisanal miners worked on other jobs before mining; 39% were unemployed. The 57 people who were previously unemployed managed to get jobs as a result of artisanal mining.

Of the previously employed 90 artisanal miners, 47% of them were worked by profession. The 31% of miners worked for private entities, 38% for the government and 31% were individual entrepreneurs. 40% of these artisanal miners used to earn up to MNT 300,000, 37% MNT 300-500,000 salary and 20% MNT 500-1,000,000 salary. These 90 artisanal miners now earned an average of MNT 629,000 per month from artisanal mining. The following table shows previous and current incomes of artisanal miners who were previously employed. 40% of these artisanal miners used to earn up to MNT 300,000; 24% now earned up to MNT 300,000. 16% had increased their income because of artisanal mining. 38% of all 90 artisanal miners increased their income by starting artisanal mining.

Table 12 Comparison of previous and current incomes of ASMs

Salary level (MNT/month)	Proportion of artisanal miners	
	% of previous income	% of current income
300,000 up	40	24
300-500,000	37	34
500,000 - 1 million	20	36
More than 1 million	3	6

Source: Follow-up study result

Conclusion. The findings of this section reveal the following:

-) Artisanal miners in the 2016 follow-up study earned an average of MNT 595,750 per month from artisanal mining. Formal miners earned more than informal miners: MNT 644,117 a month for formal mining, MNT 528,360 for informal mining.
-) Artisanal miner households in the 2016 follow-up study earned MNT 1,032,260 a month, close to the national average monthly household income (MNT 1,047,300 in 2015). Compared to the baseline study, the average income of artisanal miner households rose MNT 261,655.
-) The average monthly income of artisanal miner households involved in the 2016 follow-up study was MNT 693,542, MNT 191,913 higher than the baseline study.
-) Artisanal miner households in the 2016 follow-up study earned an income from mining; 30% also had a salary, 21% had private business income, 15% received welfare allowance, and 12% received a pension.
-) Over 70% of artisanal miner households in the 2016 follow-up study earned over half their monthly income from artisanal mining alone.
-) 147 artisanal miner households in the 2016 follow-up study made a contribution worth MNT 95.4 million per month to the local economy through their production.
-) In 15 soums in the 2016 follow-up study, 9,817 artisanal miners generated MNT 5.7 billion net from mining and made such as contribution to the local economy.
-) Among artisanal miners in the 2016 follow-up study, 57 previously unemployed found work running artisanal mining; 38% of previously employed artisanal miners increased their income by running artisanal mining.

Income generated by minerals traders

Monthly average income (from mineral trading) of minerals traders. Minerals traders in the 2016 follow-up study said they bought minerals from at most 200 - at least two - artisanal miners. 21% of traders bought from five or more artisanal miners, 36% from 6-10, 14% from 11-15, 11% from 16-40 and 14% from over 41 artisanal miners. Over 70% of respondent minerals traders dealt with only one or two suppliers (in one or two extraction points), 10% with 3-4 and one trader with 10.

In 2016, respondent minerals traders generated an average monthly income of MNT 1,413,813 from mineral sales: with a maximum of MNT 6 million, and a minimum of MNT 100,000. 39% of minerals traders generated MNT 300,000 or less, 29% MNT 300-500, 000, 11% MNT 500-1 million, 4% MNT 1-2 million, 10% MNT 2-5 million and 7% earned MNT 5 million or more from mineral sales per month.

In the study, 22 minerals trader respondents 13 earned MNT 31.5 million per month. They bought one gramme of gold from artisanal miners for about MNT 72,775 and sold it on for MNT 77,760; 1 kg tungsten cost them about MNT 10,000 and sold for MNT 11,000; 1 tonne of fluorspar was bought for MNT 138,750 and sold for MNT 183,750.

In 2016, respondents trading in gold earned about MNT 4,775 profit from each gramme of gold; ranging between MNT 1,000 and MNT 15,000. Fluorspar sellers averaged about MNT 45,000 profit per tonne, with a maximum of MNT 70,000 and a minimum of MNT 30,000. Tungsten traders averaged about MNT 1,000 profit. The following table shows average trading prices of minerals traders, by soum.

Table 13 Buying and selling prices of minerals, and average marginal profit (MNT)

Location		Mineral	Unit	Traders' average price		Marginal profit(a)
Aimag	Soum			Buying	Selling ¹⁴	
Bayan-khongor	Bayan-Ovoo	Gold	Gramme	82,500	84,000	1,500
	Bumbugur	Gold	Gramme	68,000	69,500	1,500
Darkhan-Uul	Shariin gol	Gold	Gramme	75,500	81,000	5,500
Dornogovi	Airag	Fluorspar	Tonne	182,500	222,500	40,000
Dundgovi	Khuld	Fluorspar	Tonne	160,000	190,000	30,000
Govi-Altai	Yusunbulag	Gold	Gramme	79,000	82,000	3,000
	Ulziit	Fluorspar	Tonne	30,000	100,000	70,000
Khovd	Bulgan	Gold	Gramme	63,000	75,000	12,000
	Uench	Gold	Gramme	59,000	63,000	4,000
	Tsetseg	Tungsten	Kilogramme	10,000	11,000	1,000
Selenge	Mandal	Gold	Gramme	75,000	87,500	10,000
Tuv	Zaamar	Gold	Gramme	76,783	87,500	10,500
	Bornuur	Gold	Gramme	71,500	75,500	4,180
Uvs	Tarialan	Gold	Gramme	70,000	72,000	2,000
	Umnugovi	Gold	Gramme	74,500	75,000	2,500

Source: Sample study result

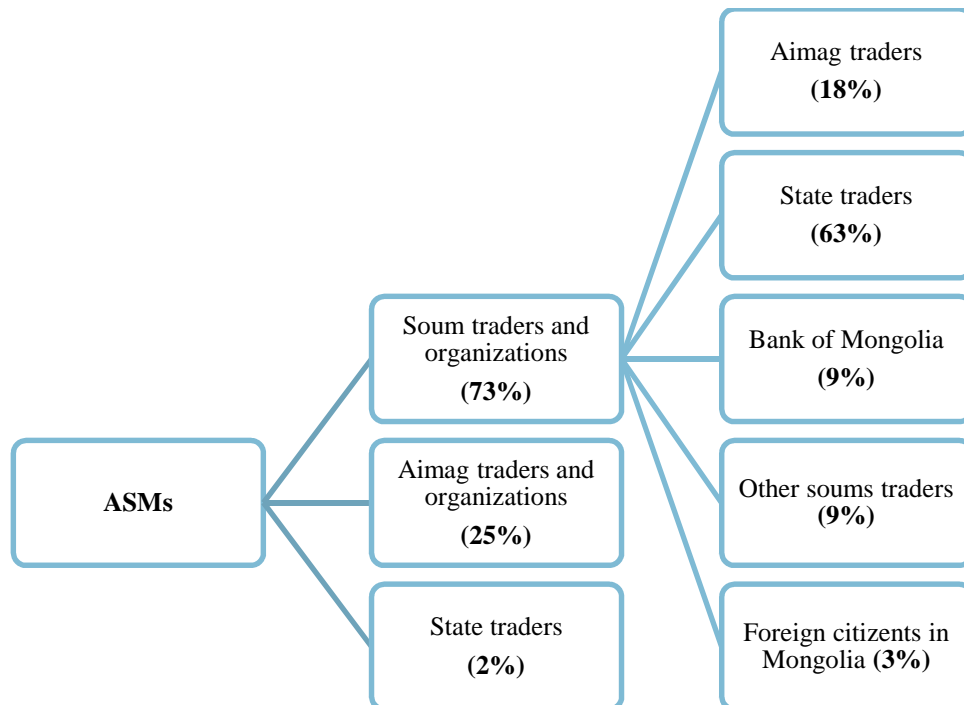
Note: (a)-Marginal profit is the difference between selling price and buying price of mineral

13 Six mineral traders refused to specify their income from minerals trading

14 Mongol Bank's gold price was MNT 92,110/gramme on average as of December 2016

63% of minerals traders sold on to Ulaanbaatar traders, 15% to aimag traders, 9% to the Bank of Mongolia, 9% to minerals traders in other soums, and 3% to foreigners living in Mongolia. The following chart shows the minerals sales process, from artisanal miners to minerals traders.

Figure 21 Stages in minerals sales (value chain)



Household incomes of minerals traders, and income from minerals. In 2016, the average monthly income of respondents among minerals trader households was MNT 2,355,148: with a median of MNT 1,290,000. This was MNT 243,000 higher than the national average income (MNT 1,047,300) in 2015. Monthly median incomes of trader households was almost the same as the monthly average household income in the baseline study.

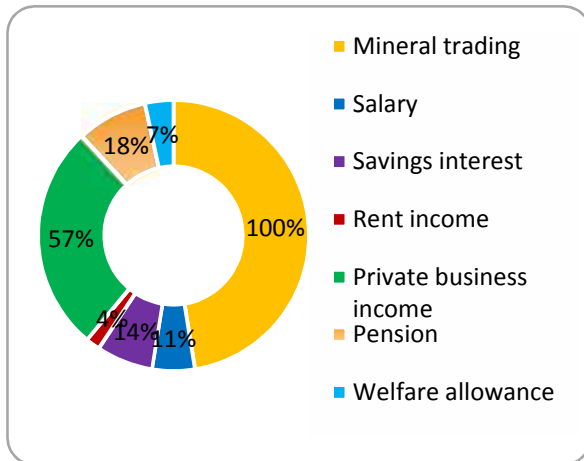
For minerals trader households, the maximum monthly income was MNT 13.1 million, and the minimum MNT 370,000 per month. 7% earned MNT 500,000 or less, 36% MNT 500-1 million, 7% MNT 1-1.5 million, 21% 1.5-2 million, 7% MNT 2-3 million and 18% earned over MNT 3 million monthly.

Respondent households earned a total of MNT 69.8 million in a month, 51% from minerals trading, 40% from other business and 3% from pensions.

57% of respondent households had extra income from private business, 18% had a pension and 14% had extra income from savings interest (Figure 22).

27% of minerals trader households earned most of their household income (over 91%) from minerals trading. Figure 23 shows the percentage of minerals sales within the overall household income.

Figure 22 Types of income in minerals trader households



Source: Sample study result

Figure 23 Percentage of income from minerals in total household income

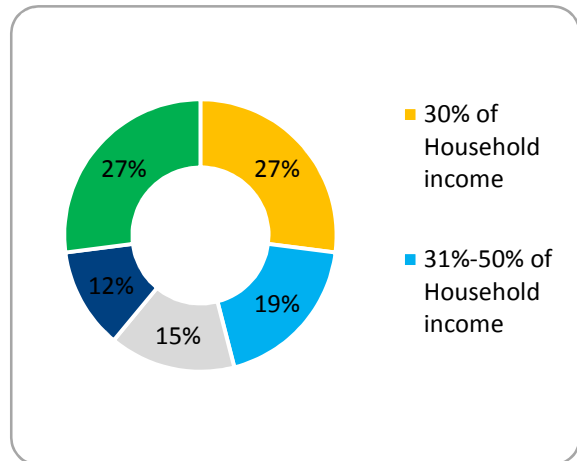
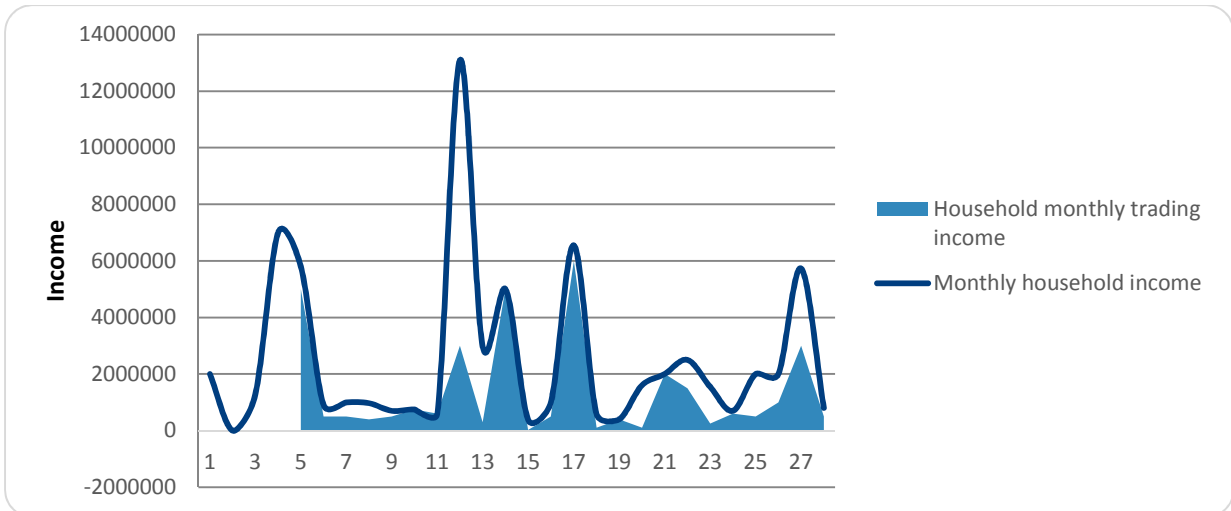


Figure 24 shows that over 50% of respondent households earned over half their monthly income from minerals trading. The following figure shows comparative data on monthly household income and revenues from minerals.

Figure 24 Households' total monthly income, and from mineral trading (MNT)



Source: Sample study result

Table 14 shows total monthly income of minerals trader households and monthly household income from minerals (baseline vs. 2016 follow-up). All respondent minerals trading households in the 2016 follow-up study earned MNT 61.9 million after tax and fees, MNT 34.8 million of which was from minerals. So 28 mineral trading households (respondents) made a local economy contribution of MNT 34.8 million through minerals trading (see Table 14).

It was vital to identify the proportion of this contribution which remained and penetrated the local economy. 93% of minerals traders were local citizens, so MNT 32.4 million can be said to have remained in the local economy.

Researchers also compared the net revenue of 28 minerals trader households against the 15 minerals trader households which were part of the baseline study; the former was MNT 21.1 million more. Of this, MNT 18.2 million was the net revenue of minerals traders in soums in the baseline study, and MNT 2.9 million was due to changes in the number of minerals traders in the baseline and growth of average income of minerals traders. As for soums covered in the baseline study, average monthly household income from mineral trading increased by MNT 167,000 compared to the 2015 baseline.

Table 14 Monthly household income – total and from minerals; 2015 baseline vs. 2016 follow-up (MNT)

Location		Baseline-2015						Follow up-2016					
		Monthly household income from trading			Total monthly household income			Monthly household income from trading			Total monthly household income		
	Soum	Average	Total*	Net*	Average	Total*	Net*	Average	Total*	Net*	Average	Total*	Net*
Aimag Bayankhongor	Bayan-Ovoo	110,000	110	110	1,100,000	1,100	1,100	675,000	1,350	1,243	675,000	1,350	1,243
	Bumbugur	569,618	1,144	1,139	1,100,000	2,200	2,157	300,000	60	568	650,000	1,300	1,268
Govi-Altai	Yusunbulag	732,345	1,520	1,465	1,300,000	2,600	2,503	1,225,000	2,450	2,270	997,722	3,991	3,811
	Biger	599,333	600	599	600,000	600	599	-	-	-	-	-	-
Dornogovi	Airag	876,634	1,050	877	1,500,000	1,500	1,252	1,000,000	2,000	1,310	1,750,000	3,500	2,810
Dundgovi	Khuld	122,496	200	123	2,000,000	2,000	1,225	500,000	500	441	900,000	900	841
	Ulziit	198,426	220	198	407,000	407	367	5,000,000	5,000	4,783	5,800,000	5,800	5,583
Darkhan-Uul	Shariin gol	1,499,170	1,500	1,499	1,500,000	1,500	1,499	350,000	700	700	1,965,000	3,930	3,930
Selenge	Mandal	1,186,549	1,200	1,187	1,200,000	1,200	1,187	3,000,000	3,000	2,947	13,100,000	13,100	1,3047
	Orkhontuul	609,600	650	610	650,000	650	610	-	-	-	-	-	-
Tuv	Zaamar	2,447,923	4,900	4,896	1,225,000	4,900	4,896	675,000	1350	1350	1,575,000	3,150	3,150
	Bornuur	1,000,000	1,000	1,000	1,000,000	1,000	1,000	500,000	1,000	995	550,000	1,100	1,095
Subtotal15		829,341	14,094	13,702	1,310,466	19,657	18,396	997,058	17,950	16,607	2,137,894	38,121	36,778
Khovd	Bulgan	-	-	-	-	-	-	750,000	1,500	1,385	2,000,000	4,000	3,885
	Uench	-	-	-	-	-	-	1,750,000	3,500	3,391	3,265,500	6,531	6,422
	Tsetseg	-	-	-	-	-	-	2,000,000	2,000	2,000	2,000,000	2,000	2,000
Uvs	Tarialan	-	-	-	-	-	-	2,510,000	5,020	5,020	2,685,000	5,370	5,370
	Umnugovi	-	-	-	-	-	-	3,250,000	6,500	6,470	3,784,000	7,568	7,538
Subtotal16		-	-	-	-	-	-	2,057,777	18,520	18,266	2,629,888	25,469	25,215
Total amount		829,341	14,094	13,702	1,310,466	19,657	18,396	1,364,231	36,470	34,874	2,355,148	63,590	61,994

Sources: Baseline and Follow-up study result

Note: -average value; (a)- net amount refers to revenues after all taxes and fees.

15 For soums covered in the baseline study

16 For soums added in the follow up study

Total income of minerals traders in the studied soums. This section details total revenues from minerals trading at the soum level. Researchers used the monthly income of minerals traders and the total number of minerals traders as supplied by the NGOs, and identified the total revenue earned by minerals trading, within each respondent soum. Researchers used the average income of soum minerals traders; as represented by the average income of respondent minerals traders.

Table 15 shows the total income of soums from mineral sales; in the 2015 baseline vs. 2016 follow-up. In 15 soums in the 2016 follow-up study, 74 minerals traders earned MNT 88 million net from trading per month. This was MNT 7 million above the net revenue of 62 minerals traders who were part of the 2015 baseline. This resulted from the net incomes of minerals traders of the five additional soums included in the 2016 follow-up. However, the total amount was increased the net income from mineral trading for soums covered in the baseline decreased by MNT 30 million compared to the baseline. This was caused by a change in the numbers of traders and a decline in the monthly average incomes of miners (Table 15).

Table 15 Total monthly income generated by minerals traders from minerals sales, at soum level, baseline vs. 2016 follow-up (MNT)

Location		Baseline-2015			Follow up-2016			
		Average from trading(a)	Number of traders (b)	Net amount*(c)	Average from trading(a)	Number of traders (b)	Monthly trading income	
Aimag	Soum						Total (c)	Net (d)
Bayan-khongor	Bayan-Ovoo	110,000	2	220,000	675,000	2	1,350,000	1,242,833
	Bumbugur	569,618	12	6,835,410	300,000	8	2,400,000	2,273,200
DarkhanUul	Shariin gol	1,499,170	5	7,495,850	350,000	6	2,100,000	2,100,000
Dornogovi	Airag	876,634	4	3,506,536	1,000,000	4	4,000,000	2,619,320
Dundgovi	Khuld	122,496	1	122,496	500,000	1	500,000	441,160
	Ulziit	198,426	4	793,704	5,000,000	1	5,000,000	4,783,333
Govi-Altai	Yusunbulag	732,345	5	3,661,723	1,225,000	7	8,575,000	7,945,210
	Biger	599,333	NA	NA	NA	-	-	-
Selenge	Mandal	1,186,549	4	4,746,196	3,000,000	5	15,000,000	14,735,000
	Orkhontuul	609,600	1	609,600	-	-	-	-
Tuv	Zaamar	2,447,923	20	48,958,460	675,000	20	13,500,000	13,500,000
	Bornuur	1,000,000	4	4,000,000	500,000	2	1,000,000	995,000
Subtotal17		829,341	62	80,949,975	997,058	56	53,425,000	50,635,056
Khovd	Bulgan	-	-	-	750,000	5	3,750,000	3,463,400
	Uench	-	-	-	1,750,000	1	1,750,000	1,695,500
	Tsetseg	-	-	-	2,000,000	3	6,000,000	6,000,000
Uvs	Tarialan	-	-	-	2,510,000	4	10,040,000	10,040,000
	Umnugovi	-	-	-	3,250,000	5	16,250,000	16,175,000
Subtotal18		-	-	-	2,057,777	18	37,790,000	37,373,900
Total amount		829,341	62	80,949,975	1,364,231	74	91,215,000	88,008,956

Note: [redacted] average value; (a)- Average income of traders from minerals trading; (b)- Source- NGOs; (c)- Sum of average income of minerals traders from mineral multiplied by the number of minerals traders; (d)-net revenue refers to the amount after taxes and fees are paid. * = thousands

17 For soums covered in the baseline study

18 For the soums added in the follow up study

Benefits/returns of mineral trading business. 85% of minerals traders in the study had other jobs before they started minerals trading, while 14% (4) had no job before. The people who had been unemployed were able to work in minerals trading.

Of 24 minerals traders who had been previously employed, half had used professional qualifications, the other half had jobs other than in their initial professional field. 21% worked for a private company, 38% for the government and four were individual entrepreneurs. 25% of minerals traders used to earn up to MNT 300,000, 42% MNT 300-500,000, 25% MNT 500-1 million, and 8% over MNT 2 million. The table below compares incomes of minerals traders (previously employed) before and currently. 25% of these minerals traders used to earn up to MNT 300,000; now 17% have that income; 8% have grown their income by minerals trading. Over half of these 24 minerals traders had higher incomes from artisanal mining-related business.

Table 16 Comparative data on the past and present income of minerals traders

Salary interval (MNT)	Minerals traders (%)	
	Previous income	Current income
300,000 up	25	17
300-500 thousand	42	29
500 thousand-1 million	25	12
1 -2 million	-	4
More than 2 million	8	17

Source: Follow-up study result

Conclusions. Summary of key findings of this section:

-) The average monthly household income of minerals traders in the 2016 follow-up study was MNT 2,355,148: and the median was MNT 1,290,000. The monthly household median income was over MNT 243,000 more than the national average household income (of MNT 1,047,300 in 2015). The monthly median income of minerals trader’s households in the baseline study was almost the same as the monthly average income of minerals trader households from minerals trading.
-) The monthly average income of minerals traders’ households in the 2016 follow-up study from minerals trading was MNT 1,364,231; MNT 534,890 more than the monthly average household income in the 2015 baseline study.
-) Minerals traders’ households in the 2016 follow-up study earned income from minerals trading; 57% had extra sources of income, 18% had a pension, and 14% had an income from savings interest.
-) Over half of minerals traders’ households in the 2016 follow-up study earns more than half their monthly income from minerals trading.
-) 28 minerals traders’ households in the 2016 follow-up study made a contribution of MNT 34.8 million to their local economy through minerals trading.
-) In 15 soums in the 2016 follow-up study, 74 minerals traders’ households earned MNT 88 million net from minerals trading and made a significant contribution to the local economy.

-) Of the minerals traders in the study, four who were not previously employed were running minerals trading. Over half of 24 minerals traders who used to have jobs had increased their income by minerals trading.

Sum of incomes of artisanal miners and minerals traders

Table 17 shows the total income of artisanal miners and traders from mining activities, at the soum level. Artisanal miners (147) and minerals traders (28) in the 2016 follow-up study earned about MNT 130.3 million per month from their operations. This was the of economic contribution that respondent artisanal miners and minerals traders made to the economy through their work.

The total revenue of artisanal miners and minerals traders was MNT 70 million more than in the 2015 baseline study; MNT 48.7 million was the net revenue of minerals traders in the additional five soums; MNT 21.3 million resulted from the changed (increased) numbers of artisanal miners and minerals traders and their average income (Table 17).

Table 17 Miners and minerals traders' monthly income from artisanal mining; respondents level (MNT, thousands)

Location		Baseline study-2015				Follow up study-2016			
Aimags	Soums	ASMs & traders	Net mining income			ASMs & traders	Net mining income		
			ASMs	Trader	Total		ASMs	Trader	Total
Bayan-khongor	Bayan-Ovoo	9	2,937	110	3,047	11	2,893	1,243	4,135
	Bumbugur	10	3,358	1,139	4,497	11	2,795	568	3,363
DarkhanUul	Shariin gol	6	2,473	1,499	3,972	11	3,017	700	3,717
Dornogovi	Airag	17	11,058	877	11,935	22	11,429	1,310	12,739
Dundgovi	Khuld	9	8,979	123	9,102	11	9,185	441	9,626
	Ulziit	9	4,143	198	4,342	11	5,271	4,783	10,054
Govi-Altai	Yusunbulag	10	1,085	1,465	2,550	23	9,792	2,270	12,062
	Biger	9	3,887	599	4,486	-	-	-	-
Selenge	Mandal	7	1,291	1,187	2,478	12	8,644	2,947	11,591
	Orkhontuul	6	1,904	610	2,514	-	-	-	-
Tuv	Zaamar	10	2,849	4,896	7,744	10	8,356	1,350	9,706
	Bornuur	9	2,590	1,000	3,590	10	3,615	995	4,610
Subtotal19		111	46,553	13,702	60,255	132	64,995	16,607	81,602
Khovd	Bulgan	-	-	-	-	7	4,058	1,385	5,443
	Uench	-	-	-	-	7	5,175	3,391	8,566
	Tsetseg	-	-	-	-	7	14,881	2,000	16,881
Uvs	Tarialan	-	-	-	-	11	2,891	5,020	7,911
	Umnugovi	-	-	-	-	11	3,454	6,470	9,924
Subtotal20		-	-	-	-	43	30,459	18,266	48,725
Total		111	46,553	13,702	60,255	175	95,454	34,874	130,328

Sources: Baseline and Follow-up study result

Table 18 presents total income that artisanal miners and minerals traders generated from artisanal mining-related activities, at the soum level. In 15 soums in the 2016 follow-up study, 8,917 artisanal miners and 74 minerals traders generated MNT 5.8 billion net, MNT 2.1 billion more than in the 2015 baseline. Of this, MNT 1.7 billion was in the five soums added to the 2016 follow-up study. Of

19 For the soums covered in the baseline study

20 For the soums added in the follow up study

their net income, MNT 0.4 billion resulted from the changed numbers of artisanal miners and minerals traders in the five additional soums and changes in their average income (Table 18).

Table 18 Miners' and minerals traders' monthly income from artisanal mining; soum level (MNT, thousands)

Location		Baseline study-2015				Follow up study-2016			
		ASMs & traders	Net mining income			ASMs & traders	Net mining income		
Aimags	Soums		ASMs	Trader	Total		ASMs & traders	ASMs	Trader	Total
Bayan-khongor	Bayan-Ovoo	832	327,952	220	328,172	1,027	393,027	1,243	394,269
	Bumbugur	107	44,827	6,835	51,662	98	24,198	2,273	26,471
Darkhan-Uul	Shariin gol	851	433,149	7,496	440,644	706	204,194	2,100	206,294
Dornogovi	Airag	169	115,776	3,507	119,282	169	93,538	2,619	96,157
Dundgovi	Khuld	651	768,155	122	768,277	381	183,596	441	184,037
	Ulziit	392	227,889	794	228,682	121	75,249	4,783	80,032
Govi-Altai	Yusunbulag	1,155	344,423	3,662	348,085	1,057	539,171	7,945	547,116
	Biger	NA	NA	NA	NA	NA	NA	NA	NA
Selenge	Mandal	904	185,619	4,746	190,365	3,005	2,190,970	14,735	2,205,705
	Orkhontuul	301	118,043	610	118,652	-	-	-	-
Tuv	Zaamar	288	95,067	48,958	144,025	388	278,673	13,500	292,173
	Bornuur	152	50,061	4,000	54,061	308	119,681	995	120,676
Subtotal21		5,802	2,710,959	80,950	2,791,909	7,206	4,102,296	50,634.0	4,152,931
Khovd	Bulgan	-	-	-	-	355	424,037	3,463	427,500
	Uench	-	-	-	-	176	118,138	1,696	119,834
	Tsetseg	-	-	-	-	708	927,197	6,000	933,197
Uvs	Tarialan	-	-	-	-	154	51,514	10,040	61,554
	Umnugovi	-	-	-	-	335	129,641	16,175	145,816
Subtotal22		-	-	-	-	1,728	1,650,526	37,374	1,687,900
Total amount		5,802	2,710,959	80,950	2,791,909	8,988	5,752,822	88,009	5,840,831

Sources: Baseline and Follow-up study result

2.1.3 Conclusion

The following table summarizes the direct economic contribution/effect by artisanal miners and minerals traders; creating employment opportunities. In 15 soums in the 2016 follow-up study, artisanal miners and minerals traders created 8,988 jobs, and generated about MNT 5.8 billion from artisanal mining. Artisanal miners and minerals traders in the 2016 follow-up study created 175 jobs and generated about MNT 130.3 million revenue from artisanal mining.

Table 19 Direct economic impact from employment

Estimate level	Baseline-2015		Follow up-2016	
	Workplace	Monthly mining net income (MNT, thousands)	Workplace	Monthly mining net income (MNT, thousands)
Soum level	7,867	3,687,618	8,988	5,840,831
Respondents level	145	60,255	175	130,328

Sources: Baseline and Follow-up study result

21 For the soums covered in the baseline study

22 For the soums added in the follow up study

2.2 Taxes and fees

The direct economic impact from taxes, fees and charges, was assessed based on total taxes, fees, social insurance, health insurance and fees related to mining operations and paid to the soum. Using the 2016 follow-up results, the average of taxes, fees, insurances and premiums paid by artisanal miners and minerals traders to the soum was calculated. For the overall impact/contribution to the entire soum, researchers used the total of artisanal miners and minerals traders operating in the soum.

For the 2016 follow-up study, researchers collected data from artisanal miners NGOs, formal and informal artisanal miners and minerals traders; in semi-structured interviews. The total of various fees and taxes paid by artisanal miners and minerals traders to their soum is shown and compared in the following tables. There were some study limitations: soum-based government agencies did not have sufficient information on the real number of artisanal miners and minerals traders and how much taxes and fees they paid. So quantitative data on soum artisanal miners and minerals traders was collected from NGOs; the average amount was calculated from the findings of interviews with artisanal miners and minerals traders.

2.2.1 Taxes

The baseline study found that informal artisanal miners were not paying tax to the soum; this was shown by the 2016 follow-up study to have changed. Artisanal miners in the 2016 follow-up study paid a total of MNT 1,624,900 tax per month to the soum administration, MNT 150,500 (9%) was paid by informal artisanal miners.

Some formal artisanal miners in some soums paid a monthly average of MNT 21,280 tax to the local government, mainly through the NGO they belonged to.

Table 20 compares total tax currently paid by artisanal miners in both the 2015 baseline and 2016 follow-up studies. Five soums of Khovd and Uvs aimags were added to the 2016 follow-up study, but the basic data on tax payments by these soum respondents were almost the same as the other soums.

Table 20 Tax paid by formal and informal artisanal miners in 2015 and 2016; respondents' level (MNT)

Aimags	Soums	ASM					
		2015 (n=96)			2016 (n=147)		
		ASMs	Monthly average	Monthly total	ASMs	Monthly average	Monthly total
Bayankhongor	Bayan-Ovoo	8	89,500	716,000	9	15,213	121,700
	Bumbugur	8	6,000	48,000	9	6,500	65,000
Darkhan-Uul	Shariin gol	5	7,600	38,000	8	625	5,000
Dornogovi	Airag	16	5,067	76,000	20	4,050	81,000
Dundgovi	Khuld	8	33,125	265,000	10	42,200	422,000
	Ulziit	8	53,000	424,000	10	53,300	533,000
Govi-Altai	Yusunbulag	8	9,417	37,666	19	13,053	248,000
	Biger	8	1,745	19,200	0	NA	NA
Selenge	Mandal	6	0	0	9	889	8,000
	Orkhontuul	5	200	1,000	0	NA	NA
Tuv	Zaamar	8	1,250	10,000	10	0	0
	Bornuur	8	1,375	11,000	9	0	0

Khovd	Bulgan	NA	NA	NA	5	24,140	120,700
	Uench	NA	NA	NA	5	1,600	8,000
	Tsetseg	NA	NA	NA	6	0	0
Uvs	Tarialan	NA	NA	NA	9	1,389	12,500
	Umnugovi	NA	NA	NA	9	0	0
Total		96	1,645,866		147	1,624,900	

Sources: Baseline and Follow-up study result

The most tax was paid by artisanal miners in soums with fluorspar deposits, in both studies. Artisanal miners in Yesunbulag and Bayan-Ovoo soum gold deposits paid more tax than other soums with gold deposits. Tax payments in Bayan-Ovoo soum were less than in the baseline as 41% of respondent artisanal miners were informal. Yesunbulag soum is a provincial centre and the tax total rose due to efforts to get the artisanal miners organized in 2016. In soums added to the 2016 follow-up study, artisanal miners of Bulgan soum paid more tax than the other added soums. The government of Bulgan soum mentioned in an interview that artisanal miners paid MNT 1,300,000 taxes in 2015. Artisanal miners of Umnugobi Aimag paid MNT 1,606,420 tax in 2015. Artisanal miners of Tarialan soum, added to the 2016 follow-up only, had paid MNT 1,548,500²³ tax by the end of Q3, 2015. Of soums in both the 2015 baseline and 2016 follow-up studies, Khuld soum artisanal miners paid MNT 29,210,500²⁴ in taxes.

