



**THE NATIONAL ACTION PLAN FOR  
REDUCING MERCURY POLLUTION  
CAUSED BY ARTISANAL AND SMALL-  
SCALE GOLD MINING IN MONGOLIA  
2019-2023**

**The Resolution of the Government of  
Mongolia No 317, dated 14 August 2019**

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## ABBREVIATION

ASG miners	Artisanal and small scale gold miners
ASGM	Artisanal and small scale gold mining
ASM	Artisanal and small scale mining
BoM	Bank of Mongolia
ESEC-2	Engaging Stakeholders in Environmental Conservation-2 Project
FRM	Frugal rehabilitation methodology
ILO	International Labour Organisation
GASHI	General Authority for Social and Health Insurances
GASI	General Agency for Specialized Inspection
GCA	General Customs Authority
GEF	Global Environmental Facility
JICA	Japan International Cooperation Agency
ASM	Agency for Standardization and Metrology
NEMA	National Emergency Management Agency
MECSS	Ministry of Education, Culture, Science and Sports
MET	Ministry of Environment and Tourism
MMHI	Ministry of Mining and Heavy Industry
MJIA	Ministry of Justice and Internal Affairs
MLSP	Ministry of Labour and Social Protection
MNT	Mongolian tugrugs (currency)
MoH	Ministry of Health
MRPA	Mineral Resources and Petroleum Authority of Mongolia
NAP	National Action Plan
NCPH	National Center for Public Health
NFASM	National Federation of Artisanal and Small Scale Mining
NGO	Non-governmental organisation
NSO	National Statistics Office
OECD	Organisation of Economic Cooperation and Development
OHS	Occupational Health and Safety
SAM	Sustainable Artisanal Mining
SDC	Swiss Agency for Development and Cooperation
SGH	State Great Hural
STD	Sexually Transmitted Diseases
UNEP	UN Environment
UNFPA	UN Population Fund
UNIDO	UN Industrial Development Organisation

UNITAR	UN Institute of Training and Research
USEPA	US Environmental Protection Agency
WB	The World Bank
WHO	World Health Organisation

## **ACKNOWLEDGEMENT**

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**Cover Photo:** Mongolia, NAP Project. 2018. Baseline Socio-Economic Survey on ASGM

## FOREWORD

Mongolia ratified the Minamata Convention on Mercury in 2015 and has obtained the technical assistance and financial support from UN Environment to develop the National Action Plan (NAP) for Reducing Mercury Pollution Caused by Artisanal and Small-scale Gold Mining (ASGM). The National Action Plan is a comprehensive and multi-dimensional programme requiring the Government's commitment, inter-ministerial coordination, and collaboration of diverse stakeholders and financing to fulfill Mongolia's obligations under Minamata Convention as well as achieving environmentally sound and safe ASGM operations.

NAP proposes 13 strategies and over 69 measures centered around four objectives which aim to eliminate the worst practices and harmful technologies, accelerate ASGM sector formalisation, protect health of artisanal and small-scale miners, particularly women and children and prevent exposure to mercury and increase access to information.

The National Action Plan has synergies with the Green Development Policy and supports its objective to ensure ecosystem's carrying capacity and reduce environmental pollution and degradation. The NAP contributes to the implementation of Sustainable Development Vision of Mongolia, the Government Action Plan 2016-2020, State Minerals Policy 2014-2025 and Gold II Programme 2017-2020 and facilitates effective enforcement of the Regulation for Extraction of Minerals through Small-scale Mining. We believe that the NAP will further advance Mongolia's commitment to human rights, social inclusiveness and gender equality.

## I. EXECUTIVE SUMMARY

According to the Law of Mongolia on Minerals<sup>1</sup> “Small-scale mining is defined as activities of citizens organised in the form of unregistered partnership as stated in the 481.1 of Civil Code of Mongolia, partnerships as stated in the Article 35.1 of the Civil Code and cooperatives as stated in 36.4 of the Civil Code of Mongolia for the purpose of mineral extraction activities in economically inefficient deposits with non-industrial reserves and in tailings and waste sites left after mining exploitation and technology and on the land allocated for the purpose stated in the clause 16.1.11 of the Law on Land”.

The official statistics says there are 11,962 artisanal and small-scale miners were actively engaged in operations of 332 sites belonging to 113 deposits or occurrences in 97 soums of 18 aimags and one district of Ulaanbaatar (Mongolia, the National Statistics Office 2016)<sup>2</sup>. Of the total, 5,108 people were engaged in gold mining; 72.3% were formal and organized gold miners (3693) and 27.7% (1415) were informal gold miners. However, the literature review reveals much higher number of ASGM miners than the number indicated in official statistics. For instance, Sandmann (2010)<sup>3</sup> refers to different sources that present the varying number of miners from 30,000 to 100,000 (WB, 2003, Ruhmann and Becker, 2003, WB, 2007).

In 2017-2019, the Ministry of Environment and Tourism (MET), in collaboration with the UN Environment, implemented the project for developing the "National Action Plan for ASGM in Mongolia (NAP)". Under the NAP project the National Overview of ASGM in Mongolia was elaborated. The key findings of the National Overview are summarized as follows:

- In January 2017, the Cabinet approved the “Regulation on extraction of minerals by small scale mining”<sup>4</sup>. The Regulation necessitates the establishment of the inter-ministerial Artisanal and Small-scale Mining Council (ASMC) for coordination and sets division of roles of central and local governments. The ASM Council will play an important coordination role for for implementation of the Regulation as well as this NAP. The Ministry of Mining and Heavy Industry and Mineral Resources and Petroleum Authority are mandated to enforce and monitor the Regulation’s implementation and aimag/capital and soum/district Governor’s offices should ensure regulatory compliance in managing ASGM operations locally. However, capacities of both central and local governments seem to be insufficient under existing institutional structure and financial circumstances.
- The Regulation allows miners to get organised into partnerships, cooperatives and unregistered partnerships to operate ASGM within their soums. Unregistered partnerships an important entry point to legalisation and are essential part of the entire formalisation process. Establishment of National Federation of ASM (NFASM) has created favourable conditions for policy advocacy, dissemination of knowledge and best practices and empowerment of miners’ organisations. As of 2018, NFASM had more than 70 member institutions operating in 47 soums of 15 aimags and more than 6,500 individual members belonging to 429 ASGM partnerships<sup>5</sup>. Nevertheless, there is lack of credibility among miners about the benefits of the ASGM organisations and the miners have insufficient information on setting up such an organisation.
- With the Order of the Minister of Environment (No 135/2008) on prohibition of the use or mercury and its compounds in mineral processing, the state and local authorities believe that mercury is no longer used in ASGM. Nevertheless, hidden mercury trade is prevalent and miners are using mercury secretly. The mercury inventory in ASGM, carried out under NAP

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<sup>1</sup> Law of Mongolia on Minerals-Article 4.1.23. 8 July 2006. Retrieved 10 December 2018 from [www.legalinfo.mn/law/details/63](http://www.legalinfo.mn/law/details/63)

<sup>2</sup> The National Statistics Office (NSO). 2017. Report on ASM Survey 2016.

<sup>3</sup> Sandmann, R., 2010. Artisanal and Small-scale Gold Mining in Mongolia – A Contribution to Sustainable Development? Study on Socio-economic Changes in Bornuur Soum Center after Foundation of XAMO Company. Retrieved 8 March 2019 from <https://asmhub.mn/en/files/view/489>

<sup>4</sup> Cabinet of Mongolia. 2017. Resolution No 151. Regulation for Extraction of Minerals through Small -scale Mining. Retrieved 14 December 2018 from <https://www.legalinfo.mn/law/details/12681>

<sup>5</sup> <http://bichiluurhai.mn>

project in 2018, estimated that 235.4 kgs of mercury are likely to be used per year. This number appears to be below the actual size. As released by media, mercury smuggling amounted to 170.4 kgs in 2016-2017. It is hard to monitor and investigate mercury trade due to its “clandestine” nature. One possible way of smuggling mercury is hiding mercury in a bulky luggage and a container of goods and ship and transport by rail or road. On the territory of Mongolia, the mercury is likely to be illegally traded through informal gold supply chain, shopping centers, blacksmith shops and markets. With the declining resources of placer gold deposits ASG miners are likely to move to hard rock mining sites and this situation may trigger greater use of mercury.

- In recent years, there have been efforts to introduce mercury free technology in ASGM, accordingly 3 mercury free gold processing plants were set up at Bayankhongor, Tuv and Selenge aimags through the support of the SAM project. But these technologies have not been scaled up due to lack of financial resources and lending mechanism.
- ASG miners suffer from diseases related to work environment<sup>6</sup>. Besides, 8.2-17.0% of the miners have some level of mercury poisoning and sickness. The NAP Health Assessment Survey revealed that one in every 4 miners needed medical screening and check-up, but 29.3% of the surveyed miners were not covered by health insurance.
- A comprehensive communication strategy to disseminate information is not in place. ASM Knowledge Center, an online platform hosted by the Ministry of Mining and Heavy Industry (MMHI) could deliver more information and extension service to the miners. Easily accessible communication tools such as SMS and social media should be extensively used for communication and outreach alongside with local TV and media channels, regular meetings and trainings.

The goal of the National Action Plan for Reducing Mercury Pollution Caused by ASGM (NAP) is aimed to reduce mercury pollution from ASGM, ensure environmental sustainability and safeguard safe and healthy environment for people of Mongolia. Four objectives and 13 strategies alongside with measures to be implemented have been elaborated to be implemented in 2019-2023:

- **Objective 1.** To halve mercury emissions and releases and environmental pollution caused by ASGM by fully eliminating harmful technologies used for gold extraction and processing and completely stopping illegal mercury trade and hidden use in ASGM;
- **Objective 2.** Reinforce optimal system and structure and mandates of the central public administration regulating ASGM, ensure interministerial coordination, enhanced stakeholders’ engagement and collaboration and capacity building and enable optimal implementation of ASGM related laws and regulations;
- **Objective 3.** By 2023, to achieve 80.0% health care service to ASG miners and increase of social and health insurance coverages of artisanal and small-scale gold miners by implementing public health and social protection strategies aimed at improving health and occupational safety of the miners and their families and preventing vulnerable groups, especially children, women and pregnant women from exposure to mercury;
- **Objective 4.** Enable ASG miners and the social groups that are vulnerable to ASGM negative impacts to gain knowledge on mercury impacts, environment, health, safety and the legislations and ensure that increased access of miners to information.

## II. INTRODUCTION AND BACKGROUND

The National Action Plan (NAP) for Reducing Mercury Pollution from Artisanal and Small-scale Gold Mining (ASGM) in Mongolia to fulfill country’s obligations under Minamata Convention and contribute to further formalisation of the sector.

According to Minerals Resources and Petroleum Authority (MRPA) there were registered reserves of 333 placer and 99 hard rock gold deposits between 2006 and 2017. As of October 2017, the MRPA made conclusions for 143 fields with 1,929.67 hectares in 43 soums of 18 aimags for

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<sup>6</sup> SDC Mongolia SAM Project, World Health Organisation (WHO), School of Public Health, Mongolian National University of Medical Science. 2014. Rapid Assessment of the Health Status of Artisanal Miners and Their Families in Mongolia. Retrieved 1 February 2019 from <https://asmhub.mn/uploads/files/20140927-rapid-health-assmt-report-eng-from-phc.pdf>

extraction of mineral resources through ASM. In 2017, ASG miners or individuals supplied 12.66 tons of gold making 63.27% of the total gold sold to the BoM. According to the NFASM, there are 429 partnerships with over 6,500 individual members operating in 47 soums of 15 aimags and Ulaanbaatar (includes gold and other minerals).

Within the framework of NAP project Mongolia has conducted the Baseline Study on ASGM in order to estimate mercury used in the ASGM, compile data on illegal mercury trade and supply, analyse previous studies on socio-economic and health status of the miners in order to better identify gaps and challenges in the sector and formulate objectives, targets and strategies of the National Action Plan for Reducing Mercury Pollution Caused by ASGM.

The Baseline Study on ASGM is based on scoping study, interviews with national stakeholders, literature review and data collection through survey at the selected mining sites. Sources of information include:

- Literature review: Official statistics and industry data, peer reviewed journals, reports and publications by the United Nations organisations including UN Environment, UN Industrial Development Organisation (UNIDO), International Labour Organisation (ILO) and the World Health Organisation (WHO), the World Bank (WB), Sustainable Artisanal Mining (SAM) project funded by the Swiss Agency for Development and Cooperation (SDC), national research and academic organisations and non-governmental organisations (NGOs);
- Workshops, meetings and discussions with stakeholders: Ministries, agencies, aimag and soum authorities, National Federation of ASM, NGOs, and health organisations;
- Baseline Socio-Economic Survey on ASGM and site visits to interview miners, gold traders, representatives of ASG partnerships and cooperatives, and local government representatives: Working conditions, demographic and socio-economic aspects of miners and a role of ASGM organisations;
- Mercury Inventory in ASGM by visiting selected sites: Geographical distribution of ASGM, mining and processing technology and estimation of mercury used in gold processing;
- Health assessment of ASG miners through desk review and survey: Occupational health status of miners and incidences of mercury poisoning, symptoms and diseases and capacities of local health organisations; and
- The Legal study through desk review: Gap analysis in existing legal and regulatory framework, system and institutional structure.

The Baseline Socio-Economic Survey on ASGM covered 15 soums in 5 aimags located in 3 regions of Mongolia: (a) Bayangol and Mandal soums, Tunkhel Village of Mandal soum in Selenge aimag, Bornuur and Zaamar soums in Tuv aimag representing Central Region; (b) Bayan-Ovoo, Galuut, Bumbugur, Jargalant soums in Bayankhongor aimag and Buregkhangai soum in Bulgan aimag representing Khangai Region; and (c) Yesunbulag, Taishir, Tsogt, Altai and Chandmani soums in Gobi-Altai aimag representing Western Region. In total, the team visited 35 deposits of which 26 or 74.29% were placer (alluvial) deposits and 9 or 25.71% were hard rock deposits.

The sample size was 375; 67.7% were male and 32.3% were female, all of age above 16. Of the respondents, 21.1% of the survey units were the members of ASGM NGOs and partnerships that were engaged in ore extraction, 18.1% were working on ore processing, 7.8% were heads/leaders of NGOs and partnerships, 4.3% were ore transporters, 23.5% were informal artisanal gold miners, 5.6% were gold traders (mostly called changers or middlemen) and 4.3% were the representatives of local government organisations including senior and mid-level officers, inspectors, and healthcare workers. In brief, the contribution of ASGM to local development and livelihood of miners has been stated by different respondents including the miners and local government officers. Job allocation between women and men is clear; men do heavy physical work and women are engaged in easier work and they are paid equally. In regard to leadership of ASGM organisations, both men and women share an equal opportunity. Nevertheless, women in artisanal mining experience verbal abuse, physical and emotional stress. Women are interested in running small businesses other than artisanal mining, but they lack professional skills and knowledge. Children under the age of 18 are not officially employed in the mining. However, children help their families earn money at mining sites during school vacation.

Gold supply chain and trading in Mongolia is highly centralized, the Bank of Mongolia purchases gold directly from individuals and entities, therefore gold traders buy gold from ASG miners locally and re-sell at higher prices to the BoM. In recent years there have been initiatives and efforts of BoM, Precious Metals Assay Inspection Department of the National Agency for Standardisation and

Metrology and SAM project to make gold trade more formal and set up gold assaying and one stop gold buying centers in aimags. In 2018, two precious metals assay laboratories and BoM-affiliated gold purchase branches were established in Bayankhongor and Darkhan-Uul aimags allowing ASGM miners to sell gold at market prices. Another important development in gold supply chain is the introduction of world standards for responsible artisanal mining practices such as Fairmined standard. In 2015, the Mongolian NGO-Xamodx, with the support of SAM project, got the Fairmined Certification which acknowledges gold production without use of mercury and cyanide. Such best practices should be further supported, scaled up and supplemented with other market-based mechanism.

Wet (mainly sluicing with barriers) and dry processing technologies are used in placer deposits. In a case of hard rock deposits, extracted ores are transported to processing plants where technologies range from rudimentary shafts and tools to mechanized shafts. It was observed that some miners established a small processing plant in household setting and backyards causing risks of mercury release and exposure to mercury in neighbourhood areas.

The NAP project carried out Mercury Inventory in ASGM, however it was impossible to directly measure the mercury amount on the spot during the gold separation process. The likely use of mercury at national, regional and local levels was estimated using the global average for mercury to gold ratio (1 gr Au: 1.3 gr Hg), estimated by Global ASGM Council (O'Neil & Telmer, 2017)<sup>7</sup>. For the mercury estimation purpose sites with hard rock gold deposits were taken as sites with potential use of mercury in gold processing. The limitations of the mercury inventory are that a) the inventory did not exclude sites that use mercury free technology for gold processing; b) some miners collect rocks (ores) left from hard rock mining and transport to nearby processing plants or home. There is likelihood that these miners process ores by using mercury; (c) private companies have not been investigated on their compliance under the Mercury inventory which poses risk of greater mercury use. It should be noted that with declining reserves of placer gold deposits the ASGM miners are likely to shift to sites with primary gold deposits and this trend may bring risks to increased mercury use.