The baseline study found that artisanal miners in soums with fluorspar deposits paid more tax than other soums; the same as in the 2016 follow-up. This is because fluorspar miners worked under contract with the local government. Local governments of other soums described that they had no oversight or control over artisanal miners. Asked why, they said the revenues earned by artisanal miners were volatile; going up and down.

Table 21 Artisanal miners' taxes to the soum government in 2015 and 2016; respondents' level (MNT)

Aimag	Soum	Traders					
		2015 (n=15)			2016 (n=28)		
		Traders	Monthly average	Monthly total	Traders	Monthly average	Monthly total
Bayankhongor	Bayan-Ovoo	1	0	0	2	25,000	50,000
	Bumbugur	2	0	0	2	0	0
Darkhan-Uul	Shariin gol	2	20,833	41,600	4	12,500	50,000
Dornogovi	Airag	1	50,000	50,000	2	150,000	300,000
Dundgovi	Khuld	1	5,000	5,000	1	55,000	55,000
	Ulziit	1	16,700	16,700	1	167,000	167,000
Govi-Altai	Yusunbulag	1	0	0	2	0	0
	Biger	1	0	0	1	53,000	53,000
Selenge	Mandal	1	0	0	-	-	-
	Orkhontuul	2	15,000	30,000	2	0	0
Tuv	Zaamar	1	0	0	2	0	0
	Bornuur	-	-	-	2	0	0
Khovd	Bulgan	-	-	-	2	0	0

23 Semi-structured interview with senior officers of Tarialan soum, amount of taxes paid by artisanal miners as of the end of Q3, 2016

24 Semi-structured interview with senior officers of Khuld soum, amount of taxes paid by artisanal miners as of the end of Q3, 2016

	Uench	-	-	-	1	0	0
	Tsetseg	-	-	-	2	0	0
Uvs	Tarialan	-	-	-	2	0	0
	Umnugovi	1	0	0	2	25,000	50,000
Total		14	143,300		28	675,000	

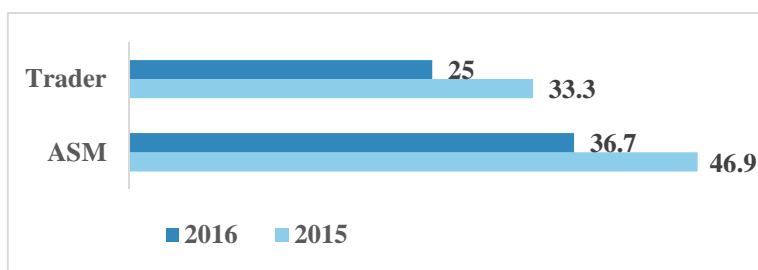
Sources: Baseline and Follow-up study result

The monthly tax from artisanal miners of target soums in the baseline study rose from MNT 143,332 to MNT 675,000 in the 2016 follow-up study. This increasment were related with the risen of taxes in Airag, Huld, Ulziit, Bayan-Ovoo and Mandal soums.

As mention before, the direct impact still higher in soums with fluorspar deposits. And contracting with mineral tarders seems the best practice for stability.

In the baseline study 46.9% of artisanal miners and 33.3% of minerals traders paid taxes. In the 2016 follow-up study, 36.7% of miners and 25% of traders were found to pay tax to the local government.

Figure 25 Percentage of tax payment, at the level of respondents, baseline vs. 2016 follow-up



Source: Sample study result

There were fewer artisanal miners paying tax than in the baseline study; this was closely related to the timing of data collection (when extraction slows down and production drops). Also, some

soum officers had recently changed and local governments had not released land for artisanal mining.

The local tax amount are shown in table below. The total sum of taxes was reduced due to the reasons above. On the other hand, due to changes in tax law artisanal miners started to pay income tax, so tax revenue were expected to increase by the end of 2016.

Table 22 Total taxes paid by artisanal miners, baseline vs. 2016 follow-up, at the soum level (MNT)

Aimags	Soums	ASMs					
		2015 (n=5,740)			2016 (n=8,917)		
		ASMs	Monthly average	Monthly total	ASMs	Monthly average	Monthly total
Bayan-khongor	Bayan-Ovoo	830	89,500	74,285,000	1,025	15,213	15,592,813
	Bumbugur	95	6,000	570,000	90	6,500	585,000
Darkhan-Uul	Shariin gol	846	7,600	6,429,600	700	625	437,500
Dornogovi	Airag	165	5,067	836,055	165	4,050	668,250
Dundgovi	Khuld	650	33,125	21,531,250	380	42,200	16,036,000
	Ulziit	388	53,000	20,564,000	120	53,300	6,396,000
Govi-Altai	Yusunbulag	1,150	9,417	10,829,550	1,050	13,053	13,705,263
	Biger	0	1,745	0	-	-	-
Selenge	Mandal	900	0	0	3,000	889	2,666,667
	Orkhontuul	300	200	60,000	-	-	-
Tuv	Zaamar	268	1,250	335,000	368	0	0
	Bornuur	148	1,375	203,500	306	0	0
Khovd	Bulgan	-	-	-	350	24,140	8,449,000
	Uench	-	-	-	175	1,600	280,000

	Tsetseg	-	-	-	708	0	0
Uvs	Tarialan	NA	NA	NA	150	1,389	208,333
	Umnugovi	NA	NA	NA	330	0	0
Total		5,740	135,643,955		8,917	65,024,826	

Sources: Baseline and Follow-up study result

Responses showed that tax payment by artisanal miners were higher than in the baseline; due to an increase in the average tax amounts and the inclusion of five additional soums in the study.

Table 23 Total taxes paid by minerals traders to the soum, baseline vs. 2016 follow-up, at the soum level

Aimag	Soum	Traders					
		2015 (n=62)			2016 (n=74)		
		Number of Traders	Monthly average tax (MNT)	Monthly total tax (MNT)	Number of Traders	Monthly average tax (MNT)	Monthly total tax (MNT)
Bayankhongor	Bayan-Ovoo	2	0	0	2	25,000	50,000
	Bumbugur	12	0	0	8	0	0
Govi-Altai	Yusunbulag	5	20,833	104,165	7	12,500	87,500
	Biger	0	0	0	0	-	-
Dornogovi	Airag	4	50,000	200,000	4	150,000	600,000
Dundgovi	Khuld	1	5,000	5,000	1	55,000	55,000
	Ulziit	4	16,700	66,800	1	167,000	167,000
Darkhan-Uul	Shariin gol	5	0	0	6	0	0
Selenge	Mandal	4	0	0	5	53,000	265,000
	Orkhontuul	1	0	0	0	-	-
Tuv	Zaamar	20	15,000	300,000	20	0	0
	Bornuur	4	0	0	2	0	0
Khovd	Bulgan	-	-	-	5	0	0
	Uench	-	-	-	1	0	0
	Tsetseg	-	-	-	3	0	0
Uvs	Tarialan	-	-	-	4	0	0
	Umnugovi	-	-	-	5	0	0
Total		62	675,965		74	1,224,500	

Sources: Baseline and Follow-up study result

Artisanal miners in the soums added to the study pay no taxes to local government.

The payment of taxes by minerals traders increased in soums with minerals deposits other than fluorspar; while miners of Airag soum - which has fluorspar deposits - paid the most tax to the soum government. More tax was paid in Airag soum than in other similar soums, which may be because local artisanal miners have no authorised land on which to work.

Table 24 Payment of taxes by minerals traders, baseline vs. 2016 follow-up, comparative

Item	Baseline / Follow up	ASM and Traders	Monthly total tax (MNT)
Soum level	2015	5802	136,319,920
	2016	8991	66,249,326
Respondents level	2015	111	1,789,166
	2016	175	2,299,900

Sources: Baseline and Follow-up study result

2.2.2 Payment and fees

For a detailed calculation of the direct economic effects, researchers needed data on the taxes and fees that artisanal miners paid to the local government. So researchers calculated the overall taxes paid by artisanal miners and minerals traders to their NGOs and the government. In all soums, each formal artisanal miner paid an average of MNT 18,839 per month to the NGOs where they were registered. Artisanal miners in the NGOs in the 2016 follow-up study paid MNT 371,250 per month as taxes or fees. Funds generated from this tax/fee were used for environmental rehabilitation, accident response and support for health and livelihoods of marginalized artisanal miners. However, some NGOs charged no fees, nor impose taxes on their members, because there was no conducive environment for sustainable operations in the area.

The 2016 follow-up study, artisanal miners from 15 soums were paid fees of MNT 257,336 to their local government, while the 2015 baseline study the artisanal miners of 12 soums were paid fees of MNT 333,332.

Table 25 Total fees paid montly by artisanal miners; 2015 baseline vs. 2016 follow-up, at the respondents' level (MNT)

Aimags	Soums	ASM					
		2015 (n=96)			2016 (n=147)		
		ASMs	Average fees	Total fees	ASMs	Average fees	Total fees
Bayankhongor	Bayan-Ovoo	8	6,500	52,000	9	9,135	73,083
	Bumbugur	8	5,750	46,000	9	9,209	92,085
Govi-Altai	Yusunbulag	8	1,250	5,000	19	2,838	53,917
	Biger	8	-	-	0	-	-
Dornogovi	Airag	16	6,250	100,000	20	-	-
Dundgovi	Khuld	8	708	5,666	10	200	2,000
	Ulziit	8	8,500	68,000	10	417	4,167
Darkhan-Uul	Shariin gol	5	6,000	30,000	8	-	-
Selenge	Mandal	6	167	1,000	9	-	-
	Orkhontuul	5	1,533	7,666	0	-	-
Tuv	Zaamar	8	-	-	10	-	-
	Bornuur	8	2,250	18,000	9	111	1,000
Khovd	Bulgan	-	-	-	5	2,050	10,250
	Uench	-	-	-	5	-	-
	Tsetseg	-	-	-	6	2,778	16,667
Uvs	Tarialan	-	-	-	9	463	4,167
	Umnugovi	-	-	-	9	-	-
Total		96	333,332		147	257,336	

Sources: Baseline and Follow-up study result

Minerals traders work under contract with the local government. For soums with contracts, the total amount of fees was high in 2015, but this changed in 2016 because the local government refused licenses to artisanal miners.

The following table shows the fees paid by traders.

Table 26 Total fees paid monthly by minerals traders; baseline vs. 2016 follow-up, at the respondents' level (MNT)

		Traders					
		2015 (n=15)			2016 (n=28)		
Aimag	Soum	Traders	Average fes	Total fees	Traders	Average fees	Total fees
Bayankhongor	Bayan-Ovoo	1	0	0	2	37,500	75,000
	Bumbugur	2	5,500	11,000	2	0	0
Govi-Altai	Yusunbulag	2	0	0	4	4,875	19,500
	Biger	1	0	0	0	-	-
Dornogovi	Airag	1	0	0	2	31,250	62,500
Dundgovi	Khuld	1	3,750,000	3,750,000	1	0	0
	Ulziit	1	0	0	1	50,000	50,000
Darkhan-Uul	Shariin gol	1	0	0	2	0	0
Selenge	Mandal	1	1,000	1,000	1	0	0
	Orkhontuul	1	0	0	0	-	-
Tuv	Zaamar	2	8,000	8,000	2	0	0
	Bornuur	1	0	0	2	5,000	10,000
Khovd	Bulgan	-	-	-	2	0	0
	Uench	-	-	-	2	0	0
	Tsetseg	-	-	-	1	0	0
Uvs	Tarialan	-	-	-	2	22,500	45,000
	Umnugovi	-	-	-	2	0	0
Total		15	3,770,000		28	262,000	

Sources: Baseline and Follow-up study result

The 2016 follow-up study showed that minerals traders paid MNT 262,000 in taxes and fees to the soum government. Minerals traders in Khuld soum were unable to pay the fees for the reasons specified above. The Khuld soum government did not issue licenses to artisanal miners or minerals traders in 2016.²⁵ In Airag soum, local artisanal miners had no 'land use' licenses in the baseline study, but the local government issued licenses in 2016. This enabled artisanal miners to generate income and pay taxes and fees to the soum.

The following table describes in detail the fees paid by artisanal miners (in the 2015 baseline and 2016 follow-up) to the government or NGO.

Table 27 Total fees, charges and premiums paid monthly by artisanal miners; baseline vs. 2016 follow-up, at the soum level (MNT)

Location		ASM					
		2015 /N=5740/			2016 /N=8917/		
Aimag	Soum	ASMs	Average fees	Total fees	ASMs	Average fees	Total fees
Bayankhongor	Bayan-Ovoo	830	6,500	5,395,000	1,025	9,135	9,363,759
	Bumbugur	95	5,750	546,250	90	9,209	828,765
Govi-Altai	Yusunbulag	1,150	1,250	1,437,500	1,050	2,838	2,979,624
	Biger	0	0	0	-	-	-
Dornogovi	Airag	165	6,250	1,031,250	165	0	0
Dundgovi	Khuld	650	708	460,200	380	200	76,000
	Ulziit	388	8,500	3,298,000	120	417	50,004

²⁵ Mentioned during an interview with the Head of Artisanal Miners' NGO in Khuld soum

Darkhan-Uul	Shariin gol	846	6,000	5,076,000	700	0	0
Selenge	Mandal	900	167	150,300	3,000	0	0
	Orkhontuul	300	1,533	459,900	-	-	-
Tuv	Zaamar	268	0	0	368	0	0
	Bornuur	148	2,250	333,000	306	111	34,000
Khovd	Bulgan	-	-	-	350	2,050	717,500
	Uench	-	-	-	175	0	0
	Tsetseg	-	-	-	708	2,778	1,966,706
Uvs	Tarialan	-	-	-	150	463	69,450
	Umnugovi	-	-	-	330	0	0
Total		5,740	18,187,400		8,917	16,085,808	

Sources: Baseline and Follow-up study result

The total value decreased in Airag, Huld, Ulziit soums due to miners' reduction of fees. As in table below shown the monthly total fee and charges paid by minerals.

Table 28 Total fees and charges paid monthly by minerals traders, baseline vs. 2016 follow-up, at the soum level (MNT)

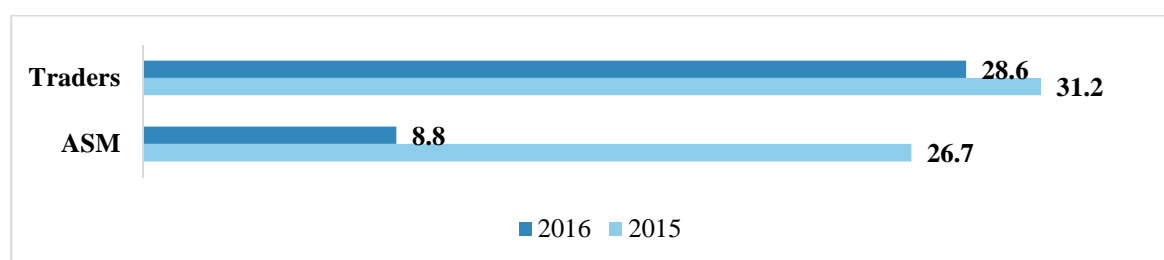
Location		Traders					
		2015 /N=62/			2016 /N=74/		
Aimags	Soums	Traders	Average fees	Total fees	Traders	Average fees	Total fees
Bayan-khongor	Bayan-Ovoo	2	0	0	2	37,500	75,000
	Bumbugur	12	5,500	66,000	8	0	0
Govi-Altai	Yusunbulag	5	0	0	7	4,875	34,125
	Biger	0	0	0	0	-	-
Dornogovi	Airag	4	0	0	4	31,250	125,000
Dundgovi	Khuld	1	3,750,000	3,750,000	1	0	0
	Ulziit	4	0	0	1	50,000	50,000
Darkhan-Uul	Shariin gol	5	0	0	6	0	0
Selenge	Mandal	4	1,000	4,000	5	0	0
	Orkhontuul	1	0	0	0	-	-
Tuv	Zaamar	20	8,000	160,000	20	0	0
	Bornuur	4	0	0	2	5,000	10,000
Khovd	Bulgan	-	-	-	5	0	0
	Uench	-	-	-	1	0	0
	Tsetseg	-	-	-	3	0	0
Uvs	Tarialan	-	-	-	4	22,500	90,000
	Umnugovi	-	-	-	5	0	0
Total		62	3,980,000		74	384,125	

Sources: Baseline and Follow-up study result

The key reason for the lower amount paid by all minerals traders was fees paid by traders of Khuld soum.

Researchers also compared the percentage of respondents paying fees to soums in both the 2015 baseline and 2016 follow-up study.

Figure 26 Percentage of payment by formal and informal artisanal miners and traders



Source: Sample study result

The payment of fees by minerals and traders were approximate, while artisanal miners paid fees much less than baseline. The payment of fees by miners decreased due to the lack of licensing for artisanal mining.

In total, fees paid to the local government fell by about MNT 14 million at soum levels, and by MNT 3.5 million at the respondent level.

Table 29 Payment of fees by artisanal miners and minerals traders, baseline vs. 2016 follow-up, comparison of two levels (MNT)

	2015 Baseline/ 2016 Follow up	ASMs & Traders	Monthly total fee payment (month)
Soum level	2015	5802	22,167,400
	2016	8991	16,469,933
Respondents level	2015	111	4,103,332
	2016	175	519,336

Sources: Baseline and Follow-up study result

2.2.3 Social insurance

Unlike with taxes and fees, artisanal miners and minerals traders were more willing to voluntarily pay social insurance premiums. This was so in the 2016 follow-up study and was also observed in the soums added to the 2016 follow-up study. In the targeted 17 soums, artisanal miners paid social insurance premiums with no problem (table 30).

Table 30 Social insurance paid monthly by artisanal miner, baseline vs. 2016 follow-up, at the respondents' level (MNT)

Location		ASM					
		2015 (n=96)			2016 (n=147)		
Aimags	Soums	ASMs	Average payment	Total payment	ASMs	Average payment	Total payment
Bayankhongor	Bayan-Ovoo	8	26,400	211,200	9	0	0
	Bumbugur	8	6,000	48,000	9	14,016	140,160
Govi-Altai	Yusunbulag	8	17,500	70,000	19	6,320	120,080
	Biger	8	6,545	72,000	0	-	-
Dornogovi	Airag	16	8,940	143,040	20	2,392	47,840
Dundgovi	Khuld	8	11,117	89,420	10	16,324	163,240
	Ulziit	8	20,160	161,280	10	11,520	115,200
Darkhan-Uul	Shariin gol	5	9,200	46,000	8	6,480	51,840
Selenge	Mandal	6	3,667	22,000	9	2,560	23,040
	Orkhontuul	5	0	0	0	-	-
Tuv	Zaamar	8	8,640	69,120	10	12,464	124,640
	Bornuur	8	7,750	62,000	9	2,600	23,400

Khovd	Bulgan	-	-	-	5	9,808	49,040
	Uench	-	-	-	5	22,916	114,580
	Tsetseg	-	-	-	6	13,333	80,000
Uvs	Tarialan	-	-	-	9	16,569	149,120
	Umnugovi	-	-	-	9	7,120	64,080
Total		96	994,060		147	1,266,260	

Sources: Baseline and Follow-up study result

Payment fell in soums with fluorspar deposits due to a stagnation of artisanal mining.

Table 31 Social insurance premium paid monthly by minerals traders; baseline vs. 2016 follow-up, at the respondents' level (MNT)

Source		Traders					
Location		2015 /N=96/			2016 /N=147/		
Aimags	Soums	Traders	Average payment	Total payment	Traders	Average payment	Total payment
Bayan-khongor	Bayan-Ovoo	1	0	0	2	11,540	23,080
	Bumbugur	2	12,000	24,000	2	12,000	24,000
Govi-Altai	Yusunbulag	2	26,900	53,800	4	24,750	99,000
	Biger	1	0	0	0	-	-
Dornogovi	Airag	1	48,000	48,000	2	12,000	24,000
Dundgovi	Khuld	1	23,040	23,040	1	0	0
	Ulziit	1	23,040	23,040	1	0	0
Darkhan-Uul	Shariin gol	1	0	0	2	0	0
Selenge	Mandal	1	0	0	1	0	0
	Orkhontuul	1	0	0	0	-	-
Tuv	Zaamar	2	23,100	46,200	2	0	0
	Bornuur	1	0	0	2	0	0
Khovd	Bulgan	-	-	-	2	54,320	108,640
	Uench	-	-	-	2	26,500	53,000
	Tsetseg	-	-	-	1	0	0
Uvs	Tarialan	-	-	-	2	21,500	43,000
	Umnugovi	-	-	-	2	22,800	45,600
Total		15	218,080		28	420,320	

Sources: Baseline and Follow-up study result

The rise in payments shown in the 2016 follow-up study was influenced by the impact from the soums added to the 2016 follow-up study. Over 60% of the total of respondents in the 2016 follow-up study were from Khovd and Uvs aimags. Soums involved both the baseline and 2016 follow-up studies exhibited no change.

The total monetary amount from respondents to the 2016 follow-up study at the soum level also fell, particularly in soums which were in the baseline study, again due to lack of permission for mining. (Table 30)

Table 32 Social insurance paid monthly by artisanal miners; baseline vs. 2016 follow-up, at the soum level (MNT)

Location		ASM					
		2015 (n=5,740)			2016 (n=8,917)		
Aimags	Soums	ASMs	Average payment	Total payment	ASMs	Average payment	Total payment
Bayan-khongor	Bayan-Ovoo	830	26,400	21,912,000	1,025	0	0
	Bumbugur	95	6,000	570,000	90	14,016	1,261,440

Govi-Altai	Yusunbulag	1,150	17,500	20,125,000	1,050	6,320	6,636,000
	Biger	-	6,545	-	-	-	-
Dornogovi	Airag	165	8,940	1,475,100	165	2,392	394,680
Dundgovi	Khuld	650	11,117	7,226,050	380	16,324	6,203,120
	Ulziit	388	20,160	7,822,080	120	11,520	1,382,400
Darkhan-Uul	Shariin gol	846	9,200	7,783,200	700	6,480	4,536,000
Selenge	Mandal	900	3,667	3,300,300	3,000	2,560	7,680,000
	Orkhontuul	300	0	-	-	-	-
Tuv	Zaamar	268	8,640	2,315,520	368	12,464	4,586,752
	Bornuur	148	7,750	1,147,000	306	2,600	795,600
Khovd	Bulgan	-	-	-	350	9,808	3,432,800
	Uench	-	-	-	175	22,916	4,010,300
	Tsetseg	-	-	-	708	13,333	9,440,000
Uvs	Tarialan	-	-	-	150	16,569	2,485,333
	Umnugovi	-	-	-	330	7,120	2,349,600
Total		5,740	73,676,250		8,917	55,194,025	

Sources: Baseline and Follow-up study result

The following table shows social insurance paid by minerals traders at the soum level. (Table 31)

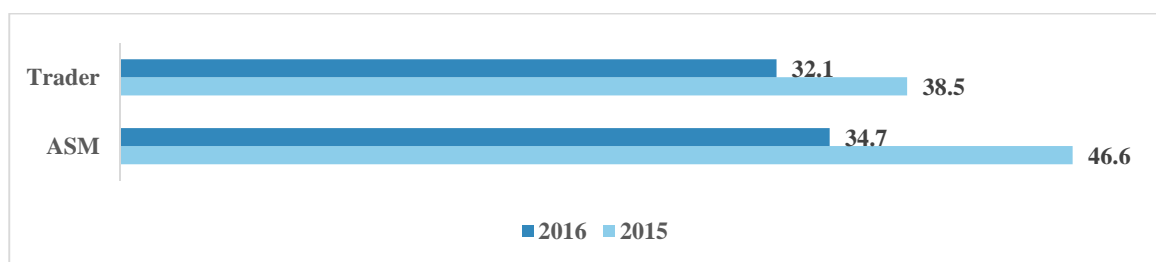
Table 33 Social insurance paid monthly by minerals traders; baseline vs. 2016 follow-up, at the soum level (MNT)

Location		Traders					
		2015 (n=62)			2016 (n=74)		
Aimags	Soums	Traders	Average payment	Total payment	Traders	Average payment	Total payment
Bayankhongor	Bayan-Ovoo	2	0	0	2	11,540	23,080
	Bumbugur	12	12,000	144,000	8	12,000	96,000
Govi-Altai	Yusunbulag	5	26,900	134,500	7	24,750	173,250
	Biger	0	0	0	0	0	0
Dornogovi	Airag	4	48,000	192,000	4	12,000	48,000
Dundgovi	Khuld	1	23,040	23,040	1	0	0
	Ulziit	4	23,040	92,160	1	0	0
Darkhan-Uul	Shariin gol	5	0	0	6	0	0
Selenge	Mandal	4	0	0	5	0	0
	Orkhontuul	1	0	0	0	0	0
Tuv	Zaamar	20	23,100	462,000	20	0	0
	Bornuur	4	0	0	2	0	0
Khovd	Bulgan	-	-	-	5	54,320	271,600
	Uench	-	-	-	1	26,500	26,500
	Tsetseg	-	-	-	3	-	-
Uvs	Tarialan	-	-	-	4	21,500	86,000
	Umnugovi	-	-	-	5	22,800	114,000
Total		62	1,047,700		74	838,430	

Sources: Baseline and Follow-up study result

The percentage of artisanal miners and minerals traders in the 2016 follow-up study paying social insurances decreased from the baseline study.

Figure 27 Artisanal miners and traders payment of social insurance premiums; respondents' level.



Source: Sample study result

The following table shows payment of social insurance by artisanal miners and minerals traders; comparing the 2016 baseline and 2016 follow-up study.

Table 34 Artisanal miners and traders payment of social insurance, baseline vs. 2016 follow-up.(MNT)

Item	2015 Baseline / 2016 Follow up	Number of ASMs & Traders	Monthly total payment (month)
Soum level	2015	5802	74,723,950
	2016	8991	56,032,455
Respondents level	2015	111	1,212,140
	2016	175	1,686,580

Sources: Baseline and Follow-up study result

2.2.4 Health insurance

Health insurance premiums are important to artisanal miners and minerals traders working in toxic and difficult working conditions. Study respondents said that they used no chemicals in their operations. However, study observations indicated that artisanal miners probably use chemicals and explosives for hard rock deposits. Artisanal miners said their health was deteriorating, mainly due to difficult and toxic working conditions. This was particularly so among artisanal miners in soums with hard rock deposits who endure fine dust particles, resulting in respiratory problems and poor lung health. That is why it is important for artisanal miners and minerals traders to pay health insurance premiums regularly in order to access low-cost medical check-ups and assistance.

Table 35 Health insurance paid monthly by artisanal miners, at the respondent level; baseline vs. 2016 follow-up (MNT)

		ASM					
		2015 /N=96/			2016 /N=147/		
Aimag	Soum	ASMs	Average payment	Total payment	ASMs	Average payment	Total payment
Bayankhongor	Bayan-Ovoo	8	335	2,680	9	1,920	15,360
	Bumbugur	8	670	5,360	9	3,100	31,000
Govi-Altai	Yusunbulag	8	335	2,680	19	2,417	45,920
	Biger	8	0	0	0	-	-
Dornogovi	Airag	16	209	3,350	20	576	11,520
Dundgovi	Khuld	8	335	2,680	10	2,688	26,880
	Ulziit	8	670	5,360	10	2,688	26,880
Darkhan-Uul	Shariin gol	5	0	0	8	480	3,840
Selenge	Mandal	6	0	0	9	0	0
	Orkhontuul	5	0	0	0	-	-
Tuv	Zaamar	8	335	2,680	10	1,952	19,520

	Bornuur	8	168	1,340	9	1,238	11,140
Khovd	Bulgan	-	-	-	5	768	3,840
	Uench	-	-	-	5	4,368	21,840
	Tsetseg	-	-	-	6	3,667	22,000
Uvs	Tarialan	-	-	-	9	3,707	33,360
	Umnugovi	-	-	-	9	3,058	27,520
Total		96	26,130		147	300,620	

Sources: Baseline and Follow-up study result

The health insurance payment in the 2016 follow-up study was increased from the baseline study about MNT 2,000.

Health insurance monthly payment by traders was shown in table below.

Table 36 Health insurance paid mnthly by minerals traders, at the respondents' level, baseline vs. 2016 follow-up (MNT)

		Traders					
		2015 /N=15/			2016 /N=28/		
Aimag	Soum	Traders	Average paymnet	Total payment	Traders	Average paymnet	Total payment
Bayankhongor	Bayan-Ovoo	1	0	0	2	3,900	7,800
	Bumbugur	2	335	670	2	3,850	7,700
Govi-Altai	Yusunbulag	2	670	670	4	2,850	11,400
	Biger	1	0	0	0	-	-
Dornogovi	Airag	1	0	0	2	1,900	3,800
Dundgovi	Khuld	1	0	0	1	4,000	4,000
	Ulziit	1	0	0	1	0	0
Darkhan-Uul	Shariin gol	1	0	0	2	0	0
Selenge	Mandal	1	0	0	1	0	0
	Orkhontuul	1	600	600	0	-	-
Tuv	Zaamar	2	335	670	2	0	0
	Bornuur	1	0	0	2	2,750	5,500
Khovd	Bulgan	-	-	-	2	6,000	12,000
	Uench	-	-	-	2	5,500	11,000
	Tsetseg	-	-	-	1	-	-
Uvs	Tarialan	-	-	-	2	4,100	8,200
	Umnugovi	-	-	-	2	3,000	6,000
Total		15	2,610		28	77,400	

Sources: Baseline and Follow-up study result

Health insurance payments rose because of an increase in the number of artisanal miners.

The following table shows health insurance payment of artisanal miners at the soum level.

Table 37 Health insurance paid by artisanal miners, baseline vs. 2016 follow-up, at the soum level.

		ASM					
		2015 /N=5740/			2016 /N=8917/		
Aimag	Soum	ASMs	Average payment	Total payment	ASMs	Average payment	Total payment
Bayankhongor	Bayan-Ovoo	830	335	278,050	1,025	1,920	1,968,000
	Bumbugur	95	670	63,650	90	3,100	279,000
Govi-Altai	Yusunbulag	1,150	335	385,250	1,050	2,417	2,537,684
	Biger	0	0	0	0	-	-
Dornogovi	Airag	165	209	34,485	165	576	95,040

Dundgovi	Khuld	650	335	217,750	380	2,688	1,021,440
	Ulziit	388	670	259,960	120	2,688	322,560
Darkhan-Uul	Shariin gol	846	0	-	700	480	336,000
Selenge	Mandal	900	0	-	3,000	0	0
	Orkhontuul	300	0	-	-	-	-
Tuv	Zaamar	268	335	89,780	368	1,952	718,336
	Bornuur	148	168	24,864	306	1,238	378,760
Khovd	Bulgan	-	-	-	350	768	268,800
	Uench	-	-	-	175	4,368	764,400
	Tsetseg	-	-	-	708	3,667	2,596,000
Uvs	Tarialan	-	-	-	150	3,707	556,000
	Umnugovi	-	-	-	330	3,058	1,009,067
Total		5,740	1,353,789		8,917	12,851,087	

Sources: Baseline and Follow-up study result

The 2016 follow-up study showed that artisanal miners paid MNT 12,851,087 per month for health insurance at the soum level. The above table shows that payments increased due to the soums added to the follow-up study.

The following table shows health insurance payments of artisanal miners at the soum level.

Table 38 Health insurance paid monthly by minerals traders; baseline vs. 2016 follow-up, at the soum level (MNT)

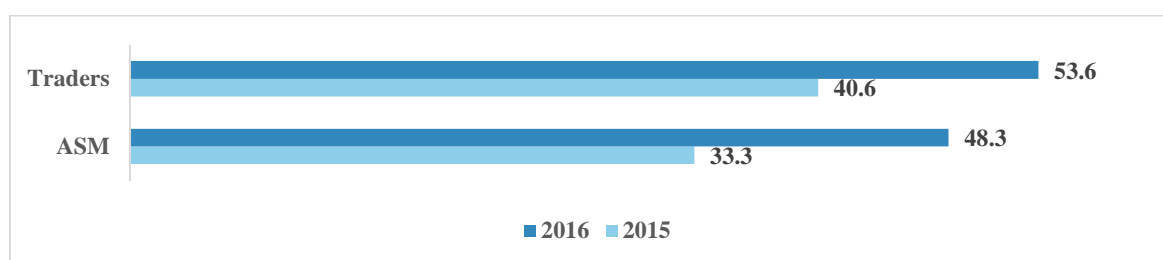
		Traders					
		2015 /N=62/			2016 /N=74/		
Aimags	Soums	Traders	Average payment	Total payment	Traders	Average payment	Total payment
Bayankhongor	Bayan-Ovoo	2	0	0	2	3,900	7,800
	Bumbugur	12	335	4,020	8	3,850	30,800
Govi-Altai	Yusunbulag	5	670	3,350	7	2,850	19,950
	Biger	0	0	0	0	-	-
Dornogovi	Airag	4	0	0	4	1,900	7,600
Dundgovi	Khuld	1	0	0	1	4,000	4,000
	Ulziit	4	0	0	1	0	0
Darkhan-Uul	Shariin gol	5	0	0	6	0	0
Selenge	Mandal	4	0	0	5	0	0
	Orkhontuul	1	600	600	0	-	-
Tuv	Zaamar	20	335	6,700	20	0	0
	Bornuur	4	0	0	2	2,750	5,500
Khovd	Bulgan	-	-	-	5	6,000	30,000
	Uench	-	-	-	1	5,500	5,500
	Tsetseg	-	-	-	3	-	-
Uvs	Tarialan	-	-	-	4	4,100	16,400
	Umnugovi	-	-	-	5	3,000	15,000
Total		62	14,670		74	142,550	

Sources: Baseline and Follow-up study result

The 2016 follow-up study showed that traders at the soum level paid MNT 142,000 for health insurance. The 2016 follow-up study showed that health insurance payments by artisanal miners and minerals traders was more than in the baseline.