The Health Assessment of ASGM miners was conducted to compile and analyse previous health related studies, make rapid assessment of local health care organisations, determine health status of ASGM miners and their families and investigate incidences of illnesses caused by mercury use. The research methodologies included literature review, survey of miners, SARA standard questionnaire/WHO and interviews, general medical examination, neurologist test and rapid test of HIV and syphilis. The team visited 12 soums in 5 aimags and visited 11 soum health centers. In total, 434 ASGM miners participated in the medical examination, tests and check-up and 14 medical doctors and healthcare workers and 22 local administrative officers were interviewed. Health assessment survey revealed that the ASGM miners suffer from occupational diseases and some miners have symptoms of mercury diseases.

The Legal study concluded that substantial progress has been made towards formalizing of ASGM sector, but gaps and inconsistencies exist in different legal documents. A great number of institutions are mandated to regulate and monitor ASGM operations and provide policy support including the Ministry of Mining and Heavy Industry (MMHI) and Mineral Resources and Petroleum Authority (MRPA)<sup>8</sup>. These ministries and agencies are able to provide support for formalisation of ASGM through its aimag/capital departments and divisions. At subnational level, both aimag and soum governors' offices are mandated to oversee ASGM operations and bear direct responsibility for land allocation, contracts with miners and environmental and safety compliance. Both aimag and soum governors' offices are responsible for incorporation of ASGM into the development policy and planning.

Alongside with the studies, the NAP project has undertaken stepwise measures to engage stakeholders in NAP development. By the order 268/2017 of the Minister of Environment and Tourism of Mongolia the working group was established with 19 members from diverse stakeholders

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<sup>7</sup> O'Neill, J. D. and Telmer, K. (2017). Estimating Mercury Use and Documenting Practices in Artisanal and Small-scale Gold Mining (ASGM) Retrieved 14 September 2018 from [https://wedocs.unep.org/bitstream/handle/20.500.11822/22892/ASGM\\_toolkit\\_eguide\\_EN\\_180216.compressed.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/22892/ASGM_toolkit_eguide_EN_180216.compressed.pdf?sequence=1&isAllowed=y)

<sup>8</sup> For the full list of ministries and agencies see 3.5 Legal and Regulatory Status of the National Overview of this document, Table 4. Ministries and agencies that have direct and indirect responsibilities for enforcement of ASGM related policies and regulations (pp. 16-17).

including ministries and agencies, non-governmental organisations and academic and research organisations was established for developing the NAP. The working group held several meetings to discuss, review and provide feedback on baseline studies and the mercury inventory and the national overview of ASGM. Based on the National Overview, the project team identified and elaborated goals, objectives and targets and strategies which were discussed by the working group two times between May and July 2018.

Between 4 and 12 October 2018, the project team, in collaboration with the Ministry of Environment and Tourism, organized multi-stakeholders' workshop to discuss the draft NAP. Over 250 representatives of key ministries, agencies, Ulaanbaatar Mayor's Office, Governor's offices of 21 aimags, industry associations, non-governmental organisations and academia participated in the workshops. These meetings and workshops have enabled the project team to better identify and prioritize the central strategies, critical actions, implementation arrangements, evaluation mechanism and the budget plan.

Throughout the project, UN Environment has supported formulation of NAP through technical assistance and capacity building. Three people from Mongolia participated in the UN Environment Global Mercury Partnership regional workshop on "Developing a national overview of the Artisanal and Small Scale Gold Mining sector for National Action Plan projects in Asian region" organized from 27-28 November 2017. On 2-5 April 2018, 3-day training was organised in Ulaanbaatar by engaging Jennifer O' Neill, the lead author of "Estimating Mercury Use and Documenting Practices in Artisanal and Small-scale Gold Mining," an AGC/UN Environment guidebook. The training aimed to enhance knowledge of experts on methodology, guideline and international best practices for developing NAP and carrying out mercury inventory.

In December 2018, the project team submitted the draft NAP to UN Environment for experts' feedback and received a NAP Review in January 2019. To discuss and incorporate review points of the international expert, in February 2019 the MET organised a 3-day technical meeting by engaging the staff of MMHI, MRPA, MoH, and National Center for Public Health (NCPH). Following the technical meeting, thorough revisions of the NAP document were made.

Based on the revised NAP, the Ministry of Environment and Tourism elaborated the policy alternatives and policy impact assessment and prepared additional annexes required by the Regulation of the Government (249/2016) "A common procedure for developing development policy documents".

The National public forum on final draft NAP was organized on April 18, 2019 and appreciated the NAP document for further processing. Accordingly, the NAP was circulated to all the ministries for feedback. After this circulation and review process, the document was submitted to the Ministry of Finance for its agreement to submit to the Cabinet. The Cabinet discussed the NAP at its meeting dated 14 August 2019 and approved it by its Resolution 317. The Workplan for implementation of the NAP was approved by joint order of the Minister of Environment and Tourism and the Minister of Mining and Heavy Industry NoA/232 and A/66 of April 07, 2020. The Government of Mongolia officially submitted the NAP to the Secretariat of the Minamanta Convention on June 08, 2020.

### **III. NATIONAL OVERVIEW OF ARTISANAL SMALL-SCALE GOLD MINING**

#### **3.1. Previous Experiences in Addressing ASGM**

##### ***Scoping of research, projects and programmes***

###### *Socio-economic research*

In 2002 and 2005, the National Center for Public Health (NCPH), in cooperation with APIK programme, implemented at the National University of Mongolia, carried out a study on working conditions, income, health and safety of artisanal and small-scale miners (NAP Project 2018). In 2007, UNPFA, in cooperation with School of Public Health, National University of Medical Sciences, conducted the survey "Socio-economic conditions of artisanal miners- Mongolia" to examine socio-economic issues in artisanal small-scale gold mining sector (UNPFA, School of Public Health 2007). In 2015, the Independent Research Institute of Mongolia (IRIM) conducted "Baseline Study Investment from ASGM to Local Development" with the support of SDC Mongolia SAM project. The study estimated direct and indirect contribution of ASGM including household income, taxes and jobs created.

### *Health research*

Since 2006 a number of studies have been carried out to understand health status of ASGM community and assess impact of mercury on miners' health<sup>9</sup>. The findings of the studies demonstrate that mercury has affected the miners health to some extent; ranging from minor to dangerous levels and the symptoms such as tremor and loss of balance in walking are prevalent. Other work-related illnesses, STDs and tuberculosis have also been widely spread among miners<sup>10</sup>.

### ***Studies on mercury use in ASGM***

The studies and projects on mercury pollution caused by ASGM have been carried out since 2000. These studies and projects include:

- The research by Japan International Cooperation Agency (JICA) on "Assessment of mercury contaminated areas in Boroo river basin" in 2003;
- The project "Research on Pollution from Gold Ore Extraction in Selenge River Basin" and the subsequent report "Assessment of Environmental Risks of Mercury Pollution during the Exploitation of Gold Deposits in Selenge Catchment Area of Mongolia" implemented by the Ministry of Environment of the Czech Republic in 2006-2007;
- The project "Technical and Technological Support for Mongolia to Eliminate Environmental Pollution Caused by Informal Gold Mining in Central Region of Mongolia" implemented by the Government of Mongolia and Ministry of Environment of Czech Republic in 2009-2011;
- The survey by the International Labor Organization "Ending Child Labour in Mining: Field Experience and Analysis of Interventions from Mongolia" in 2007,
- The project "A National Mercury Emissions Inventory" implemented by MNET and UNITAR with the financial support from the US Environmental Protection Agency (US EPA) in 2011; and
- The project "Reducing the Impacts of Mercury on Human Health and the Environment by Promoting Sound Chemical Management in Mongolia" implemented by MET, UNIDO, and Mine Reclamation Corporation (Mireco) of South Korea in 2013-2016<sup>11</sup>.

The findings of these studies show that mercury was widely used in ASGM causing extensive soil and water pollution and waste nearby mining sites.

### ***International projects in ASGM***

Since 2005 the Swiss Agency for Development and Cooperation (SDC) and the Ministry of Mining has been implementing Sustainable Artisanal Mining Project (SAM) project aimed at formalization of artisanal mining, dissemination of best practices in ASM, capacity enhancement and awareness of stakeholders. In overall, the SAM project has contributed to transition from environmentally harmful and dangerous ASM practices to sustainable and well performing ASM operations. The project resulted in better legal framework, improved technology and safety and application of best practices of environmental reclamation, development of ASM organisations, strengthened capacity and role of NFASM as a strong advocate for miners' rights, enhanced knowledge and capacities of central and local government on ASM management and governance and better engagement and collaboration of diverse stakeholders.

In 2013-2016, Asia Foundation implemented the project "Engaging Stakeholders in Environmental Conservation-2 Project (ESEC-2)" with SDC financing. The project contributed to improvement of compliance with environmental standards by developing Frugal Rehabilitation Methodology (FRM), establishment of soum-level environmental management plans and ASM-led rehabilitation plan implementation. In 2014 -2015, the project collaborated with 18 ASG NGOs and rehabilitated 17 blocks in 17 soums of 9 aimags<sup>12</sup>.

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<sup>9</sup> Public Health Institute, Ministry of Health. 2016. Consolidation of the studies on mercury 2008-2015. Ulaanbaatar

<sup>10</sup> See for more details Subsection 3.10 Health information of this document, pp 43-44.

<sup>11</sup> See for more details Subsection 3.9 Environmental information of this document, pp. 41-42

<sup>12</sup> The Asia Foundation. 2016. Frugal rehabilitation demonstration (FRD) in Mongolia: FRD case studies handbook. Retrieved 10 March 2019 from <https://asmhub.mn/en/files/view/543?b1=publications>

In 2015, the Government of Mongolia and UNITAR implemented the project “Ratification and Early Implementation of Minamata Convention on Mercury in Mongolia” through the assistance of the Swiss Government. The project enabled priority setting for implementation of the Minamata Convention at national level and identified key areas including monitoring system for mercury releases to the environment, training and awareness raising, reduction of mercury and mercury emission from primary anthropogenic sources and of mercury emission from ASGM (MET and UNITAR 2015). Currently, the Government of Mongolia, in cooperation with UNIDO, is implementing the project “Advanced Minamata Initial Assessment. In 2019, Mongolia, in collaboration with UN Environment, will start the project “GEF GOLD – From Miners to Refiners”.

### 3.2. Geographical Distribution of ASGM

As of September 2014, 117 hard rock gold deposits, 664 placer gold deposits and 1,763 gold occurrences were identified in Mongolia; 15% of all deposits were hard rock deposits while the remaining 85% were placer deposits (SAM, 2014).

According to Minerals Resources and Petroleum Authority, there were registered reserves of 333 hard rock and 99 placer gold deposits in 2006- 2017.

**Table 1. Number of placer and hard rock gold deposits and identified reserves, 2006-2017, tons**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Hard rock deposit	23	15	22	31	34	20	38	26	32	30	38	24	333
Placer gold deposit	3	4	1	3	13	11	13	15	16	6	8	6	99
Proven gold reserves (ton)	7.9	12.1	7.2	17.8	39.8	54.6	40.6	37.4	94.3	33.0	41.0	11.4	

Source: Mongolia. Minerals Resources and Petroleum Authority. 2018

Placer deposits are spread in 26 soums: Govi-Altai, Zavkhan, Uvs and Khovd aimags in Western region; Bayankhongor, Bulgan and Uvurkhangai aimags in Khangai region; Dornogovi, Umnugovi, Selenge, Tuv and Darkhan-Uul aimags and Ulaanbaatar in Central region and Dornod and Khentii aimags in Eastern region. Hard rock deposits are prevalent in 9 soums of 5 aimags in 4 regions of Mongolia; Altai and Bugat soums of Govi-Altai aimag and Bulgan soum of Khovd aimag in Western region; Bayan-Ovoo soum of Bayankhongor aimag in Khangai region; Mandal, Bayangol, Orkhontuul soums and Tunkhel village of Selenge aimag and Bornuur soum of Tuv aimag in Central region. In overall, ASGM is heavily concentrated in Govi-Altai (5 placer and 2 hard rock), Selenge (1 placer and 4 hard rock) and Bayankhongor aimags (5 placer and 1 hard rock)<sup>13</sup>.

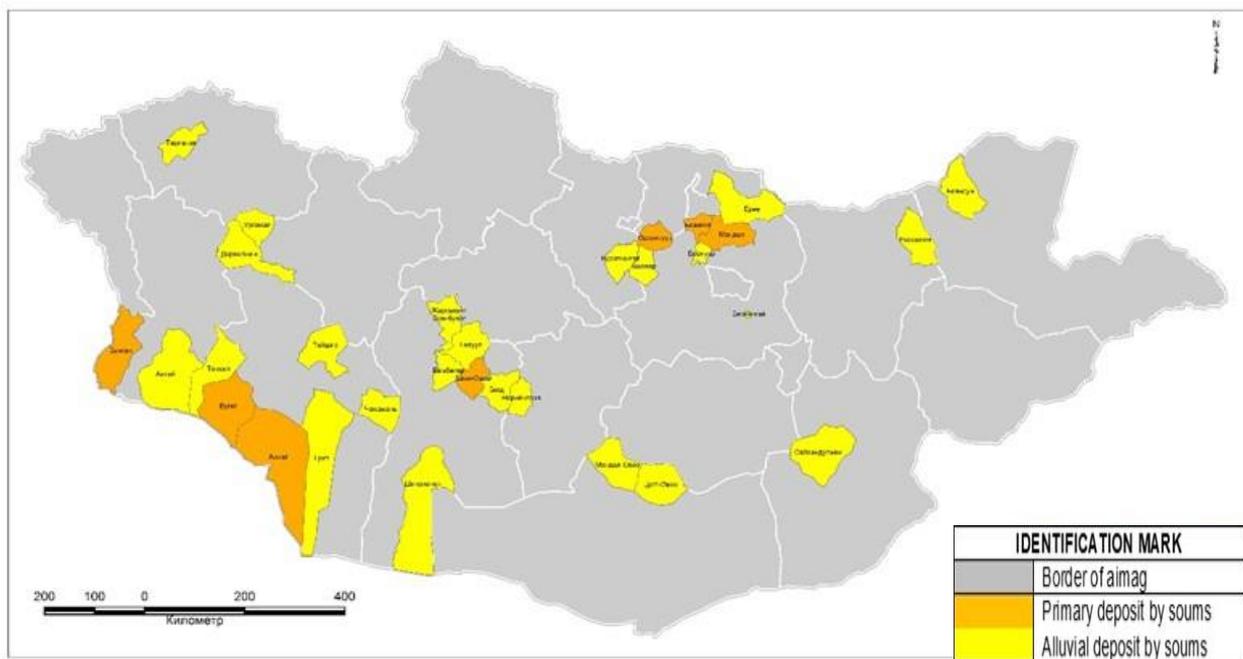
According to MRPA, by the end of 2017, 62 sites in 23 soums of 13 aimags provided information on ASGM including 50 gold sites<sup>14</sup>. In 2017-2018, MRPA released that there were 44 sites with permits and 60 sites without permits used for ASM. As of October 2017, the MRPA made conclusions that 143 fields with 1,929.67 hectares in 43 soums of 18 aimags have potential resources for extraction of minerals through small scale mining<sup>15</sup>.

<sup>13</sup> For further details see Mongolia. NAP Project. 2018. Mercury Inventory.

<sup>14</sup> Mongolia, Mineral Resource and Petroleum Authority (MRPA) 2018. Compiled from sources of information provided by NSO, aimags and from business trips to aimags and soums. Not included information of Uvs, Khovd, Uvurkhangai, Selenge and Dundgovi.

<sup>15</sup> <https://mrpam.gov.mn/article/131/>

**Figure 1. Location of ASGM sites, types of ores, by aimags, soums and capital**



Source: Mongolia. NAP Project 2018. Mercury Inventory.

The number of ASG miners in Mongolia fluctuate throughout the season. The Survey on ASM, conducted by the National Statistics Office of Mongolia in 2016 with the support of Sustainable Artisanal Mining (SAM) project estimated 11,962 artisanal and small-scale miners that were actively engaged in operations of 332 points belonging to 113 deposits or occurrences in 97 soums of 18 aimags and one district of Ulaanbaatar<sup>16</sup>. Out of the survey respondents, 5,108 people were engaged in gold mining. Other sources point out that the number of ASG miners is greater than the official statistics provided by the NSO. The study by Robert Sandmann (2010)<sup>17</sup> points to different sources on estimation of the number of small-scale miners and provides various numbers fluctuating between 30,000 and 100,000 (WB, 2003, Ruhmann and Becker, 2003, WB, 2007). GEF Gold Project by UN Environment says the ASGM sector employs 40,000 to 60,000 individuals.

### 3.3. Mining and Processing Information

#### **Gold mining and processing technology**

In Mongolia, gold is mined from placer, dry placer, hard rock, and as a by-product from copper ore, and the ASGM sector accesses both places deposits and primary deposits.<sup>18</sup>.

Placer (alluvial) deposit. Mining at placer gold mines usually takes place in tailings or previously mined areas and unexploited mining sites. The miners usually dig shaft in areas with potential gold veins and make tunnels to the vein to extract gold ores. In some cases, they use mine tailings and low grade remains or search for gold using metal detectors at abandoned mine areas and new deposits. When gold bearing ore is removed from the tunnel/shaft, it is transported to a processing workshop for processing. Processing of alluvial gold is done through wet processing and dry processing and sluicing.

If wet technology is used the miners heat water in winter time, remove stones and gravel from ores, wash ores; and separate gold by washing. Sluices with barriers are widely used in wet processing

<sup>16</sup> National Statistics Office (NSO) 2017. ASM Survey 2016 Report.

<sup>17</sup> Sandmann. R., 2010. Artisanal and Small-Scale Gold Mining in Mongolia – A Contribution to Sustainable Development? Study on Socio-Economic Changes in Bornuur Soum Center after Foundation of XAMO Company. Retrieved on 8 March 2019 from <https://asmhub.mn/en/files/view/489>

<sup>18</sup> SDC Mongolia SAM Project. 2015. Artisanal and Small Scale Mining-Subsector of the Mining Industry in Mongolia Retrieved 15 March 2019 from <https://asmhub.mn/en/files/index?type=publications>

of material extracted from alluvial deposits. When using sluices, it is important for miners to precisely set the slope degree and the ratios of water and solid material, which depends on the characteristics of the ore and the grade of the gold<sup>19</sup>. When dry technology is used, miners need to accurately set the blowing speeds and operators must wear dust masks, safety goggles and other protective equipment. In both wet and dry technology mercury is not used, but environmental impacts are high due to excessive use of water in case of wet technology.

**Figure 2. Shaft sinking and ore extraction on a placer gold mine**



a) Ore extraction



b) Carrying ore (in buckets)



c) Separating rocks and gravel



d) Washing gold



e) Panning for gold



f) Sponge gold after washing

<sup>19</sup> SDC Mongolia SAM project. 2016. Artisanal and Small-scale Mining in Mongolia. Conventional Handout. Retrieved 15 March 2019 from <https://asmhub.mn/en/files/view/61509?b1=publications>

**Figure 3. Shaft sinking and dry processing at artisanal placer gold mine**



a) Ore extraction from mine shaft



b) Separation of rocks and gravels



c) Transportation of ores



d) Dry ore processing method



d) Panning for gold



e) Gold after separation

*Hard rock (primary) deposit.* Gold extraction at the hard rock deposit starts with shaft sinking till the gold containing veins followed by extracting ores along the vein. Miners mainly use handheld minimal tools and electric tools. Extracted ores are collected from mining areas and and processed at the processing plant at the mine sites ore transported and processed in the nearby processing plants. Gold bearing ore is processed through several steps:

- Crushing ores breakers;
- Milling (roller and hammer mill);
- Sluicing (ore beneficiation);
- Washing ores; and
- Milling the concentrate with disk mill.

**Figure 4. Process workflow at the processing workshops at hard rock mine site**



Ore crushing



Roller milling



Milling at the hammer mill



Sluicing



**Figure 5. Ore processing at the milling workshop**



1. Ores brought by miners



2. Bushing ores with jaw breaker



3. Hammer mill



4. Roller mill



5. Sluicing



6. Slimes dam



7. Ore concentrate production



8. Gold separation on the shaking table



9. Melting process



10. Dore

The Table 2 shows the number of processing plants in soums visited during the Mercury Inventory and their facilities. The facilities at the plant usually include a jaw crusher, roller mill and hammer mills and shaking table. A mill is used to crush the ore to the desired size, and a shaking table is used to separate the gangue from the metal concentrate and the gold. In addition, some areas have separate milling facilities that can be rented for a fee.

On 23 January 2008 the Government passed the Resolution No 28 on “Coordination of activities of citizens engaged in artisanal mining” which included statement on establishment of processing plants at 3-4 places where gold is extracted at hard rock deposits. Accordingly, the processing plants were built in Bornuur soum of Tuv aimag, Bayan-Ovoo soum of Bayankhongor aimag and Mandal soum of Selenge aimag with the support of the Government and SAM project. Of these workshops, two workshops got necessary permits and are currently operating. The workshop, built in Bornuur soum of Tuv aimag, has not yet obtained the “Comprehensive environmental assessment”, therefore has not officially started the operations. As seen in the Table 2, Bornuur processing plant has 1 jaw crusher, 3 roller mills and Holman shaking table with 200 kg/hour capacity. It is also possible to smelt the gold into bars, ready to sell to the BoM. The processing plant in Bayan-Ovoo soum of Bayankhongor aimag has 1 jaw crusher, 4 roller mills and 2 hammer mills and has a capacity to process 10 tonnes of ore a day.

**Table 2. Location, number of gold processing plants and equipment description, selected soums**

#	Location		Number of processing plants	Comments
	Aimag	Soum		
1	Gobi-Altai	Yesunbulag	3	Jaw crusher, 3 roller mills, 2 shaking tables. Located at 4 kms distance from provincial center Altai city and processes ores supplied from Bugat, Tsogt and Altai soums.
		Altai	1	A jaw crusher, a roller mill, a shaking table. Located at Altai soum center. Ores supplied from deposit in Torgot Mountain.
2	Selenge	Bayangol	9	A jaw crusher, 3 roller mills, 9 hammer mills, 8 disk mills. Artisanal miners operate in the block licensed to Selenge Mining LLC.
		Mandal	3	Jaw crusher, 7 roller mills, 3 shaking tables. Located at the Mandal soum center. Processes ores extracted from a block licensed to Noyod LLC, as well as illegal mine sites.
3	Bayankhongor	Bayan-Ovoo	1	1 jaw crusher, 4 roller mills, 2 hammer mills. Capacity to process 10 tonnes of ore a day. Partially operational (304 days a year excluding maintenance and standstill periods). If fully operational, possible to produce 85- 90 kg gold a year. Serves formal artisanal miners working on license areas of Special Mines LLC with tri-partite agreement, informal miners in the same field, and both formal and informal artisanal miners working in Western region.
4	Tuv	Bornuur	1	1 jaw crusher, 3 roller mills, and Holman shaking table with 200 kg/hour capacity. Located at 6 kms distance from Bornuur soum center and provides service for formal and informal artisanal miners.
5	Khovd	Tsetseg	3	1 jaw crusher, sluice and shaking table. Extracts minerals under the rehabilitation agreement.
6	Umnugobi	Khankhongor	1	Construction of plant finished, equipment not yet installed.
7	Zavkhan	Uliastai	1	Located at the provincial center.

Source: Mongolia. NAP Project. 2018. Mercury Inventory.

### ***Worst practices and mercury use***

The use of mercury in Mongolia's mining sector dates back to 1913. In 1913, the "Mongolor" coal mine, German-Russian-Mongolian joint venture in the Boroo river basin in Mandal soum of Selenge

aimag, began using mercury in hard rock gold mining. Later, in 1956 a crack in the amalgamating tank caused release of a large amount of mercury and formed a significant anthropogenic mercury deposit in the Boroo river basin. In 2000, the paper “Environmental hazard in Lake Baikal watershed posed by mercury placer in Mongolia” presented data from the 1993 geological assessment of gold and mercury reserves in the remaining foundations of Mongolor buildings and disclosed information that 98.5 kg of mercury were found in a small area of the contaminated site. Based on the 2000 field observations, the authors suggested that up to 10 tons of mercury were present in the Boroo area (UNIDO, 2013).

The various studies reveal that mercury was extensively used at household settings to catch gold from the ores by heating the amalgam for evaporation. The study by the National University of Mongolia reveals that until 2005 there were about 400 artisanal and small-scale miners in Bornuur soum of Tuv aimag and each miner had recovered 223,8 grams of gold by using 400 grams of mercury per year<sup>20</sup>. In 2007, 800 artisanal miners worked in 5 mine sites in Bornuur soum of Tuv aimag and had 14 processing plants with mercury usage. In 2008-2009, the Government of Mongolia implemented a decontamination campaign on mercury and cyanide polluted sites at the national level and suspended and destroyed 147 mills that used mercury for gold processing.

In 2006, the survey carried out by the International Labor Organization (ILO), found out that the mercury was mostly used in amalgamation process to separate the gold from the ore at hard rock sites located in Selenge and Tuv provinces<sup>21</sup>. The study also disclosed that 60 % of children working at artisanal and small-scale mining camps were directly involved in amalgamation process with mercury.

In 2007, General Agency for Specialized Inspection carried out an extensive national level inspection over the use of dangerous and toxic chemicals and identified that 203 507.58 m<sup>3</sup> soil of 53.5 hectares of land and dozens of wells in 120 sites were heavily contaminated by mercury and cyanide toxic chemicals used in ASGM<sup>22</sup>.

In 2008-2009, the Ministry of Nature, Environment and Tourism organized decontamination of chemical spills and pollution and spent 3.7 billion MNT on this decontamination measures. In 2008-2009, 105 kgs of mercury were collected from the former Mongolor site in Mandal soum of Selenge aimag. Four hazardous and toxic waste landfill sites were created in the most polluted areas and total of 197,687 tons of slimes were neutralized and buried. As a result, 28,444 square meters of polluted land in 231 places scattered around 38 counties of 10 provinces were decontaminated.

Despite banning use of mercury in mineral processing there has been continued illegal use of mercury. GEF Gold project highlights that small-scale gold miners are likely using mercury to extract gold, either from ores they excavated from mining areas, or from mine wastes they retrieve from the processing facilities. In this case, a miner may use up to 200 grams of mercury for every kilogram of gold. The miners may sell the gold to the processing plant owners, or to an accredited gold buyer in the capital city of Ulaanbaatar.

### **3.4. Baseline Estimate of the Amount of Mercury Used in ASGM**

After the Government of Mongolia prohibited mercury use in mining and destroyed the mills, mercury use slipped to underground and covert form. In order to estimate the likely mercury use in ASGM the NAP project team collected data on the number active placer and hard rock deposits and average amount of gold extracted through aimag and soums governor’s offices. Accordingly, 129.9 tons of ores are extracted a year and 1,089 kgs of gold are produced through ASGM, from both placer and hard rock deposits. Of this total amount of gold, produced through ASGM, 181,9 kgs gold are produced from hard rock deposits (Mercury Inventory 2018).

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<sup>20</sup> Sandmann. R., 2010. Artisanal and Small-scale Gold Mining in Mongolia – A Contribution to Sustainable Development? Study on Socio-economic Changes in Bornuur Soum Center after Foundation of XAMO Company. Retrieved 8 March 2019 from <https://asmhub.mn/en/files/view/489>

<sup>21</sup> International Labour Organisation. 2007. Ending child labour in mining Field experience and analysis of interventions from Mongolia Retrieved 28 February 2019 from <https://asmhub.mn/en/files/index?rtype=reports>

<sup>22</sup> The Ministry of Environment and Tourism of Mongolia. Mongolia National Report on Sustainable Development for the 18<sup>th</sup> Session of the Commission on SD. 2010

However, the BoM reports that in 2017, 12,66 tons of gold were supplied by “individual citizens as well as artisanal and small-scale gold miners”. Uncertainty comes out from the fact that the BoM conducts limited due diligence on gold supply and does not identify origin of gold sold by different gold suppliers. Therefore, it is highly possible that ASG partnerships, cooperatives some legal entities as well as individuals sell gold to BoM under the name of “individuals and ASG miners” to avoid taxes. The current situation poses risks of supplying gold, extracted and processed using mercury, into formal supply chain.

Within the framework of the NAP project it was impossible to conduct the nationwide mercury inventory and directly measure the mercury amount on the spot during the gold separation process. Based on the technology used in ASGM (including sluice to process concentrate) it has been assumed that if mercury were used in ASGM it would be used as concentrate amalgamation. In concentrate amalgamation, mercury is used on concentrate which contains the heaviest minerals and gold<sup>23</sup> and the ratio of mercury to gold produced 1x1 or 1.3x1. Accordingly, the estimation of likely use of mercury at national, regional and local levels was estimated using the global average for mercury to gold ratio (1 gr Au: 1.3 gr Hg), estimated by Global ASGM Council (O’Neil & Telmer 2017)<sup>24</sup>. For this estimation purpose sites with hard rock deposits were taken as sites with potential use of mercury in ASGM.

The project team did not find any risk factors that might lead to potential risks of mercury use in placer gold deposits. Previous studies have also showed that there are no abandoned and existing placer gold sites that have been polluted by mercury. Table 3 demonstrates that the contingent use of mercury might be 23.4 kg in Gobi-Altai aimag, 20.28 kg in Khovd aimag, 57.3 kg in Bayankhongor aimag, 120.08 kg in Selenge aimag and 14.352 kg in Tuv aimag, respectively and 235.416 kg collectively at the national level.

**Table 3. Estimation of likelihood of mercury use**

No	Region	Aimag	Soum, district, village	Average values for small-scale gold mines			Production of small-scale gold mines		Potential mercury use (1 gr 24K Au:1.3 gr Hg)
				Gold grade (gr/t)	Assaying result/recovery rate (%)	Daily production (t ore /shift)	Ore production, t/year	Gold production, kg (24K gold/year)	
1	Western	Gobi-Altai	Altai	27.18	80	0.03	805	17.6	22.88
2			Bugat	27.18	80	0.03	60	0.4	0.52
		<b>Aimag total</b>							<b>23.4</b>
3		Khovd	Bulgan	18.97	88	0.03	717	15.6	20.28
		<b>Aimag total</b>							<b>20.28</b>
<b>Regional sub-total</b>									<b>43.68</b>
4	Khangai	Bayankhongor	Bayan-Ovoo	8.35	88	0.07	6 018	44.08	57.30
		<b>Aimag total</b>							<b>57.30</b>
<b>Regional sub-total</b>									<b>57.30</b>
5	Central	Selenge	Mandal	16.37	87	0.07	457	6.48	8.424

<sup>23</sup> UNEP. 2012. Reducing Mercury Use in ASGM: A Practical Guide

<sup>24</sup> O’Neill, J. D. and Telmer, K. 2017. Estimating Mercury Use and Documenting Practices in Artisanal and Small-scale Gold Mining (ASGM) Retrieved 14 September 2018 from [https://wedocs.unep.org/bitstream/handle/20.500.11822/22892/ASGM\\_toolkit\\_eguide\\_EN\\_180216.compressed.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/22892/ASGM_toolkit_eguide_EN_180216.compressed.pdf?sequence=1&isAllowed=y)

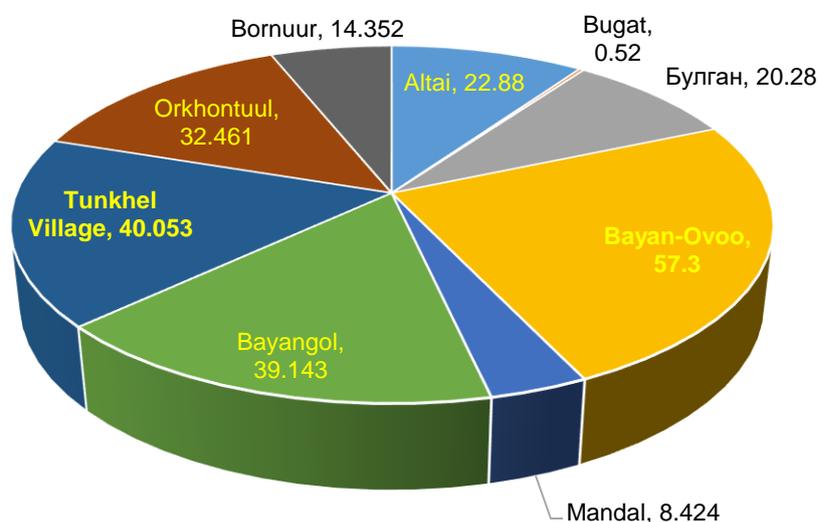
6		Bayangol	20.77	84	0.03	1 733	30.11	39.143
7		Tunkhel Village	26.91	93	0.07	1 233	30.81	40.053
8		Orkhontuul	18.97	88	0.07	1 495	24.97	32.461
		<b>Aimag total</b>						<b>120.08</b>
9	Tuv	Bornuur	11.81	90	0.11	1 037	11.04	14.352
		<b>Aimag total</b>						<b>14.352</b>
<b>Regional sub-total</b>								<b>134,452</b>
<b>National total</b>						<b>129 909</b>	<b>181.9</b>	<b>235.413</b>

Source: Mongolia. NAP Project 2018. Mercury Inventory.