Payment of health insurance by minerals traders in the 2016 follow-up study rose from the baseline level.

Figure 28 Artisanal miners and traders health insurance payment status; respondents' level



Source: Sample study result

Health insurance payments at the soum and respondent levels rose for both artisanal miners and minerals traders. The table below shows health insurance payments in both the 2015 baseline and 2016 follow-up. For the soums added to the 2016 follow-up study only, health insurance payments made up about 30% of the total paid for health insurance. Comparison of baseline and 2016 follow-up study results show an increase from the baseline, confirming that health insurance payment is important for artisanal miners and minerals traders.

Table 39 Health insurance payment by artisanal miners and minerals traders, baseline vs. 2016 follow-up, (MNT)

	2015 Baseline / 2016 Follow up	ASMs & Traders	Monthly total health insurance
Soum level	2015	5802	1,368,459 ₮
	2016	8991	12,993,637 ₮
Respondents level	2015	111	28,740 ₮
	2016	175	378,020 ₮

Sources: Baseline and Follow-up study result

2.2.5 Payment for use of mineral reserves

The baseline study showed that some artisanal miners paid royalties to the soum government. In the 2016 follow-up study, researchers asked for information about certain fees such as royalties and other unspecified fees that respondents paid.

Table 40 shows that respondent artisanal miners paid MNT 647,503 per month in total land and other fees to the soum administration. Of the soums in both baseline and 2016 follow-up studies, Bumbugur soum had the highest land fees while of the soums added to the 2016 follow-up study, Uyench soum had the highest land fee rate.

Table 40 Land fee paid by artisanal miners and other fees, at the level of respondents; 2016 follow-up study (MNT)

Location		ASM				
Aimags	Soums	ASMs	Monthly land fee		Monthly other payment	
			Average payment	Total payment	Average payment	Total payment
Bayan-khongor	Bayan-Ovoo	9	9,042	72,333	-	-
	Bumbugur	9	17,500	175,000	-	-
Govi-Altai	Yusunbulag	19	2,114	40,167	-	-
	Biger	0	-	-	-	-
Dornogovi	Airag	20	1,458	29,167	63	1,250
Dundgovi	Khuld	10	570	5,700	-	-

	Ulziit	10	-	-	-	-
Darkhan-Uul	Shariin gol	8	6,563	52,500	-	-
Selenge	Mandal	9	2,160	19,444	667	6,000
	Orkhontuul	0	-	-	-	-
Tuv	Zaamar	10	-	-	29,500	295,000
	Bornuur	9	-	-	-	-
Khovd	Bulgan	5	1,700	8,500	-	-
	Uench	5	16,042	80,208	-	-
	Tsetseg	6	-	-	-	-
Uvs	Tarialan	9	12,222	110,000	-	-
	Umnugovi	9	6,054	54,484	-	-
Total		147	647,503		302,250	

Source: Follow-up study result

Other fees in the 2016 follow-up study include waste removal and water fees, for which artisanal miners paid MNT 302,250 in total per month. Artisanal miners of soums added to the 2016 follow-up study only, did not pay these fees. For land fees, artisanal miners paid MNT 647,503 per month to the soum government.

Table 41 Land fees from artisanal miners and other fees, at the soum level; 2016 follow-up (MNT)

Location		ASM (n=8,917)				
		ASMs	Monthly land fee		Monthly other payment	
Aimags	Soums		Average payment	Total payment	Average payment	Total payment
Bayankhongor	Bayan-Ovoo	1,025	24,111	24,713,775	0	0
	Bumbugur	90	87,500	7,875,000	0	0
Govi-Altai	Yusunbulag	1,050	10,042	10,543,838	0	0
	Biger	NA	NA	NA	NA	NA
Dornogovi	Airag	165	29,167	4,812,555	63	10,313
Dundgovi	Khuld	380	700	266,000	0	0
	Ulziit	120	0	0	0	0
Darkhan-Uul	Shariin gol	700	26,250	18,375,000	0	0
Selenge	Mandal	3,000	19,444	58,332,000	667	2,000,000
	Orkhontuul	NA	NA	NA	NA	NA
Tuv	Zaamar	368	0	0	29,500	10,856,000
	Bornuur	306	0	0	0	0
Khovd	Bulgan	350	8,500	2,975,000	0	0
	Uench	175	40,104	7,018,200	0	0
	Tsetseg	708	0	0	0	0
Uvs	Tarialan	150	22,000	3,300,000	0	0
	Umnugovi	330	18,161	5,993,240	0	0
Total		8,917	31,828,092		12,866,313	

Source: Follow-up study result

For soum level land fees, artisanal miners paid a total of MNT 31,828,092. In terms of soums in the 2016 follow-up study, a total of MNT 31,828,092 was paid to the local government for land fees.

Table 42 Land fees paid by artisanal miners and other fees, two level comparisons of 2016 follow-up results (MNT)

Item	Number of Miners	Monthly land fee
Soum level	8,917	31,828,092 ₮
Respondents level	145	647,503 ₮
Yearly other payment		

Soum level	8,917	12,866,313 ₮
Respondents level	145	302,250 ₮

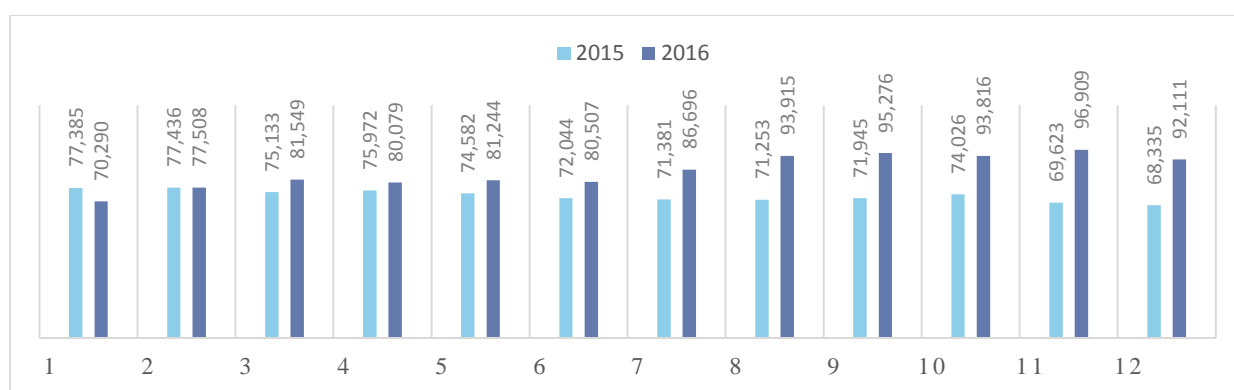
Source: Follow-up study result

2.2.6 Royalty (Payment for use of mineral reserves)

The ASM's had less chance to pay mineral royalties due to the lack of possibilities selling gold to the Bank of Mongolia in Ulaanbaatar. Therefore, ASM's sell their gold to the minerals traders in Aimags. Such a way the gold with unknown origin had accumulating in the Bank of Mongolia.

The table below shows Mongol Bank's gold prices during the 2015 baseline and follow up study. In 2015, the average annual purchase price was MNT 73.214, in 2016 it was MNT 85.822.

Figure 29 Mongol Bank's gold price (MNT)



Source: Web page of Mongol Bank

Mongol Bank's gold price rate had increased since March 2016. But traders bought a total of 20.211 kilogramme of gold from artisanal miners in 2014, 2015 and 2016 and they supplied it to Mongol Bank. Of this, 6.990 kg of gold was supplied in 2015, and 9.970 kg in 2016. In 2015, 2,206 people and in 2016, 2,806 people supplied gold to Mongol Bank.

According to the Budget law of Mongolia, certain amounts of income generated from the local mineral resources shall be allocated to the Local Development Fund. However, due to the indefinite origin or limitation to determine the origin of mineral resources, certain amounts of the royalty fails to be distributed to the Local Development Fund. This leads to barriers to strengthen the economic capacity of stakeholders of the formal supply network of artisanal miners. As a result, the contribution made by miners and traders into local economic sector could not be fully calculated.

2.2.7 Summary of taxes and fees

The following table shows the total of taxes, fees, insurances and premiums paid by artisanal miners and minerals traders (at the respondent level) in the 2015 baseline and in the 2016 follow-up study.²⁶

Table 43 Total amount of taxes, fees, premiums and insurances paid by artisanal miners, at the respondents' level (MN T)

Location		ASM			
		2015 /N=96/		2016 /N=147/	
Aimag	Soum	ASMs	Monthly total	ASMs	Monthly total
Bayankhongor	Bayan-Ovoo	8	981,880	9	282,476
	Bumbugur	8	147,360	9	503,245
Govi-Altai	Yusunbulag	8	115,346	19	508,084
	Biger	8	91,200	0	-
Dornogovi	Airag	16	322,390	20	170,777
Dundgovi	Khuld	8	362,766	10	619,820
	Ulziit	8	658,640	10	679,247
Darkhan-Uul	Shariin gol	5	114,000	8	113,180
Selenge	Mandal	6	23,000	9	56,484
	Orkhontuul	5	8,666	0	-
Tuv	Zaamar	8	81,800	10	439,160
	Bornuur	8	92,340	9	35,540
Khovd	Bulgan	-	-	5	192,330
	Uench	-	-	5	224,628
	Tsetseg	-	-	6	118,667
Uvs	Tarialan	-	-	9	309,147
	Umnugovi	-	-	9	146,084
Total		96	2,999,388	147	4,398,869

Sources: Baseline and Follow-up study result

Respondents to the 2016 follow-up study revealed that the total taxes and fees amounted to MNT 4,398,869; with about MNT 1 million related to the five soums added to the 2016 follow-up.

The total amount of taxes, fees, premiums and insurances paid by minerals traders, at the respondents level are shown below.

Table 44 Minerals traders' payment of taxes, fees, premiums & insurances; respondents' level (MNT)

		Traders			
		2015 (n=15)		2016 (n=28)	
Aimag	Soum	Traders	Monthly total	Traders	Monthly total
Bayan-khongor	Bayan-Ovoo	1	0	2	155,880
	Bumbugur	2	35,670	2	31,700
Govi-Altai	Yusunbulag	2	96,070	4	179,900
	Biger	1	-	0	-
Dornogovi	Airag	1	98,000	2	390,300
Dundgovi	Khuld	1	3,778,040	1	59,000
	Ulziit	1	39,740	1	217,000
Darkhan-Uul	Shariin gol	1	-	2	-

²⁶ Land fee for mineral extraction and other fees are not included

Selenge	Mandal	1	1,000	1	53,000
	Orkhontuul	1	600	0	NA
Tuv	Zaamar	2	84,870	2	0
	Bornuur	1	0	2	15,500
Khovd	Bulgan	-	-	2	120,640
	Uench	-	-	2	64,000
	Tsetseg	-	-	1	-
Uvs	Tarialan	-	-	2	96,200
	Umnugovi	-	-	2	51,600
Total		15	4,133,990	28	1,434,720

Sources: Baseline and Follow-up study result

In the table below, the total sum of taxes, fees, premiums and insurance payments by artisanal miners in soum level are shown.

Table 45 Total sum of taxes, fees, premiums and insurance payment by artisanal miners, at the soum level (MNT)

Location		ASM			
		2015 (n=5,740)		2016 (n=8,917)	
Aimag	Soum	ASMs	Monthly total	ASMs	Monthly total
Bayan-khongor	Bayan-Ovoo	830	101,870,050	1,025	36,192,238
	Bumbugur	95	1,749,900	90	4,529,205
Govi-Altai	Yusunbulag	1,150	32,777,300	1,050	28,078,326
	Biger	-	-	-	-
Dornogovi	Airag	165	3,376,890	165	1,408,910
Dundgovi	Khuld	650	29,435,250	380	23,553,160
	Ulziit	388	31,944,040	120	8,150,964
Darkhan-Uul	Shariin gol	846	19,288,800	700	9,903,250
Selenge	Mandal	900	3,450,600	3,000	18,828,000
	Orkhontuul	300	519,900	-	-
Tuv	Zaamar	268	2,740,300	368	16,161,088
	Bornuur	148	1,708,364	306	1,208,360
Khovd	Bulgan	-	-	350	13,463,100
	Uench	-	-	175	7,861,980
	Tsetseg	-	-	708	14,002,706
Uvs	Tarialan	-	-	150	5,152,450
	Umnugovi	-	-	330	5,356,413
Total		5,740	228,861,394	8,917	193,850,150

Sources: Baseline and Follow-up study result

The direct economic impact for the soums - as shown in both the baseline and 2016 follow-up studies - for the total amount of taxes, fees and premiums, rose to MNT 19,767,318. The 2016 follow-up study showed that the total amount of direct economic contribution by artisanal miners in taxes, fees and premiums fell by over MNT 80 million. The decline was due to reductions in the average taxes and fees in Bayankhongor aimag's soums, Gobi-Altai aimag's soums and Dundgobi aimag's soums; and changes in the number of artisanal miners. Other key reasons were the lack of land licensed for artisanal mining and limited reserves of permitted land.

For minerals traders, the findings showed lower fees etc. than in the baseline study. The five newly added soums accounted for 28% of all taxes and fees at the soum levels, according to the 2016 follow-up study.

Table 46 Total amount of taxes, fees, premiums and insurances paid by miners, at the soum level (MNT)

Source		Traders			
Location		2015 /N=62/		2016 /N=74/	
Aimags	Soums	Traders	Monthly total	Traders	Monthly total
Bayankhongor	Bayan-Ovoo	2	0	2	155,880
	Bumbugur	12	214,020	8	126,800
Govi-Altai	Yusunbulag	5	242,015	7	314,825
	Biger	0	-	0	-
Dornogovi	Airag	4	392,000	4	780,600
Dundgovi	Khuld	1	3,778,040	1	59,000
	Ulziit	4	158,960	1	217,000
Darkhan-Uul	Shariin gol	5	0	6	0
Selenge	Mandal	4	4,000	5	265,000
	Orkhontuul	1	600	0	0
Tuv	Zaamar	20	928,700	20	0
	Bornuur	4	0	2	15,500
Khovd	Bulgan	-	-	5	301,600
	Uench	-	-	1	32,000
	Tsetseg	-	-	3	0
Uvs	Tarialan	-	-	4	192,400
	Umnugovi	-	-	5	129,000
Total		62	5,718,335	74	2,589,605

Sources: Baseline and Follow-up study result

The total amount of local taxes and fees decreased due to the reduced taxes and fees of artisanal miners. A summary of the amounts are shown in table below.

Table 47 Total sum of taxes, fees, premiums for social and health insurance (MNT)

	2015 Baseline / 2016 Follow up	Number of ASMs & Traders	Total monthly taxes and fees, Payment of social insurance and health insurance premiums
Soum level	2015	5,802	234,579,729
	2016	8,991	196,439,755
Respondents level	2015	111	7,133.378
	2016	175	5,833,589

Sources: Baseline and Follow-up study result

2.3 Procurement related to the mineral extraction operations

The direct economic impact of the procurement of goods and services was measured by the sum of costs incurred by artisanal miners and minerals traders for artisanal mining operations.

2.3.1 Procurement costs related to artisanal mining operations

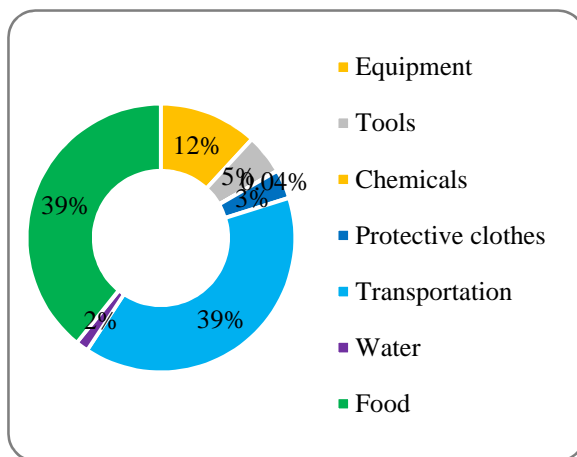
Procurement costs related to artisanal mining operations included the cost of equipment, tools, chemicals, protective work clothing, safety devices, transport and food. The total costs relating to extraction operations of all businesses in the 2016 follow-up study²⁷ was MNT 83.3 million a month. Most of this was for food and transport: 39% of all procurement costs of artisanal miners was for

²⁷ 10 artisanal miners did not disclose production costs, so the study focused on procurement costs of the remaining 137 artisanal miners.

food, 39% for transport, 12% for equipment, 5% for tools, 3% for work clothing and safety devices and 2% for water (Figure 30).

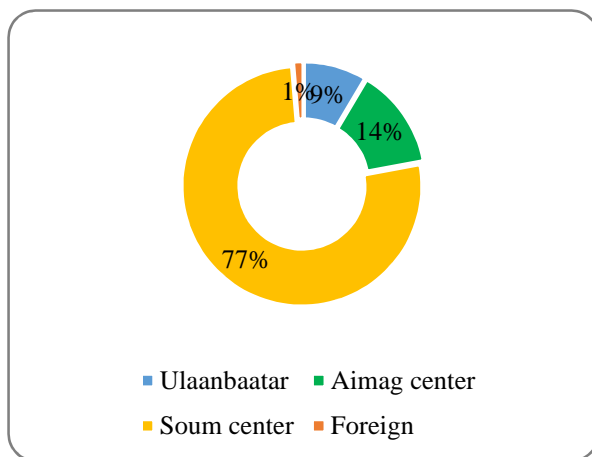
Artisanal miners made most procurements from their soum-based suppliers. For instance, they purchased 77% of goods and services from soums, 14% from the aimag centre, 9% from Ulaanbaatar and 1% from the foreign market (Figure 31).

Figure 30 Types of procurement costs, for artisanal miners extraction necessities



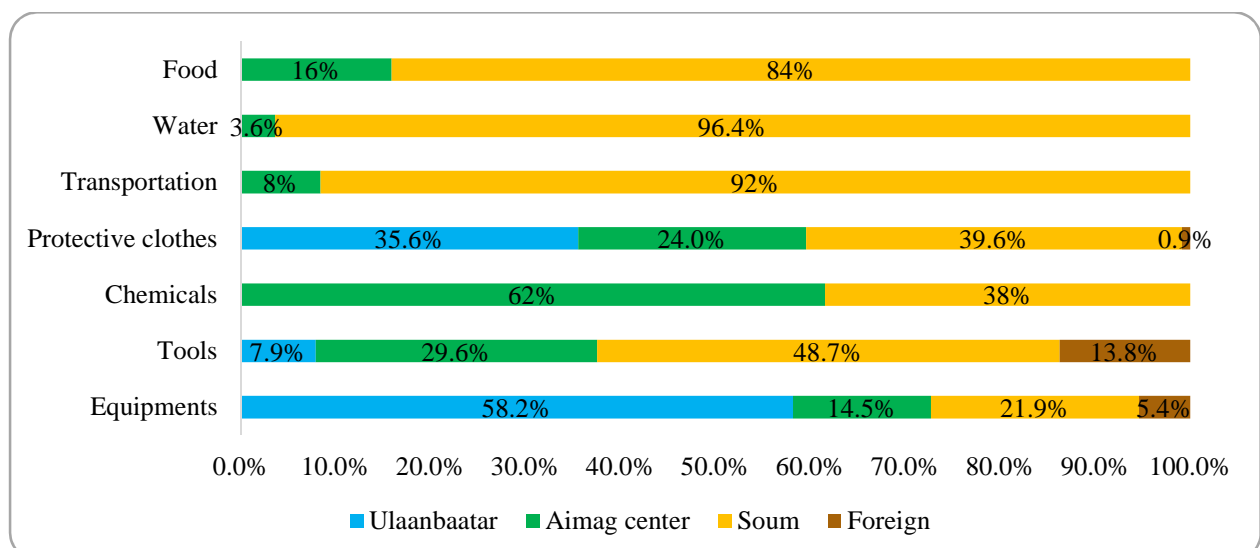
Source: Follow-up study result

Figure 31 Key markets from where artisanal miners procedure



Responses about where the artisanal miners bought goods and service are summarized in the following figure, by type of procurement. Artisanal miners bought most of their food, water and fuel from the soum market, and most equipment, protective clothing and tools from Ulaanbaatar and aimag markets.

Figure 32 Types of procurement costs and key markets



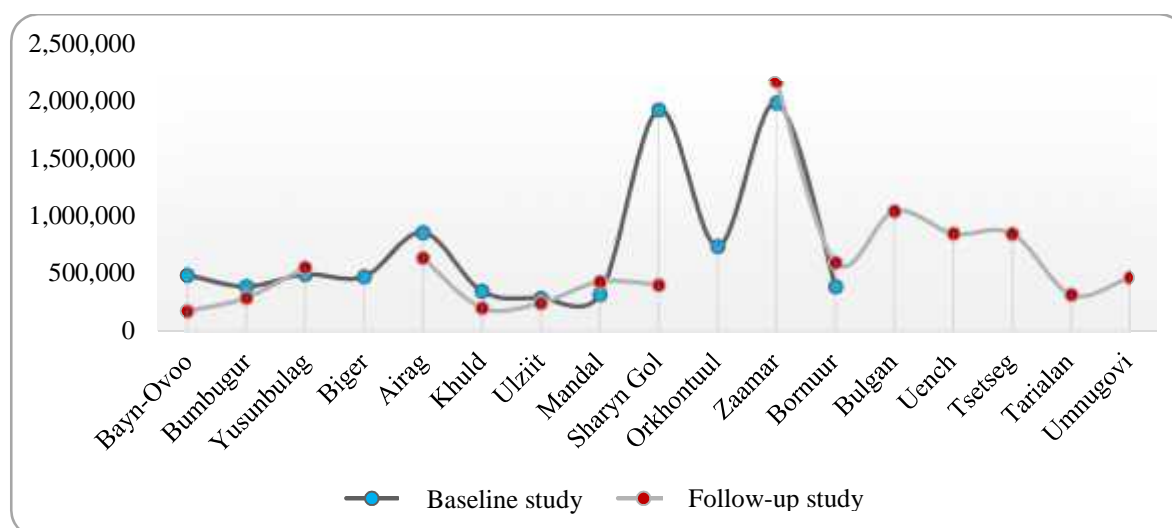
Source: Follow-up study result

Table 48 presents artisanal miners' procurement costs related to mining operations for the baseline and the follow up study. Artisanal miners in the 2016 follow-up study spent about MNT 608,038 a month for related artisanal mining activities (with a maximum of MNT 10 million, and a minimum of

MNT 12,500 per month). Procurement costs for artisanal mining extraction were highest in Tuv aimag’s Zaamar soum and lowest in Bayankhongor aimag’s Bayan-Ovoo soum. In the baseline study, Zaamar soum had the same result because it has gold deposits, requiring various extraction equipment, so costs such as leasing equipment and fuel are often high.

The average procurement costs were MNT 110,380 lower than in the baseline study. Six soum artisanal miners had lower costs than previously, and in four soums they were higher. Procurement costs fell by about 40-80% in Sharyn-Gol, Bayan-Ovoo and Khuld soums, but rose 35-55% in Bornuur and Mandal soums. The following figure compares average procurement costs from the 2015 baseline and 2016 follow-up.

Figure 33 Average procurement costs related to mineral extraction, baseline vs. 2016 follow-up.



Source: Follow-up study result

Business operators in the 2016 follow-up study spent MNT 83.3 million for procurement of goods and services needed for extraction. Compared to the baseline study, these costs had risen by MNT 16.1 million because of the procurement costs of the five soums added to the sample. However the total procurement costs decreased by MNT 5.2 million for the soums covered in the baseline study. The key reason is related to the decrease in average procurement cost (Table 48).

Overall, 137 business operators contributed MNT 83.3 million to the economy through procurement, of which MNT 63.8 million remained in the soum economy; MNT 11.3 million remained in aimag economy while MNT 7.0 stayed in Ulaanbaatar.

Table 48 Artisanal miners' costs related to mineral extraction, respondents level; baseline vs. 2016 follow-up (MNT)

Location		Baseline-2015			Follow up-2016		
		Average procurement cost	ASMs	Total procurement cost	Average procurement cost	ASMs	Total procurement cost
Aimag	Soum						
Bayan khongor	Bayan-Ovoo	482,887	8	3,863,100	171,281	8	1,370,250
	Bumbugur	385,037	8	3,080,300	287,861	6	1,727,167
Govi-Altai	Yusunbulag	489,600	4	1,958,400	549,134	18	9,884,417
	Biger	470,125	12	5,641,500	-	-	-
Dornogovi	Airag	851,102	16	13,617,631	633,625	18	11,405,250
Dundgovi	Khuld	344,150	8	2,753,200	199,063	8	1,592,500
	Ulziit	285,124	8	2,280,996	243,375	10	2,433,750
Darkhan-Uul	Shariin gol	1,907,332	5	9,536,661	398,417	7	2,788,917
Selenge	Mandal	318,549	6	1,911,291	426,889	9	3,842,000
	Orkhontuul	731,999	5	3,659,996	-	-	-
Tuv	Zaamar	1,969,582	8	15,756,655	2,152,917	10	21,529,170
	Bornuur	385,582	8	3,084,659	592,185	9	5,329,667
Sub-total28		718,422	96	67,144,389	539,451	103	61,903,088
Khovd	Bulgan	-	-	-	1,034,667	5	5,173,335
	Uench	-	-	-	841,000	5	4,205,000
	Tsetseg	-	-	-	840,278	6	5,041,667
Uvs	Tarialan	-	-	-	313,870	9	2,824,834
	Umnugovi	-	-	-	461,482	9	4,153,334
Sub-total29		-	-	-	769,019	34	21,398,169
Total		718,422	96	67,144,389	608,038	137*	83,301,257

Source: Follow-up study result

Note: -average value

In counting the total costs relating to mineral extraction for soums, researchers used the monthly average cost (for each soum) of artisanal miners, and the total number of artisanal miners as provided by NGOs. For this calculation, the average procurement cost of artisanal miners in each soum was represented by the average procurement costs of respondent artisanal miners representing each soum.

Table 49 shows procurement costs in relation to operations for all artisanal miners in the soums involved in the 2016 follow-up study. In the 15 soums in the 2016 follow-up study, there were a total of 8,917 artisanal miners, and they spent MNT 4.8 billion per month for procurements. This was as much as MNT 1.5 billion higher than the baseline study, largely due to procurement costs of the five soums added to the study sampling (Table 49).

Using the above data, it can be said that all artisanal miners in the 15 soums contributed MNT 4.8 billion to the local economy through procurement, and MNT 3.7 billion remains in the local economy.

28 For the soums covered in the baseline

29 For the soums added in the follow up

Table 49 Artisanal miners procurement costs related to extraction operations; soum level, baseline vs. 2016 follow-up (MNT)

Location		Baseline-2015			Follow up-2016		
		Average procure-ment cost	ASMs	Total procure-ment cost (000s)	Average procure-ment cost	ASMs	Total procure-ment cost (000s)
Aimag	Soum						
Bayan-khongor	Bayan-Ovoo	482,887	830	400,796	171,281.3	1025	175,563
	Bumbugur	385,037	95	36578.5	287,861.1	90	25,907
Govi-Altai	Yusunbulag	489,600	1150	563040.0	549,134.3	1050	576,591
	Biger	851,102	165	553,216	633,625.0	165	104,548
Dornogovi	Airag	344,150	650	133,530	199,062.5	380	75,644
Dundgovi	Khuld	285,124	388	256,612	243,375.0	120	29,205
	Ulziit	1,907,332	846	572,200	398,416.7	700	278,892
Darkhan-Uul	Shariin gol	318,549	900	269,492	426,888.9	3000	1,280,667
Selenge	Mandal	731,999	300	196,176	-	-	-
	Orkhontuul	1,969,582	268	291,498	2,152,917	368	792,273
Tuv	Zaamar	385,582	148	57,066	592,185.2	306	181,209
	Bornuur	482,887	830	400,796	171,281.3	1025	175,563
Subtotal30		718,422	5740	3,330,205	539,451	7,204	3,520,499
Khovd	Bulgan	-	-	-	1,034,667	350	362,133
	Uench	-	-	-	841,000.0	175	147,175
	Tsetseg	-	-	-	840,277.8	705	592,396
Uvs	Tarialan	-	-	-	313,870.4	150	47,081
	Umnugovi	-	-	-	461,481.5	330	152,289
Subtotal31		-	-	-	769,019	1,710	1,301,074
Total		718,422	5740	3,330,205	608,038	8914	4,821,573

Source: Follow-up study result

Note: -average value

2.3.2 Procurement of minerals traders in relation to trading businesses

Trader costs associated with mineral sales included vehicle maintenance, fuel, transport, food and contracting costs.

The total procurement costs relating to artisanal mining activities of all minerals traders³² in the 2016 follow-up study were MNT 17.8 million per month. The largest part of this was for fuel and food: 39% of minerals trader costs were for fuel, 33% for food, 16% for transport and 12% for vehicle maintenance and fuel (Figure 34).

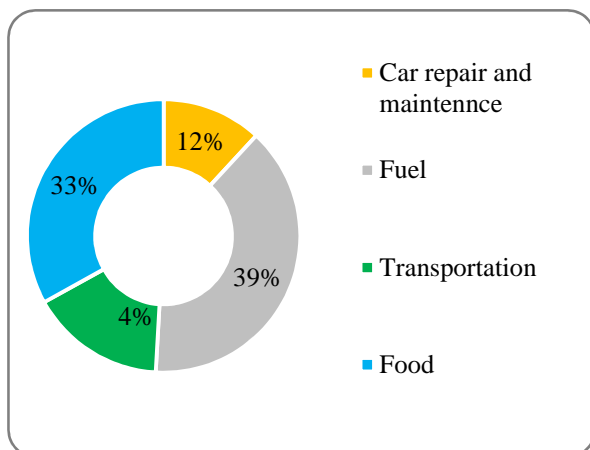
Minerals traders made 71% of their procurement from the soum market, 25% from the aimag centre and 4% from Ulaanbaatar (Figure 35).

³⁰ For the soums covered in the baseline

³¹ For the soums added in the follow up

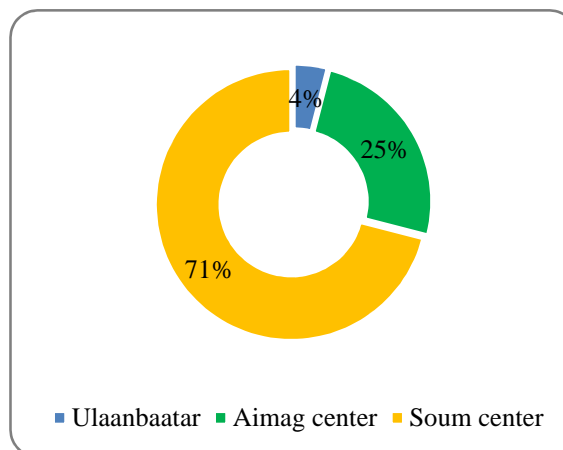
³² 3 mineral traders did not disclose their costs associated with mineral trading, so the study continues with procurement costs of the other 25 mineral traders.