It should be noted that there are three compelling issues. In Mongolia gold producers include individual illegal gold miners (so called ninja), small scale miners (cooperatives and partnerships) and formal legal entities-small, medium and large scale gold mining companies. The mercury estimation is based on hard rock gold mines operated by individual illegal gold miners, cooperatives and partnerships, however it did not include legal entities (SMEs and large companies). There might be potential use of mercury by some of small scale companies. Some survey respondents said that there was a Chinese gold company in Zaamar soum of Tuv aimag that used mercury for gold processing, but during the field visit the company was closed down. Therefore, in the future it is recommended to conduct extended mercury inventory at national level covering all types of gold producers. Such nationwide inventory will require substantial financial and human resources and engagement of different stakeholders including MET, MMHI, GASI, MRPA and aimag and soum governor's offices.

Secondly, in some places with hard rock deposits, ore processing is mercury free, but they are included in the list of sites used for calculation. Thirdly, some people collect rocks (ores) left after mining process and bring home or to a nearby processing plant. In this case, there is a risk of using mercury at home.

**Figure 6. Amount of mercury used in ASGM, (kg/Hg), by soums**



Source: Mongolia. NAP Project 2018. Mercury Inventory

### 3.5. Legal and Regulatory Status

#### ***Policies, laws and regulations related to formalisation of ASGM***

The formalisation of ASGM sector took a number of years (O'Neil & Telmer, 2017). Earlier regulations related to ASGM include the Government Resolution No 28 "Development of Artisanal and Small-Scale Mining until 2015", Government Resolution No. 72 on "Temporary Regulation for

Artisanal and Small-Scale Miners' Operation<sup>25</sup>. However, the enforcement and implementation of these government resolutions and legal acts has been ineffective.

The Gold Programme, approved in 1991 resulted in drastic increase of gold production and exports in 1992- 2000<sup>26</sup>. As a result, annual gold production rose from 0.7 tons to 11 tons between 1992 and 2000.

In 1997, the Law of Mongolia on Minerals was approved. The amendments to the Minerals Law were made in 2006 followed by approval of the Mining Windfall Profit Tax and the Law to prohibit mining exploration and operations at headwaters of rivers, protected zones and water reservoirs (so called Law with Long Name). In 2006-2010, the gold production decreased drastically due to the windfall profit tax on gold sales at price in excess of USD 500 per ounce.

In 2010, the Government made several steps to formalize the sector. Firstly, the amendments were made to the Law on Minerals incorporating the provision "Issues pertaining to extraction of minerals through artisanal mining shall be regulated by a separate regulation, subject to approval by Cabinet". Subsequently, the "Regulation on Extraction Minerals through Small-scale Mining"<sup>27</sup>, the Guidelines for Occupational safety and Health, Rehabilitation and Tripartite agreement between ASGM, private companies and local government and application forms for mining land were approved. The Regulation allowed setting up ASGM partnerships and cooperatives to operate mining on their soums territory and enter into contract with the soum Governor, license holder and the partnership using the template.

In December 2010, the Amendments were made to the Law of Mongolia on Tax, as a result, artisanal and small-scale miners were included in the category of "individuals engaged in work and services, income of which cannot be immediately determined"<sup>28</sup> and pay taxes accordingly. An important step for engaging the local government in ASGM was the Government's decisions on allocation of 30% of the income accumulated in the state budget from payment for using gold reserves and 50% of the income accumulated from the gold exploration and licenses<sup>29</sup>.

By 2014 the legal entities as well as individuals were allowed to sell gold to the Bank of Mongolia (BoM)<sup>30</sup>. These changes resulted in overall gold production and transparency of gold supply. As of October 2015, the gold mining sector accounted for 2.6% of GDP, 9.6% of mining production and 9.1% of total export revenues, respectively, as of October 2015 (NSO 2015). In recent years, two assaying units and one stop gold purchase

In 2017, the Government approved "National Gold Programme II"<sup>31</sup> for the purpose of increasing gold production, fostering economic development and addressing pressing issues such as environmental pollution, lack of rehabilitation and illegal mining. The programme is planned to be implemented in two phases; 2017-2018 and 2019-2020.

Currently, a large number of laws and regulations exist in relation to the ASGM and they cover a broad range of areas, including a) operations of ASM, structure, duties and rights of ASM organizations, b) mandates, rights and obligations of central and local government including control and monitoring of ASGM operations c) land use, permits and licensing, d) environmental protection, waste management and rehabilitation, e) technology capacity limitations; f) prohibition of using mercury in mining, g) labour safety, h) gold trade and i) fees and taxes.

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<sup>25</sup> SAM Project SDC Mongolia. 2015. Artisanal and Small-Scale Mining-Subsector of the Mining Industry in Mongolia. Retrieved 15 March 2019 from <https://asmhub.mn/en/files/index?rtype=publications>

<sup>26</sup> Cabinet of Mongolia, Resolution No304 dated 1 November 1991 National Gold Programme

<sup>27</sup> Cabinet of Mongolia, Resolution No 308 dated 1 December 2010 (ceased by the Resolution No 151 in 2017)

<sup>28</sup> Mongolia, General Tax Law dated 20 May 2008. Provision 7.4.2. Retrieved on 15 March 2019 from <https://www.legalinfo.mn/law/details/473?lawid=473>

<sup>29</sup> Ochtsetseg Ganbaatar (2010) Gold 2025-Baseline Study. Retrieved on 10 March 2019 from [https://www.academia.edu/35914654/Алт\\_2025\\_хөтөлбөрийн\\_н\\_суурь\\_судалгааны\\_тай\\_лан](https://www.academia.edu/35914654/Алт_2025_хөтөлбөрийн_н_суурь_судалгааны_тай_лан)

<sup>30</sup> The amendments to the Provision 35 of the Law on Minerals were made on 24 January 2014 which allowed individuals and legal entities to pay 2.5% fee for using mineral resources (previously 10%) if the gold is sold to the BoM and branches of commercial banks with permits to engage in gold trading.

<sup>31</sup> Cabinet of Mongolia. Resolution No20 dated 18 January 2017. National Gold Programme II. Retrieved 3 August 2018 from <https://www.legalinfo.mn/law/details/12431>

On 24 May 2017, the Government approved the renewed “Regulation on extraction of minerals by small scale mining”<sup>32</sup> acknowledging further the contribution of ASM into the country’s economy and demonstrating the Government’s commitment to formalisation of the sector. The Regulation has set objectives to support use of sites, which are economically unprofitable to mine through production technology and the mine waste sites and tailings for small scale mining purpose, protect the environment, and reduce poverty and to create jobs in rural areas. In the regulation it is stated that an inter-governmental ASM Council will be established for coordination.

Further, the Regulation specifies a role of aimag government, soum/district Citizens’ Representatives Khural and Soum/District Governor. Accordingly, the district and soum/district governor’s offices are obliged to maintain registration of ASG miners, take measures for issuing land permission and making contracts, provide guidance and advice to miners, ensure proper social protection and healthcare service, monitor and oversee rehabilitation, use and storage of chemicals and take measures to reduce injuries, poisoning and accidents. The Regulation provides sufficient power and authority to local government to manage and oversee ASGM, however both central and local governments may face technical, human resource and financial capacity limitations to effectively play their role and perform their mandates under existing institutional structure and circumstances. In accordance with the Regulation the ASG miners are required to be organised into unregistered partnerships, partnerships or cooperatives. The Clause 481.1 of Article 481 of the Civil Code states “Several persons may run an operation being organised into a form of association and partnership on a contract for cooperation. This form of organisation shall not be a subject to state registration and its members shall agree on and define its organisational structure and form”<sup>33</sup>. Although unregistered partnerships have limitations they are an important entry point to legalisation and formalisation.

An important issue in ASGM legal framework is land for mining. The Regulation states that soum governors make a request to MRPA for ASGM land and MRPA approves the land after checking the site’s ownership, licensing and whether the site is not in protected area. MRPA granted ASM permission to operate in 20 soums in 10 aimags, and in total, 96 licenses in 34 soums in 10 aimags were issued in 2016<sup>34</sup>. Land for ASGM can also be obtained through tripartite agreement between the license holder, ASG miner and the soum governor. It should be noted not all the available land have been used by the miners. For instance, in 2016 only 30% of the land were used for mining and the remaining was not used to limited resources and high costs.

Despite recent improvement of legal and regulatory framework for ASGM there exist some inconsistencies and duplications in the laws and regulations causing vague interpretations for enforcement. For example, in the Law on Land it is stated that aimag and the capital exercises power and authority to hold the land for special purposes including for mining purposes. However, in the Law on Minerals it is said that the aimag and the capital can only make a decision on the land for mining purposes based on the requests of soums and districts. In these two legal documents powers and authorities of aimags as well as soums for allocating land for mining purposes are blurred leading to long and cumbersome processing of land permission for ASGM. This inconsistency could also cause conflicts between the soum and aimag governor’s offices.

### ***Miners’ feedback on enforcement of the Regulation***

During the Baseline Socio-Economic Survey on ASGM the miners expressed their opinions on soum government officials. Most of the opinions were related to land for ASGM purpose; responsibilities of soums and aimags on land issues are unclear and the local government fails to provide information

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<sup>32</sup> Cabinet of Mongolia. Resolution No 151 dated 24 May 2017. The Regulation of extraction of minerals through small scale mining. Retrieved on 10 December 2018 from <https://www.legalinfo.mn/law/details/12681>

<sup>33</sup> SDC Mongolia SAM project. 2016. Artisanal and Small-scale Mining in Mongolia. Conventional Handout. Retrieved 15 March 2019 from <https://asmhub.mn/en/files/view/61509?b1=publications>

<sup>34</sup> UNIDO. 2017. A Rapid Assessment of Gold and Financial Flows Linked to Artisanal and Small-Scale Gold Mining in Mongolia-Follow the Money: Mongolia. 10 March 2019 from <http://www.levinsources.com/assets/pages/Follow-the-Money-Artisanal-and-Small-Scale-Gold-Mining-in-Mongolia-GEF.pdf>

on land for ASGM; organized ASG miners have problems in getting land for their operations and such issues are not resolved at the aimag level; local government fails to make contract with miners on artisanal mining activities in the area and the mechanism to impose sanctions and responsibilities on illegal mining is weak. Also, the miners said that the new Regulation has increased opportunities for formalizing ASGM, but it has added extra burden and hierarchical stage for getting land permission.

The findings suggest for need to reach out miners to provide practical advice and information on compliance with the Regulation and provide timely and accurate information about the land available for ASGM.

### **Central and local government organisations in charge of ASGM**

The ministries and agencies that have direct and indirect mandates and responsibilities for ASGM are provided in the Table 4.

The Ministry of Mining and Heavy Industry (MMHI) has no separate division responsible for artisanal and small-scale mining, and ASGM responsibilities lie under the Director of the Department of Policy Implementation and MMHI is hosting ASM Knowledge Hub.

The Mineral Resources and Petroleum Authority under the MMHI used to have a “Division for Artisanal Mining” in 2007- 2016, but the Division was dissolved following the decision of the Government of Mongolia (Resolution No4/2016) on the structure of government agencies. Currently, the MRPA has three officers in charge of ASGM. Though not under the ASGM division, they have clear mandates and small operational budget. The MRPAM is responsible for research, land allocation and licensing, labor, environment and checking the land.

Soum/district governor’s offices bear direct responsibility for ASGM and work with MRPAM to award land to artisanal and small-scale miners. At the soum level there is an officer in charge of mining issues including ASGM registration and monitoring of sites.

It should be noted that all the ministries and agencies have aimag/capital departments and divisions enabling them to enforce policies and regulations at subnational level. However, in most cases one officer is in charge of several issues and the officer overburdened with many duties is likely to have limited time and knowledge for enforcement of the Regulation as well as this NAP.

**Table 4. Ministries and agencies that have direct and indirect responsibilities for enforcement of ASGM related polices and regulations**

<b>Ministries and agencies</b>	<b>Relevant departments and units</b>
<b>Ministry of Mining and Heavy Industry</b> www.mmhi.gov.mn	Department of Policy Implementation
<b>Mineral Resources and Petroleum Authority</b>	Division of Geology and Exploration Division of Mining Production and Technology Division of Cadastre
<b>The Ministry of Environment and Tourism</b>	Department of Environment and Natural Resources Management Department of Green Development Policy and Planning (Minimata Convention) Division of Environmental Monitoring and Auditing Division of Cadastre of Forestry, Rivers and Protected Areas
<b>Ministry of Justice and Internal Affairs (MJIA)</b>	Department of Policy for Laws and Regulations
<b>General Police Department</b>	Division of prevention Unit of criminal records Aimag and capital police divisions
<b>The Ministry of Finance</b>	Department of budget policy and planning
<b>General Customs Authority</b>	Department of Customs Inspections and Monitoring
<b>The Ministry of Labour and Social Protection</b>	The Department of labour policy Implementation Department of social insurance policy implementation Department of population development
<b>General Authority for Social and Health Insurance</b>	Division of policy implementation and research Division of trainings, public relations and collaboration
<b>Agency for Families, Children and Youth Development</b>	Division for children development and protection Division for youth development
<b>Agency for Land, Geodesy and Cadastre under the Ministry of</b>	Division of geodesy and cadastre Division of land management

<b>Construction and Urban Development</b>	Division of cadastre
<b>The Ministry of Health</b>	Department of public health
<b>Public Health Institute</b>	Center for environmental health and chemical poisoning
<b>Bank of Mongolia</b>	Treasury fund under the Department of reserve management and financial market
<b>Agency for Standardisation and Metrology</b>	Precious metal assaying department
<b>National Emergency Management Agency</b>	Department of Disaster Management Mining Rescue Unit
<b>General Authority for Specialized Inspection</b>	Aimags and capital department of specialised inspection
<b>Human Rights Commission</b>	Division of Human rights education and research
<b>National Development Agency</b>	Division of sectoral policy coordination
<b>National Statistics Office</b>	Department of macroeconomics etatistics

Source: Mongolia. NAP Project. 2018. Legal Study. Compiled by the project team.

Various capacity building activities have been organized to strengthen institutional capacities and knowledge building. In 2017, 50 trainings on labour safety and health were organized in which 577 civil servants from local government organisations and 521 staff of emergency units of aimags participated in addition to 5,190 artisanal and small scale miners. Despite these efforts, the government has limited human resources and is constrained by material and budgetary resources and ASM management and governance knowledge needed for formalization is lacking at soum level.

### **3.6. Leadership and Organization of ASGM at National and Local Levels**

#### ***The National Federation of Artisanal and Small-Scale Mining (NFASM)***

Establishment of miners' partnerships and cooperatives and NFASM has created favourable conditions for policy advocacy and collaboration with stakeholders through participation in various government councils and working groups, In recent years, NFASM has organized advocacy activities with the Parliament through members of Parliament who were elected from aimags with ASGM, tried to set up a lobby group at Parliament level, and organized national forums, various meetings and consultations with ministries and closely collaborated with local government. These activities have resulted in positive political perception and incorporation of ASM in the Vision document of the Mongolian People's Party in 2016-2020 and in the Government Action Plan in 2016-2020. The representatives of NFASM have been included in various working groups of ministries for formulation of regulations and policies.

The NFASM has seen growing membership since its establishment, as of 2018 it had more than 70 member institutions operating in 47 soums of 15 aimags and more than 6500 individual members, who belong to 429 ASGM partnerships<sup>35</sup>. The growing membership of NFASM in its turn necessitates enhanced leadership and role to support ASGM organisations through knowledge and experience sharing and advice on ASGM operations and advocacy with the government.

Despite such progress and achievements, the Baseline Socio-economic Survey on ASGM revealed that there is lack of credibility among miners about the benefits of the ASGM organisations and the miners have insufficient information on setting up such an organisation.

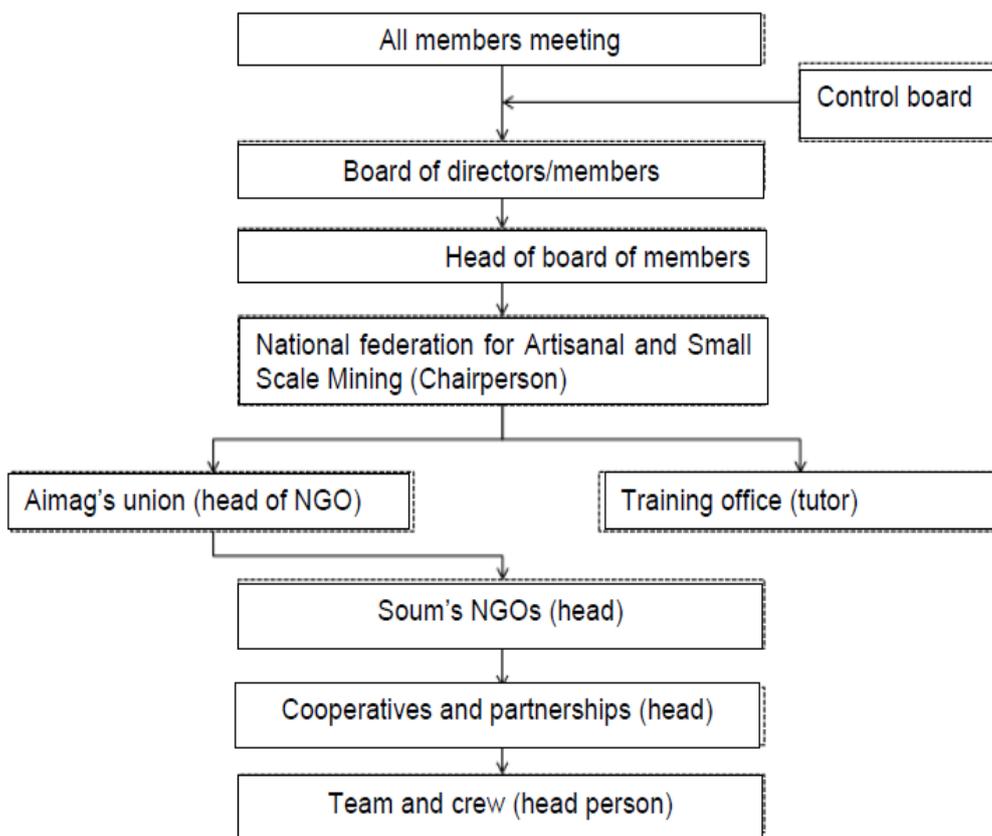
#### ***Leadership and organisation of ASGM***

The ASG miners, who are organized into partnerships need to sign cooperation agreements among themselves that regulate operations and the retaining of investments by combining a portion of their assets and labour contributions. Partnership members must agree on and approve the bylaws which obligates each member to comply with occupational health and safety regulations, perform environmental rehabilitation, pay social and health insurances and personal income tax and follow daily operational procedures. The bylaws also reflects saving and spending of mutual funds, members' meetings, partnership leaders on rotation basis and representatives in charge of maintaining mutual fund records.

<sup>35</sup> <http://bichiluurhai.mn>

The management and organizational structure of ASGM partnerships and cooperatives is shown in the Figure 3. The heads of ASGM NGOs, partnerships and cooperatives mainly undertake duties for organizing their members, providing advice and instructions, coordinating and controlling operations, making contracts and maintaining financial records. In addition, they take responsibility for organizing trainings and workshops, disseminating information and knowledge, collecting social and health insurance premiums, facilitating miners' access to healthcare service and developing official documents and reports related to their operations. Previous studies as well as the Baseline Survey on ASGM have shown that there is greater equality between men and women when it comes to leadership of ASGM organisations.

**Figure 7. Management of ASGM partnerships and cooperatives**



Source: Mongolia. NAPProject. 2018. Baseline Socio-Economic Survey on ASGM

Figure 4 shows the collaboration among the stakeholders of ASGM sector. Informal and unregistered artisanal miners mainly work with local processing workshops and gold traders. Gold traders (middlemen) sometimes give loan to miners and pay upfront. However, the gold traders do not sign a formal contract with miners on gold trade and there is no established and long-lasting cooperation between them. Often miners sell the gold to those traders who promise the highest price.

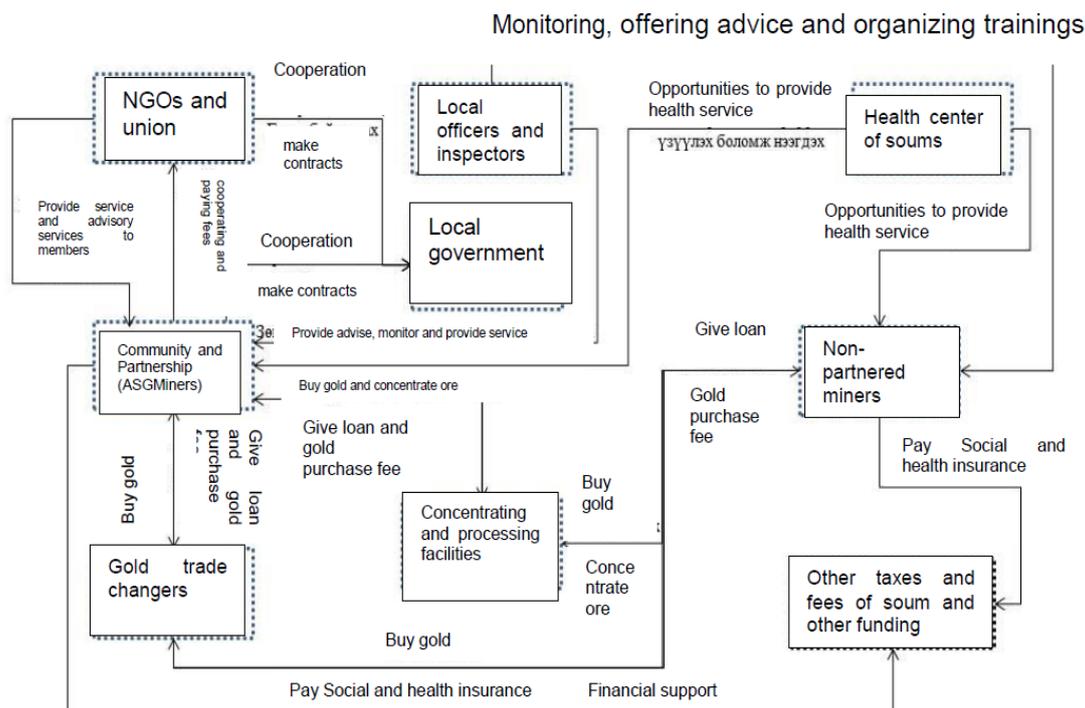
The local government and healthcare organisations provide advice and information on environmental rehabilitation and legislations and organize safety trainings and medical check-ups. The local police officers frequently patrol in mining areas and provide advice and instructions.

Non-governmental organisations in ASM plays an important role since it is a legal entity voluntarily joined by artisanal and small-scale miners and their partnerships to protect their common interests<sup>36</sup>. NGOs serve their members, protect their interests, bring members' voices to central and local governmental organisations and make efforts to enhance cooperation and understanding among stakeholders. Good experiences of NGOs operations have been demonstrated in some aimags including Baidragin Hujil ASM NGO in Jargalant soum of Bayankhongor aimag, Bornuur bichil uurkhai erkhleghchdiin kholboo in Bornuur soum of Tuv aimag, Batsaikhan setgel NGO in Galuut

<sup>36</sup> SDC Mongolia SAM Project Artisanal and Small-scale Mining in Mongolia. Conventional Handout. Retrieved 15 March 2019 from <https://asmhub.mn/en/files/view/61509?b1=publications>

soum of Bayankhongor aimag and Duush Mandal Khairkhan Kholboo in Mandal soum of Selenge aimag<sup>37</sup>. Nevertheless, NGOs have faced challenges including distrust among members, failure to ensure transparency on spending of fund, lack of effective management.

**Figure 8. Cooperation among stakeholders in ASGM sector**



Source: NAP project. 2018. Baseline Socio-Economic Survey on ASGM

### 3.7. Mercury Trade and Demand

#### *Illegal mercury trade*

Since mercury use in mining is illegal, there is no official statistics from customs office and other sources indicating the import of mercury or trade of mercury. Only registered case was that Bal Chuluu LLC obtained import permits in 2003-2005 for research purpose. Since then no permission has been issued to any legal entity and no data on mercury shipping and transportation through the Mongolian border has been registered.

Nevertheless, there is likely to be undocumented and illegal mercury movement, trade and transfers in Mongolia. Mongolia imports most of the chemicals from Russia, China, South Korea and Germany. Since Mongolia maintains visa waive policy with Russia and China people can buy mercury in Russia or China and hide it in a bulky luggage and a container of goods shipped and transported by rail and road. It might be possible to bring mercury without proper documentation and labelling through smaller ports of entry where inspection is not stringent.

On the territory of Mongolia mercury can sold indirectly through shopping centers, blacksmith workshops and markets like Narantuul market. Another way is to sell mercury to miners at ASGM sites, through gold traders using informal gold supply chain. Informal gold traders may have access to people who are able to steal mercury from formal mercury storage facility. They may also know about unknown mercury storage place. Formal paths such as dentistry and medical laboratories, where mercury use is permitted, could also be sources of mercury leakage and supply to ASGM.

<sup>37</sup> SDC Mongolia SAM Project Artisanal and Small-scale Mining in Mongolia. Conventional Handout. Retrieved 15 March 2019 from <https://asmhub.mn/en/files/view/61509?b1=publications>

**Figure 9. Illegal mercury transportation in Mongolia**



Source: Mongolia. NAP Project. 2018. Mercury Inventory

In 2018, 60 kgs of mercury were stolen from Mercury storage facility located in Special Rescue Unit of Emergency Division in Ulaanbaatar and currently, investigation is ongoing. Media has been reporting various cases of cross-border trafficking, spill, transportation, attempts of selling mercury, catching gold in the ore with mercury, melting mercury containing gold in trade and service centers and blacksmiths workshops, located in populated areas, and spilling or scattering in settlement areas and schools. Table 4 shows that 170.4 kg mercury was smuggled into and sold in Mongolia during the period between May 2016 and 17 February 2017 evidencing that mercury remains in use by ASGM in Mongolia.

**Table 5 Illegal attempts to import, transport and sell mercury in Mongolia**

Date	Comments	Amount of mercury unveiled, kg	Source
<b>17 Feb, 2017</b>	A (Orkhon aimag resident), T (Darkhan-Uul aimag resident), B, O and D (from Ulaanbaatar) were found to have 34 kgs mercury in their car	34	Criminal Police Unit, Railway Police Department
<b>21 Feb, 2017</b>	People were caught while selling 900 gr mercury from Toyota Allian car in Khoroo 32, Bayangol District	0.9	<a href="http://unuudur.mn/article/95763">http://unuudur.mn/article/95763</a>
<b>19 Jan, 2017</b>	Experts of Capital City Emergency Management Department found 1 kg mercury selling attempt in Khoroo #16, Sukhbatar District, in response to information from citizens	1	<a href="http://unuudur.mn/article/95763">http://unuudur.mn/article/95763</a> Capital City Emergency Agency
<b>22 Dec, 2016</b>	Khan-Uul District Traffic Police Officer detect a Range Rover transporting 64.5 kg mercury in Bayangol District, Ulaanbaatar	64.5	<a href="http://unuudur.mn/article/95763">http://unuudur.mn/article/95763</a> <a href="http://police.gov.mn/a/2386">http://police.gov.mn/a/2386</a>
<b>28 Nov, 2016</b>	Police seizes 40 kg mercury while being transported by Prius 20 car in Bayanzurkh District, Ulaanbaatar	40	<a href="http://www.police.gov.mn">http://www.police.gov.mn</a>
<b>2016</b>	6 calls related to mercury received in 2016		Capital City Emergency Agency
<b>May 2016</b>	30 kg mercury detected at customs in Gashuunsukhait border pass, Umnugobi Aimag, hidden in Nord Benz truck transporting coal. Driver was arrested while attempting to sell the mercury	30	<a href="http://unuudur.mn/article/95763">http://unuudur.mn/article/95763</a>
<b>Total</b>		<b>170.4</b>	

Source: Mongolia. NAP Project. 2018. Mercury Inventory

There is high potential or increasing demand for mercury in ASGM since placer gold deposits are declining and miners are shifting to the region with hard rock gold deposits. The current situation on illegal mercury use in ASGM and potential risks for its increase necessitates the Government take closer look into illegal supply chain of mercury trade.

### **Gold supply chain in ASGM**

In Mongolia, the Bank of Mongolia (BoM) is the main actor responsible for gold purchase, sending gold abroad for refining, storing gold bullion bars and supplying the domestic gold manufacturing sector. BoM provides a centralized service for purchasing, physical delivery, verification of assay,

encasing, storage, confirmation and signing of gold trading contracts, and monitoring the precious metals. According to the Law on Minerals, individual citizens are not permitted to undertake gold mining, this right is vested to only licensed legal entities, ASGM partnerships and cooperatives, but the Law on Treasury does not specify these parties.

Under existing legal environment, the BoM conducts limited due diligence on gold supply and does not identify origin of gold properly. Therefore, there is no official statistics indicating how much gold was sold by the ASG miners.

It is highly possible that ASG partnerships and cooperatives and some legal entities sell gold to BoM in the name of individuals to avoid tax. The current situation poses risks of supplying gold, extracted and processed using mercury, into formal supply chain.

In recent years there have been initiatives and efforts of BoM, Precious Metals Assay Inspection Department of National Agency for Standardisation and Metrology and SAM project to set up one stop shops for gold assaying and purchase in aimags. As a result, the Precious Metals Assay Laboratories as well as one stop shop for gold purchase were established in Bayankhongor and Darkhan Uul aimags in 2018 allowing ASG miners to sell gold at market prices. It also provides opportunities to reduce illegal gold trade. The BoM plans to open two more centers in 2019.

Another important development in ASGM supply chain was introduction of Fairmined Certification. In 2015 the Mongolian NGO-Xamodx, with the support of SAM project, got the Fairmined Certification which acknowledges gold production without use of mercury and cyanide.

### **3.8. Economic Aspects of ASGM**

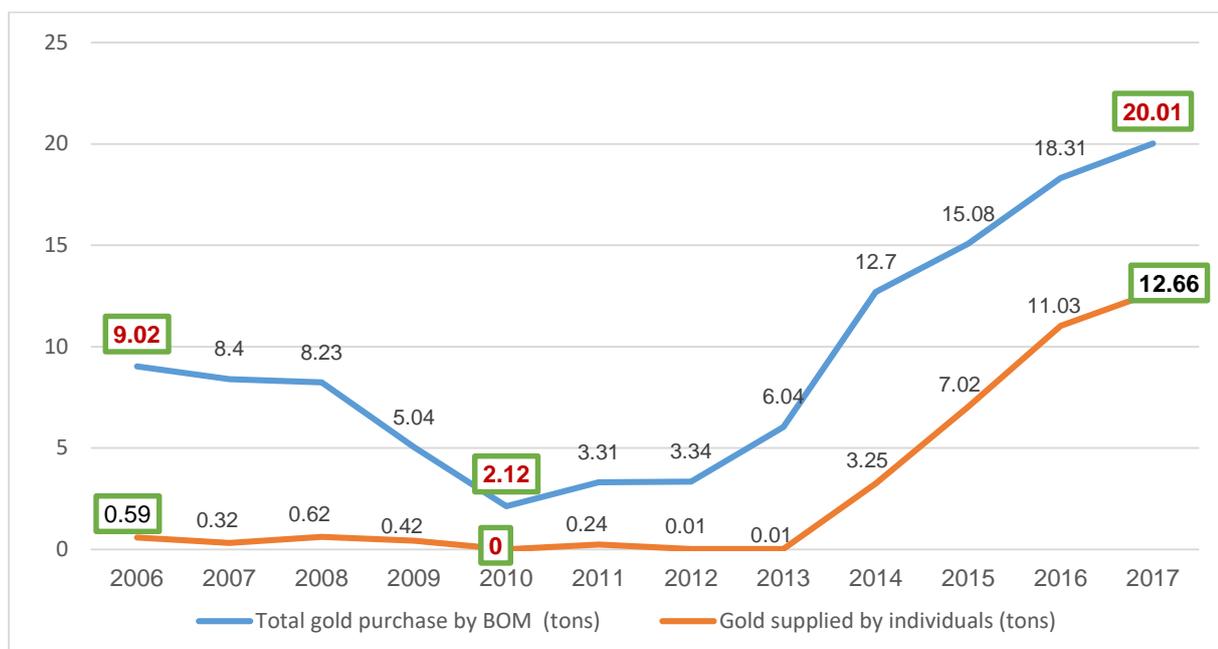
#### ***Contribution of ASGM to national economy***

In 2006, total gold mined by artisanal and small scale miners accounted for 0.59 tons or 6.3% of the total gold purchase by the Bank of Mongolia (BOM 2018). In 2017, the 12.66 tons of gold were supplied by individual citizens or artisanal small-scale gold miners to the Bank of Mongolia making 63.27% of the total gold sold.