Figure 34 Types of procurement costs related to minerals traders



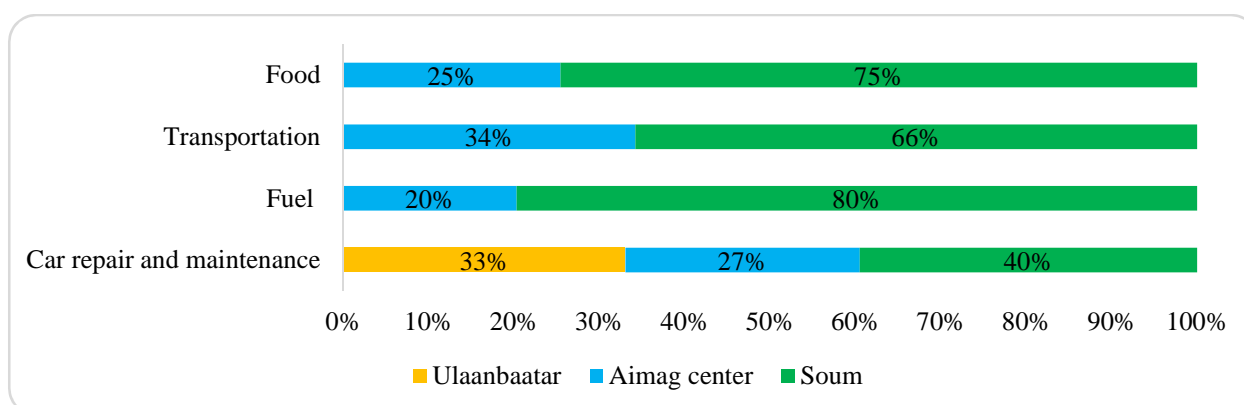
Source: Follow-up study result

Figure 35 Key markets where minerals traders buy necessities



The following figure shows responses to a question of where artisanal miners bought necessary procurements, disaggregated by each type of procurement. Artisanal miners bought most food, water, transport and fuel in their soum.

Figure 36 Types of procurement costs and market where procurement is made



Source: Baseline and Follow-up study result

Table 50 presents procurement costs related to trading for the respondent traders and all traders in the soums. Minerals traders in the 2016 follow-up study spent about MNT 757,348 per month for procurement of goods and services (with a maximum of MNT 3 million, and a minimum of MNT 50,000). Minerals traders in Tuv aimag’s Bornuur soum spent the most for procurement of necessities; minerals traders of Sharyn-Gol soum spent the least.

Minerals traders in the 2016 follow-up study paid about MNT 17.8 million per month for procurements, so 24 minerals traders contributed MNT 17.8 to the local economy in procurements, of which MNT 12.6 million entered the soum economy and MNT 4.4 was injected into the aimag centre’s economy (Table 50).

All 74 minerals traders in 15 soums in the 2016 follow-up study spent MNT 69.8 million a month for procurements necessary for their operations. So these minerals traders contributed MNT 69.8 million to the local economy for procurements, of which 49.6 million remained in the local soum economy.

Table 50 Procurement costs of minerals traders, at the respondent level and soum level (MNT)

Location		Respondents level			Soum level	
		Average procurement cost	Traders	Average procurement cost	Traders	Total procurement cost
Aimag	Soum					
Bayan-khongor	Bayan-Ovoo	187,500	2	375,000	2	750,000
	Bumbugur	312,500	2	625,000	8	5,000,000
Govi-Altai	Yusunbulag	524,125	4	2,096,500	7	14,675,500
	Biger	NA	NA	NA	NA	NA
Dornogovi	Airag	1,081,250	2	2,162,500	4	8,650,000
Dundgovi	Khuld	240,000	1	240,000	1	240,000
	Ulziit	1,100,000	1	1,100,000	1	1,100,000
Darkhan-Uul	Shariin gol	70,000	1	70,000	6	420,000
Selenge	Mandal	175,000	1	175,000	5	875,000
	Orkhontuul	NA	NA	NA	NA	NA
Tuv	Zaamar	240,000	1	240,000	20	4,800,000
	Bornuur	1,540,000	2	3,080,000	2	6,160,000
Khovd	Bulgan	825,000	2	1,650,000	5	8,250,000
	Uench	837500	2	1,675,000	1	1,675,000
	Tsetseg	1,400,000	1	1,400,000	3	4,200,000
Uvs	Tarialan	1,550,000	1	1,550,000	4	6,200,000
	Umnugovi	690,000	2	1,380,000	5	6,900,000
Total amount		757,348	25	17,819,000	74	69,895,500

Source: Follow-up study result

Note: ■-median value

2.3.3 Sum of AMs and minerals traders artisanal mining operations procurements

2016 follow-up respondents included artisanal miners (147) and minerals traders (28), who spent a total of MNT 101.1 million for procurements relating to their artisanal mining. This is considered as contribution from these respondents to the local economy through purchase of goods and services.

Artisanal miners and minerals traders' procurement costs rose MNT 33.9 million since the baseline study, of which MNT 29 million was net revenue from artisanal miners and minerals traders in the five soums added to the sample; MNT 4.9 million was due to changes in procurement costs of artisanal miners and minerals traders of the soums in the baseline study (Table 51).

Table 51 Artisanal miners and minerals traders procurement costs: sample level (MNT)

Location		Monthly procurement costs related to artisanal mining			
		Baseline-201533	Follow up-2016		
Aimag	Soum		ASMs	Traders	Total
Bayankhongor	Bayan-Ovoo	3,863,100	1,370,250	375,000	1,745,250
	Bumbugur	3,080,300	1,727,167	625,000	2,352,167
Govi-Altai	Yusunbulag	1,958,400	9,884,417	2,096,500	11,980,917
	Biger	5,641,500	0	0	0
Dornogovi	Airag	13,617,631	11,405,250	2,162,500	13,567,750

33 Baseline study did not cover the procurement costs of mineral traders related to mineral trading businesses

Dundgovi	Khuld	2,753,200	1,592,500	240,000	1,832,500
	Ulziit	2,280,996	2,433,750	1,100,000	3,533,750
Darkhan-Uul	Shariin gol	9,536,661	2,788,917	70,000	2,858,917
Selenge	Mandal	1,911,291	3,842,000	175,000	4,017,000
	Orkhontuul	3,659,996	0	0	0
Tuv	Zaamar	15,756,655	21,529,170	240,000	21,769,170
	Bornuur	3,084,659	5,329,667	3,080,000	8,409,667
Subtotal34		67,144,389	61,903,088	10,164,000	72,067,088
Khovd	Bulgan	0	5,173,335	1,650,000	6,823,335
	Uench	0	4,205,000	1,675,000	5,880,000
	Tsetseg	0	5,041,667	1,400,000	6,441,667
Uvs	Tarialan	0	2,824,834	1,550,000	4,374,834
	Umnugovi	0	4,153,334	1,380,000	5,533,334
Subtotal35		-	21,398,170	7,655,000	29,053,170
Total amount		67,144,389	83,301,257	17,819,000	101,120,257

Sources: Baseline and Follow-up study result

As shown in Table 52, 8,917 artisanal miners and 74 minerals traders in the 15 soums of the 2016 follow-up study make procurements worth MNT 4.9 billion per month, MNT 1.6 billion more than procurement costs of 5,802 artisanal miners and traders of 11 soums in the baseline study. This was almost the costs of artisanal miners and minerals traders in the five soums added to the 2016 follow-up study. (Table 52).

Table 52 Artisanal miners and minerals traders procurement costs related to artisanal mining; soum level (MNT, 000s)

Location		Monthly procurement costs related to artisanal mining			
		Baseline-2015 36	Follow up-2016		
Aimags	Soums		ASMs	Traders	Total
Bayankhongor	Bayan-Ovoo	400,796	175,563	750	176,313
	Bumbugur	36578.5	25,907	5,000	30,907
Govi-Altai	Yusunbulag	563040.0	576,591	14,676	591,267
	Biger	553,216	104,548	8,650	113,198
Dornogovi	Airag	133,530	75,644	240	75,884
Dundgovi	Khuld	256,612	29,205	1,100	30,305
	Ulziit	572,200	278,892	420	279,312
Darkhan-Uul	Shariin gol	269,492	1,280,667	875	1,281,542
Selenge	Mandal	196,176	-	-	-
	Orkhontuul	291,498	792,273	4,800	797,073
Tuv	Zaamar	57,066	181,209	6,160	187,369
	Bornuur	400,796	175,563	750	176,313
Subtotal37		3,330,205	3,520,499	42,671	3,563,170
Khovd	Bulgan	NA	362,133	8,250	370,383
	Uench	NA	147,175	1,675	148,850
	Tsetseg	NA	592,396	4,200	596,596
Uvs	Tarialan	NA	47,081	6,200	53,281
	Umnugovi	NA	152,289	6,900	159,189

34 For soums covered in the baseline

35 For soums added in the follow up

36 Baseline study did not study the procurement costs of mineral traders related to mineral trading businesses

37 For the soums covered in the baseline

Subtotal³⁸	NA	1,301,074	27,225	1,328,299
Total amount	3,330,205	4,821,573	69,896	4,891,469

Sources: Baseline and Follow-up study result

2.3.4 Conclusion

The following table summarizes the direct economic impact by artisanal miners and minerals traders by procurement of goods and services. In the 15 soums, artisanal miners and minerals traders made procurement worth MNT 4.9 billion a month, of which MNT 3.5 billion remained in the local economy.

Artisanal miners and minerals traders in the 2016 follow-up study made MNT 101.1 million of procurement a month, of which MNT 72 million remained in the local economy.

Table 53 Direct economic impact/effect from the artisanal mining activities

Level	Baseline study-2015		Follow-up study-2016	
	Monthly procurement costs related to artisanal mining operations, (MNT, 000s)	Parts remaining in the soum economy (MNT, 000s)	Monthly procurement costs related to artisanal mining operations (MNT, 000s)	Parts remaining in the soum economy (MNT, 000s)
Soum level	3,330,205	2,331,143	4,891,469	3,472,942.6
Respondents level	67,144.4	47,001.1	101,120.3	71,795.4

Sources: Baseline and Follow-up study result

2.4 Investment for the public (community)

This section offers information and findings on investments by artisanal miners and minerals traders during the year, for the public and community.

As in the baseline study, investments by the artisanal mining sector were classified into (1) physical investment for the soum, (2) investment for environmental reclamation, (3) training and safety of artisanal mining, (4) investment supporting the community and (5) donations.

Physical (tangible) investment in the soum included local landscape improvement (road repair, waste removal, and tree planting), forestation measures, repair of administration buildings, donations for kindergarten construction, gers (traditional tent-like dwelling), resolving issues related to water sources for herder households, and digging irrigation canals.

Investment supporting the community covered repair of schools and hospitals, student scholarships, gifts of school supplies, donations to the cultural centre, public goodwill campaigns (donations to sick people, and livestock supply), improving headwater areas and building repairs.

Also included were, investments for artisanal mining training in health and safety, protective clothing and devices, training in formal gold sales and environmental rehabilitation, NGO management support, alternative business training such as felt crafting, business proposal development training, and sewing skills courses.

³⁸ For the soums added in the follow-up

The following tables show the amount of investment by NGOs, artisanal miners and minerals traders in their soums, disaggregated by type.

Table 54 Investment made by NGO for the community

Location		NGO investment (MNT, 000s)					
Aimag	Soum	Physical investment	Reclamation	Training	Artisanal mining safety	Support to community	Total
Bayan-khongor	Bayan-Ovoo	1,680	50,000	0	0	N/A	51,680
	Bumbugur	1,440	0	400	0	0	1,840
Govi-Altai	Yusunbulag	300	40,000	0	0	534	40,834
Dornogovi	Airag	10,250	19,100	2,000	405	750	32,505
Dundgovi	Khuld	0	0	0	0	0	0
	Ulziit	0	20,000	0	0	0	20,000
Darkhan-Uul	Shariin gol	2,350	N/A	0	400	700	3,450
Selenge	Mandal	N/A	400	0	0	0	400
Tuv	Zaamar	0	3,000	0	0	1,800	4,800
	Bornuur	0	0	1,370	0	71,300	72,670
Khovd	Bulgan	2,500	40,000	1,500	0	0	44,000
	Uench	0	22,000	180	1,200	0	23,380
	Tsetseg	0	0	0	0	0	0
Uvs	Tarialan	0	0	0	0	1,500	1,500
	Umnugovi	0	0	0	0	0	0
Total		18,520	194,500	5,450	2,005	76,584	297,059

Source: Follow-up study result

Total investment by the NGOs in the 2016 follow-up study equalled MNT 297 million of which over half was invested for environmental rehabilitation.

Table 55 Amount of investment by artisanal miners to the local soums

Location		Miners investment amount (MNT)					Total
Aimag	Soum	Physical investment	Reclamation	Support to community	Donations and aid	Other	Total
Bayan-khongor	Bayan-Ovoo	0	0	100,000	155,000	2,000,000	2,255,000
	Bumbugur	0	72,000	0	80,000	0	152,000
Govi-Altai	Yusunbulag	0	NA	318,000	236,000	0	554,000
Dornogovi	Airag	450,000	44,500,000	150,000	280,000	0	45,380,000
Dundgovi	Khuld	0	0	0	100,000	0	100,000
	Ulziit	0	0	0	400,000	0	400,000
Darkhan-Uul	Shariin gol	0	35,000	0	0	0	35,000
Selenge	Mandal	0	0	42,000	60,000	0	102,000
Tuv	Zaamar	0	0	13,000,000	310,000	0	13,310,000
	Bornuur	0	0	2,100,000	25,000	0	2,125,000
Khovd	Bulgan	0	1,400,000	2,000,000	100,000	0	3,500,000
	Uench	0	0	0	0	0	0

	Tsetseg	0	0	0	800,000	0	800,000
Uvs	Tarialan	60,000	0	113,000	740,000	0	913,000
	Umnugovi	0	23,000	0	0	0	23,000
Total		510,000	46,030,000	17,823,000	3,286,000	2,000,000	69,649,000

Source: Follow-up study result

Table 56 Investment made by minerals traders for the community

Aimags	Soums	Traders investment amount (MNT)			Total
		Physical investment	Support to community	Donations and aid	
Bayan-khongor	Bayan-Ovoo	-	-	-	-
	Bumbugur	-	-	100,000	100,000
Govi-Altai	Yusunbulag	-	-	1,500,000	1,500,000
	Biger	N/A	N/A	N/A	N/A
Dornogovi	Airag	900,000	200,000	100,000	1,200,000
Dundgovi	Khuld	-	-	4,000,000	4,000,000
	Ulziit	1,500,000	-	3,000,000	4,500,000
Darkhan-Uul	Shariin gol	-	-	-	-
Selenge	Mandal	-	-	400,000	400,000
	Orkhontuul	N/A	N/A	N/A	N/A
Tuv	Zaamar	150,000	-	-	150,000
	Bornuur	-	-	60,000,000	60,000,000
Khovd	Bulgan	-	-	800,000	800,000
	Uench	-	3,000,000	500,000	3,500,000
	Tsetseg	-	-	-	-
Uvs	Tarialan	-	-	-	-
	Umnugovi	-	-	400,000	400,000
Total		2,550,000	2,550,000	3,200,000	147,350,000

Source: Follow-up study result

Artisanal miners and minerals traders in the 2016 follow-up study reported investment of MNT 69,649,000 and MNT 76,550,000 respectively.

Analysis of the investment in target soums showed a difference in the investment amount. For instance, investment was high in Tuv aimag's Bornuur soum for community support; whereas investment in two soums of Bayanhongor aimag and Khovd aimag's Bulgan soum for environmental rehabilitation was highest.

As for the baseline study, artisanal miners of Dornogobi aimag's Airag soum injected the most investment for rehabilitation. Artisanal miners of Tuv aimag's Zaamar soum made significant investment for community support and local development.

Minerals traders of Tuv aimag's Bornuur soum injected a significant investment as donation and aid. In the baseline study, traders of Gobi-Altai aimag's Yesunbuleg soum made considerable investment in the local soum.

2.5 Summary of contributions from artisanal miners and minerals traders to the economy

At the respondent level, Table 57 shows the direct economic contribution of artisanal miners and traders involved in the follow up study (at the respondents' level). Artisanal miners and minerals traders in the 2016 follow-up study created 175 jobs, earned about MNT 130.3 million from artisanal

mining business, spent MNT 101.1 million for procurement of goods and services and paid MNT 5.8 million taxes. In total, these two groups made MNT 237.2 million of direct contribution to the economy (Table 57).

Artisanal miners and minerals traders invested and donated to the local economy and for the local community; artisanal miners and minerals traders spent MNT 146.1 million last year for social investment. The following table shows direct contributions from artisanal miners and minerals traders to the economy, disaggregated by soum (Table 57).

The direct economic contribution of artisanal miners and minerals traders rose 1.7 fold (MNT 102.7 million) since the baseline. MNT 79.1 million of this growth was from artisanal miners and minerals traders of the five soums added to the study; the other MNT 23.7 million was due to changes in the numbers of artisanal miners and minerals traders in the study, and changes in average income and changes in procurement.

Table 57 Direct economic contribution by artisanal miners and minerals traders, at the respondents' level

Location		Follow up-2016					
		Employment		Procurement (thous. MNT/month)	Taxes and fees (thous. MNT/month)	Total (thous. MNT/month)	Social investment (thous. MNT/month)
		Jobs	Net income from artisanal mining (thous. MNT/month)				
Aimags	Soums						
Bayankhongor	Bayan-Ovoo	11	4,135.3	1,745.3	438.4	6,318.9	2,255.0
	Bumbugur	11	3,363.0	2,352.2	534.9	6,250.1	252.0
Govi-Altai	Yusunbulag	23	12,061.9	11,980.9	688.0	24,730.8	2,054.0
Dornogovi	Airag	22	12,738.8	13,567.8	561.1	26,867.6	46,580.0
Dundgovi	Khuld	11	9,626.3	1,832.5	678.8	12,137.6	4,100.0
	Ulziit	11	10,054.0	3,533.8	896.2	14,484.0	4,900.0
Darkhan-Uul	Shariin gol	11	3,716.8	2,858.9	109.5	6,685.2	502.0
Selenge	Mandal	12	11,590.5	4,017.0	113.2	15,720.7	35.0
Tuv	Zaamar	10	9,705.8	21,769.2	439.2	31,914.1	13,460.0
	Bornuur	10	4,609.5	8,409.7	51.0	13,070.2	62,125.0
Subtotal39		132	81,601.9	72,067.3	4,510.3	15,8179.2	13,6263
Khovd	Bulgan	7	5,443.1	6,823.3	313.0	12,579.4	4,300.0
	Uench	7	8,566.3	5,880.0	288.6	14,734.9	3,500.0
	Tsetseg	7	16,881.3	6,441.7	118.7	23,441.6	800.0
Uvs	Tarialan	11	7,910.8	4,374.8	405.3	12,691.0	913.0
	Umnugovi	11	9,923.9	5,533.3	197.7	15,654.9	423.0
Subtotal40		43	48,725.4	29,053.1	13,23.3	79,101.8	9,936
Total amount		175	130,327.3	101,120.3	5,833.6	237,281.1	146,199.0

Source: Follow-up study result

At the soum level. Table 58 shows the direct economic contribution of all artisanal miners and minerals traders in the soums covered in the follow up study (soum level). All artisanal miners and minerals traders operating in the 15 soums of the 2016 follow-up study created 8,988 jobs, generated about MNT 5.8 billion income per month from their operations, spent MNT 4.8 billion for

39 For the soums covered in the baseline

40 For soums added in the follow up

procurements, and paid MNT 196 million in taxes. In total, artisanal miners and minerals traders in the 15 soums made MNT 10.9 billion of direct contributions to the economy (Table 58).

Since the 2015 baseline study, the direct economic contribution of artisanal miners and minerals traders increased 1.7 fold - MNT 4.5 billion - at the soum level. MNT 3.0 billion of this rise was due to the contribution made by artisanal miners and minerals traders of the five soums added to the 2016 follow-up study, while MNT 1.5 billion was due to the change in the number of artisanal miners and traders and their direct contribution.

Table 58 Direct contribution made by artisanal miners and minerals traders to the economy, at the soum level

Location		Follow up-2016				
		Employment		Procurement (thous. MNT/month)	Taxes and fees (thous. MNT/month)	Total (thous. MNT/month)
		Jobs	Net income from artisanal mining (thous. MNT/month)			
Aimag	Soum					
Bayankhongor	Bayan-Ovoo	1027	394,269	176,313	36,348.1	606,930
	Bumbugur	98	26,471	30,907	4,656.0	62,034
Govi-Altai	Yusunbulag	1057	547,116	591,267	28,393.2	1,166,776
Dornogovi	Airag	169	96,157	113,198	2,189.5	211,545
Dundgovi	Khuld	381	184,037	75,884	23,612.2	283,533
	Ulziit	121	80,032	30,305	8,368.0	118,705
Darkhan-Uul	Shariin gol	706	2,205,705	1,281,542	9,903.3	3,497,150
Selenge	Mandal	3005	206,294	279,312	19,093.0	504,699
Tuv	Zaamar	388	292,173	797,073	16,161.1	1,105,407
	Bornuur	308	120,676	187,369	1,223.9	309,269
Subtotal41		7,260	4,152,930	3,563,170	149,948	7,866,048
Khovd	Bulgan	355	427,500	370,383	13,764.7	811,648
	Uench	176	119,834	148,850	7,894.0	276,577
	Tsetseg	708	933,197	596,596	14,002.7	1,543,795
Uvs	Tarialan	154	61,554	53,281	5,344.9	120,180
	Umnugovi	335	145,816	159,189	5,485.4	310,490
Subtotal42		1,728	1,687,901	1,328,299	46,491.7	3,062,690
Total amount		8988	5,840,831	4,891,469	196,439.8	10,928,740

Source: Follow-up study result

Conclusion: The following table summarizes the direct impact/contribution from artisanal miners and minerals traders to the economy. In the 15 soums in the 2016 follow-up study, artisanal miners and minerals traders made MNT 10.9 billion of contributions to the local economy per month, of which MNT 8.9 billion stayed in the local economy (Table 58).

Respondent artisanal miners and minerals traders made a direct contribution worth MNT 237.2 million a month to the economy; about MNT 194.9 million remained in the local economy (Table 59).

41 For soums covered in the baseline

42 For soums added in the follow up

Table 59 Total sum of direct contribution from artisanal miners and minerals traders, baseline vs. 2016 follow-up

Estimate level	Baseline-2015			Follow up-2016		
	Jobs	Direct contribution of artisanal miners and minerals traders to the economy		Jobs	Direct contribution of artisanal miners and minerals traders to the economy	
		Total amount (thous. MNT/month)	Remaining amount to the soum economy (thous.MNT/month)		Total amount (thous. MNT/month)	Remaining amount to the soum economy (thous.MNT/month)
Soum's level	5802	6,356,693.5	5,080,411.9	8988	10,928,740	8,926,130
Respondents level	145	134,532.7	108,363.9	175	237,281.1	194,923.5

Sources: Baseline and Follow-up study result

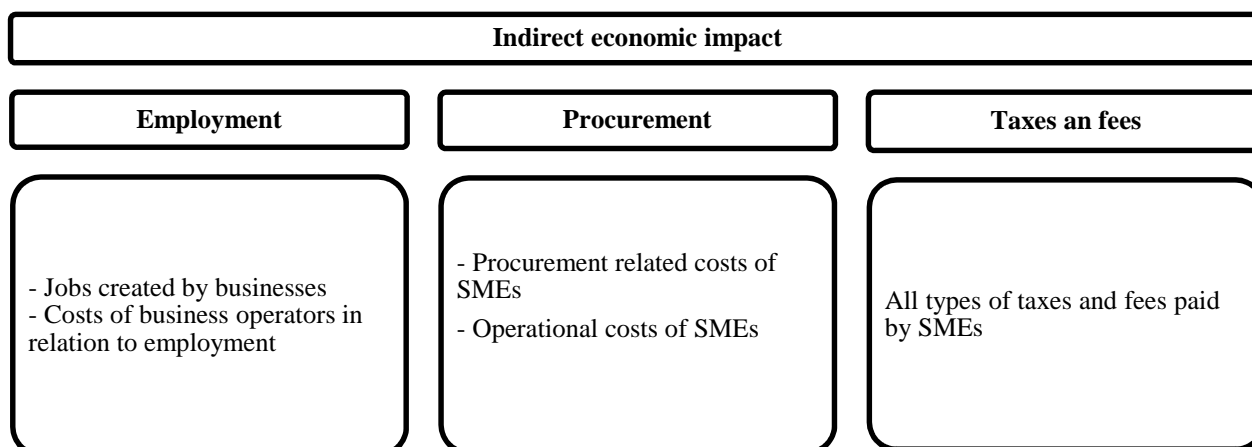
3 INDIRECT ECONOMIC IMPACT/EFFECT

This section of the study describes the indirect contribution/effect of artisanal miners and minerals traders to the local economy. The indirect economic impact was measured by jobs the suppliers created, how much tax they paid, and what procurement costs they incurred in the supply of goods and services to artisanal miners and minerals traders. Included in the framework of this study were small and medium business operators and herders working in the soum as suppliers. Small and medium business operators included: food retailers (including food, beverages and cigarettes); other types of retailer; grocery stores; retail sellers of drinks and beverages; cigarette stores; cafes; and mobile food retailers.

The total of revenues for businesses and herders from artisanal miners should not exceed the indirect contribution made by artisanal miners and minerals traders.

The chart below shows key components/contents for measuring indirect economic impact and required factors.

Figure 37 Indirect economic impact and its components



Each component of the indirect economic impact/effect was classified into the following sub-categories.

Summary on suppliers involved in the 2016 follow-up study

The 2016 follow-up study covered a total of 33 business operators and 50 herders, which meant an average of two business operators and four herders for each soum. 94% of business operators ran food and goods sales, 3% services and 3% production businesses.

Business operators in this study had been in business for an average of about 11 years (with a maximum of 30 years, and a minimum of one year): 30.3% of business operators had been running for 1-5 years, 30.3% for 6-10 years, 30.3% for 11-20 years and 9.1% for over 20 years.

Operators had been supplying artisanal miners with goods and services for an average of 8 years: 42% had supplied artisanal miners for 1-5 years, 36.4% for 6-10 years and 21.2% for over 10 years.

The average number of customers (per day) of the respondent businesses was 61, with a maximum of 200 and minimum of five). 88% of businesses said that less than 50% of their clients were artisanal miners, while 12% said over 50% of their customers were artisanal miners.

66% of herder respondents said they sold meat and dairy products to artisanal miners; 34% sold nothing to artisanal miners. And 67% of herders sell meat, 33% of herders sell dairy to artisanal miners.

Revenues generated by business operators and herders by selling goods and services to artisanal miners

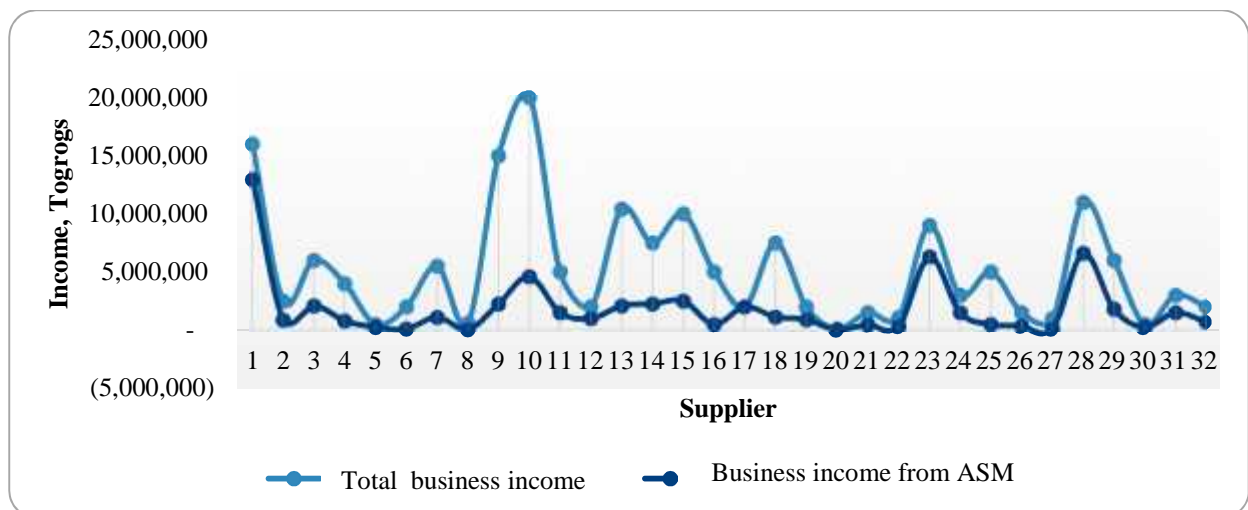
The total revenue generated by business operators and herders from artisanal miners should not exceed the total indirect impact/effect from artisanal miners for the economy. So before calculating the total indirect contribution of artisanal miners to the economy, it was important to identify how much business and herders earned from selling to artisanal miners.

Business operators. Respondent business operators to the 2016 follow-up study earned MNT 5,256,771 per month from their business (with a maximum of MNT 20 million and a minimum of MNT 100,000). 15% of business operators earned up to MNT 1 million per month, 33% earned MNT 1-3 million, 12% earned MNT 3-5 million and 21% earned MNT 5 million or more from their business.

Respondent business operators earned about 34% of total income from artisanal miners, including one who earned all their income from artisanal miners only. In detail, business operators earned about MNT 1.9 million a month from artisanal miners (with a maximum of MNT 12.9 million, and a minimum of MNT 30,000).

The following figure shows the total respondent businesses income and their income from artisanal miners.

Figure 38 Total income of businesses and revenues generated from artisanal miners



Source: Follow-up study result

Business operators responding to the 2016 follow-up study earned MNT 168.2 million from their businesses in total, with MNT 59.3 million from artisanal miners and minerals traders. Business operators in Khuld, Sharyn-Gol and Bulgan soums earned over 60% of their total income from artisanal miners. Businesses in Uyenich soum earned only 10% of their total income from artisanal miners. (Table 60)

Table 60 Income from businesses and total income generated from artisanal miners, by soums

Aimag	Soum	Number of suppliers	Total income of suppliers (MNT/month)	Income earned from artisanal miners (MNT/month)	Percentage of income generated from artisanal miners in the total income
Bayankhongor	Bayan-Ovoo	2	1,200,000	360,000	30%
	Bumbugur	2	25,000,000	6,100,000	24%
Govi-Altai	Yusunbulag	4	8,600,000	1,510,000	18%
Dornogovi	Airag	4	20,500,000	4,700,000	23%
Dundgovi	Khuld	2	18,500,000	13,835,000	75%
	Ulziit	2	10,000,000	2,900,000	29%
Darkhan-Uul	Shariin gol	3	12,000,000	7,800,000	65%
Selenge	Mandal	2	6,500,000	950,000	15%
Tuv	Zaamar	2	14,416,000	3,983,200	28%
	Bornuur	2	7,500,000	1,125,000	15%
Khovd	Bulgan	1	11,000,000	6,600,000	60%
	Uench	1	1,000,000	100,000	10%
	Tsetseg	2	7,500,000	2,145,000	29%
Uvs	Tarialan	2	17,500,000	4,750,000	27%
	Umnugovi	2	7,000,000	2,500,000	36%
Total		33	168,216,000	59,358,200	-

Source: Follow-up study result

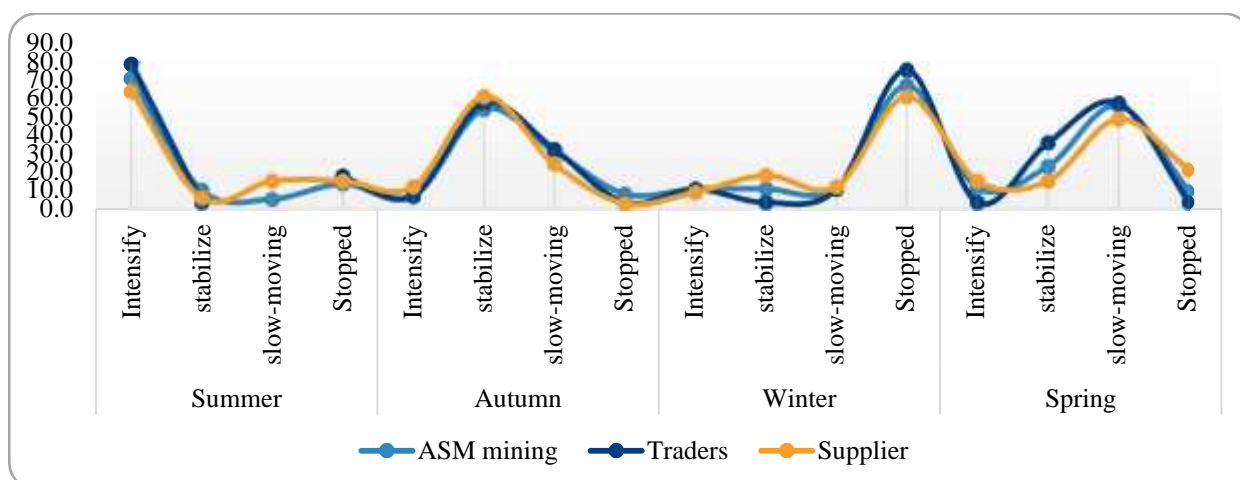
Only 6% of respondent business operators said their business income was higher than the previous year; 60% said their income had fallen and 33% said, 'No change.' Businesses whose income had changed said that this was due to changes in the purchasing capacity of artisanal miners.

Most business operators said artisanal miners paid cash for goods and services.

Soums depending on minerals extraction were influenced by seasonal fluctuations of artisanal mining. Researchers also assessed how seasonal characteristics impacted on the operations of businesses (see Figure 39). The findings revealed that seasonal business fluctuations usually coincide with seasonal fluctuations of artisanal mining and minerals trading; both were active in summer, stagnated in autumn, ceased in winter and were slow in spring.