*The Baseline Socio-economic Survey on ASGM reveals that in some places, like Bornuur and Zaamar soums of Tuv aimag, the gold mined by ASG miners goes through 2-3 middlemen until it reaches the BoM. In one case, local processing plants purchase gold from miners for about MNT 84, 000 per gram and then sell to gold traders from Ulaanbaatar adding MNT 4,000-5,000 and then Ulaanbaatar traders sell gold to Bank of Mongolia at market rate. In other cases, local grocery stores buy directly from miners paying MNT 75,000 per gram, then sell to traders adding MNT 2,000- 5,000 per gram. At final stage, the traders in Ulaanbaatar sell gold to the BoM at market rates. Some informal sources say that Chinese changers come with affluent amount of money and distribute money to changers from Ulaanbaatar in advance and participate informally in the gold value chain.*

*Source: Mongolia. NAP Project. 2018. Baseline Socio-Economic Survey on ASGM*

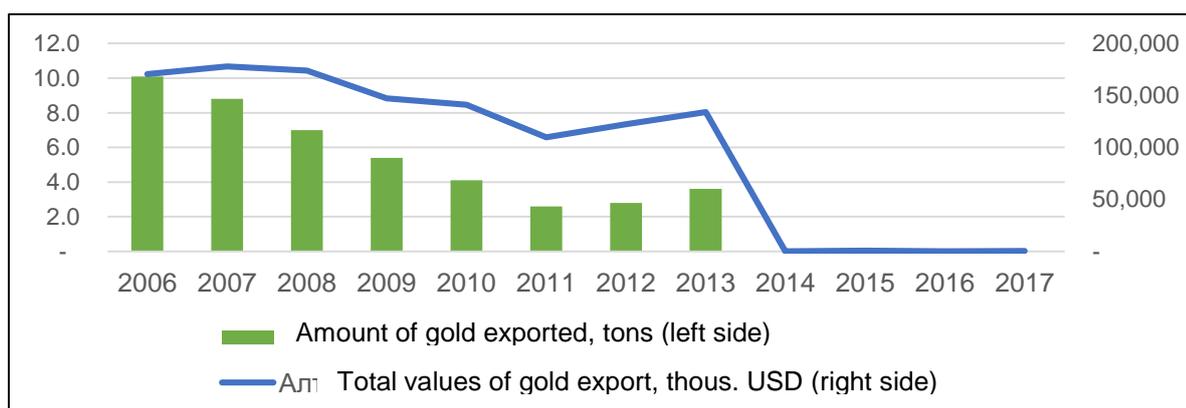
**Figure 10. Amount of gold purchased by Bank of Mongolia, 2006-2017, tons**



Source: Bank of Mongolia. 2017.

With the gold supply to BoM Mongolia's gold export increases resulting in growth of foreign currency reserves which in its turn positively influences balance of payment and inflation.

**Figure 11. Mongolia's gold export and prices**



Source: General Customs Authority. 2018

### **Economic contribution of ASGM to local economy**

The 2016 ASM Survey reveals that the ASG miners paid 279.9 mln MNT as tax and made 860.7 mln MNT investment including 497 mln MNT to buy equipment and 285 mln MNT to buy transport. The annual expenditure of ASGM organisations in 2016 were 6,387.9 mln MNT in total of which 1, 235.7 mln MNT were spent on salaries and wages, 2,131.3 mln MNT were spent on oil and 732,8 mln MNT were spent on equipment rent, 128,6 mln MNT were spent on rehabilitation and 279.8 mln MNT were spent on safety clothing and gear.

IRIM LLC (Independent Research Institute of Mongolia) carried out "Baseline Study: Investment from ASM to Local Development" in 2015 with the support of SAM project. The survey selected 12 soums in 7 aimags and assessed the direct and indirect impact from ASGM sector to the local economy. The survey team calculated the monthly investment injected by miners and traders as MNT 8 million. In addition, ASGM sector contributes significantly to the local development by environmental rehabilitation, investment into local infrastructure and community work (IRIM LLC 2015).

During the Baseline Socio-Economic Survey on ASGM revealed local government officers cited that ASGM creates jobs in rural areas, positively affects livelihood of local community through direct household income and purchase of good and service and contributes to local revenues through

paying taxes and fees and social and health insurance fund. Some local government officers said that the ASGM organisations have become more responsible and more compliant with regulations.

### **Income distribution among ASG miners**

The Baseline socio-economic survey on ASGM found out that income is distributed among ASGM partnership members on equal basis, performance basis or differently depending on whether the miner is a full member of the partnership. On average, the monthly salary ranges between MNT 350,000 and 570,000 for full-time individuals employed by partnerships and cooperatives, MNT 320,000-570,000 for those who are paid on equal basis, MNT 300,000-800,00 for those paid on performance basis and MNT 900,000 for full members.

Prior to distributing revenues to members and partners, cooperatives and partnerships deduct all the operational costs including costs for fuel, food and for milling and divide remaining income among their members and partners. More than 40% of formal ASG miners pay personal income tax, health and social insurance premiums.

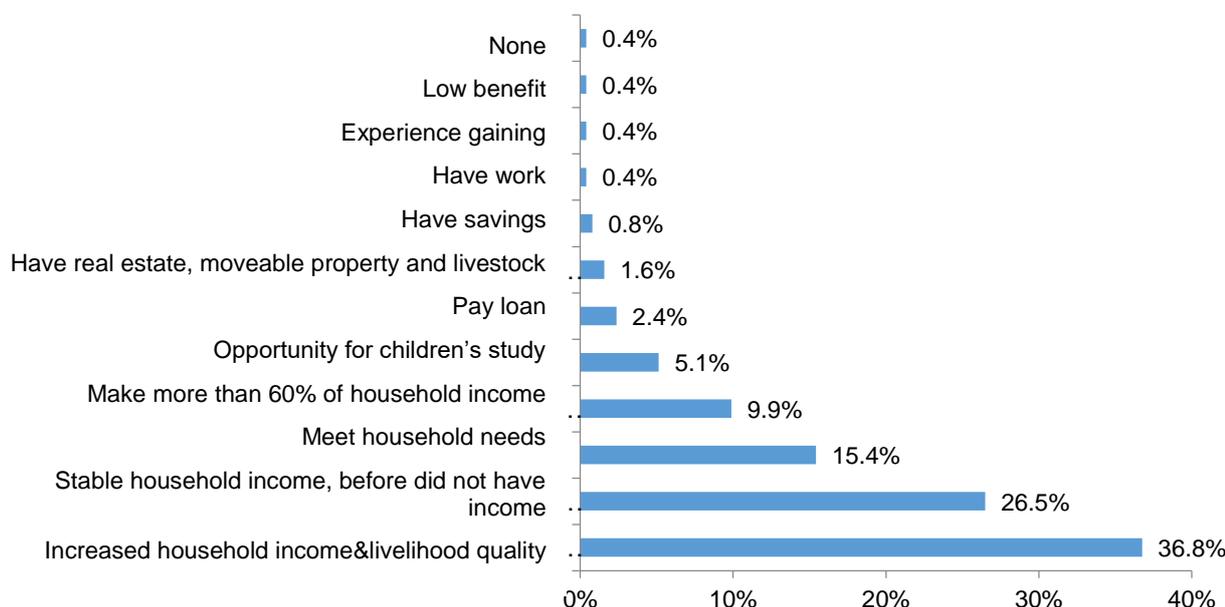
In terms of informal artisanal miners, they first deduct the costs from revenues and divide the remaining revenues equally. Depending on aimags and soums an individual miner gets MNT 400-570 000 on average, on a monthly basis. Compared to organized miners, lower number of informal artisanal miners pay personal income tax, social insurance and health insurance premiums.

As for gold traders, they earn on average MNT 1.0- 2.2 million a month and they also pay personal income tax and premiums for social and health insurances.

*The respondents of the Baseline Socio-economic Survey on ASGM said that they benefit from ASGM, including increased and stable household income and improvement of livelihood. They responded that more than half of the household income coming from ASGM go to children's education and loan payment.*

*Source: Mongolia. NAP Project. 2018. Baseline Socio-economic Survey on ASGM*

**Figure 12. Responses of survey participants on ASGM impacts on livelihood**



Source: Mongolia. NAP Project. 2018. Baseline Socio-economic Survey on ASGM

During the baseline survey ASG miners have responded that if opportunities are available they want to herd animals, work in groups to produce garments and shoes and process animal hides, run a sewing workshop; work as a cook, pre-school teacher or an accountant and run a small business in trade and building interior design and repair.

### 3.9. Demographic and Social Information

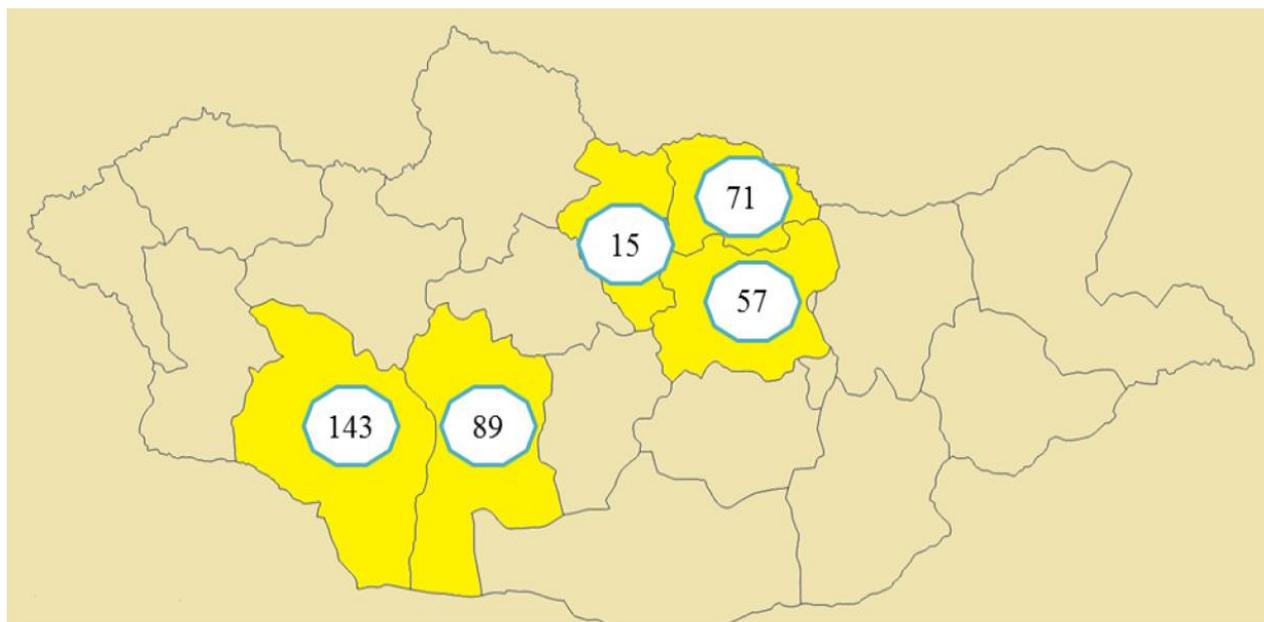
#### **Demographic information of ASG miners**

According to the National Statistics Office (NSO 2017), a total of 5,108 people were engaged in gold mining; 562 were men and the remaining 4,546 were men. In regard to the age group, 65 miners belonged to the age groups of 10-14 and 15-19 and 2,880 miners belonged to the age groups ranging from 20 to 50 and 822 miners were over 50 years old. There we 119 people without formal education and the remaining miners attended some sort of formal education. Of these ASG miners 327 had higher education. Only 32% were registered in partnerships and cooperatives and the remaining were individual gold miners. Mining operations took places in 14 aimags and Ulaanbaatar covering 35 soums and districts.

The Baseline Socio-Economic Survey on ASGM, conducted within the framework of NAP project in 2018, covered 15 soums representing ASGM sites in 3 regions of Mongolia: (a) Bayangol and Mandal soums, Tunkhel Village of Mandal soum in Selenge aimag, Bornuur and Zaamar soums in Tuv aimag representing Central Region; (b) Bayan-Ovoo, Galuut, Bumber, Jargalant soums in Bayankhongor aimag and Buregkhangai soum in Bulgan aimag representing Khangai Region; and (c) Yesunbulag, Taishir, Tsogt, Altai and Chandmani soums in Gobi-Altai aimag representing Western Region. In total, the team visited 35 deposits of which 26 or 74.29% were placer (alluvial) deposits and 9 or 25.71% were hard rock deposits.

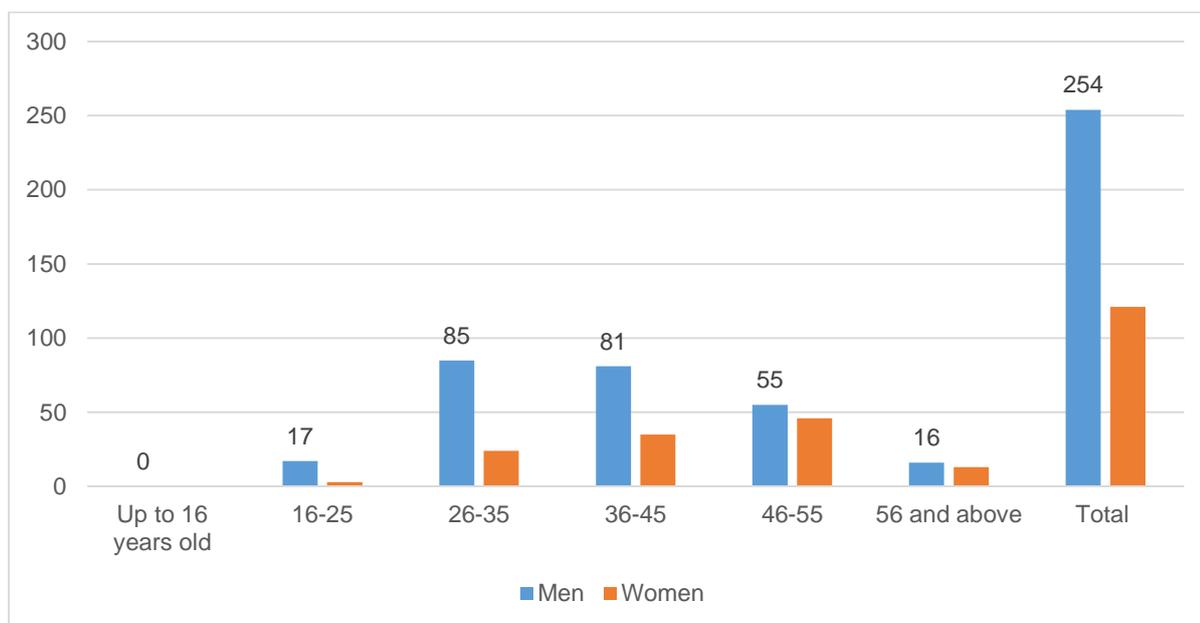
The sample size was 375; 67.7% were male and 32.3% were female, all of age above 16. Of the respondents, 21.1% of the survey units were the members of NGOs and partnerships who were engaged in ore extraction, 18.1% were working on ore processing, 7.8% were heads/leaders of NGOs and partnerships, 4.3% were ore transporters, 23.5% were informal artisanal gold miners, 5.6% were gold traders and 4.3% were the representatives of local government organisations including senior and mid-level officers, inspectors, and healthcare workers.

**Figure 13. The sample size, by location**



Source: Mongolia. NAP Project. 2018. Baseline Socio-economic Survey on ASGM

**Figure 14. Survey sample size, by gender**



Source: Mongolia. NAP Project. 2018. Baseline Socio-economic Survey on ASGM

### ***Employment and gender issues***

The “Gender assessment of small scale mining in Mongolia” conducted by Asia Foundation (2013) under ESEC II (Engaging Stakeholders in Environmental Conservation) Project with financing from Swiss Development Cooperation, identified the gender-related differences in ASM sector, barriers and difficulties and work allocation among men and women.

The key findings were that both female and male artisanal miners were basically the same in terms of age, education level as well as the reason for running artisanal mining (lack of jobs, lost livestock to natural disaster). Men did jobs requiring physical strength, including working underground, moving extracted ore from mine, loading and unloading ore to trucks. Women work on gold washing, ore processing, cooking and cleaning. For managing partnerships and cooperatives, men and women work at almost equal numbers and women enjoy the same opportunities as men for decision making process. Regardless the gender difference, duties and positions held by men and women, all partnership members earn equally.

The Baseline Socio-Economic Survey on ASGM covered 95 women miners (30.7%) and the key findings have been basically the same as Asia Foundation’s gender assessment. Ten respondents responded that they encountered cases of inappropriate attitudes from other people, such as insulting with words, physical attack and intimidating during mining operations.

### ***Child labor***

Since the inception of the ASGM sector, children have been involved in the artisanal mining operations. A study, made by National Statistics Office in 2012, revealed that 7.0% of 13,375 people working in artisanal mining sector were children of age 10-18. The 2016 Survey found out that 188 children under 18 years old were working in artisanal and small-scale mining sector including 36 children working in gold mining. Of these children, 61.8% were working during the school holidays and 34.2% were working during non-school hours and the remaining were working throughout a year. The children were mainly involved in moving water, rocks and earth, digging pits and washing gold. It is said that 66.7% of the children had minor injuries, 23.1% suffered from physical injuries restricting movement, 5.1% experienced brain and spinal trauma and 5.2% had vision and hearing injuries as well as poisoning from toxic substances (NSO 2017).