Most respondents gave artisanal mining increases as the key for business re-vitalization; and decrease of artisanal mining as the key to business decline.

Figure 39 Seasonal cycle of artisanal mining production and mineral trading



Source: Follow-up study result

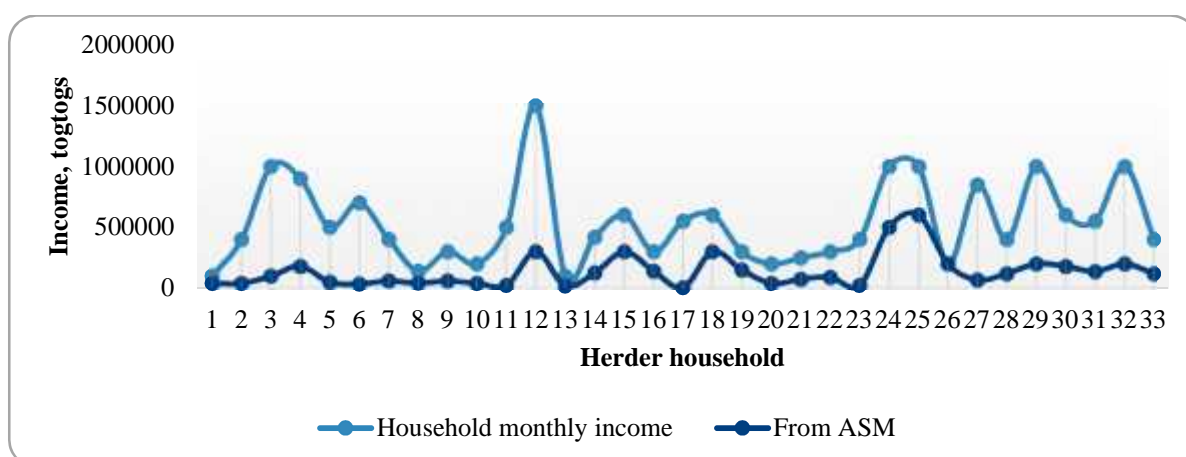
Herder households. The 2016 follow-up study showed average monthly income of respondent herder households was MNT 554,000; 28% earned MNT 300,000 or less per month, 28% MNT 300-500,000, 18% MNT 500-700,000, 12% MNT 700-900,000, and 14% over MNT 900,000 per month. 66% of respondent herders sold products to artisanal miners, 34% did not. The annual monthly household income of herders who sold to artisanal miners was MNT 535,151; herders not selling products to artisan miners earned MNT 590,588.

67% of herders' sales to artisanal miners was of meat, and 33% was dairy products. 88% of herders said that artisanal miners mostly paid cash, 12% said artisanal miner sometimes bought on short-term credit.

Herders had been supplying to artisanal miners for an average of two years (with a maximum of 10 years, and a minimum of one month).

Herder households selling to artisanal miners earned about 28% of their total income from artisanal miners; herders earning 100% of their income from artisanal miners were also involved in the study. Herders earned about MNT 183,454 per month from artisanal miners (with a maximum of MNT 600,000, and a minimum of MNT 5,500). The following figure shows the monthly income of herder households that sold to artisanal miners and the share of income from artisanal mining in the total income.

Figure 40 Herder household income and income generated from artisanal miners



Source: Follow-up study result

Herders in the 2016 follow-up study who sold to artisanal miners earned a total of MNT 27.7 million in household income: and MNT 6.7 million was directly generated from artisanal miners. Herders of Tsetseg and Mandal soums earned over half their monthly household income from artisanal miners, while herders of Bornuur soum earned only 1% of their monthly household income from artisanal miners (Table 61)

Table 61 Total monthly income of herder households and total income paid by artisanal miners, by soums

Aimags	Soum	Number of herder household	Monthly household income (MNT)	Total income generated from artisanal miners (MNT/month)	Percentage of income from artisanal miners in the total household income
Bayankhongor	Bayan-Ovoo	3	2,350,000	470,000	20
	Bumbugur	3	1,000,000	120,000	12
Govi-Altai	Yusunbulag	6	2,400,000	144,000	6
Dornogovi	Airag	6	4,350,000	870,000	20
Dundgovi	Khuld	3	1,600,000	144,000	9
	Ulziit	3	2,300,000	322,000	14
Darkhan-Uul	Shariin gol	4	1,110,000	399,600	36
Selenge	Mandal	4	3,000,000	1,500,000	50
Tuv	Zaamar	3	2,650,000	662,500	25
	Bornuur	3	1,050,000	10,500	1
Khovd	Bulgan	2	530,000	159,000	30
	Uench	2	1,010,000	-	-
	Tsetseg	2	1,200,000	804,000	67
Uvs	Tarialan	3	2,050,000	615,000	30
	Umnugovi	3	1,100,000	495,000	45
Total amount		50	27,700,000	6,715,600	-

Source: Follow-up study result

12% of herders responded that their income was more than the previous year, 26% said their income was less and 62% said there was no change. Half of herders selling to artisanal miners whose income had fallen in the past year said the change was because of changes in the purchasing power of artisanal miners.

The total income of respondent businesses and herders - from artisanal miners - was MNT 66.0 million per month.

Table 62 Total revenues generated by suppliers and herder households from artisanal miners

Aimag	Soum	Total income of suppliers earning from artisanal miners (MNT/month)	Total income of herder households earning from artisanal miners (MNT/month)	Total income (MNT/month)
Bayankhongor	Bayan-Ovoo	360,000	470,000	830,000
	Bumbugur	6,100,000	120,000	6,220,000
Govi-Altai	Yusunbulag	1,510,000	144,000	1,654,000
Dornogovi	Airag	4,700,000	870,000	5,570,000
Dundgovi	Khuld	13,835,000	144,000	13,979,000
	Ulziit	2,900,000	322,000	3,222,000
Darkhan-Uul	Shariin gol	7,800,000	399,600	8,199,600
Selenge	Mandal	950,000	1,500,000	2,450,000
Tuv	Zaamar	3,983,200	662,500	4,645,700
	Bornuur	1,125,000	10,500	1,135,500
Khovd	Bulgan	6,600,000	159,000	6,759,000
	Uench	100,000	-	100,000
	Tsetseg	2,145,000	804,000	2,949,000
Uvs	Tarialan	4,750,000	615,000	5,365,000
	Umnugovi	2,500,000	495,000	2,995,000
Total		59,358,200	6,715,600	66,073,800

Source: Follow-up study result

Conclusions. The summary of key findings in this section were:

-) Suppliers in the 2016 follow-up study earned about MNT 5.2 million per month (maximum MNT 20 million, minimum MNT 100,000). Business operators basically earned about 34% (MNT 1.9 million) of their income from artisanal miners (maximum MNT 12.9 million, minimum MNT 30,000).
-) Respondent suppliers in the 2016 follow-up study earned MNT 168.2 million per month in total, MNT 59.3 million of which was from artisanal miners and minerals traders.
-) The average monthly income of herder household respondents to the 2016 follow-up study was MNT 554,000. 66% of herders sold to artisanal miners, 34% did not.
-) Herders selling to artisanal miners earned about 28% (MNT 138,454) of their income from artisanal miners (maximum MNT 600,000, minimum MNT 5,500).
-) The 50 respondent herders supplying artisanal miners earned MNT 27.7 million revenue in total; MNT 6.7 million of which from artisanal miners.
-) Both suppliers and herders earned MNT 66.0 million in total, monthly, from artisanal miners.

3.1 Employment

Indirect economic impact from employment measures by the total number of jobs and salary of businesses suppliers.

79% of businesses in the 2016 follow-up study said they had 57 staff (48 full-time, and 9 part-time), apart from the owners. All 33 business operators created a total of 90 jobs,43 each creating 2.7 jobs on average.

The 15 business operators in the baseline study created 71 jobs, an average of 4.7 jobs each. 90% of staff were soum citizens, 7% were resident in the aimag centre; and 3% were residents of Ulaanbaatar city. Each business created on average two fewer jobs than in the baseline study. Business operators in the 2016 follow-up study paid a maximum of MNT 600,000 and minimum of MNT 180,000 in salary (MNT 327,273 average). 33 business operators paid MNT 29.1 million per month in staff salaries. This was MNT 20 million more than in the baseline study; MNT 7.4 million were salary costs in businesses in the five soums added to the study for the 2016 follow-up. The other MNT 12.6 million increase was caused by changes in the number of baseline study businesses and their salary costs. This was also connected to the fact that businesses in the baseline study did not give detailed information on salary-related costs (Table 63).

The percentage of business salary costs sourced from revenues that they generated from artisanal miners were also examined. Here, researchers multiplied the percentage that artisanal miners paid, by the total salary cost. 33 business operators incurred MNT 29.6 million salary costs per month; with an estimated MNT 8.9 million originated from income generated by artisanal miners. This was MNT 5.8 million more than in the baseline study, MNT 2.4 million of which was salaries in the businesses in the five additional soums. The other MNT 3.4 million was attributed to changes in the baseline number of businesses, their average salary costs and revenues generated from artisanal miners. (Table 63).

Table 63 Number of jobs that business operators created, their salary costs, at the respondent level

Location		Baseline-2015 (n=24)			Follow up-2016 (n=33)			
		Jobs(a)	Total salary costs (MNT/month)	Total salary cost induced by miners (MNT/month)	Jobs(a)	Monthly average salary (MNT)	Total salary cost (MNT/month)	Total salary cost induced by miners (MNT/month)
Aimag	Soum							
Bayankhongor	Bayan-Ovoo	1	0	0	4	300,000	1,200,000	360,000
	Bumbugur	6	950,000	152,000	6	475,000	2,850,000	695,400
Govi-Altai	Yusunbulag	2	0	0	10	200,000	2,000,000	351163
	Biger	3	200,000	50,000	-	-	-	-
Dornogovi	Airag	16	900,000	382,500	10	270,000	2,700,000	619024.4
Dundgovi	Khuld	5	1,920,000	748,800	4	500,000	2,000,000	1495676
	Ulziit	7	0	0	3	220,000	660,000	191,400
Darkhan-Uul	Shariin gol	5	192,000	86,400	6	300,000	1,800,000	1,170,000

43 57 employees + 33 business operators = 90 jobs

Selenge	Mandal	3	500,000	350,000	6	300,000	1,800,000	263,077
	Orkhontuul	2	483,000	144,900	-	-	-	-
Tuv	Zaamar	8	1,000,000	150,000	10	325,000	3,250,000	897,988
	Bornuur	13	3,000,000	1,050,000	10	350,000	3,500,000	525,000
SubTotal44		71	9,145,000	3,114,600	69	309,000	21,760,000	6,568,728
Khovd	Bulgan	-	-	-	4	300,000	1,200,000	720,000
	Uench	-	-	-	3	300,000	900,000	90,000
	Tsetseg	-	-	-	6	275,000	1,650,000	471,900
Uvs	Tarialan	-	-	-	6	425,000	2,550,000	692,143
	Umnugovi	-	-	-	2	550,000	1,100,000	392,857
Sub Total45					21	375,000	7,400,000	2,366,900
Total amount		71	9,145,000	3,114,600	90	327,272	29,160,000	8,935,628

Sources: Baseline and Follow-up study result

Note: - average value; (a)-including all 33 respondent business operators

12% of businesses in the 2016 follow-up study said they employed more staff thanks to their supply of goods and services to artisanal miners; 88% said 'No.' Businesses supplying artisanal miners said six new jobs were created.

Number of jobs that soum businesses created and their salary costs. This section shows estimates of total jobs created in all soum businesses and the salary costs incurred. The section analyzes the percentage of salary costs that were financed from revenues that the businesses generated from artisanal miners. For this, researchers calculated the average salary costs of businesses, the number of jobs that soum-based businesses created and the percentage of income generated from artisanal miners in salary costs; with salary costs calculated for each soum.

As shown in Table 64, 375 business entities⁴⁶ operating in the 15 study soums created a total of 1,013 jobs and spent 297.2 million on staff salaries; MNT 91.3 million was attributable to revenue collected from artisanal miners.

Table 64 Number of jobs created by businesses and their salary costs, at the soum level

Location		Baseline-2015		Follow up-2016				
		Jobs(a)	Total salary cost induced by miners (MNT/month)	Number of business entities	Jobs(a)	Average monthly salary (MNT)	Total salary cost (MNT/month)	Total salary cost induced by miners (MNT/month)
Aimags	Soums							
Bayankhongor	Bayan-Ovoo	1	-	2	5	300,000	1,620,000	486,000
	Bumbugur	6	304,000	5	14	475,000	6,412,500	1,564,650
Govi-Altai	Yusunbulag	199	2,865,600	75	203	200,000	40,500,000	7,111,047

44 For the soums covered in the baseline

45 For the soums covered in the follow up

46 Businesses: retail traders with major products including foodstuffs, drinks and cigarettes; retail traders with other various goods; foodstuff retailers; drinks and beverages retailers; cigarette retailers; restaurant and mobile food retailers.

	Biger	20	500,000	-	-		-	-
Dornogovi	Airag	36	3,442,500	15	41	270,000	10,935,000	2,507,049
Dundgovi	Khuld	16	5,990,400	5	14	500,000	6,750,000	5,047,905
	Ulziit	12	-	4	11	220,000	2,376,000	689,040
Darkhan-Uul	Shariin gol	48	2,073,600	34	92	300,000	27,540,000	17,901,000
Selenge	Mandal	170	59,500,000	90	243	300,000	72,900,000	10,654,615
	Orkhontuul	24	3,477,600	-	-	-	-	-
Tuv	Zaamar	32	2,400,000	11	30	325,000	9,652,500	2,667,025
	Bornuur	8	4,200,000	4	11	350,000	3,780,000	567,000
Khovd	Bulgan	-	-	45	122	300,000	36,450,000	21,870,000
	Uench	-	-	25	68	300,000	20,250,000	2,025,000
	Tsetseg	-	-	40	108	275,000	29,700,000	8,494,200
Uvs	Tarialan	-	-	4	11	425,000	4,590,000	1,245,857
	Umnugovi	-	-	16	43	550,000	23,760,000	8,485,714
Total amount		572	84,753,700	375	1,013	327,272	297,216,000	91,316,103

Sources: Baseline and Follow-up study result

Note: ■ -average value; (a)- number of jobs that businesses created at the soum level = number of business entities in the soum × average number of jobs that a business entity created. researchers obtained necessary data from various sources such as the number of soum business entities from the business registry at the National Statistics Office and data on the average of jobs each business entity created from respondent data.

Conclusion. The summary of key findings in this section were:

-) Business operators in the 2016 follow-up study created 90 jobs (in total), with an average of 2.7 each.
-) The average monthly salary in respondent businesses was MNT 327,273 (maximum MNT 600,000, minimum MNT 180,000). All business operators respondents spent MNT 29.1 million per month for staff salaries.
-) 33 business operators spent MNT 29.1 million for staff salaries: about MNT 8.9 originated from earnings generated by business with artisanal miners.
-) Business operators in the 15 soums created a total of 1,013 jobs and spent MNT 297.2 million on salaries; MNT 91.3 million was attributed to revenue directly generated from supplying artisanal miners.

3.2 Procurement

The indirect economic impact/effect of procurement by artisanal miners and minerals traders can be calculated from the total procurement-related costs of local business operators. Procurement-related costs for businesses in the 2016 follow-up study were calculated as the sum of costs in buying and transporting goods, operational costs, depreciation and investment costs. However, the baseline study used only the operational costs.

Procurement costs of businesses are shown in Table 64. The monthly expenditure of all 33 respondent businesses was calculated at MNT 150.9 million: 62% on procuring goods, 35% for operations, 3% for investment and 2% for depreciation.

Businesses spent about MNT 2.9 million per month buying goods (with a maximum of MNT 10 million, and a minimum of MNT 100,000). 18% of businesses paid less than MNT 1 million at any one time buying goods for resale, 9% paid MNT 1.0-2.5 million, 18% paid MNT 2.5-4.0 million, 9% paid MNT 4.0-5.5 million and 12% paid over MNT 5.5 million for local consumers. In total, all 33

respondent businesses spent MNT 92.9 million buying goods, 22.6% being attributable to revenue earned from artisanal miners.

58% of businesses got their goods from Ulaanbaatar, 37% from a provincial centre and 5% from a soum centre. So MNT 13.1 million of the MNT 22.6 million that businesses earned from artisanal miners went to the Ulaanbaatar economy, MNT 8.3 million to the provincial economy and MNT 1.2 million to the soum economy.

Operational costs included rent, credit, transport, fuel, electricity, water, heating and management costs. Of these, credit payback were the highest: 12% of all costs were for paying back loans. Other costs associated with operations took 1-3% of all costs.

Business operators spent about MNT 1.6 million per month for operational costs, and all 33 business operators in the study spent MNT 53.1 million in total per month. This was as much as MNT 39 million more than the baseline study (3.76 times more). Of this amount, MNT 12.3 million referred to business operators of the five soums added to the 2016 follow-up study; the other MNT 26.7 million growth was the result of adding more items to operational costs, the increasing number of respondents and a rise in average operational costs (Table 6).

33 business operators in the study spent MNT 150.9 million buying goods, financing operations, investment and depreciation, of which MNT 36.3 million was sourced from revenues generated from artisanal miners. Procurement costs of businesses are shown in Table 65.

Table 65 Procurement costs of business operators, at respondent level, in MNT 1000

Location		Baseline-2015	Follow up-2016												
		Operational cost	Cost for procuring goods for sale	Operational cost									Investment cost	Depreciation	Total cost	Total salary costs for artisanal mining activities
Rent	Loan			Transport	Fuel	Electricity, water	Heating	Management cost	Total						
Bayankhongor	Bayan-Ovoo	700.0	3,000	-	1,000.0	75.0	140.0	40.0	165.0	-	1420	-	80.0	4,420	1,326
	Bumbugur	1,295.5	15,000	-	10,000.0	1,650.0	350.0	225.0	300.0	6.0	12531	-	200.0	27,531	5,506
Govi-Altai	Yusunbulag	2,160.0	2,750	400	1,950.0	400.0	185.0	1,790	500.0	-	5225	-	155.0	7,975	1,436
	Biger	353.0	-	-	-	-	-	-	-	-	0	-	-	-	-
Dornogovi	Airag	1,281.2	11,850	270	4,169.0	1,300.0	150.0	435.0	1,600	550.0	8474	2,550.0	1,480.0	22,874	5,261
Dundgovi	Khuld	1,695.8	8,750	-	1,000.0	1,000.0	400.0	190.0	30.0	-	2620	-	-	11,370	3,411
	Ulziit	549.0	5,000	-	1,400.0	-	700.0	190.0	235.0	-	2525	320.0	260.0	7,845	2,275
Darkhan-Uul	Shariin gol	470.0	8,000	-	3,480.0	500.0	370.0	80.0	600.0	-	5030	-	-	13,030	3,909
Selenge	Mandal	1,297.0	2,600	300	400.0	60.0	170.0	130.0	-	-	1060	1,500.0	-	5,160	774
	Orkhontuul	490.0	-	-	-	-	-	-	-	-	0	-	-	-	-
Tuv	Zaamar	1,475.0	7,750	-	-	-	600.0	435.0	100.0	200.0	1335	400.0	-	9,485	2,656
	Bornuur	2,350.0	6,250	-	-	-	280.0	180.0	100.0	10.0	570	-	-	6,820	1,023
Subtotal ⁴⁷		14,116.5	70,950	970	23,399	4,985	3,345	3,695	3,630	766	40,790	4,770	2,175	116,510	27,577
Khovd	Bulgan	-	1,000	-	2,500.0	300.0	200.0	110.0	120.0	-	2460	100.0	80.0	4,330	1,299
	Uench	-	4,000	-	760.0	300.0	300.0	100.0	1,000	-	2035	-	50.0	6,460	646
	Tsetseg	-	6,000	-	60.0	1,300.0	300.0	75.0	300.0	-	2635	-	50.0	8,035	2,330
Uvs	Tarialan	-	5,500	-	2,000.0	110.0	110.0	120.0	295.0	-	2025	-	50.0	8,135	2,196
	Umnugovi	-	5,500	-	600.0	500.0	600.0	50.0	275.0	-	2460	-	45.0	7,525	2,258

⁴⁷ For the soums covered in the baseline

Subtotal48		-	0	5,920	2,510	1,510	455	1,990	0	12,385	100	275	34,485	8,729
Total amount	14,116.5	92,950	970	29,319.0	7,495.0	4,855.0	4,150	5,620	766.0	53,175	4,870.0	2,450.0	150,995	36,306
% in total cost	-	62%	1%	19%	5%	3%	3%	4%	1%		3%	2%	100%	-

Sources: Baseline and Follow-up study result

Note: (a)-summation of operational costs; (b)-summation of procuring goods for sale, operational cost, investment and depreciation

48 For the soums added in the follow up

Procurement costs of all businesses in the studied soums. This section describes procurement costs incurred by all business operators in the soums. This section also explores how much of all costs were originated from revenues generated from artisanal miners.

Researchers calculated procurements costs for each soum based on the average procurement costs and the total number of business operators in the soum.


In table 66, a total of 375 business operators in the 15 soums spent about MNT 1.3 billion (buying goods, operational costs, investment and depreciation), of which MNT 218.7 million was induced by revenue generated from artisanal miners.

Of the MNT 218.7 million, MNT 126.9 million entered the Ulaanbaatar city economy, MNT 80.9 million the aimag economy and MNT 10.9 million entered the soum economy.

Table 66 Total procurement cost of businesses, at soum levels

Location		Baseline-2015	Follow up-2016			
		Total procurement cost (thous.MNT/month)	Number of business entities	Average procurement cost (thous. MNT/month)	Total procurement cost (thous. MNT/month)	Procurement cost induced by ASMs (thous. MNT/month)
Aimag	Soum					
Bayankhongor	Bayan-Ovoo	630	2	2,210	4,420	884
	Bumbugur	69	5	13,766	68,828	6,883
Govi-Altai	Yusunbulag	16,119	75	1,994	149,531	14,953
	Biger	441	-	-	-	-
Dornogovi	Airag	2,450	15	5,719	85,778	11,151
Dundgovi	Khuld	2,645	5	5,685	28,425	5,685
	Ulziit	659	4	3,923	15,690	2,981
Selenge	Mandal	2,538	34	4,343	147,673	29,535
	Shariin gol	77,171	90	2,580	232,200	34,830
	Orkhontuul	1,764	-			
Tuv	Zaamar	1,770	11	4,743	52,168	9,390
	Bornuur	1,645	4	3,410	13,640	2,046
Subtotal49			245		798,352	118,338
Khovd	Bulgan	-	45	4,330	194,850	38,970
	Uench	-	25	6,460	161,500	16,150
	Tsetseg	-	40	4,018	160,700	30,533
Uvs	Tarialan	-	4	4,068	16,270	2,766
	Umnugovi	-	16	3,763	60,200	12,040
Subtotal50			130		593,520	100,459
Total amount		107,902	375	4,632	1,391,872	218,797

Sources: Baseline and Follow-up study result

Note:  -median value

Conclusion. The summary of key findings of this section are:

-) Business operators in the 2016 follow-up study spent an average MNT 2.9 million per month in procuring goods for resale. 33 business operators spent MNT 92.9 million per month

⁴⁹ For the soums covered in the baseline

⁵⁰ For the soums added in the follow up

procuring goods, of which MNT 22.6 million originated from revenue generated by artisanal miners' purchases. Of this MNT 22.6 million, MNT 13.1 million went to Ulaanbaatar, MNT 8.3 million to the aimag centre market and MNT 1.2 million entered the soum economy.

-) Business operators in the 2016 follow-up study spent an average of MNT 1.6 million in operational costs, at MNT 53.1 million a month.
-) 33 business operators spent MNT 150.9 million a month procuring goods, financing operations, making investments, and for depreciation, of which MNT 36.3 million related to revenues from artisanal miners.
-) 375 business operators in all 15 soums in the study spent about MNT 1.3 billion per month in procurement (buying goods for sale, operating costs, investments, and depreciation), of which about MNT 218.7 million originated from artisanal miners.
-) Of that MNT 218.7 million, MNT 126.9 stayed in the Ulaanbaatar city economy, MNT 80.9 million in the aimag centre economy and MNT 10.9 million in the local economy.

3.3 Taxes and fees

The indirect economic impact of tax payments were measured by how much tax a business entities paid after supplying goods and services to artisanal miners.

Tax-related costs of businesses in the 2016 follow-up study included personal income tax, social insurance premiums, corporate income tax, VAT and other taxes and fees paid to the government. 33 respondent business operators paid MNT 2.7 million in taxes per month: 22% for personal income tax, 22% for operations, 44% for social insurance, 11% for corporate income tax and 1% for other types of taxes and fees.

Table 67 Payment of taxes by businesses, the respondent level

Location		Baseline-2015	Follow up-2016					Total (MNT)
			Tax, fee (MNT)	Personal income tax (MNT)	Social insurance (MNT)	Corporate income tax (MNT)	VAT (MNT)		Other taxes and fees (MNT)
Aimag	Soum							
Bayankhong or	Bayan-Ovoo	0	-	-	20,500	-	-	20,500
	Bumbugur	133,966	-	4,000	-	-	-	4,000
Govi-Altai	Yusunbulag	235,500	74,000	174,500	6,667	-	50,000	305,167
	Biger	71,500	-	-	-	-	-	-
Dornogovi	Airag	567,349	35,667	149,000	45,000	150,000	144,167	523,833
Dundgovi	Khuld	665,333	30,000	223,040	-	-	-	253,040
	Ulziit	431,993	33,333	123,750	10,000	58,333	-	225,417
Darkhan-Uul	Shariin gol	139,826	20,000	24,000	30,000	-	-	74,000
Selenge	Mandal	138,300	-	-	5,833	-	833	6,667
	Orkhontuul	106,000	-	-	-	-	-	-
Tuv	Zaamar	286,330	-	116,850	25,000	-	50,000	91,850
	Bornuur	343,300	240,000	-	-	-	10,000	250,000

Khovd	Bulgan	-	30,000	81,390	90,000	90,000	26,667	318,057
	Uench	-	-	23,040	10,000	-	-	33,040
	Tsetseg	-	73,333	82,327	25,000	-	10,000	190,660
Uvs	Tarialan	-	12,000	112,967	40,500	-	28,333	193,800
	Umnugovi	-	54,792	79,127	13,333	-	-	147,252
Total		3,119,397	603,125	1,193,900	321,833	298,333	320,000	2,737,282

Sources: Baseline and Follow-up study result

Payment of tax by all businesses in respondent soums. This section describes tax payments at soum level by all business operators in the soum. The section analyzes the percentage of taxes paid by artisanal miners. For this purpose, researchers obtained tax data from the soum administration.

All 375 business entities in the 15 soums in the 2016 follow-up study paid about MNT 22.3 million taxes per month to the local government. Of this, about MNT 7.4 million originated from income generated by artisanal miners.

Table 68 Payment of taxes by businesses, at the soum level

Location		Baseline-2015	Follow up-2016	
		Payment of taxes and fees (MNT/month)	Payment of taxes and fees (MNT/month)	Payment of taxes for the artisanal mining operations (MNT/month)
Aimag	Soum			
Bayankhongor	Bayan-Ovoo	-	20,500.0	6,150.0
	Bumbugur	7,145	60,000.0	14,640.0
Govi-Altai	Yusunbulag	1,757,419	5,721,875.0	1,004,654.8
	Bilger	89,375	-	-
Dornogovi	Airag	1,085,053	1,514,375.0	347,198.2
Dundgovi	Khuld	1,037,921	632,600.0	473,082.2
	Ulziit	518,393	450,833.3	130,741.7
Darkhan-Uul	Shariin gol	755,060	838,666.7	545,133.3
Selenge	Mandal	8,228,850	900,000.0	131,538.5
	Orkhontuul	381,600	-	-
Tuv	Zaamar	343,596	1,055,175.0	291,549.2
	Bornuur	240,310	500,000.0	75,000.0
Khovd	Bulgan	-	4,412,550.0	2,647,530.0
	Uench	-	826,000.0	82,600.0
	Tsetseg	-	3,813,200.0	1,090,575.2
Uvs	Tarialan	-	387,600.0	105,205.7
	Umnugovi	-	1,178,013.3	420,719.0
Total		14,444,722	22,311,388.3	7,366,317.8

Sources: Baseline and Follow-up study result

3.4 Summary of indirect effects

At the respondent level. Business operators in the study created 90 jobs in supplying artisanal miners and minerals traders, spent MNT 8.9 million per month for salaries, made procurements worth MNT 36.3 million a month, and paid MNT 2.7 million in taxes. In total, these businesses spent MNT 47.9 million, considered to be an indirect impact/effect/contribution to the local economy. The following table summarizes the indirect contribution of artisanal miners and minerals traders to the local economy, disaggregated by soum.

The indirect contribution of artisanal miners and minerals traders to the local economy increased 3.8 times since the baseline study⁵¹ (MNT 35.2 million). Of this, MNT 11.9 million was attributed to business operators (costs) from the five soums added to the study, while the other MNT 23.3 million related to costs associated with buying goods for resale, which was added as part of the procurement costs.

Table 69 Indirect contribution of artisanal miners and minerals traders to economy, at the respondent level

Location		Follow up-2016				
		Employment		Procurement (MNT/month)	Taxes and fees (MNT/month)	Total (MNT/month)
		Jobs	Salary cost (MNT/month)			
Aimag	Soum					
Bayankhongor	Bayan-Ovoo	4	360,000	1,326,000	20,500	1,706,500
	Bumbugur	6	695,400	5,506,000	4,000	6,205,400
Govi-Altai	Yusunbulag	10	351,163	1,436,000	305,167	2,092,330
Dornogovi	Airag	10	619,024.4	5,261,000	523,833	6,403,857
Dundgovi	Khuld	4	1,495,676	3,411,000	253,040	5,159,716
	Ulziit	3	191,400	2,275,000	225,417	2,691,817
Darkhan-Uul	Shariingol	6	1,170,000	3,909,000	74,000	5,153,000
Selenge	Mandal	6	263,077	774,000	6,667	1,043,744
Tuv	Zaamar	10	897,988	2,656,000	191,850	3,745,838
	Bornuur	10	525,000	1,023,000	250,000	1,798,000
Subtotal⁵²		69	6,568,728	27,577,000	1,854,474	36,000,202
Khovd	Bulgan	4	720,000	1,299,000	318,057	2,337,057
	Uench	3	90,000	646,000	33,040	769,040
	Tsetseg	6	471,900	2,330,000	190,660	2,992,560
Uvs	Tarialan	6	692,143	2,196,000	193,800	3,081,943
	Umnugovi	2	392,857	2,258,000	147,252	2,798,109
Subtotal⁵³		21	2,366,900	8,729,000	882,809	11,978,709
Total		90	8,935,628	36,306,000	2,737,282	47,978,911

Source: Follow-up study result

At the soum level. As a result of supplying goods to artisanal miners and minerals traders, business operators in the 15 soums created a total of 1,013 jobs. They paid MNT 91.3 million for salaries, made procurements worth MNT 322.4 million and paid MNT 7.3 million in taxes every month. In total these businesses spent MNT 421.1 million as an indirect contribution to the local economy. The following table shows data on the indirect contribution of business operators, by soum.

The indirect contribution of artisanal miners and minerals traders to the local economy was double what it was in the baseline study (up MNT 214 million). Of this, MNT 183.4 million was attributable to the businesses of the five soums added to the study, while the other MNT 237.6 million related to costs associated with buying goods for resale (added as part of the procurement costs).

51 Indirect contribution of ASMs and traders in the baseline study was MNT 12.7 million at the respondent level. See Table 67

52 For the soums covered in the baseline

53 For the soums added in the follow up

Table 70 Indirect contribution/impact of artisanal miners and miner traders to the economy, at soum levels

Location		Follow up-2016				
		Employment		Procurement (MNT/month)	Taxes and fees (MNT/month)	Total (MNT/month)
		Jobs	Salary cost (MNT/month)			
Aimag	Soum					
Bayankhongor	Bayan-Ovoo	5	486,000	884,000	6,150	1,376,150
	Bumbugur	14	1,564,650	6,882,750	14,640	8,462,040
Govi-Altai	Yusunbulag	203	7,111,047	14,953,125	1,004,655	23,068,827
Dornogovi	Airag	41	2,507,049	11,151,075	347,198	14,005,322
Dundgovi	Khuld	14	5,047,905	5,685,000	473,082	11,205,987
	Ulziit	11	689,040	2,981,100	130,742	3,800,882
Darkhan-Uul	Shariin gol	92	17,901,000	29,534,667	545,133	47,980,800
Selenge	Mandal	243	10,654,615	34,830,000	131,538	45,616,153
Tuv	Zaamar	30	2,667,025	9,390,150	291,549	12,348,724
	Bornuur	11	567,000	2,046,000	75,000	2,688,000
Sub total⁵⁴		664	49,195,331	118,337,867	3,019,687	170,552,885
Khovd	Bulgan	122	21,870,000	38,970,000	2,647,530	63,487,530
	Uench	68	2,025,000	16,150,000	82,600	18,257,600
	Tsetseg	108	8,494,200	30,533,000	1,090,575	40,117,775
Uvs	Tarialan	11	1,245,857	2,765,900	105,206	4,116,963
	Umnugovi	43	8,485,714	12,040,000	420,719	20,946,433
Sub total⁵⁵		352	42,120,771	100,458,900	4,346,630	146,926,301
Total		1,013	91,316,103	218,796,767	7,366,318	317,479,186

Source: Follow-up study result

Conclusion

The following table shows a summary of the indirect contribution of artisanal miners and minerals traders to the local economy. In the 15 soums of the 2016 follow-up study, artisanal miners and minerals traders made indirect contributions worth MNT 317.0 million to the economy per month. Of this, MNT 109.0 million remained in the local economy. In supplying artisanal miners and minerals traders, respondent business operators reported a total of MNT 47.9 million indirect contributions to the economy per month. Of this, MNT 13.4 million remained in the local economy.

Table 71 Indirect contribution by artisanal miners and minerals traders to the economy, total, baseline vs. 2016 follow-up

Level	Baseline-2015		Follow up-2016	
	Indirect contribution of artisanal miners and minerals traders		Indirect contribution of artisanal miners and minerals traders	
	Total amount (MNT/month)	of which portion remaining in the soum economy (MNT/month)	Total amount (MNT/month)	of which portion remaining in the soum economy (MNT/month)
Soum level	207,100,817	-	317,479,186	109,622,259
Respondent level	12,723,406	-	47,978,911	13,488,210

Sources: Baseline and Follow-up study result

54 For the soums covered in the baseline

55 For the soums added in the follow up

4 INDUCED ECONOMIC IMPACT/EFFECT

The overall impact/effect of artisanal miners and minerals traders on the local economy exceeded the total amount that artisanal miners and minerals traders paid in tax, fees and for employment. The key reason was that the recipients of money spent by artisanal miners and traders regularly spent their proceeds purchasing in the local economy. The induced economic effect refers to employees, suppliers, herders and other parties spending their income in the local economy and the government procurement processes made; thanks to taxes and fees paid by artisanal miners, minerals traders and business operators, enabling circulation of money in the economy.

Simply, the induced effect refers to impacts/effects on households as relating to artisanal miners and traders, and social groups or other economic sector members spending their income. Researchers calculated an induced effect using household income in the local economy by consolidating all types of household income into a total. The amount spent by family members of artisanal miners and minerals traders and investment by herders - of capital accumulated by selling meat and dairy to artisanal miners and minerals traders - were included in the induced economic impact, which was then compared against the baseline.

4.1 Household consumption

Income generated from minerals extraction was spent in households' consumption. Household expenditures of artisanal miners was considered neither a direct nor indirect contribution, but an induced effect from economic action caused by primary economic actions.

The calculation covered average monthly expenditure of artisanal miners' and minerals traders' households and the share of the cost related to mineral resources in the total cost, both at the soum level and the respondents' level. Table 72 shows the average monthly expenditure of a household (identified at the respondent level) as equal to MNT 1,120,456. This spending makes a significant contribution to local income generation and creates more jobs. The spending difference between these households was related to the difference in sales prices on the local market, the number of members in the households and their income level.

Table 72 Average monthly expenditure of artisanal miners and minerals traders-2016

Location		ASM, Traders-2016 (thousand MNT)						
		Average monthly expenditure of ASM and Traders	Respondents level			Soum level		
Aimags	Soums		ASM number	Traders number	Expenditure	ASM number	Traders number	Expenditure
Bayankhongor	Bayan-Ovoo	551	8	2	5,507	1025	2	565,586
	Bumbugur	671	10	2	8,048	90	8	65,729
Govi-Altai	Yusunbulag	1,315	19	4	30,252	1050	7	1,390,292
Dornogovi	Airag	776	20	2	17,064	165	4	131,086
Dundgovi	Khuld	842	10	1	9,259	380	1	320,709
	Ulziit	1,146	10	1	12,602	120	1	138,620
Darkhan-Uul	Shariin gol	401	8	2	4,012	700	6	283,271
Selenge	Mandag	-	9	1	-	3000	5	-
	Orkhontuul	790	-	-	7,906	-	-	2,375,652
Tuv	Zaamar	1,253	10	2	15,037	368	20	486,215

	Bornuur	1,015	9	2	11,171	306	2	312,802
Sub total		8,760	113	19	120,858	7,204	56	6,069,962
Khovd	Bulgan	2,704	5	2	18,931	350	5	960,089
	Uench	2,654	5	2	18,582	175	1	467,209
	Tsetseg	1,833	6	1	12,835	708	3	1,303,703
Uvs	Tarialan	1,193	9	2	13,122	150	4	183,708
	Umnugovi	1,068	9	2	11,748	330	5	357,786
Sub total		9,452	34	9	75,218	1,713	18	3,272,495
Total amount		1,120	147	28	196,08	8917	74	9,342,458

Table 73 Average monthly expenditure of artisanal miners and minerals traders-2015

Location		ASM, Traders-2016 (thousand MNT)						
Aimags	Soums	Average monthly expenditure of ASM and Traders	Respondents level			Soum level		
			ASM number	Traders number	Expenditure	ASM number	Traders number	Expenditure
Bayankhongor	Bayan-Ovoo	1,076	8	1	9,689	830	2	895,694
	Bumbugur	1,247	7	2	11,221	95	12	133,405
Govi-Altai	Yusunbulag	1,007	4	2	6,040	1150	5	1,162,700
	Biger	1,028	12	1	13,362	0	0	0
Dornogovi	Airag	1,006	16	1	17,097	165	4	169,968
Dundgovi	Khuld	1,080	8	1	9,725	650	1	703,467
	Ulziit	746	8	1	6,718	388	4	292,589
Darkhan-Uul	Shariin gol	951	6	1	6,658	846	5	809,471
Selenge	Mandag	724	6	1	5,067	900	4	654,367
	Orkhontuul	813	5	1	4,876	300	1	244,612
Tuv	Zaamar	934	8	2	9,340	268	20	268,992
	Bornuur	432	8	1	3,888	148	4	65,674
Total amount		926	96	15	103,682	5740	62	5,400,941

Average monthly expenditure of artisanal miners and minerals traders were approximately the same as the 2015 baseline study. Although the average per household may seem to have increased, this is because of the five added soums, and in reality the indicator remained stable.

Table 74 Induced impact/effect from artisanal miners and minerals traders-2016

Location		Monthly average cost of ASM' and Traders' households	ASM, Traders-2016					
Aimags	Soums		Respondents level			Soum level		
		ASM number	Traders number	Cost	ASM number	Traders number	Cost	
Bayankhongor	Bayan-Ovoo	418,447	8	2	4,184	1025	2	429,745
	Bumbugur	326,921	10	2	3,923	90	8	32,038
Govi-Altai	Yusunbulag	977,241	19	4	22,476	1050	7	1,032,944
	Biger	-	-	-	-	-	-	-
Dornogovi	Airag	516,227	20	2	11,357	165	4	87,242
Dundgovi	Khuld	491,258	10	1	5,404	380	1	187,169
	Ulziit	811,810	10	1	8,930	120	1	98,229
Darkhan-Uul	Shariin gol	291,683	8	2	2,917	700	6	205,928

Selenge	Mandal	442,216	9	1	4,422	3000	5	1,328,860
Tuv	Zaamar	610,781	10	2	7,329,370	368	20	236,983
	Bornuur	568,843	9	2	6,257,275	306	2	175,204
Khovd	Bulgan	1,034,738	5	2	7,243,169	350	5	367,332
	Uench	436,905	5	2	3,058,334	175	1	76,895
	Tsetseg	1,547,714	6	1	10,834,000	708	3	1,100,425
Uvs	Tarialan	515,860	9	2	5,674,464	150	4	79,442
	Umnugovi	715,952	9	2	7,875,474	330	5	239,844
Total amount		639,348	147	28	111,885,901	8917	74	5,678,282

Table 75 Induced impact/effect from artisanal miners and minerals traders-2015

Location		ASM, Traders-2015						
Aimags	Soums	Monthly average cost of ASM' and Traders' households	Respondents level			Soum level		
			ASM number	Traders number	Cost	ASM number	Traders number	Cost
Bayankhongor	Bayan-Ovoo	746,956	8	1	6,722,604	830	2	621,467,392
	Bumbugur	703,111	7	2	6,328,003	95	12	75,232,925
Govi-Altai	Yusunbulag	445,333	4	2	2,672,000	1150	5	514,300,000
	Biger	547,023	12	1	7,111,304	0	0	-
Dornogovi	Airag	656,289	16	1	11,156,912	165	4	110,912,831
Dundgovi	Khuld	659,076	8	1	5,931,680	650	1	429,058,187
	Ulziit	426,653	8	1	3,839,880	388	4	167,248,107
Darkhan-Uul	Shariin gol	773,223	6	1	5,412,560	846	5	658,012,651
Selenge	Mandal	419,943	6	1	2,939,600	900	4	379,628,343
	Orkhontuul	708,433	5	1	4,250,600	300	1	213,238,433
Tuv	Zaamar	691,195	8	2	6,911,952	268	20	199,064,218
	Bornuur	337,111	8	1	3,034,000	148	4	51,240,889
Total amount		601,521	96	15	66,311,095	5740	62	3,419,463,975

The average household cost of artisanal miners and minerals traders and share of costs in revenue from minerals increased by MNT 37,827 since the 2015 baseline.

Table 76 shows the induced impact/effect of artisanal miners and minerals traders on the soum economy in 2016 was 5.6 billion and this was because of the five added soums.

The following table shows the sum of induced effects made by artisanal miners and minerals traders.

Table 76. Sum for induced effect made by artisanal miners and minerals traders

Cost type	Baseline study			Follow-up study		
	Average (MNT)	At respondent level (thousand MNT)	Soum level (thousand MNT)	Average (thousand MNT)	At respondent level (thousand MNT)	Soum level (thousand MNT)
Household monthly cost	1,120,456	196,080	9,342,458	926,445	103,682	5,400,941
Costs associated with mineral revenues	639,348	111,886	5,678,282	601,521	66,311	3,419,464

4.2 Herder consumption

Herders as part of the community are both positively and negatively impacted by mining operations. In the 2016 follow-up study, two-thirds (66%) of herders said they did some trading and dealing with artisanal miners, while the baseline study indicated only one-third did businesses with artisanal miners. Artisanal miners buy mainly meat and dairy products from herders - with meat the highest sales item (66.7%) - and artisanal miners often pay cash or buy on short-term credit. As in the baseline study, trade with artisanal miners was not the major part of herder households' income (just 30%).

Table 77 Induced effect of herders – at the respondents' level

		Herders - 2016				Herders - 2015		
		Share of spending in revenue generated from artisanal mining	At respondent level		Soum level	Share of spending in revenue generated from artisanal mining	At respondent level	Soum level
Aimag	Soum		Herders number	Induced effect				
Bayankhongor	Bayan-Ovoo	95,000	3	285,000	47,215	386,667	1,160,001	178,253
	Bumbugur	61,215	3	183,645	39,239	138,313	553,252	86,169
Govi-Altai	Yusunbulag	80,828	6	484,968	30,553	7,667	23,001	2,798
	Biger	-	-	-	-	72,000	144,000	29,232
Dornogovi	Airag	234,764	6	1,408,584	76,768	77,858	467,148	22,501
Dundgovi	Khuld	192,056	3	576,168	78,551	175,900	879,500	58,926
	Ulziit	136,583	3	409,749	62,145	-	-	-
Darkhan	Shariin gol	265,600	4	1,062,400	37,715	85,500	171,000	12,226
Selenge	Mandal	241,927	4	967,708	108,625	167,500	335,000	73,197
	Orkhontuul	-	-	-	-	-	-	-
Tuv	Zaamar	76,615	4	306,460	43,364	-	-	-
	Bornuur	8,742	2	17,484	4,546	-	-	-
Subtotal		1,393,330	38	5,702,166	528,721	1,111,405	3,732,902	463,302
Khovd	Bulgan	390,000	2	780,000	350,220	-	-	-
	Uench	-	2	-	-	-	-	-
	Tsetseg	670,933	2	1,341,866	201,951	-	-	-
Uvs	Tarialan	156,833	3	470,499	80,455	-	-	-
	Umnugovi	490,444	3	1,471,332	277,101	-	-	-
Subtotal		1,708,210	12	4,063,697	909,727	-	-	-
Total amount		3,101,540	50	9,765,863	1,437,492	1,111,405	3,732,902	463,304

The above table shows the share of spending relative to revenue from artisanal mining averaged MNT 195,317 for the target soums. This shows that artisanal mining has an induced impact/effect on the local economy. All herder households cost MNT 9,750,695 in target soums.

4.3 Summary of induced effect

The average monthly expenditure of artisanal miners and minerals traders was studied, and the induced effect on the economy of all soums was measured/ The monthly household income of artisanal miners and minerals traders in each soum was multiplied by the average monthly household income of artisanal miners, minerals traders and herders.

Table 78 Percentage of revenues from minerals in total by ASM & Traders household income-respondents level

Aimag	Soum	Number of ASM	Number of Traders	ASM & Traders household monthly cost	Number of Herder	Herders monthly cost	2016 Total amount	2015 Total amount
Bayankhongor	Bayan-Ovoo	8	2	4,184,474	3	285,000	4,469,474	7,882,605
	Bumbugur	10	2	3,923,055	3	183,645	4,106,700	6,881,255
Govi-Altai	Yusunbular	19	4	22,476,552	6	484,968	22,961,520	2,695,001
	Biger	-	-	-	-	-	-	7,255,304
Dornogovi	Airag	20	2	11,356,994	6	1,408,584	12,765,578	11,624,060
Dundgovi	Khuld	10	1	5,403,840	3	576,168	5,980,008	6,811,180
	Ulziit	10	1	8,929,907	3	409,749	9,339,656	3,839,880
Darkhan	Shariin gol	8	2	2,916,828	4	1,062,400	3,979,228	5,583,560
Selenge	Mandal	9	1	4,422,164	4	967,708	5,389,872	3,274,600
	Orkhontuul	-	-	-	-	-	-	4,250,600
Tuv	Zaamar	10	2	7,329,370	4	306,460	7,635,830	6,911,952
	Bornuur	9	2	6,257,275	2	17,484	6,274,759	3,034,000
Subtotal		113	19	77,200,459	38	5,702,166	82,902,625	70,043,997
Khovd	Bulgan	5	2	7,243,169	2	780,000	8,023,169	-
	Uench	5	2	3,058,334	2	-	3,058,334	-
	Tsetseg	6	1	10,834,000	2	1,341,866	12,175,866	-
Uvs	Tarialan	9	2	5,674,464	3	470,499	6,144,963	-
	Umnugovi	9	2	7,875,474	3	1,471,332	9,346,806	-
Subtotal		34	9	34,685,441	12	4,063,697	38,749,138	-
Total amount		147	28	111,885,901	68	9,765,863	121,651,764	70,043,997

The induced effect was calculated from the artisanal miners, minerals traders and herders household level using the results of table above.

Table 79 Percentage of revenues from minerals in total by artisanal miners & Traders household income-soum level

Aimag	Soum	Number of ASM	Number of Traders	ASM & Traders household monthly cost	Number of Herder	Herders monthly cost	2016 Total amount	2015 Total amount
Bayankhongor	Bayan-Ovoo	1,025	2	429,745	497	47,215,000	476,960,514	799,720,392
	Bumbugur	90	8	32,038	641	39,238,815	71,277,100	161,401,925
Govi-Altai	Yusunbulag	1,050	7	1,032,944	378	29,597,400	1,062,541,551	517,098,000
	Biger							29,232,000
Dornogovi	Airag	165	4	87,242	327	76,767,828	164,010,191	133,413,831
Dundgovi	Khuld	380	1	187,169	409	78,550,904	265,720,271	487,984,187
	Ulziit	120	1	98,229	455	62,145,265	160,374,242	167,248,107
Darkhan	Shariin gol	700	6	205,928	142	37,715,200	243,643,257	670,238,651
Selenge	Mandal	3000	5	1,328,860	449	108,625,223	1,437,485,505	452,825,343
	Orkhontuul							213,238,433
Tuv	Zaamar	368	20	236,983	566	43,364,090	280,347,053	199,064,218
	Bornuur	306	2	175,204	520	4,545,840	179,749,540	51,240,889
Subtotal		7,204	56	3,814,344	4,384	527,765,565	4,342,109,224	3,882,705,976
Khovd	Bulgan	350	5	367,332	898	350,220,000	717,552,142	-
	Uench	175	1	76,895	573	-	76,895,255	-
	Tsetseg	708	3	1,100,425	301	201,950,833	1,302,375,690	-
Uvs	Tarialan	150	4	79,442	513	80,455,329	159,897,825	-
	Umnugovi	330	5	239,844	565	277,100,860	516,944,841	-
Subtotal		1,713	18	1,863,939	2,850	909,727,022	2,773,665,753	-
Total amount		8,917	74	5,678,282	7,234	1,437,492,587	7,115,774,977	3,882,705,976

In summary, artisanal miners, minerals traders and herders of the 15 soums incurred costs of about MNT7.1 billion per month in soum. Much of the expenses nearly 5.6 billion were spent from artisanal miners and traders households.

Table 80. Summary of induced effect on household economy

Cost types	At respondent level			Soum level		
	ASM & Traders households	Herders household	Total amount	ASM & Traders households	Herders household	Total amount
Household monthly cost	196,079,769	58,748,368	254,828,137	9,342,458,551	8,430,079,734	17,772,538,285
Costs associated with extractive revenues	111,885,901	9,750,695	121,636,596	5,678,282,390	1,437,492,587	7,115,774,977

5 MULTIPLIER ECONOMIC EFFECT

It was often impossible to measure some effects that artisanal and small-scale miners and minerals traders had on the local economy and community. For instance, a soum governor said that the entire soum gets moving and people have cash when mining production of the small-scale artisanal miners' boom results in increased purchasing power. Conversely, the community was said to simmer down and stagnate afterwards. 75% of study respondents said they were happy to be able to supply goods and services to local artisanal and small-scale miners and minerals traders. 66% of herders sold to artisanal and small-scale miners and minerals traders, and all respondent businesses said they supplied artisanal and small-scale miners and minerals traders with goods and services. Business owners had been supplying artisanal and small-scale miners and minerals traders for an average of eight years: 42.4% for 1-5 years, 36.4% for 6-10 and 21.2% for over 10 years. This showed that artisanal and small-scale miners and minerals traders are key players in the local economy.

The multiplier effect was calculated using direct, indirect and induced effects/impacts, as in the previous three sections. Effects of artisanal and small-scale miners and minerals traders refers to a calculation of how each '1.00 MNT' that they create is multiplied in the economy.

Level of respondents. Artisanal and small-scale miners and minerals traders in the study made a contribution worth MNT 406.8 million to the local economy; MNT 237.2 million through employment, taxes, fees and procurement. MNT 47.9 million was directly injected into the local economy through goods and services supplied to artisanal miners and minerals traders, while the other MNT 121.0 million made an induced impact on the economy through household spending of artisanal miners, minerals traders and herders. Artisanal miners and minerals traders in the study contributed MNT 139.2 million through employment, of which MNT 130.3 million was income of artisanal miners and minerals traders and the other MNT 8.9 million was salaries paid by businesses that supply goods and services to artisanal miners and minerals traders (Table 81).

The following table shows the economic effect/impact of respondent artisanal miners and minerals traders - with multiplier effects - disaggregated by soum. For all respondent artisanal miners and minerals traders, every single MNT that they created in the economy was multiplied to MNT 1.7. Artisanal miners and minerals traders of Bumbugur soum had the highest multiplier effect while artisanal miners and minerals traders of Uyenich soum had the lowest multiplier effect. In particular, 1 MNT created by Uyenich soum respondents was multiplied to MNT 1.26 in the economy (Table 81).

Table 81 Economic effect and multiplier effect of artisanal miners and minerals traders, at the respondents' level

Location		Economic effect/impact			Multiplier			
Aimag	Soum	Direct effect (thousand MNT)	Indirect (thousand MNT)	Induced (thousand MNT)	Direct	Indirect	Induced	Total
Bayankhongor	Bayan-Ovoo	6,318.90	1,706.50	4,469.47	1.00	0.27	0.71	1.98
	Bumbugur	6,250.10	6,205.40	4,106.70	1.00	0.99	0.66	2.65
Govi-Altai	Yusunbulag	24,730.80	2,092.33	22,961.52	1.00	0.08	0.93	2.01
	Biger	-	-	-	-	-	-	-
Dornogovi	Airag	26,867.60	6,403.86	12,765.58	1.00	0.24	0.48	1.72
Dundgovi	Khuld	12,137.60	5,159.72	5,980.01	1.00	0.43	0.49	1.92
	Ulziit	14,484.00	2,691.82	9,339.66	1.00	0.19	0.64	1.83
Darkhan-Uul	Shariin gol	6,685.20	5,153.00	5,389.87	1.00	0.77	0.81	2.58
Selenge	Mandal	15,720.70	1,043.74	3,979.23	1.00	0.07	0.25	1.32
	Orkhontuul	NA	NA	NA	NA	NA	NA	NA
Tuv	Zaamar	31,914.10	3,745.84	7,635.83	1.00	0.12	0.24	1.36
	Bornuur	13,070.20	1,798.00	6,274.76	1.00	0.14	0.48	1.62
Khovd	Bulgan	12,579.40	2,337.06	8,023.17	1.00	0.19	0.64	1.83
	Uench	14,734.90	769.04	3,058.33	1.00	0.05	0.21	1.26
	Tsetseg	23,441.60	2,992.56	12,175.87	1.00	0.13	0.52	1.65
Uvs	Tarialan	12,691.00	3,081.94	6,144.96	1.00	0.24	0.48	1.72
	Umnugovi	15,654.90	2,798.11	9,346.81	1.00	0.18	0.60	1.78
Total amount		237,281.10	47,978.91	121,636.60	1.00	0.2	0.51	1.71

Source: Follow-up study result

The following table compares the total economic effect/impact of respondent artisanal miners and minerals traders and the multiplier effects against the baseline data. The economic effect of artisanal miners and minerals traders was 1.7 times (nominal monetary value) higher than the baseline, while the multiplier effect fell by 0.1.

Table 82 Artisanal miners and minerals traders economic and multiplier impacts; respondents' level

Effects	Baseline-2015		Follow up-2016	
	Economic effect/impact	Multiplier	Economic effect/impact	Multiplier
Direct effect	134,533,089	1	237,281,100	1
Indirect	12,723,406	0.09	47,978.91	0.2
Induced	96,567,322	0.72	121,636,600	0.5
Total	243,823,817	1.81	406,896.61	1.7

Sources: Baseline and Follow-up study result

At soum levels. In the 15 soums in the study, artisanal miners and minerals traders contributed MNT 18.3 billion-worth per month, of which MNT 10.9 was directly injected into the local economy through employment, taxes, fees and procurements. A further MNT 317.4 million entered the economy through suppliers selling goods and services to artisanal miners and minerals traders and the other MNT 7.1 entered into the economy indirectly by the household spending of artisanal miners, minerals traders and herders (Table 83).

The following table shows the economic and multiplier effects of artisanal miners and minerals traders in 15 soums, broken down by soum. Every 1 MNT that the artisanal miners and minerals traders in these 15 soums create was multiplied to MNT 1.68 in the local economy. The multiplier effect was highest in Sharyn Gol soum and lowest in Mandal soum. By contrast, every MNT earned by artisanal miners and minerals traders of Mandal soum remained almost the same, with a small multiplier effect of 1.08 (Table 83).

Table 83 Economic impact/effect and multiplier effect of artisanal miners and minerals traders, at the soum level

Location		Economic effect/impact			Multiplier			
Aimag	Soum	Direct effect (thousand MNT)	Indirect (thousand MNT)	Induced (thousand MNT)	Direct effect (thousand MNT)	Indirect (thousand MNT)	Induced (thousand MNT)	Total
Bayankhongor	Bayan-Ovoo	606,930	1376.2	476,960.5	1.00	0.002	0.79	1.79
	Bumbugur	62,034	8462.0	71,277.1	1.00	0.136	1.15	2.29
Govi-Altai	Yusunbulag	1,166,776	23068.8	1,062,541.6	1.00	0.020	0.91	1.93
	Biger	NA	NA	NA	NA	NA	NA	NA
Dornogovi	Airag	211,545	14005.3	164,010.2	1.00	0.066	0.78	1.85
Dundgovi	Khuld	283,533	11206.0	265,720.3	1.00	0.040	0.94	1.98
	Ulziit	118,705	3800.9	160,374.2	1.00	0.032	1.35	2.38
Darkhan-Uul	Shariin gol	504,699	47980.8	1,437,485.5	1.00	0.095	2.85	3.95
Selenge	Mandal	3,497,150	45616.2	243,643.3	1.00	0.013	0.07	1.08
Tuv	Zaamar	NA	NA	NA	NA	NA	NA	NA
	Bornuur	1,105,407	12348.7	280,347.1	1.00	0.011	0.25	1.26
Khovd	Bulgan	309,269	2688.0	179,749.5	1.00	0.009	0.58	1.59
	Uench	811,648	63487.5	717,552.1	1.00	0.078	0.88	1.96
	Tsetseg	276,577	18257.6	76,895.3	1.00	0.066	0.28	1.35
Uvs	Tarialan	1,543,795	40117.8	1,302,375.7	1.00	0.026	0.84	1.87
	Umnugovi	120,180	4117.0	159,897.8	1.00	0.034	1.33	2.36
Total amount		10,928,740	317,479	7,115,775	1.00	0.029	0.65	1.68

Source: Follow-up study result

The table below shows the total economic effect of all artisanal miners and minerals traders of the 15 soums and the multiplier effects compared with the baseline data. The total economic effect of artisanal miners and minerals traders was 2.3 times the baseline in monetary value and 0.4 multiplier points.

Table 84 Economic effect and multiplier effect of artisanal miners and minerals traders, at soum level

Effects	Baseline-2015		Follow up-2016	
	Economic effect/impact	Multiplier	Economic effect/impact	Multiplier
Direct effect	6,356,693	1	10,928,740	1
Indirect	207,100.8	0.03	317,479	0.03
Induced	3,882,705.9	0.61	7,115,775.00	0.65
Total	10,446,499,427	1.64	18,465,643	1.68

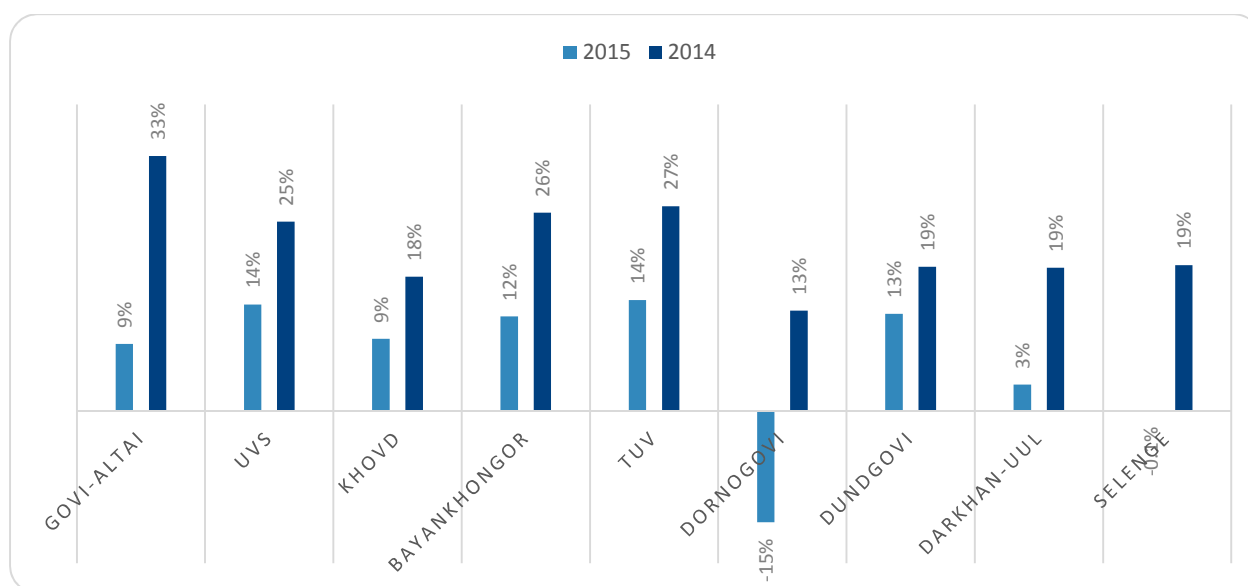
Sources: Baseline and Follow-up study result

6 ECONOMIC GROWTH IN AREAS WITH ARTISANAL AND SMALL SCALE MINING

Calculation of the contributions made by artisanal and small-scale miners and minerals traders to the local economic growth required detailed information, including the area's GDP, its growth rate and total production of artisanal and small-scale miners and minerals traders. For the necessary data, the study team used the following two methods. First, researchers asked the National Statistics Office for detailed data on the GDP of soums in the study, and breakdown of sector-specific data. However the National Statistics Office replied that it did not calculate soum GDP and had no data except aimags' GDP, which it provided to the study team. Second, researchers asked for GDP data and other economic details from soum administrations and relevant officers. In response, researchers received GDP data and other economic indicators from six of the 15 soums in the study. However, these data were not comprehensive and could not give researchers enough on production of artisanal and small-scale miners and minerals traders.

The following figure shows aimags' economic growth for 2014 and 2015 (based on data from the National Statistics Office). Economic growth of these aimags was relatively high, with an average 19% growth rate, which declined significantly in 2015. For instance, the Dornogobi aimag economy shrank 15% during 2014 to 2015.

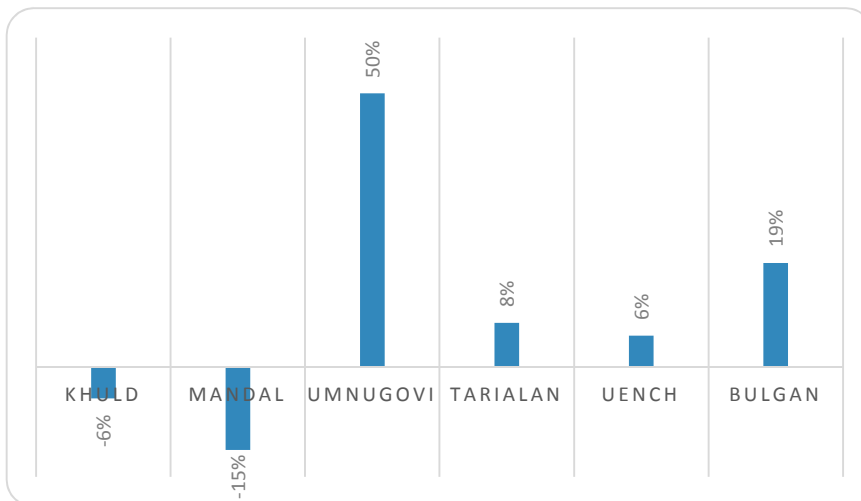
Figure 41 Economic growth rate of Aimags, 2014 and 2015



Source: NSO

The following figure shows the 2015 economic growth rate of the six soums that provided data on their GDP. In 2015, the Umnugobi soum economy showed the highest growth, while Mandal soum's GDP dropped the most, 14% from 2014. Khuld soum GDP also declined by 6% in 2015.

Figure 42 Economic growth of soums, 2015



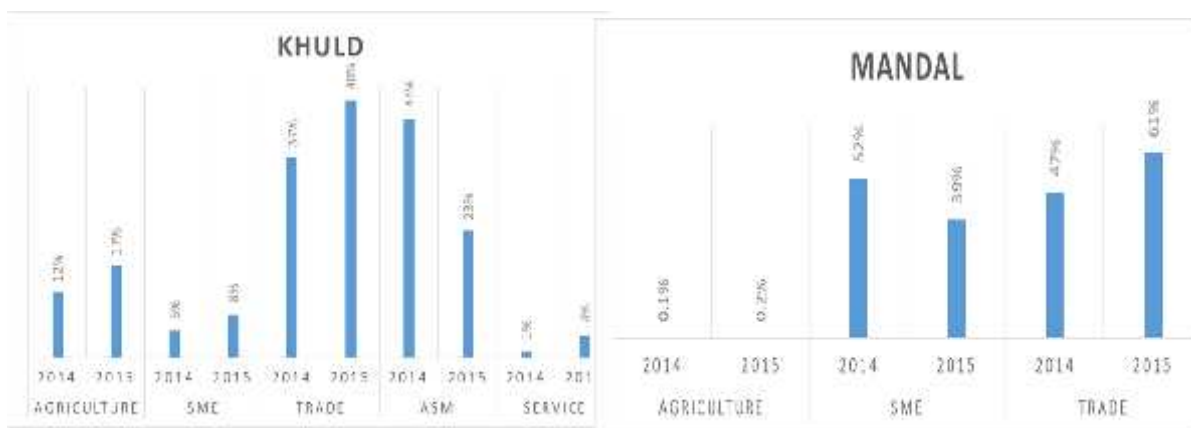
Researchers here looked at which sector, especially artisanal mining, had the highest impact on these soums.