During the Baseline Socio-Economic Survey on ASGM, 10.4% of the respondents said “Children stay during the summer time or sometimes during other seasons and do easy jobs such as moving earth and rocks and bringing necessary tools” and 9.1% of the respondents said “They come to the mine site simply accompanying their parents”. Besides, some miners live with their children at sites.

**Table 6. Responses of survey participants on engagement of children in ASGM**

Cases	Formal and informal artisanal gold miners	Local government and officers	Health officers	General valuation
Work at the mine site during summer or sometimes during other seasons (work on easy jobs)	8.8%	15.4%	21.4%	10.4%
Accompany parents	6.8%	13.5%	35.7%	9.1%
Don't know	1.2%	5.8%	14.3%	2.5%
No children at the mine site	83.3%	65.4%	28.6%	77.9%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	

Source: Mongolia. NAP Project. 2018. Baseline Socio-economic Survey on ASGM

*My baby is now 6 months. At this site there are 3 children aged 0-5 years old. Occasionally, medical doctors come and make medical check-up. If necessary, we go by ourselves for health care service. My baby has not yet had vaccine. When I go to soum center, I will visit the health center.*

*A female respondent, from Bayan-Ovoo site, Bayankhongor aimag  
NAP Mongolia Project. 2018. Baseline Socio-economic Survey on ASGM*

### **Social welfare and protection**

The 2016 Survey on ASM demonstrated that 51.47% of the respondents (4,729 respondents) had insurance coverages. Of the total, 96.9% had health insurance and 56.6% had social insurance. In regard to the gold miners, 3,654 miners (71.5%) were covered by health or social insurance. The findings of the survey show that still a great number of artisanal miners have been left without social and health insurances and cannot benefit from the Government's social protection programmes. The situation will bring high vulnerability among miners causing future health and financial risks.

To raise ASG miners' understanding of benefits of insurances and governments' service on social protection and social welfare the Ministry of Labour and Social Protection organized trainings with the support of SAM in Uvs and Khovd aimags in 2018 in which 287 miners, staff of Aimag Social Insurance Division and soum inspectors participated.

For involving miners in social and health insurances branches of the General Department of Social Insurance must play a key role by convincing partnerships and cooperatives to pay their members' insurances, making easy insurance payments and communicating on benefits of insurances. The NGOs could also collaborate with the soum Social Insurance Divisions to enforce insurance policies among ASGM organisations as well as miners.

### **Crime, accidents and injuries**

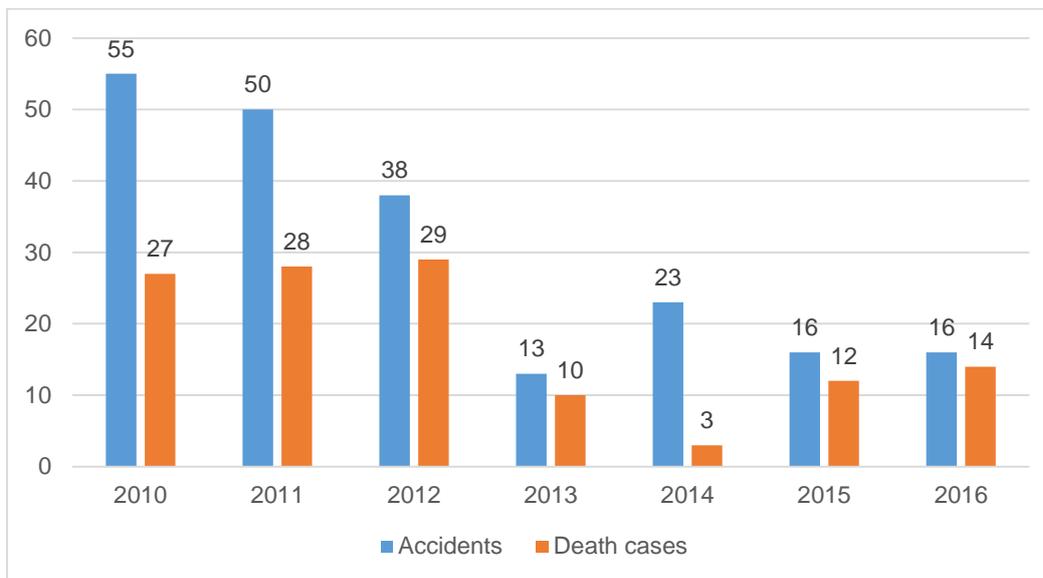
The crime of "Illegal exploration and mining of minerals" accounts for 12-15% of environmentally related crimes registered<sup>38</sup>. By the end of 2016, 35 crimes related to illegal mining were registered by the police. The number of crimes increased by 2.3 times by the end of 2017 reaching to 83 crimes. During the Baseline Socio-economic survey, the miners referred to some criminal cases such fighting, intimidation and racketeering and armed assaults. Occasionally, people get injured or fatally fell into the pits due to excessive consumption of alcohol.

*In Gobi-Altai aimag it was observed that some criminals were released from prisons intimidate and inflict bodily damages to artisanal miners. In Selenge and Bayankhongor aimags, artisanal miners' death was caused by excessive use of alcohol.*

<sup>38</sup> Investigation Department, General Police Department. December 2017

Accidents, injuries and deaths sometimes are also caused due to breach of labour and safety regulations at sites. The Figure 11 shows the total number of accidents and deaths in ASM including artisanal gold mining. In 2017, 17 accidents happened in artisanal mining. Twenty three people were affected and 4 people passed away.

**Figure 15. Accidents in the artisanal and small-scale mining**



Source: Mongolia. National Emergency Management Agency. Mining Resque Unit. 2018.

The Mining Rescue Unit of the National Emergency Management Agency, has been working to working conditions at mines and prevent from accidents. The Mining Rescue Unit has provided on-site safety trainings to miners, inspects the mine shafts and provides advice and instructions. For instance, Mining Rescue Unit of the National Emergency Management Agency organized 50 training sessions on occupational safety engaging 5,824 (4,680 male and 510 female) people in 34 soums and 2 districts of 17 aimags and capital Ulaanbaatar. The participants included 5,190 artisanal and small-scale miners, 577 local government officers and 521 officers of local Emergency Management Departments.

### **Access to information and knowledge**

The Baseline Socio-economic Survey on ASGM community has identified gaps in information access and awareness:

- Most artisanal miners lack information and knowledge on legislations. During the baseline survey the formal and informal artisanal miners were asked whether they have some knowledge about the Regulation on “Extraction of minerals by small scale mining” and found out that 71.4% of respondents never heard about the Regulation, or heard about it, but didn’t study very well. In other words, they have no adequate knowledge about the Regulation, eventually are not able to comply with.
- Majority of the ASG miners said they have some basic knowledge on mercury impacts on health and environment. Various trainings on this topic were provided to the ASG miners; however miners have different level of perception and attitude. 54.5% of local health officers, who responded to the survey said artisanal miners don’t have good level of knowledge on mercury while the remaining 45.5% said they previously organized awareness raising trainings for miners, but they were not receptive.
- In many cases, artisanal miners receive information from the local government in the form of guidelines and instructions. For instance, they receive instructions on occupational safety, land use, environmental rehabilitation, contracts, taxes and fees, as well as healthcare tips and advice (1-2 times a year). NFASM, its aimag and soum branches and NGOs provide most of the information that artisanal miners receive.
- Majority of artisanal miners were found to receive information from local residents and TVs.

The survey, conducted by SAM project in 2015 revealed that the most effective tools for communication were meetings and workshops in addition to TV channels. The majority of AS miners

had cell phones, but not smart phones in 2015. The miners also use Facebook frequently. It seems that ASG miners rarely use NFASM website, ASM Knowledge Center and government databases for information.

### **3.10. Environmental Information**

#### ***Mercury contaminated areas***

In 2003, JICA funded a mercury pollution survey at the Boroo River and determined that production ruins were most exposed to the pollution with mercury concentrations (117 mg/kg) and it exceeded permissible level by more than 50 times.

In 2006, the project entitled "Research of Pollution from Gold Ore Extraction in Selenge River Basin" was implemented by the Ministry of Environment of the Czech Republic to further investigate mercury contamination in soil and sediment along the Boroo river. The study revealed that the mercury contamination was higher at the tank spill site, mercury concentrations were between 1.8 g/m<sup>3</sup> and 69.5 g/m<sup>3</sup> and excessive amount of mercury was detected in sampled vegetables and fish.

Based on the research study results, the Czech Republic implemented the project "Technical and technological support for Mongolia to eliminate environmental pollution caused by informal gold mining in Central region of Mongolia" in 2009-2011. Within the framework of the Government of the Czech Republic Development Cooperation Program "Technical and technological support for the elimination of environmental pollution caused by illegal gold mining in the area of Central region of Mongolia" 105 kgs of mercury were extracted from waste and handed over to the Government of Mongolia<sup>39</sup>.

In 2007-2008, The Government of Mongolia carried out nationwide inspections over the operation of individuals and business entities that use chemical in their operations and identified that more than 120 areas were contaminated with mercury and cyanide containing more than 200,000 tons of slimes and tailings. 53 hectares of land and tens of water wells were contaminated. Subsequently, government ceased operation of 145 mills using mercury followed by seizing and destroying them (Green Asia Consulting LLC, 2017).

On April 2, 2008, The Cabinet passed the resolution on "Measures to mitigate the pollution of toxic chemicals" and allocated and the 2.7 billion MNT to enforce the implementation. That year 92,956 m<sup>3</sup> or 13,910 tons of slime, accumulated in 130 sites of 21 soums of 6 aimags, were transported and 78,965 m<sup>2</sup> of soil, contaminated by chemicals, were neutralized. In addition, 10.024 kgs of mercury were removed and 5.525 kgs of gold were refined from 10,400 tons of slime<sup>40</sup>. In 2008-2009, 131,792 m<sup>3</sup> or 197,687 tons of slime, accumulated in 230 sites of 37 soums of 9 aimags, were transported and 128,444 m<sup>2</sup> contaminated soil and sediment were decontaminated.

In 2013-2016, the Ministry of Environment, Green Development and Tourism of Mongolia, UNIDO, and Mine Reclamation Corporation (Mireco) from South Korea implemented the project "Reducing Negative Impacts on Human Health and Environment through Promotion of the Sustainable Management of Mongolian Chemicals" and revealed the total land area polluted by the mining near Boroo River is approximately 7.5 hectares (75,000 m<sup>2</sup>) and mercury, arsenic and cadmium pollution exceeds the permissible level, for instance, arsenic contamination exceeded in 95% of the total land (7.1 hectare = 71,000m<sup>2</sup>).

In 2017, Green Asia Consulting LLC conducted a research for elaborating soil and water monitoring programs for areas that used whole ore amalgamation process, areas with soils contaminated with mercury and disposal points. In the areas that the study covered, no mercury evaporation was detected, content of mercury in ground and surface water samples were lower than the permissible level while the content of mercury in soil samples were identified varying. Analyses on 63 soil samples showed that mercury content was higher than permissible level; 1 case with higher values than the toxic content and 1 case exceeding the dangerous level. These two samples with higher mercury content were the samples of slime collected from the mercury disposal site Bortolgoi, in Bayangol soum, Selenge aimag. The research shows that ignorance of control and safeguard actions for mercury-contaminated sludge and soil disposal/stockpiling areas in 2008- 2009 resulted in complete destruction of one point and contaminated sludge was transported from one area to

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<sup>39</sup> Ministry of Environment and Tourism, Unpublished data from the project report

<sup>40</sup> Ministry of Environment and Tourism, Unpublished administrative data

another. Transportation of contaminated soil and sludge to other areas could have created contamination in other areas and people who participated in this operation might have exposed to mercury.

### **Impacts of ASGM on environment**

ASGM sector poses threat to natural environment exemplified by severely eroded land, large amount of solid waste, rangeland degradation, and unrehabilitated mine pits, causing animals and people fall into pits/shafts, excessive use of wood and bushes for shaft pillars in Khangai region, and destroying topsoil and plant cover.

In addition, ASGM sector use power generators, compressors, mini tractors and trucks resulting in pollution of nearby soil and surface water with fuel and lubricants.

ASGM operations pose the following negative impacts on the biological diversity<sup>41</sup>:

- Make multiple dirt roads, pits and canals, creating temporary settlement zones, which degrade the living environment for wildlife, divert them and destroy the plant coverage;
- Increased risk for human and wildlife to fall in the vertical shafts and pits;
- Loss of river flows and diversion due to mining operations on the placer gold mine along river basins, loss of biodiversity due to river pollution and degradation of wildlife living environment;
- Excessive poaching of wildlife by artisanal miners;
- Contamination of surface, soil and aquatic environment resulting from uncontrolled disposal of mercury contaminated slimes and ores, poisoning wildlife through food chain, thus posing risks to human health;
- Artisanal mining operation takes place inside or near specially protected areas affecting vulnerable animals and warding them, in some cases.

ESEC II project by the Asia Foundation developed Frugal Rehabilitation Guidelines which was approved as an Annex to Regulation for Extraction of Minerals by Artisanal Mining<sup>42</sup>. By the end of 2017, artisanal miners rehabilitated 210 hectares of land by working closely with the local government and international projects and 107.1 hectares with their own financing, totaling 317.1 hectares<sup>43</sup>. MRPA reported that in the 1<sup>st</sup> quarter of 2018, 49 mine sites were operational in 1 district of Ulaanbaatar and 11 soums of aimags using 178.84 hectares of land for mining, As of that time, 82.07 hectares of land were eroded and 63.58 hectares of land were rehabilitated.

### **Waste management**

The waste management practices vary greatly depending on the type of gold deposit, geographic location of deposits and infrastructure.

- Hard rock deposit: After extracted ores are processed at the milling workshops, slimes are stockpiled in tailings storage (dug pit), and an average tailing storage/slimes dam facility is completely filled within 6 months to 1 year depending on the capacity of workshops and storage facility. Price for tailings (slime) in storage also varies due to gold grade in the slime dam.
- Placer deposit: As for the placer gold deposit, artisanal miners mainly work in the area that large mining companies mined and rehabilitated and they wash remaining gravel dams.

## **3.11. Health Information**

### **Occupational health issues**

Potential health risks associated with the ASGM could be divided into work-related health and health risks associated with the mercury use. A number of studies have been carried out on artisanal miners' working conditions and on health status of ASG miners. Findings of these surveys on health issues of miners showed that living and working environment of artisanal small-scale gold miners are not supplied with basic needs such as clean drinking water, hygiene and sanitation facilities, as result the miners frequently expose to health risks as they live and work in large numbers on the territory of mine sites.

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<sup>41</sup> The World Bank 2009. Safeguarding Important Areas of Natural Habitat alongside Economic Development in Mongolia. Retrieved 14 March 2019 from <https://elibrary.worldbank.org/doi/abs/10.1596/28253>

<sup>42</sup> The Asia Foundation. 2016. Frugal rehabilitation methodology (FRM): Field handbook. Retrieved on 10 March 2019 from <https://asmhub.mn/en/files/view/547?b1=publications>

<sup>43</sup> MRPA, April 2018.

ASG miners work in highly difficult and dangerous environment that require physical strength and permanent movement in dusty, noisy and vibrating settings, so they expose to risks such as slip, fall and earth collapse, which cause hearing impairments, ailments of bone and muscles, back and kidney pains. They also encounter barriers to access regular healthcare services and specific medical check-ups and diagnosis to detect mercury poisoning and symptoms.

The Health assessment survey of ASG miners, carried out under the NAP project, revealed that artisanal miners suffer from kidney, spinal curve, arthritis and respiratory diseases, urinary tract infections, dust related pneumoconiosis, allergy, asthma, tuberculosis and sexually transmitted diseases were prevalent. In some soums, miners passed away due to these types of diseases.

*When miners were questioned about their previous diseases, 10.1% of the respondents said they got sick with infectious diseases, 30.0% of the respondents said they got kidney diseases, 12.1% said they had respiratory diseases, 16.6% said they got hepatitis, and 2.7% responded they had tuberculosis. Of the total respondents, 29,3% were not covered by health insurance, 72.3% do not get any pension and allowance. One of every 4 respondents said they need health care service and special medical check-up and thorough examination.*

*Source: Mongolia. NAP Project. 2018. Health Assessment Survey of ASG Miners.*

*Interviews with the ASG miners.*

**Table 7. Signs and symptoms of illnesses by miners**

Description	Total % (n)	Hard rock deposit	Placer deposit
Noise in the ears	10.4 (32)	17 (13.9)	15 (8.1)
Cough	8.8 (27)	5 (4.1)	22 (11.8)
Eye irritation, redness and tearing	12.3 (38)	11 (9.0)	27 (14.5)
Skin itching and rash	5.2 (16)	6 (4.9)	10 (5.4)
Swelling	4.9 (15)	5 (4.1)	10 (5.4)
Frequent urine	5.8 (18)	7 (5.7)	11 (5.9)
Back pain	30.2 (93)	30 (24.6)	63 (33.9)
Arthritis	12.3 (38)	12 (9.8)	26 (14.0)
Hand numbing	11.7 (36)	11 (9.0)	25 (13.4)
No	113 (36.7)	44 (36.1)	69 (37.1)
<b>Total</b>	<b>308</b>	<b>122</b>	<b>186</b>

Source: Mongolia. NAP Project. 2018. Health Assessment Survey of ASG Miners.