Khuld. Breaking down the Khuld soum’s 2015 GDP by economic sectors, trading/sales accounted for 48%, artisanal mining 23%, agriculture 17%, SME sector 8% and

service sector 4%. This shows that Khuld soum’s economy was significantly dependent on artisanal mining. In 2015, the Khuld soum economy fell 6%, mainly because of a decline in artisanal mining. From 2014 to 2015 the agricultural sector’s percentage in the soum GDP rose 5%, the SME sector 3%, trade sector 11% and service sector 3%; the GDP percentage of the artisanal mining sector dropped 21%.

Mandal. In 2015, Mandal soum’s GDP situation showed the trade/sales sector at 61%, the SME sector 39% and agricultural sector at 0.2%. Data on the soum’s GDP provided by the Mandal soum administration did not include data on artisanal mining, so it was impossible to calculate the effect artisanal mining had on the soum’s economic growth. In 2015, the Mandal soum economy shrank by 15% mainly due to a decline of the SME sector.

Figure 43 Economic sectors in GDP of Khuld and Mandal soum; 2014 and 2015 (%)



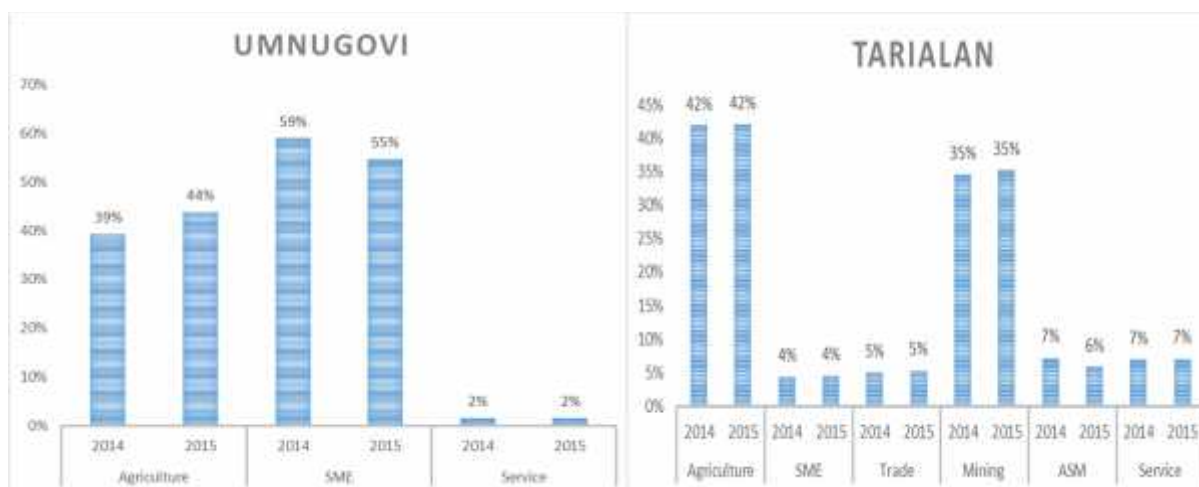
Source: Follow-up study result

Umnugobi. A breakdown of Umnugobi’s GDP in 2015 shows that the SME sector was 55%, the agriculture sector 44% and service sector 2%. Information from the Aimag government included no data on artisanal mining, so the study team could not identify the GDP effect of artisanal mining. The Umnugobi soum economy grew by 50% in 2015 driven by a fast-growing agriculture sector.

Tarialan. In Tarialan soum in 2015, the GDP shows that the agricultural sector accounted for 42%, mining sector 35%, service sector 7%, artisanal mining 6%, trade sector 5% and the SME sector 4%.

The Tarialan soum economy was heavily dependent on the mining sector, especially on artisanal mining. The Tarialan soum economy grew by 8% in 2015, with an equal rate growth in all sectors.

Figure 44 Sectors in GDP of Umnugovi and Tarialan soums: 2014 and 2015 (%)

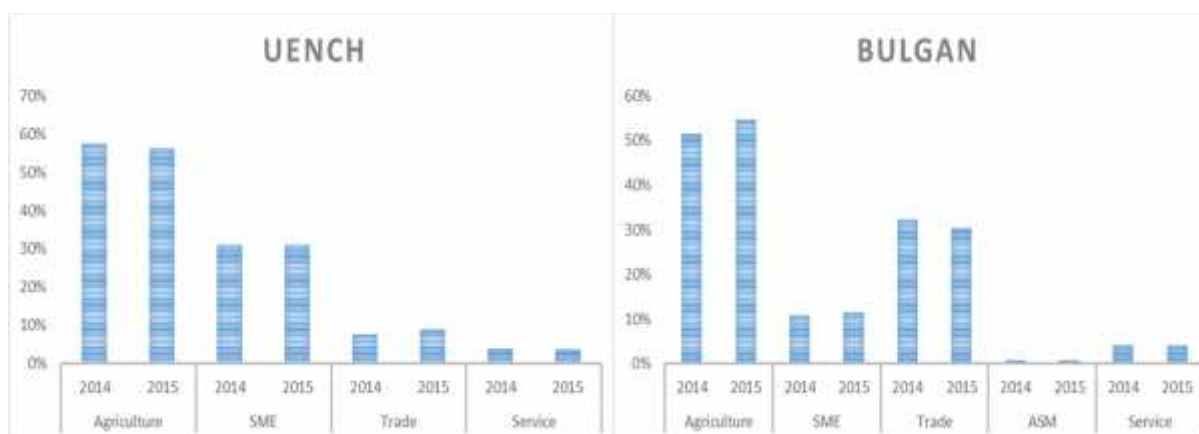


Source: Follow-up study result

Uench. In 2015, Uyench soum GDP comprised agriculture (56%), SME (36%), trade (9%) and service (4%). However detailed data on soum GDP from the administration did not include data on artisanal mining, so it was impossible to calculate the effect of artisanal mining on soum economic growth. In 2015, the soum economy grew by 6%.

Bulgan. The 2015 GDP of Bulgan soum showed several sectors, including agriculture 55%, trade 31%, SME 12%, small business 4% and artisanal mining 1%. It seemed the artisanal mining sector had almost zero effect on the soum economy.

Figure 45 Percentage of sectors in GDP of Uyench and Bulgan soums for 2014 and 2015



Source: Follow-up study result

7 FORMS AND TYPES OF BUSINESSES RUN BY ARTISANAL MINERS

This section describes types and forms of businesses operated by artisanal miners as answered by the miners and their NGOs.

Appendix 2 shows that artisanal miners basically ran various service businesses; many also ran service businesses such as hotels, hairdressers, laundries, cafés and dressmaking, and production businesses such as building block production, wood processing, tanneries, bakeries, carpentry and shoes repair.

Figure 46 Key operational areas of business entities run by artisanal miners

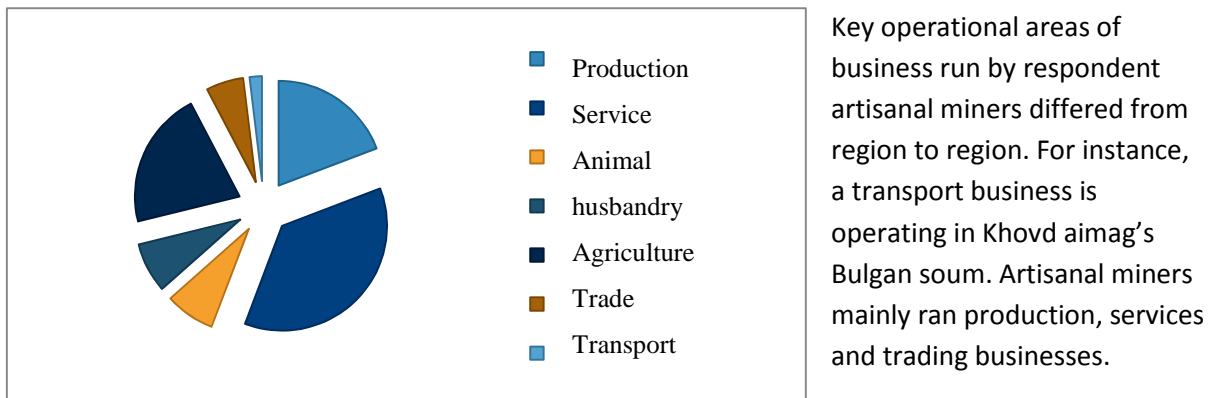


Figure 47 Miners business operation areas by soum

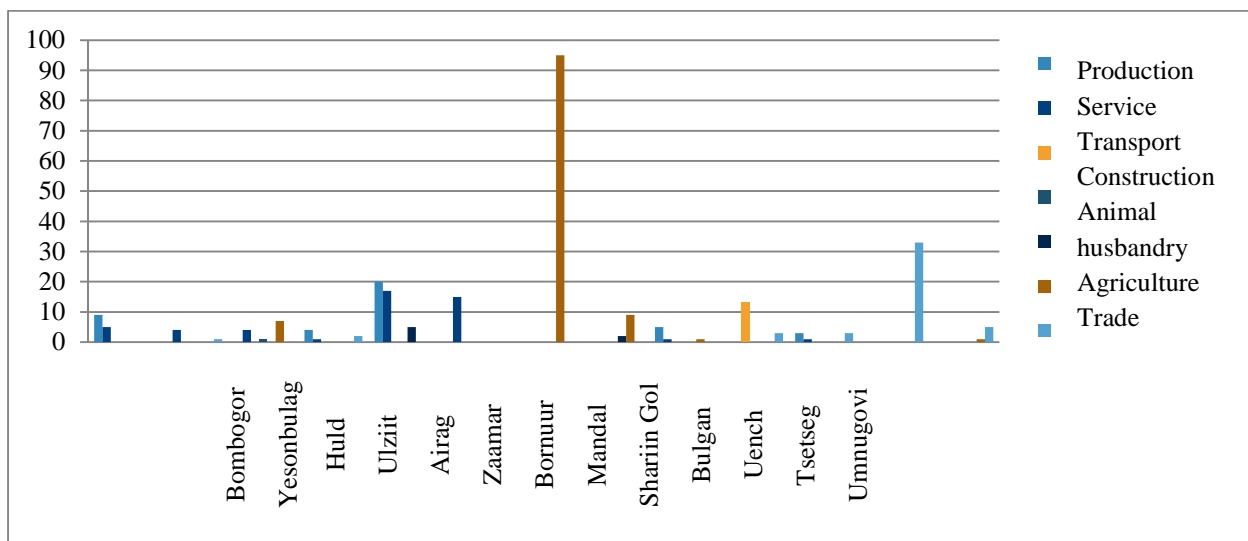
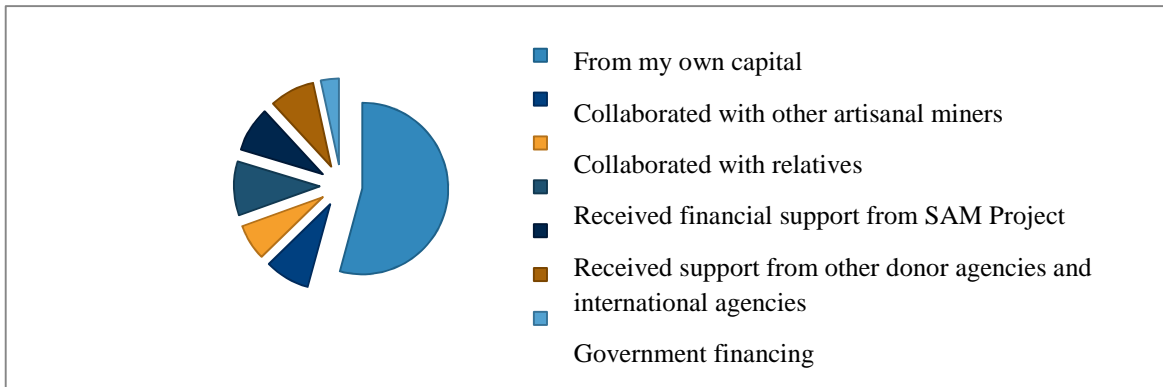
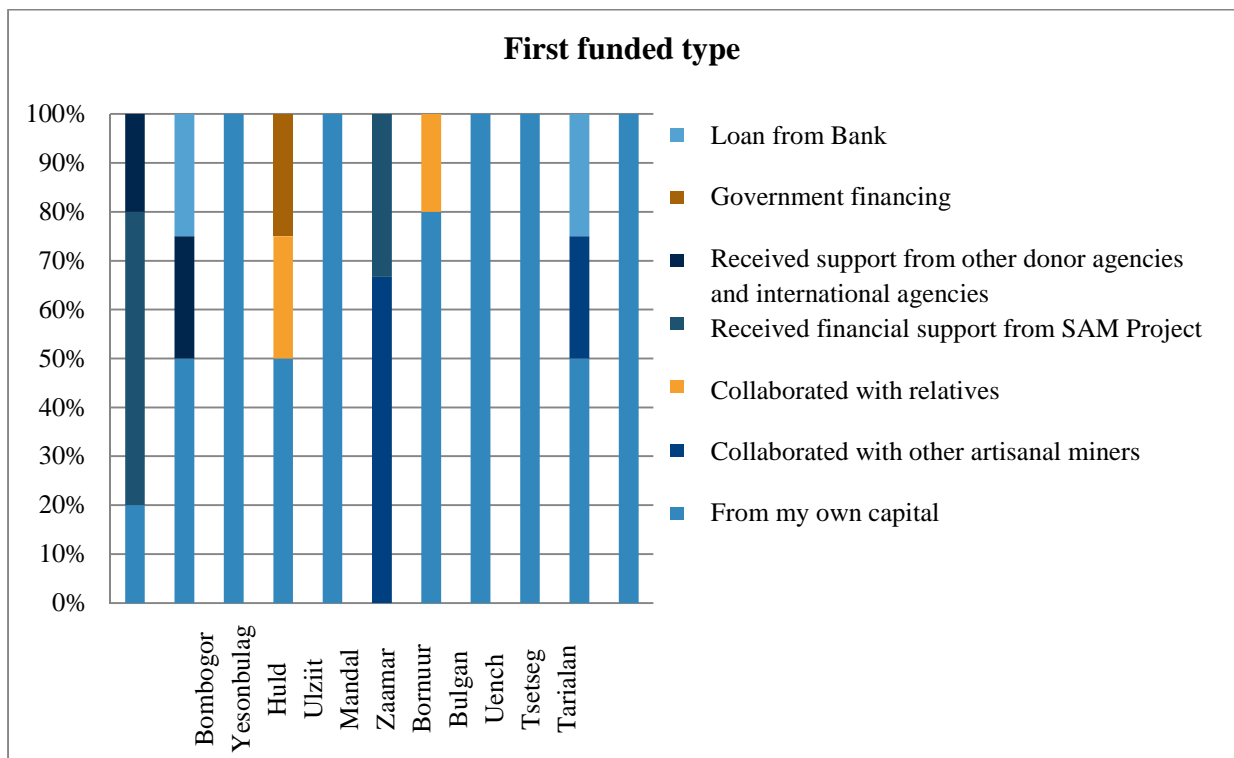


Figure 48 Initial seed funding of entities run by miners



Khuld, Bulgan, Uyench and Tarialan soum artisanal miners provided seed finance for their businesses from their own capital; artisanal miners in Tuv aimag’s Zaamar soum worked together to raise funds, and also received financial support from the SAM Project, described in more detail in Figure 63.

Figure 49 Types of seed finance for business run by artisanal miners, by soums



8 RECOMMENDATIONS

Based on observations during the study and the key findings, the Consulting team prepared the following recommendations:

Recommendations related to operations/activities of the SAM project:

-) Continue efforts to formalize artisanal miners to get them officially registered by the government. In particular, there is currently insufficient data on the registration of artisanal miners at work in local soums and/or data on the total taxes they pay. To implement this recommendation, some action should be taken to formalize artisanal miners and get them registered at the government registry. With improved registration and data, tax revenues from artisanal miners and minerals traders will increase, and oversight and responsibility of artisanal miners will be enhanced.
-) The certain amounts of income generated from the local mineral resources shall be allocated to the Local Development Fund. However, due to the indefinite origin or limitation to determine the origin of mineral resources, certain amounts of the royalty fails to be distributed to the Local Development Fund. Raise public awareness of the economic contributions of artisanal miners. Providing realistic and authentic information to the community about the contributions of artisanal miners to their families and local economy, local government will likely change attitudes towards artisanal miners and access to public services will improve.
-) Support artisanal miners to set up and run alternative business. For this, it is necessary to offer training to artisanal miners, minerals traders and their family members, provide information on the labour market and provide referral services for seasonal jobs, in partnership with local government and NGOs.
-) There are little difference of gold price between Mongol bank and Miners rates. To increase the miners income Mongol bank should work closer with local community.

Recommendations on evaluation of the effects/impacts of artisanal mining on local economies:

-) It is necessary to increase the sample size for parties up to 400 to be involved in the evaluation. Baseline and 2016 follow-up studies previously made by IRIM were based on small sample sizes; therefore the findings of such small sample studies cannot provide adequate data on the contribution of artisanal miners to local economies. It was difficult to disaggregate data by aimag and soum. In addition, the study methodology researchers selected aimed to identify direct, indirect and induced effects at the same time, so such a study focused more on assessing income and expenditures of local SMEs, trading businesses, herders and ordinary households.
-) One opportunity to reduce study costs and improve evaluation outcomes would be to create national and local level quantitative data on artisanal miners (at both national and local government levels) for use in relevant studies. The SAM Project should closely collaborate with the Ministry of Mining and Heavy Industry, the National Statistics Office and provincial centre and soum statistics offices; devoting attention to developing a database of artisanal miner economic performance.

Additional recommendations:

-) Study social conditions of artisanal miners, such as health and education, and pay attention to resolving social issues. As artisanal miners work in difficult and toxic conditions for extended hours, they have health issues, have less time for family members and are left out of local decision-making.
-) Interpret the miners mite in local economy. So the government service will be improved for miners.

9 ANNEX 1. Study Tools

Tool #1

Artisanal miners

Questionnaire on evaluating the contribution of artisanal miners and minerals traders to the local economy and its growth

Study goal:

The goal of this study was to identify the contribution made by, and effect posed by, artisanal miners on the local economy. The study findings will be used for implementation of Phase -4 of the SAM Project, implemented by SDC, so we kindly request you to take an active part in the study and provide candid responses. We will keep confidential all data you provide according to rules and laws, and shall use the material only for the designated purposes of this study.

Formal artisanal miner refers to small-scale artisanal miner, who is a member of the NGO, and operating artisanal mining in the areas permitted by the soum government.

Informal artisanal miner refers to small-scale artisanal miner, who is not a member of the NGO or any other local NGOs, and operating artisanal mining individually.

Artisanal miners refer to both formal and informal miners.

Last year or baseline year refers to period covering September 2015 – end of October 2016.

Questionnaire code:.....

Researcher code:.....

1. BASIC INFORMATION ON THE RESPONDENT

#	Question	Answer
1.1	Aimag	
1.2	Soum	
1.3	Location	
1.4	Which type of artisanal miner, do you belong to?	Formal artisanal miner Informal artisanal miner
1.5	What mineral do you extract?	Gold Fluorspar Other
1.6	Respondent's name:	1.7 Age: 88. Refused to tell
		1.8 Sex: Male Female
1.9	Marital status	Married Not married
1.10	Are you a native citizen of this area?	Yes No (If 'No', ask which Aimag/soum s/he is from?)
1.11	Education level	Elementary High school Secondary school Vocational Higher No education
Family information		
1.12	Number of household members	..... (includes number of all people that lived in the family for last 6 month period)

1.13	Number of employment age members in the family			
1.14	Of them how many are employed?			
1.15	Occupation/jobs of employed members	Relevance to you?	Occupation/job	
1.16	Do your family members take part in artisanal mining extraction? If yes, in what form and how?	Form of participation		Number of family members
		1	Supply with food and meal	
		2	Work together on extraction and help	
		3	Supply with tools, fuel and other materials	
		4	Help in selling minerals	
		5	Other.....	
		6	No participation	

2. employment status of respondents

#	Question	Answer
2.1	How long have been running artisanal mining?	
2.2	How long have you been working in total?	
2.3	In the last year, for how many months, did you run artisanal mining?	
2.4	When (which time of the year) do you usually run mineral extraction? (Multiple choice)	Always (round the year) Run artisanal mining on seasonal basis (Please specify the season)..... Suddenly or when the reserve is discovered Off the work hours (weekends) Only during vacation (annual vacation etc.) Other.....
2.5	Do you have any other jobs/work other than artisanal mining?	Yes. (If Yes, please specify what work/job?) _____ No
2.6	Please rank the extraction cycle or the seasons. (1=active, 2=stable, 3=stunt, 4= cease)	2.6.1 Summer
		2.6.2 Autumn
		2.6.3 Winter
		2.6.4 Spring
2.7	What do you usually do when the mining stunts or ceases?	Run private business Animal herding Go to other place for artisanal mining Work in the government agency Work for private company Other..... No work or job
2.8	How much do you earn monthly from artisanal mining?	..... MNT/month
2.9	In average, for how much do you sell your minerals extracted?	..... MNT/gram.....MNT/kg.....MNT/ tonne

		(Please select appropriate category depending on the type of mineral)	
2.10	To who, do you usually sell the mineral you mined? /Write the percentage in the relevant line and all sum should total 100% /	Who	What %
		Changer (trader) in the soum	
		Trader in the Aimag centre	
		Trader in Ulaanbaatar	
		Sell outside of Mongolia	
		Foreigner residing in Mongolia	
		Bank of Mongolia	
		Soum based business entity, name	
		Aimag based business entity, name	
		Ulaanbaatar based business entity, name	
	Other.....		
2.11	Were your previously employed/had job before you started artisanal mining?	Yes No (Jump to Question 2.16)	
2.12	When you had a job, did you work in your professional major field?	Yes No	
2.13	Ownership type of your previous employer?	Private Public NGO Private entrepreneur (proprietorship) Foreign entity/organization	
2.15	What was the monthly salary of your previous work/job?	UP to MNT 300,000 MNT 300-500,000 MNT 500,000 -1 million MNT 1 million -1.5 million MNT 1.5 million-2 million More than MNT 2 million	
2.16	Do you work with someone else when you do mining?	Yes. With how many persons? _____ No (Skip to Question 3)	
2.17	How many members are there in your partnership? (Ask only from formal miners)		
2.18	How do you share your revenues with your colleagues/partners?	Pay in form of salaries. Total salary cost per month..... Divide equally Give% of the income Other _____ No sharing with others	

3 household income and consumption costs

#	Question	Answer	
3.1	Please tell your monthly household revenue according to the following classifications	Type of revenues	Amount (MNT/month)
		Revenue from artisanal mining	
		Salary	
		Saving interest	
		Rent revenue	

		Private business income	
		Pension	
		Welfare allowance	
		Other	
		Total	
3.2	What percent does the revenue from mining take in your household income?		
3.3	Ask from a respondent who filled out for Question 3.1 '5. Private business income'. Please answer the following questions related to your private business.	3.3.1 Name of business entity..... 3.3.2 Key operational area/direction of your business entity (business)..... 3.3.3 How many people participate in your business? 3.3.4 How many of them are artisanal miners? (respondent must include him/herself) 	
3.3.a	Ask this question from a respondent that checked '5. Private business income' on Question 3.1. How did you raise the initial seed capital for this business? (Multiple choice)	From my own capital Collaborated with other artisanal miners Collaborated with relatives Received financial support from SAM Project Received support from other donor agencies and international agencies Government financing (e.g. through Employment promotion Fund) Other.....	
3.4	In average, how much cost does your family incur on the following costs? Also, where do you usually buy these necessities? (Annually—covers the period id September 201- end of October 2016)	Types of costs	Amount (MNT)
		Where the cost incurs (where money goes to (UB=1, Aimag=2, Soum=3, On-site stores =4)	
		Food, monthly	
		Clothes, annually	
		Coal and firewood, annually	
		Electricity and water, monthly	
		Children's tuition fee and dormitory fee, annually	
		Medicines and treatment, annually	
		Phone charge, monthly	
		Transportation, monthly	
		Furniture and other items, annually	
		Loan payment, monthly	
		Total	
3.5	Did your household buy any immovable property last year (land, house, apartment)?	Yes Now (Skip to Question 3.9)	
3.6	What was the price of the real estate you purchased?	.....MNT (If more than 1 property, ask the total price)	

3.7	How many percent of the property you paid so far?%
3.8	Where is the property you purchased located?	This soum Another soum Aimag centre Ulaanbaatar Other
3.9	Did your household buy any movable property last year (car, motorcycle and etc.)?	Yes No (Jump to Question 3.11)
3.10	What was the price of the movable property you purchased?	..... MNT (If more than 1 property, ask the total price)
3.11	Last year, were there any other costs in your family other than those mentioned above?	Yes (How much?) _____ No

4. taxation, mining related costs and investment

#	Question	Answer		
4.1	In the last year, how much taxes and fees did you pay to the soum government in relation to your artisanal mining activities?	Type	Amount (MNT)	
		1. Land fee, monthly		
		2. Tax, monthly		
		2. Social insurance, monthly		
		3. Health insurance, monthly		
		4. Fees, annually		
		5. Other, annually		
4.2	For the following things/items, which are related to artisanal mining, how much cost do you have? Also, where do you usually buy these things? (Annually— covers the period of September 2016- end of October 2016)	Costs	Amount (MNT)	Where to buy (UB=1, Aimag=2, Soum=3, On-site store=4)
		Equipment, annually		
		Tools, quarterly		
		Chemicals, quarterly		
		Protective clothes, quarterly		
		Transportation, monthly		
		Water, monthly		
		Salary, monthly		
4.3	In the last year, did you make any investment or give donations to the soum where you work?	Types of investment	Amount (MNT)	Purpose
		Physical investment		
		Rehabilitation		
		Supporting community development		
		Donations and aids		
		Other.....		
4.4	In the future, are you planning to make any investment or give donations to the soum economy?	Types of investment	Amount (MNT)	Purpose
		Physical investment		
		Rehabilitation		

		Supporting community development		
		Donations and aids		
		Other.....		
		99. No		

Please tell us your contact phone number: We will use your phone number only for checking and verifying the accuracy and authenticity of the data.

Tool #2

MINERALS TRADERS

Questionnaire on evaluating the effect/contribution of artisanal miners and minerals traders in the local economy and its growth

Study goal:
The goal of this study aims at identifying the contribution made by and effect posed by the artisanal miners to the local economy. The findings of the study will be used for the implementation of Phase -4 of SAM Project, implemented by SDC, so we kindly request you to take active part in the study and provide as candid as responses. We will keep confidentiality of data you provide to us, according to rules and laws, and shall use only for the designated purposes of this study.

Formal artisanal miner refers to small-scale artisanal miner, who is a member of the NGO, and operating artisanal mining in the areas permitted by the soum government.

Informal artisanal miner refers to small-scale artisanal miner, who is not a member of the NGO or any other local NGOs, and operating artisanal mining individually.

Artisanal miners refers to both formal and informal miners.

Last year or baseline year refers to period covering September 2015 – end of October 2016.

Questionnaire code:.....

Researcher code:.....

1. basic information on the respondents

#	Question	Answer	
1.1	Aimag		
1.2	Soum		
1.3	Location		
1.4	What type of mineral do you trade with?	Gold Fluorspar Other.....	
1.5	Name of respondent:	1.6 Age: 88. Refused to disclose	1.7 Sex: Male Female
1.8	Marital status	Married Not married	
1.9	Are you a native resident of this area?	Yes No (If No, which Aimag/soum are you from?)	
1.10	Education level	Elementary High school Secondary school Vocational University No education	
Family information			
1.11	Number of household members	..... (Insert number of all persons living together)	
1.12	Number of employment age members in the family		
1.13	Of them, how many are employed?		
1.14		Relevance to you	Occupation/Work

	Jobs/occupation of employed members		

2. employment of respondents

#	Question	Answer
2.1	How long have you working as a minerals trader?	
2.2	In total, how long have you been working/employed?	
2.3	In the last year, for how many months did you trade minerals?	
2.4	When do you usually do mineral trading? (Multiple choice)	Always (round the year) Run artisanal mining on seasonal basis (Please specify the season)..... Suddenly or when the reserve is discovered Off the work hours /Weekends / Only during vacation (annual vacation etc.) Other.....
2.5	Do you have any other job/work in addition to mineral trading?	Yes. (If Yes, exactly what?) _____ No
2.6	Please rank the trading cycle or the seasons. (1=active, 2=stable, 3=stunt, 4= cease)	2.6.1 Summer
		2.6.2 Autumn
		2.6.3 Winter
		2.6.3 Spring
2.7	What do you usually do when the mining stunts or ceases?	Run private business Animal herding Go to other place for minerals Work in the government agency Work for private company Other..... No work or job
2.8	On average, with how many artisanal miners do you trade with?	
2.9	In total, how many extraction points do you buy minerals?	
2.10	How much income do you earn a month from mineral trading?	..... MNT /month 88. Refused to disclose
2.11	For how much do you buy minerals from artisanal miners?	..... MNT/gram MNT/ kg MNT/ tonne 88. Refused to disclose (Fill out the relevant part depending on the type of minerals)
2.12	For how much do you sell the minerals you purchased from artisanal miners?	..... MNT/ gram MNT/ kg.....MNT/ tonne 88. Refused to disclose (Fill out the relevant part depending on the type of minerals)

2.13	To who do you usually sell minerals?	Buyers	Percentage
		Soum based changer (trader)	
		Aimag based trader	
		UB based trader	
		Sell outside of Mongolia (foreign country)	
		Foreign residents in Mongolia	
		Bank of Mongolia	
		Soum based business entity Name.....	
		Aimag based business entity Name	
		UB based business entity.....	
		Other	
2.14	Only traders of minerals except gold Could you please tell what steps or chain the minerals you trade pass through until it reaches to the end user or exported through Mongolian border.	Steps/chain until the end user: 1..... 2..... 3..... 4..... 5..... 88. Don't know	Steps/chain until exported out of Mongolia: 1..... 2..... 3..... 4..... 5..... 88. Don't know
2.15	Were you previously employed before you started mineral trading?	Yes No (Skip to Section 3)	
2.16	Have you ever worked on your professional field?	Yes No	
2.17	Type of ownership of your previous employer	Private entity Government agency NGO Sole proprietorship Foreign entity	
2.18	How much was your salary for your previous work?	Up to MNT 300,000 MNT 300-500.000 MNT 500,000- 1 million MNT 1 million- 1.5 million MNT 1.5 million- 2 million More than MNT 2 million	

3. household income and consumption costs

#	Question	Answer	
3.1	Please tell your monthly household income according to the following classification/types.	Income types	Income amount (MNT/month)
		Income from mineral trading	
		Salary	
		Savings interest	
		Income from rent	
		Private business income	
		Pension	
		Welfare allowance	
		Other	
	Total		
3.2	What percent does income from mineral sales take in your household income?		
3.3	Ask this question from a respondent that selected '5. Private business income' on Question 3.1.	3.3.1 name of the business entity	
		3.3.2 Operational areas of your business entity (type of business)	

	Please answer the following questions related to your private business.	3.3.3 How many people are involved in this business?		
3.3a	Ask this question from a respondent that selected '5. Private business income' on Question 3.1. How did you raise the seed capital for this business? (Multiple choice)	From personal capital (Self-financed) Collaborated with other artisanal miners Collaborated with relatives and siblings Received financial support from SAM Project Received support from other donor and international organization Government financing (e.g. through Employment Promotion Fund) Other		
3.4	How much cost does your household have on the following items? Also, where do you usually buy them? Annual—refers to period covering September 2015- end of October 2016)	Costs	Amount (MNT)	Where you buy (UB=1, Aimag centre=2, Soum=3, On-site stores =4)
		Food, monthly		
		Clothes, annual		
		Coal and firewood, annual		
		Electricity and water, monthly		
		Children's tuition fee and dormitory fee, annual		
		Medicines and treatment, annual		
		Phone, monthly		
		Transportation, monthly		
		Furniture and household items, annual		
Loan, monthly				
3.5	Did your household buy any immovable property last year (land, house, apartment)?	Yes Now (Skip to Question 3.9)		
3.6	What was the price of the real estate you purchased?	.....MNT (If more than 1 property, ask the total price)		
3.7	How many percent of the property you paid so far?%		
3.8	Where is the property you purchased located?	This soum Another soum Aimag centre Ulaanbaatar Other		
3.9	Did your household buy any movable property last year (car, motorcycle and etc.)?	Yes No (Jump to Question 3.11)		
3.10	What was the price of the movable property you purchased?	..... MNT (If more than 1 property, ask the total price)		
3.11	Last year, were there any other costs in your family other than those mentioned above?	Yes (How much?) _____ No		

4. costs related to taxation and trading, investment

#	Question	Answer		
4.1	In the last year, how much taxes and fees did you pay to the soum government in relation to mineral trading?	Payment type		Amount (MNT)
		1. Personal income tax, month		
		2. Social insurance, month		
		3. Health insurance, month		
		4. Fees, year		
		5. Other, year		
		6. Nothing paid		
4.2	In relation to mineral trading, how much cost do you pay for the following things? Also, where do you usually buy them? Annual— refers to a period covering September 2015 and end of October 2016)	Costs	Amount (MNT)	Where you buy (UB=1, Aimag=2, Soum=3, On-site stores =4)
		Car repair and maintenance, quarter		
		Fuel, month		
		Transportation, month		
		Salary, month		
		Food, month		
		Contracting, month		
		Other .....,month		
4.3	In the last year, did you make any investment and give any support to the soum?	Type of investment	Amount (MNT)	Purpose
		Physical investment		
		Environment rehabilitation		
		Supporting community development		
		Donation and aids		
		Other.....		
		99. No		
4.4	Are you planning make any investment and give any support to the soum in the future?	Type of investment	Amount (MNT)	Purpose
		Physical investment		
		Environment rehabilitation		
		Supporting community development		
		Donation and aids		
		Other.....		
99. No				

Please tell us your contact phone number: We will use your phone number only for checking and verifying the accuracy and authenticity of the data.

Tool #3

artisanal mining ngos

Questionnaire on evaluating the effect/contribution of artisanal miners and minerals traders in the local economy and its growth

Study goal:
 The goal of this study aims at identifying the contribution made by and effect posed by the artisanal miners to the local economy. The findings of the study will be used for the implementation of Phase -4 of SAM Project, implemented by SDC, so we kindly request you to take active part in the study and provide as candid as responses. We will keep confidentiality of data you provide to us, according to rules and laws, and shall use only for the designated purposes of this study.

Formal artisanal miner refers to small-scale artisanal miner, who is a member of the NGO, and operating artisanal mining in the areas permitted by the soum government.

Informal artisanal miner refers to small-scale artisanal miner, who is not a member of the NGO or any other local NGOs, and operating artisanal mining individually.

Artisanal miners refers to both formal and informal miners.

Last year or baseline year refers to period covering September 2015 – end of October 2016.

Questionnaire code:.....

Researcher code:.....

1. basic information

#	Question	Answer	
1.1	Aimag		
1.2	Soum		
1.3	NGO name		
1.4	Position		
1.5	Phone number		
1.6	Respondent's name:	1.7 Year NGO established:	1.8 Number of registered members:
1.9	What type of mineral do the members mine?	Gold Fluorspar Other	
1.10	What is the number of formal and informal artisanal miners in your soum?	Formal:.....	Informal:
1.11	Are there any members in your NGO that run private businesses?	Yes. How many?..... No (Skip to Section 2)	
1.12	If Yes, answer the following questions.	Get the Table in the Annex filled out.	

2. Tax and investment

#	Question	Answer		
2.1	Amount of taxes, social insurance and fees that the registered artisanal miners paid in the last one year period?: September 2015- end of October 2016			
	Type	Number of members paid	Amount (MNT/month or year)	Total
2.1.1	NGO membership fee			
2.1.2	Taxes on extraction			
2.1.3	Personal income tax			

2.1.4	Social insurance (sum of both the shares of employer and individual)			
2.1.5	Health insurance			
2.1.6	Donations			
2.1.7	Other.....			
Total				
2.2	What are the steps or chains from mineral extraction to the end user? (Write down the percentage for each. Not necessary to give details on each line)			
	To who	Ranking	Percentage	
2.2.1	Changer (trader) in the soum/business entity in the soum			
2.2.2	Trader in the Aimag centre/business entity in the Aimag			
2.2.3	Trader in Ulaanbaatar/business entity in UB			
2.2.4	Sell outside of Mongolia			
2.2.5	Foreigner residing in Mongolia/business entity Mongolia			
2.2.6	Bank of Mongolia			
Total		Must be equal to 100%		
2.3	Did the registered artisanal mining make any investment into the soum in the last one-year period (September 2015- end of October 2016)? (If investment made several times for the same purpose, take the sum)			
	Type of investment	Amount (in monetary value)		
2.3.1	Physical investment (Buildings, road, bridge construction, repair, and celebration of events)			
2.3.1.1				
2.3.1.2				
2.3.1.3				
2.3.1.4				
2.3.2	Environmental rehabilitation			
2.3.2.1	Name of the area:	Area.....square meters Total MNT.....		
2.3.3	Training			
2.3.3.1				
2.3.3.2				
2.3.4	Safety of artisanal miners			
2.3.4.1				
2.3.4.2				
2.3.5	Support community development			
2.3.5.1				
2.3.5.2				
2.3.5.3				
2.4	What investment are your MGO members planning to make in the soum in the following 12 months?			
	Type of investment	Amount (MNT)	Purpose	
2.4.1	Investment made into the soum			
2.4.2	Reclamation			
2.4.3	Training			
2.4.4	Safety of artisanal mining			
2.4.5	Community support			
2.5	Please rank the extraction cycle or the seasons. (1=active, 2=stable, 3=stunt, 4= cease)	2.5.1 Summer		
		2.5.2 Autumn		
		2.5.3 Winter		
		2.5.4 Spring		

2.6	When your NGO is stagnant and have mining, what activities do you undertake for the members?	Training and other activities related to artisanal mining Training on other activities aside from artisanal mining Other.....
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Thank you for responding to the study

ANNEX TO TOOLS #3: If NGO members include artisanal miners that also run businesses, fill out the following table.

#	Name of business entity	Key operation area/business of the business entity	Number of artisanal miners that work in the business entity	Monthly average income of the business	Form of initial seed financing 1= Personal capital 2= Collaborated with artisanal miners 3= Collaborated with siblings and relatives 4= Received support from SAM Project 5= Received support from other international organization 6= Government financing 7= Other.....
1					
2					
3					

Tool #4

SOUM GOVERNMENT OFFICIALS

Questionnaire on evaluating the effect/contribution of artisanal miners and minerals traders in the local economy and its growth

Study goal:
 The goal of this study aims at identifying the contribution made by and effect posed by the artisanal miners to the local economy. The findings of the study will be used for the implementation of Phase -4 of SAM Project, implemented by SDC, so we kindly request you to take active part in the study and provide as candid as responses. We will keep confidentiality of data you provide to us, according to rules and laws, and shall use only for the designated purposes of this study.

Formal artisanal miner refers to small-scale artisanal miner, who is a member of the NGO, and operating artisanal mining in the areas permitted by the soum government.

Informal artisanal miner refers to small-scale artisanal miner, who is not a member of the NGO or any other local NGOs, and operating artisanal mining individually.

Artisanal miners refers to both formal and informal miners.

Questionnaire code:.....

Researcher code:.....

1. basic information

#	Question	Answer	
1.1	Aimags		
1.2	Soums		
1.3	Name of agency		
1.4	Position		
1.5	Phone number		
1.6	What is the number of both formal and informal artisanal miners in your soum?	Formal:.....	Informal:

2. employment of population, soums budget and investment

#	Question	Answer			
2.1	Employment of soum population				
	Types of employment	Percentage in the population			
		2015		First 3 quarters of 2016	
		Quantity	Percentage	Quantity	Percentage
2.1.1	Animal husbandry				
2.1.2	Crop planting				
2.1.3	Government agency				
2.1.4	Trade				
2.1.5	Service				
2.1.6	Production				
2.1.7	Mining				
2.1.8	Artisanal mining (both formal and informal)				
2.1.9	Registered unemployed people				
2.1.10	Other.....				

Total		100%		100%
2.2	Information on the business entities that paid/have paid taxes to soum government in 2015 and first 3 quarters of 2016 (Ask for more clarifications)			
	Sectors	Number of business entities	Amount of taxes (MNT)	
			2015	First 3 quarters of 2016
2.2.1	Animal husbandry			
2.2.2	Crop planting			
2.2.3	Government agency			
2.2.4	Trade			
2.2.5	Service			
2.2.6	Production			
2.2.7	Mining			
2.2.8	Artisanal mining (both formal and informal)			
2.2.9	Other			
	Total			
2.3	Types of budget revenues generated by the soum government in 2015 and first 3 quarters of 2016	Types	2015	First 3 quarters of 2016
		Revenues remaining in the soum budget, MNT		
		Revenues transferred to Aimag budget, MNT		
		Revenues transferred to Aimag budget, MNT		
2.4	How much tax did the soum collect from artisanal miners in 2015 and first 3 quarters of 2016?		2015	First 3 quarters of 2016
2.5	What percentage the tax from artisanal mining take in overall budget revenue of your soum?		2015	First 3 quarters of 2016
2.6	For what, did the soum spend the taxes collected from artisanal miners in in 2015 and first 3 quarters of 2016?			
	Cost items	Amount (MNT)		
2.4.1				
2.4.1				
2.4.3				
2.4.5				
2.4.6				
2.5	What was the GDP and industrial output of your soum during past few years?			
	Sectors	GDP		
		2014	2015	
2.5.1	Agricultural sector			
2.5.2	SME sector			
2.5.3	Trade			
2.5.4	Mining			
2.5.5	Artisanal mining			
2.5.7	Service			

Total				
	Mount of taxes, fees, social insurance and other fees that artisanal miners paid in 2015 to the soum government?			
2.6	Type	Number of artisanal miners	Amount (MNT/month or year)	Comments
2.6.1	Land fee for extraction			
2.6.2	Social insurance			
2.6.3	Health insurance			
2.6.4	Donations			
2.6.5	Other			
2.7	During the past two-year period, did the local economic development policy include any actions/provisions related to artisanal miners? If yes, exactly what actions/provisions?		..... .....
2.8	During the next two-year period, do the local economic development policy include any actions/provisions related to artisanal miners? If yes, exactly what actions/provisions?		..... .....
2.9	As of 2015 and first three quarters of 2016, what investment have the artisanal miners made in into your soum?			
	Type of investment		Amount (MNT)	
2.9.1				
2.9.2				
2.9.3				
2.9.4				
2.9.5				

Tool #5

HERDERS

Questionnaire on evaluating the effect/contribution of artisanal miners and minerals traders in the local economy and its growth

Study goal:
 The goal of this study aims at identifying the contribution made by and effect posed by the artisanal miners to the local economy. The findings of the study will be used for the implementation of Phase -4 of SAM Project, implemented by SDC, so we kindly request you to take active part in the study and provide as candid as responses. We will keep confidentiality of data you provide to us, according to rules and laws, and shall use only for the designated purposes of this study.

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Informal artisanal miner refers to small-scale artisanal miner, who is not a member of the NGO or any other local NGOs, and operating artisanal mining individually.

Artisanal miners refers to both formal and informal miners.

Last year or baseline year refers to period covering September 2015 – end of October 2016.

Questionnaire code:

Researcher code:

1. respondents' basic information

#	Question	Answer	
1.1	Aimag		
1.2	Soum		
1.3	Location		
1.4	Name of interviewee/respondent:	1.5 Age: 88. Refused to disclose	1.6 Sex: Male Female
1.7	Marital status	Married Not married	
1.8	Are you a native citizen of this area?	Yes No (If No, ask which Aimag/soum s/he is from?	
1.9	Education level	Elementary High school Secondary Vocational University No education	
Household information			
1.10	Number of household members	..... (include the number of members living together for last 6-month period)	
1.11	Number of employment age members in the household		
1.12	Of them, how many are employed?		
1.13	Job/occupation of employed members	Relevance to you	Job/occupation

2. household income, consumption cost

#	Question	Answer		
2.1	What is your average monthly household income?			
2.2	Do you sell your products (meat, milk, dairy) to artisanal miners? (meat, milk/dairy and etc.)	Yes No (Go to Question 2.8)		
2.3	What type of goods do you sell to artisanal miners?	Meat Milk and dairy Skin and hide Minerals Other.....		
2.4	In what form, do the artisanal miners pay to you? (Multiple choice)	Cash Short term credit Barter with extracted minerals such as gold Barter with other products (excepts minerals) Other.....		
2.5	How long have you been selling your products to artisanal miners?	..... months	
2.6	What percentage does deals with artisanal miners take in your overall income?	..... 99. We don't do any deals with artisanal miners. No selling to miners.	
2.7	Please tell me the changes in your business according to seasons? In what season, it is more active? Also, specify the key reason for such change.	Seasons	Changes in business 1=Sales drastically increase, 2=Sales stable, 3=Sales decrease, 4= Sales cease	
		2.8.1 Summer		
		2.8.2 Autumn		
		2.8.3 Winter		
		2.8.4 Spring		
2.8	In the past year, did a change occur in your household income?	It rose It fell No change (Skip to Question 2.9)		
2.8	If the income of your household rose or fell, what do you think the reason was?	Purchasing capacity of all consumers in the soum rose/fell Purchasing capacity of artisanal miners rose/fell Number of artisanal miners rose/fell I added/cut the number of good for sale Price for goods rose/fell Other.....		
2.9	How much does your household spend for the following costs, per month?	Costs	Amount (MNT)	Where you buy (UB=1, Aimag=2, Soum=3, On-site store =4)
	Where do you buy/procure them? (Annual— refers to period covering September 2015- end of October 2016)	Livestock fodder, quarterly		
		Food, monthly		
		Clothes, annually		
		Coal and firewood, annually		
		Water and electricity, monthly		
		Children's tuition fee and dormitory payment, annually		

		Medicines and treatment, annually		
		Loan payment, monthly		
		Phone, monthly		
		Transportation, monthly		
		Furniture and household items, annually		
2.10	Did your household buy any immovable property last year (land, house, apartment)?	Yes No (Skip to Question 2.14)		
2.11	What was the price of the real estate you purchased?	.....MNT (If more than 1 property, ask the total price)		
2.12	How many percent of the property you paid so far?%		
2.13	Where is the property you purchased located?	This soum Another soum Aimag centre Ulaanbaatar Other.....		
2.14	Did your household buy any movable property last year (car, motorcycle)?	Yes No (Jump to Question 2.16)		
2.15	What was the price of the property you purchased?	..... MNT (If more than 1, aske the total sum)		
2.16	Last year, were there any additional costs aside from those mentioned above, for the household consumption?	Yes (How much?) _____ No		

3. induced impact on herders

#	Question	Answer
3.1	In the past year, did you receive any support from artisanal miners or any project/program connected to them?	Yes. What support? Name:..... Approximate amount..... No
3.2	What is the level of your satisfaction from working with artisanal miners?	Very high High/ good Fair/medium Poor (Skip question 5.4) Very low/ very poor (Skip questions 5.5) Don't know (Finish the interview) 99. Artisanal miners don't get our service? (Finish the interview)
3.3	If yes, exactly for what are you satisfied with?	
3.4	If not, exactly for what are you dissatisfied with?	
3.5	In general, to what extent impact do you think the artisanal miners make to your household economy?	Very high impact Hi impact Medium impact Low impact No impact Don't know 99. We don't do any deals with artisanal miners.

Please tell us your contact phone number: We will use your phone number only for checking and verifying the accuracy and authenticity of the data.

Tool #6

business operators

Questionnaire on evaluating the effect/contribution of artisanal miners and minerals traders in the local economy and its growth

Study goal:
 The goal of this study aims at identifying the contribution made by and effect posed by the artisanal miners to the local economy. The findings of the study will be used for the implementation of Phase -4 of SAM Project, implemented by SDC, so we kindly request you to take active part in the study and provide as candid as responses. We will keep confidentiality of data you provide to us, according to rules and laws, and shall use only for the designated purposes of this study.

Formal artisanal miner refers to small-scale artisanal miner, who is a member of the NGO, and operating artisanal mining in the areas permitted by the soum government.

Informal artisanal miner refers to small-scale artisanal miner, who is not a member of the NGO or any other local NGOs, and operating artisanal mining individually.

Artisanal miners refers to both formal and informal miners.

Last year or baseline year refers to period covering September 2015 – end of October 2016.

Questionnaire code:.....

Researcher code:.....

1. basic information of respondents

#	Questions	Answer
1.1	Aimag	
1.2	Soum	
1.3	Location	
1.4	Name of business entity/individual	
1.5	Key operational direction	Production Service Trade Other
1.6	For how long have you been running this business?	
1.7	For how long have you been supplying your goods and services to the artisanal miners?	

2. income, cost and procurement of business operators

#	Questions	Answer
	How many clients do you have every day?	
2.2	What is the percentage of the following groups in the overall number of clients?	Types of clients
		Percentage in all clients
		Herders
		Artisanal miners
	Soum centre residents	
	Other	
2.3	In average, how much income do you generate from your business a month?	
2.4	What percent of your income comes from artisanal miners?	..... 99. Artisanal miners don't get our services.

2.5	Did your business income change last year?	Increased Decreased No change (Directly ask question 2.7)		
2.6	If the income of your business rose or fell, what do you think the reason was? (Multiple choice)	Purchasing capacity of all consumers in the soum rose/fell Purchasing capacity of artisanal miners rose/fell Number of artisanal miners rose/fell I expanded/cut my business operations Price for goods rose/fell Other.....		
2.7	In what form, do the artisanal miners pay to you? (Multiple choice)	Cash Short term credit Barter with gold or minerals extracted Barter with other goods and products (other than minerals) Other _____ 99. We don't serve for the artisanal miners		
2.8	Please tell me the changes in your business according to seasons? Also, specify the key reason for such change.	Seasons	Changes in business 1=Sales drastically increase, 2=Sales stable, 3=Sales decrease, 4= Sales cease	Key reason
		2.8.1 Summer		
		2.8.2 Autumn		
		2.8.3 Winter		
		2.8.4 Spring		
2.9	How much does your business spend for the following costs, per month?	Types of costs		Amount of cost (MNT)
		Buying goods (raw materials)		
		Salary		
		Rent		
		Loan		
		Transportation		
		Fuel		
		Depreciation		
		Investment cost		
		Other materials		
		Management cost		
Electricity and water				
Heating				
2.10	Where do you buy/procure goods (raw materials) for sale?	Market place	Percentage of procurement cost in total cost	
		Ulaanbaatar		
		Aimag centre		
		Soum centre		
		Other countries		

3. information on the employment of business operators

#	Questions	Answer	
3.1	How many staff/workers do you have?	Full-time	Part-time
3.2	Did you increase jobs resulting from supplying goods and services to artisanal miners?	Yes. (How many jobs?)..... No	

3.3	What is the average salary that your business entity pays?	..... 88. No average salary	
3.4	Residence/domicile of your staff/workers	Place of residence	Number of staff/workers
		Ulaanbaatar	
		Aimag centre	
		This soum	
	Other		

4. information on payment of taxes by businesses

#	Questions	Answer	
4.1	In the last year, how much did your entity pay for the following taxes and fees? Last year = September 2015- end of October 2016	Type of tax	Amount paid (MNT)
		Personal income tax	
		Social insurance premium (sum of company share and individual's share for social insurance)	
		Corporate income tax	
		VAT	
		Other taxes and fees	
		Total	

5. INDUCED IMPACT ON THE BUSINESS OPERATORS

#	Questions	Answer
5.1	In the past year, did you receive any support from artisanal miners or any project/program connected to them?	Yes. What support? Name: Approximate amount..... No
5.2	What is the level of your satisfaction from working with artisanal miners?	Very high High/good Fair/medium Poor (Skip question 5.4) Very low/ very poor (Skip questions 5.5) Don't know (Finish the interview) 99. Artisanal miners don't get our service? (Finish the interview)
5.4	If yes, exactly for what are you satisfied with?	
5.5	If not, exactly for what are you dissatisfied with?	

Please tell us your contact phone number: We will use your phone number only for checking and verifying the accuracy and authenticity of the data.

10 ANNEX 2. Businesses Run by Respondent Artisanal Miners

Aimag	Soum	Entity	Key operation	Key activities	Artisanal miners working for the entity	Monthly average income from businesses (MNT)	Source	
Bayankhongor	Bumbugur	Uran gar cooperative	Production	Carpentry	2	400,000	NGO-SSI	
			Service	Sewing	5	250,000	NGO-SSI	
			Production	Tannery	3	250,000	NGO-SSI	
			Production	Shoe making	2	300,000	NGO-SSI	
			Production	Livestock fodder	2	150,000	NGO-SSI	
	Yesun-bulag	Mongol Zuu cooperative	Service	Sewing	1	NA	AM-SSI	
		Individual	Service	Repair	1	NA	AM-SSI	
		Individual	Trade	Raw material	1	NA	AM-SSI	
	Darkhan	Sharyn Gol	Individual	Agriculture	Crop planting	1	NA	AM-SSI
			Individual	Service	Service	1	NA	AM-SSI
Individual			Production	Wood processing	5	NA	AM-SSI	
Individual			Animal husbandry	Animal husbandry	1	NA	AM-SSI	
Individual			Trade	Trade	1	NA	AM-SSI	
Dornogobi	Airag	Individual	Service	Service	3	350,000	NGO-SSI	
		Chicken pizza	Service	Café	2	400,000	NGO-SSI	
		Amtat Zoog	Service	Café	2	650,000	NGO-SSI	
		Devshil partnership	Production	Bakery	5	1,000,000	NGO-SSI	
		Delgerekh partnership	Production	Building blocks	5	3,000,000	NGO-SSI	
		Bayan-Uv partnership	Animal husbandry	Dairy farm	5	NA	NGO-SSI	
		Tsagaan Dul partnership	Service	Hairdressers	5	NA	NGO-SSI	
		Gurval Gal partnership	Service	Café and catering	5	NA	NGO-SSI	
		Gobi Nutgyn Chuluu cooperative	Production	Stone souvenir making	10	NA	NGO-SSI	
		Khovd	Khuld	Khuld Tavan Erdene LLC	Animal husbandry	Breeding	7	500,000	NGO-SSI
Individual	Service			Sewing	2	NA	AM-SSI	
Individual	Service			Repair	1	NA	AM-SSI	
Individual	Construction			Construction	1	NA	AM-SSI	
Chandmani LLC	Service			Café	1	NA	AM-SSI	
Bulgan	Ulziit		Individual	Production	Building blocks	4	NA	AM-SSI
			Individual	Trade	Car parts	1	NA	AM-SSI
			Individual	Trade	Raw material sales	1	NA	AM-SSI
			Individual	Service	Hotel	1	NA	AM-SSI
			Individual	Transportation	Cargo transport	10	1,500,000	NGO-SSI

		Individual	Trade	Trade	3	2,000,000	NGO-SSI	
		Khovd Khairkhan Buren	Transportation	Cargo transport	2	NA	AM-SSI	
		Individual	Transportation	Cargo transport	1	NA	AM-SSI	
	Tsetseg	Uyench	Iyench Ireedui	Production	Ice cream making	3	2,400,000	NGO-SSI
			Bayannuur	Trade	Trade	2	1,200,000	NGO-SSI
		Individual	Trade	Household goods	1	NA	AM-SSI	
		Individual	Service	Hairdressers	1	NA	AM-SSI	
		Oirdyn 5 Erdene	Trade	Raw material sales	30	NA	AM-SSI	
		Individual	Trade	Trade	3	NA	AM-SSI	
		Tuv	Zaamar	Mandarvaani	Service	Sewing	10	250,000	NGO-SSI
Shidet Khuus	Service			Laundry	2	100,000	NGO-SSI	
Individual	Service			Café	2	NA	AM-SSI	
Individual	Service			Hairdressers	1	NA	AM-SSI	
Bornuur	Individual		Agriculture	Vegetable planting	95	NA	NGO-SSI	
Selenge	Mandal	Individual	Animal husbandry	Animal herding	2	NA	AM-SSI	
		Yesun naiz cooperative	Agriculture	Pig farming	9	NA	AM-SSI	
Uvs	Umnugobi	Uliastai	Trade	Trade	3	8,000,000	NGO-SSI	
		Undram	Trade	Trade	2	4,000,000	NGO-SSI	
		Individual	Agriculture	Agriculture and crop planting	1	NA	AM-SSI	

11 ANNEX 3. Field Researchers' Observations

Aimag	Soum	NGOs checked their registration number before convey	Official permission for mining	Places artisanal miners mainly trade and deal	Respondents' data on incomes and expenditures (by checking their documents)
Bayankhongor	Bayan-Ovoo	No	Yes	Soum centre	No
	Bumbugur	No	No	Soum centre Aimag centre	No
Darkhan-Uul	Shariin gol	No	No	Soum centre	No
Dornogovi	Airag	No	Yes	Soum centre	No
Dundgovi	Khuld	No	Yes	Soum centre	No
	Ulziit	No	Yes	Soum centre	No
Govi-Altai	Yusunbulag	No	No	Aimag centre	No
	Biger	NA	NA	NA	NA
Khovd	Bulgan	No	No	Foreign	No
	Uench	No	No	Soum centre	No
	Tsetseg	No	No	Field	No
Selenge	Mandal	No	Yes	Soum centre	No
	Orkhontuul	NA	NA	NA	NA
Tuv	Zaamar	No	Yes	Bag centre	No
	Bornuur	No	No	Soum centre	No
Uvs	Tarialan	No	No	Aimag centre Soum centre	No
	Umnugovi	No	No	Soum centre	No

12 APPENDIX 4. Research main results

12.1 DIRECT IMPACT

Direct contribution made by artisanal miners and minerals traders to the economy, at the soum level

Location		Follow up-2016					Baseline 2015
		Employment		Procurement (million. MNT/month)	Taxes and fees (million. MNT/month)	Total (million. MNT/month)	
Aimag	Soum	Jobs	Net income from artisanal mining (million. MNT/month)				
Bayankhongor	Bayan-Ovoo	1,027	394.3	176.3	36.3	606.9	830.8
	Bumbugur	98	26.5	30.9	4.7	62	90.2
Govi-Altai	Yusunbulag	1,057	547.1	591.3	28.4	1,166.80	944.1
Dornogovi	Airag	169	96.2	113.2	2.2	211.5	676.3
Dundgovi	Khuld	381	184	75.9	23.6	283.5	935
	Ulziit	121	80	30.3	8.4	118.7	517.4
Darkhan-Uul	Shariin gol	706	206.3	279.3	19.1	504.7	1,032.10
Selenge	Mandal	3,005	2,205.70	1,281.50	9.9	3,497.20	463.3
	Orkhontuul	-	-	-	-	-	315.3
Tuv	Zaamar	388	292,173	797,073	16,161.1	1,105.40	439.2
	Bornuur	308	120,676	187,369	1,223.9	309.3	112.8
Subtotal		7,260	4,152.90	3,563.20	149.9	7,866.00	6,356.70
Khovd	Bulgan	355	427.5	370.4	13.8	811.6	-
	Uench	176	119.8	148.9	7.9	276.6	-
	Tsetseg	708	933.2	596.6	14	1,543.80	-
Uvs	Tarialan	154	61.6	53.3	5.3	120.2	-
	Umnugovi	335	145.8	159.2	5.5	310.5	-
Subtotal		1,728	1,687.90	1,328.30	46.5	3,062.70	-
Total amount		8,988	5,840.80	4,891.50	196.4	10,928.70	6,356.70

12.2 INDIRECT IMPACT

Indirect contribution/impact of artisanal miners and miner traders to the economy, at soum levels
(million MNT/month)

Location		Follow up-2016					Baseline 2015
		Employment		Procurement	Taxes and fees	Total	
		Jobs	Salary cost				
Aimag	Soum						
Bayankhongor	Bayan-Ovoo	5	0.4	0.88	0.01	1.38	0.6
	Bumbugur	14	1.5	6.88	0.01	8.46	0.4
Govi-Altai	Yusunbulag	203	7.1	14.95	1	23.07	20.7
	Biger	-	-	-	-	-	1
Dornogovi	Airag	41	2.5	11.15	0.35	14.01	7
Dundgovi	Khuld	14	5	5.69	0.47	11.21	9.7
	Ulziit	11	0.7	2.98	0.13	3.8	1.2
Darkhan-Uul	Shariin gol	92	17.9	29.53	0.55	47.98	5.4
Selenge	Mandal	243	10.7	34.83	0.13	45.62	144.9
	Orkhontuul	-	-	-	-	-	5.6
Tuv	Zaamar	30	2.7	9.39	0.29	12.35	4.5
	Bornuur	11	0.6	2.05	0.08	2.69	6.1
Sub tota		664	49.2	118.34	3.02	170.55	207.1
Khovd	Bulgan	122	21.9	38.97	2.65	63.49	-
	Uench	68	2	16.15	0.08	18.26	-
	Tsetseg	108	8.5	30.53	1.09	40.12	-
Uvs	Tarialan	11	1.2	2.77	0.11	4.12	-
	Umnugovi	43	8.5	12.04	0.42	20.95	-
Sub total		352	42.1	100.46	4.35	146.93	-
Total		1,013	91.3	218.8	7.37	317.48	207.1

12.3 INDUCED EFFECT

Percentage of revenues from minerals in total by artisanal miners & Traders household income-soum level (million MNT/month)

Aimag	Soum	ASM number	Traders number	household monthly cost	Herders number	ASM & Traders household monthly cost	2016 total amount	2015 total amount
Bayankhongor	Bayan-Ovoo	1025	2	430	497	47.2	477	799.7
	Bumbugur	90	8	32	641	39.2	71.3	161.4
Govi-Altai	Yusunbulag	1050	7	1,033	378	29.6	1,062.50	517.1
	Biger	-	-	-	-	-	-	29.2
Dornogovi	Airag	165	4	87	327	76.8	164	133.4
Dundgovi	Khuld	380	1	187	409	78.6	265.7	488
	Ulziit	120	1	98	455	62.1	160.4	167.2
Darkhan	Shariin gol	700	6	206	142	37.7	243.6	670.2
Selenge	Mandal	3,000	5	1,329	449	108.6	1,437.50	452.8
	Orkhontuul	-	-	-	-	-	-	213.2
Tuv	Zaamar	368	20	237	566	43.4	280.3	199.1
	Bornuur	306	2	175	520	4.5	179.7	51.2
Sub total		7,204	56	3,814	4,384	527.8	4,342.10	3,882.70
Khovd	Bulgan	350	5	367	898	350.2	717.6	-
	Uench	175	1	77	573	-	76.9	-
	Tsetseg	708	3	1,100	301	202	1,302.40	-
Uvs	Tarialan	150	4	79	513	80.5	159.9	-
	Umnugovi	330	5	240	565	277.1	516.9	-
Sub total		1,713	18	1,864	2,850	909.7	2,773.70	-
Total amount		8,914	74	5,678	7,234	1,437.50	7,115.80	3,882.70

12.4 ECONOMIC EFFECT/MULTIPLIER

ASM and mineral traders economic total effect (million MNT/month)

Aimag	Soum	Economic effect				
		DIRECT IMPACT	INDIRECT IMPACT	INDUCED EFFECT	2016	2015
Bayankhongor	Bayan-Ovoo	606.9	1.4	477	1,085.30	1,631.20
	Bumbugur	62	8.5	71.3	141.8	252
Govi-Altai	Yusunbulag	1,166.80	23.1	1,062.50	2,252.40	1,482.00
	Biger	-	-	-	-	30.3
Dornogovi	Airag	211.5	14	164	389.6	816.7
Dundgovi	Khuld	283.5	11.2	265.7	560.5	1,432.70
	Ulziit	118.7	3.8	160.4	282.9	685.8
Darkhan-Uul	Shariin gol	504.7	48	1,437.50	1,990.20	1,707.70
Selenge	Mandal	3,497.20	45.6	243.6	3,786.40	1,061.00
	Orkhontuul	-	-	-	-	534.2
Tuv	Zaamar	1,105.40	12.3	280.3	1,398.10	642.8
	Bornuur	309.3	2.7	179.7	491.7	170.2
Sub total		7,866.00	170.6	4,342.10	12,378.70	10,446.50
Khovd	Bulgan	811.6	63.5	717.6	1,592.70	0
	Uench	276.6	18.3	76.9	371.7	0
	Tsetseg	1,543.80	40.1	1,302.40	2,886.30	0
Uvs	Tarialan	120.2	4.1	159.9	284.2	0
	Umnugovi	310.5	20.9	516.9	848.4	0
Sub total		3,062.70	146.9	2,773.70	5,983.30	0
Total amount		10,928.70	317.5	7,115.80	18,362.00	10,446.50

Economic effect

Type	Baseline-2015	Follow up-2016
	Economic effect	
DIRECT IMPACT	6,356.70	10,928.70
INDIRECT IMPACT	207.1	317.4
INDUCED EFFECT	3,882.70	7,115.70
Total	10,446.50	18,465.60

Economic multiplier

		Economic multiplier	
Aimag	Soum	Follow up-2016	Baseline-2015
Bayankhongor	Bayan-Ovoo	1.79	1.96
	Bumbugur	2.29	2.79
Govi-Altai	Yusunbulag	1.93	1.57
	Biger	-	1
Dornogovi	Airag	1.85	1.21
Dundgovi	Khuld	1.98	1.53
	Ulziit	2.38	1.33
Darkhan-Uul	Shariin gol	3.95	1.65
Selenge	Mandal	1.08	2.29
	Orkhontuul	-	1.69
Tuv	Zaamar	1.26	1.46
	Bornuur	1.59	1.51
Sub total		1.57	1.64
Khovd	Bulgan	1.96	-
	Uench	1.35	-
	Tsetseg	1.87	-
Uvs	Tarialan	2.36	-
	Umnugovi	2.73	-
Sub total		1.95	-
Total amount		1.68	1.64