### **Health issues caused by mercury use in ASGM**

The findings of the various health studies conducted between 2008 and 2015 show that the effects of chronic poisoning and nervous system changes among artisanal miners and their families have been detected since 2006<sup>44</sup>. Symptoms such as tremor, loss of balance when walking have been observed among ASG miners from Mandal soum and Bayangol soums of Selenge aimag. In urine, blood and hair samples, collected from ASG miners in 2014, average mercury content was 4.33 micrograms/litre and the highest mercury content was 269 micrograms/litre. The 2014 results showed an increased content of mercury in samples compared to the results of similar studies conducted in 2008. Considering mercury concentrations in biological specimens, 8.2% -17.0% of ASG miners had dangerous levels, 6.1%-7.5 % of ASG mines were found to have levels requiring immediate medical assistance.

During the Health Assessment Survey of ASG Miners (NAP 2018) 18 miners, who went medical screening, had symptoms such as tiredness, sweating, frustration, sleepiness and taste of iron in the mouth. Twenty five people had signs of progressive slowness and increased muscle tone which

<sup>44</sup> Public Health Institute, Ministry of Health. 2016. Consolidation of the studies on mercury 2008-2015. Ulaanbaatar

might be associated with hypertension, cerebrovascular, conditions and alcohol and tobacco use. On one hand these symptoms are micro-symptoms of chronic mercury poisoning, but on the other hand, these symptoms could be caused by miners' working and living conditions.

*Mrs. B. E, a 35-year-old woman in Bayan-Ovoo soum, Bayankhongor aimag, responded that she might be having some minor signs and symptoms of mercury poisoning because she feels taste of iron in the mouth, flux, hand-shaking, impairment in memory and attention. Her symptoms were proved by neurological tests. Medical check-up of Mrs. D. B, a 58-year-old woman, who worked in ASGM in Zaamar soum, Tuv province for three years, showed that she had micro signs of chronic mercury poisoning. Neurological test showed dysmetria (ataxi).*

*Source: NAP Project Mongolia 2018. The Health Assessment Survey of ASG Miners.*

*Interviews and medical screening*

The Health Assessment Survey revealed that despite the miners' need for health care service, the capacities of medical doctors and health care workers to detect, diagnose and treat diseases and illnesses due to gold mining and chemical-poisoning have been revealed limited. Eighty eight percent of the surveyed health workers said they do not know how to provide emergency care in cases of mercury poisoning and 98% of the respondents referred to the need for training and information on chemical poisoning, treatment, diagnosis and prevention. Half of the soum health centers had insufficient number of doctors and nurses per population. For some aimags, such as Bayankhongor and Govi-Altai, it is difficult to provide emergency care assistance to artisanal miners because of a distance from the health centers and high costs involved.

There is no registration and health record system of ASG miners, therefore monitoring of ASG miners' health is not in place and no assistance to their specific health needs is provided. Mainly, routine screens including blood pressure measurement, CVD and STI screening are conducted.

### **3.12. Towards Decision Making Process**

Findings and data compiled through the Baseline Socio-economic Survey on ASGM, Health Assessment Survey and Mercury Inventory have informed the Government to formulate the NAP based on evidences and accurate data. The data could be further used as baseline indicators for measuring progress of NAP Implementation as well as progress of implementation of the Regulation on Extraction of Mineral Resources through Small-scale Mining. The issues, raised in the National Overview, should also be reflected in aimag and soum development policy and planning to synergize and link ASGM formalisation with development policies.

However, it is important to note that there was no opportunity to conduct a nationwide survey to covering entire territory and ASGM sites and to carry out a comprehensive mercury inventory.

## **IV. NATIONAL OBJECTIVES AND REDUCTION TARGETS**

### **4.1. Problem Statements**

The contribution of ASGM to the economy of Mongolia has dramatically increased in recent years bringing jobs and increasing income of people, particularly in rural areas. However, the ASGM sector is characterized by "informality"-low compliance with laws and regulations and low enforcement of environmental, health, safety and labour procedures. This informality reduces benefits to local economy and to household livelihood, causes environmental deterioration and brings risks to health of miners and local community.

Technically viable, financially affordable and efficient technology solutions could help miners fully transform to mercury-free mining operations, however financial resources and lending mechanism are lacking. Mercury-free technologies have been introduced in 3 aimags, but the gold processing workshops with such technologies are not available close by and there is long queue for such service.

The Government has been making efforts for creating favorable legal and institutional framework to formalise, regulate and support ASGM. Nonetheless, discrepancies in the Minerals Law and other regulations limit possibility of local people to engage in mining operations. The process of obtaining licenses for artisanal and small-scale gold mining is slow and long and cumbersome. Additionally, information on land for ASGM purpose is not easily accessible and available.

Establishment of the NFASM and miners' cooperatives and partnerships has favourable impacts on practicing responsible ASGM in the country. Nevertheless, there is lack of credibility among miners about these organisations and their prospective. The miners also have insufficient information on setting up such an organisation.

Gold supply chain and trading in Mongolia is highly centralized, the Bank of Mongolia purchases gold directly from individuals and entities and there are only two previous metal assaying divisions and one stop gold trade centers of BOM in Darkhan-Uul and Bayankhongor aimags. Gold traders often buy gold at lower prices from ASG miners and re-sell at higher prices to the Bank of Mongolia. The geographical size of Mongolia, low population density, lack of developed transportation infrastructure, remote mine sites and centralization of the formal gold supply chain in Ulaanbaatar make selling gold mined through ASGM unrealistic for many miners.

With the support of SAM project the world standards for responsible artisanal mining practices such as Fair mined standard have been introduced enabling direct export of eco gold. Such best practices should be further supported, scaled up and supplemented with other market based mechanism.

With the Order of the Minister of Environment (No 135/2008) on prohibition of the use of mercury and its compounds in mining, the state and local authorities believe that mercury is no longer used in ASGM. Nevertheless, hidden mercury trade is prevalent and miners are using mercury secretly.

It is also challenging to monitor registration, transportation, storage and waste of hazardous and toxic chemicals and detect smuggling of mercury and its compounds. It should be stated that quantitative data on mercury trade (hidden), mercury releases and environmental pollution resulting from mercury use are limited despite a broad range and variety of studies on ASGM.

Miners have insufficient knowledge on mercury impacts despite various trainings on ASGM. Furthermore, effectiveness of these trainings is low and in reality, the trainings are not resulting in visible behavioural and attitude changes.

Job allocation between women and men is clear; men do heavy physical work and women are engaged in easier work. In regard to leadership of ASGM organisations, both men and women share an equal opportunity. Nevertheless, women in artisanal mining experience verbal abuse, physical and emotional stress. Women are interested in running small businesses other than artisanal mining, but they lack professional skills and knowledge. Also, employment in rural areas is limited and financial support to run businesses is not available for ASG miners.

Children under the age of 18 are not officially employed in the mining. However, children help their families earn money at mining sites during school vacation. The children, working at sites have inadequate knowledge and information on occupational health and safety and they are not trained to take measures in cases of emergency and accidents.

Some occupational health problems and diseases are prevalent among miners including tuberculosis, sexually transmitted diseases (STD), kidney disease, respiratory diseases, back pain and digestive system problems. During the health assessment survey symptoms of mercury poisoning and illnesses were observed including mental disorders and nervous system changes, but some health workers have inadequate skills to detect and diagnose early signs and symptoms and are not ready to provide treatment.

There is a lack of effective stakeholders' cooperation in the implementation of ASGM-related programs and enforcement of policies and regulations.

The communication strategy to disseminate information on responsible ASGM practices, public services, banking and financial services, technology, market, health and safety is missing.

#### **4.2. Goal**

The goal of the National Action Plan is to reduce mercury pollution from ASGM, ensure environmental sustainability and safeguard safe and healthy environment for people.

#### **4.3. National Objectives and Reduction Targets**

In order to achieve the above goal the following objectives will be pursued:

- **Objective 1.** To halve mercury emissions and releases and environmental pollution caused by ASGM by fully eliminating harmful technologies used for gold extraction and processing and completely stopping illegal mercury trade and hidden use in ASGM;
- **Objective 2.** Reinforce optimal system and structure and mandates of the central public administration regulating ASGM, ensure interministerial coordination, enhanced stakeholders'

engagement and collaboration and capacity building and enable optimal implementation of ASGM related laws and regulations;

- **Objective 3.** By 2023, to achieve 80.0% health care service to ASG miners and increase of social and health insurance coverages of artisanal and small-scale gold miners by implementing public health and social protection strategies aimed at improving health and occupational safety of the miners and their families and preventing vulnerable groups, especially children, women and pregnant women from exposure to mercury;
- **Objective 4.** Enable ASG miners and the social groups that are vulnerable to ASGM negative impacts to gain knowledge on mercury impacts, environment, health, safety and the legislations and ensure that increased access of miners to information.

## V. IMPLEMENTATION STRATEGY

### 5.1. Strategies

**Objective 1.** To halve mercury emissions and releases and environmental pollution caused by ASGM by fully eliminating harmful technologies used for gold extraction and processing and completely stopping illegal mercury trade and hidden use in ASGM.

- To replace and eradicate gold extraction and processing technology and techniques and completely eliminate worst practices that are harmful to human health and environment;
- To monitor and prevent mercury pollution, emissions and releases caused by artisanal and small-scale mining and processing, carry out research on risks and exposures to mercury and reduce mercury contaminated and eroded areas through remediation and neutralization;
- Take measures to track, detect, stop illegal mercury trade and stop illegal mercury use in ASGM.

The strategies outlined under Objective 1 are in harmony with the implementation of several aspects of the Article 7 of the Minamata Convention: (a) eliminate the worst practices and take steps to reduce, and where feasible eliminate, the use of mercury and mercury compounds in ASGM; (b) take measures to reduce mercury the emissions and releases to the environment and risks to exposure and (c) implement strategies for managing trade and prevention of mercury.

**1<sup>st</sup> strategy:** Prior to introducing mercury-free technologies the NAP proposes to undertake measures to track, detect, stop and close down ASGM operations that are using the worst technologies. These measures will inform the Government about current conditions of gold processing plants in soums with hard rock gold deposits and available equipment and tools and facilitate the Government's decisions on establishing mercury free processing plants, feasibility of private investment and alternative financing. Then, the Government will take actions to identify affordable and efficient mercury-free techniques and technologies, develop feasibility study and investment plan to introduce selected technologies and take steps for introducing technologies in selected soums where hard rock gold mines are heavily concentrated. Establishment of the mercury-free processing technology will take several steps including site selection, system design, financing, procurement and installation. The NAP will use previous experiences accumulated during SAM project and seek for technical and financial assistance to be provided under GEF Gold project. Various financing mechanism will be explored for this strategy including bank's loan, private investment, Credit and Savings Cooperative of ASGM and international project contribution. Besides, the MMHI will develop procedures and standards for ASGM plant operations. The introduction of mercury-free techniques and technologies will be supplemented by trainings for ASG miners on operations and maintenance of equipment and facilities, hands-on practice and mentorship. The responsible organisations from the Government side will include MMHI, MRPA, MET, MoF, General policy department, NEMA, GASI, General Police Department and aimag/capital and soum/district governor's offices. International organisations, NGOs, banks and the ASGM partnerships and cooperatives will collaborate for implementation.

**2<sup>nd</sup> strategy:** It encompasses a number of studies including mercury inventory, environmental pollution monitoring of mercury contaminated areas in and nearby ASGM sites as well as in sites that have previously been decontaminated and neutralized. Promotion and advisory service to implement Frugal Rehabilitation Methodology and best practices to remediate and neutralize areas contaminated by mercury will be implemented followed by pilot remediation and neutralisation

projects. The measures under the 2<sup>nd</sup> strategy will enable collection, compilation and processing of various data that will be uploaded and maintained in environmental database and pollutants' registration. The strategy requires collaboration of MMHI, MET, MRPA and aimag/capital and soum/district governor's offices.

**3<sup>rd</sup> strategy:** It will be implemented through a set of activities: use incentives to citizens, in accordance with the Environmental Law for reporting illegal use of toxic and hazardous chemicals including mercury, identify border points that have substantial risks of cross-border mercury trade and domestic channels for illegal mercury supply; and strengthen knowledge and qualifications of border, customs and police staff to inspect, detect and monitor illegal trade of mercury. Collaborative efforts of MMHI, MET, NEMA, GASI, General police department, Customs authority and aimag/capital and soum/district governor's offices are crucial for tracking, detecting and stopping illegal mercury trade. Technical assistance by international organisations are foreseen to strengthen knowledge and qualifications of border, customs and police staff in inspecting, detecting and monitoring illegal mercury trade.

**Objective 2.** Reinforce optimal system and structure and mandates of the central public administration regulating ASGM, ensure interministerial coordination, enhanced stakeholders' engagement and collaboration and capacity building and enable optimal implementation of ASGM related laws and regulations.

- Strengthen and optimize accountability mechanism, inter-ministerial coordination, institutional structure and mandate for enforcement of Regulation on extraction of minerals;
- Enhance capacities of government staff and strengthen physical and material resources of research institutions and laboratories;
- Introduce market-based mechanism to support responsible ASGM.

The strategies outlined under Objective 2 are in line with the Article 7 of the Minamata Convention (a) steps to facilitate formalisation or regulation; (b) strategies for involving stakeholders; (c) additional strategies including market-based mechanism.

**1<sup>st</sup> strategy:** To accelerate process of formalizing ASGM sector and the implementation of the NAP it is planned to establish and make operational interministerial Council on ASM based on the current working group. The Council's membership and procedure for management and operations will be developed. The Council will be led by MMHI (Deputy Minister or State Secretary) and secretary of the Council will be from the Division in charge of ASM. Taken into account the Parliament Election of 2020 followed by changes in the Government structure it is planned to make a proposal to the Cabinet on establishing a unit in charge of ASM at ministry level. At the same time, assessment of the progress of implementation of the Regulation on ASM will be undertaken and measures for reviewing and renewing existing policies and legislations on ASGM will be carried. The legal assessment will cover issues, proposed under GEF Gold project (land tenure, mining rights, decent working conditions, gold trading regulations, and access to domestic and international markets) to reveal gaps and barriers hindering formalization in the sector and to reflect in development of more comprehensive policies and regulations. Support will be provided to aiming and soum governors to integrate ASGM issues as well as NAP objectives and strategies into the local development policy and planning. One of the key challenges for ASG miners is related to land and licensing. Therefore, MMHI will ensure that gold reserves to be used for ASGM purpose are properly identified and registered and enable timely access to the data. An important part of the NAP implementation is monitoring of the progress. Therefore, the continued conduction of ASM survey at 4-year frequency (next is in 2020) is necessary. The NSO should estimate more indicators disaggregating data into ASG and ASGM in order to enable use of indicators for measuring implementation progress of the Regulation on ASM as well as this NAP. For the 1<sup>st</sup> strategy MMHI, GASI, MET, MRPA, NSO, and aimag/capital governor's offices will take a lead role.

**2<sup>nd</sup> strategy:** It recognizes need for strengthening capacities of the government staff and physical capacities of laboratories and research organisations. A set of capacity building activities including ToT will be organised to provide central and local government with knowledge and skills necessary for enforcement of ASGM legislations and the NAP are proposed. The training on Minamata Convention and country obligations under the Convention will be a part of the training components. Key staff to be trained include specialists in charge of environment, OHS, research and analysis,

land and licensing, and technology from both central and local government. Measures to enhance physical and material resources of laboratories and research institutions will be taken to build national capacities for conducting environmental pollution monitoring and mercury related laboratory analysis. MMHI, MRPA, MET, aimag/capital governor's offices and soum/district governor's offices will be in charge of this strategy. International organisations will partner in developing and delivering ToT.

**3<sup>rd</sup> strategy:** Tahe strategy aims to introduce market-based mechanisms envisioned. OECD due diligence, Fairmined certification systems and voluntary reporting on environmental and social responsibility are foreseen under this strategy. Complimentary to these activities will be development of guidance, manuals and modules to be used in trainings and workshops for which technical assistance will be sought from international organisations. The technical assistance will also be sought from international organisations to BoM in support of exporting eco gold to international market. BoM, MMHI and international organisation will collaborate to implement this strategy.

**Objective 3.** By 2023, to achieve 80.0% health care service to ASG miners and increase of social and health insurance coverages of artisanal and small-scale gold miners by implementing public health and social protection strategies aimed at improving health and occupational safety of the miners and their families and preventing vulnerable groups, especially children, women and pregnant women from exposure to mercury.

- Implement specific strategies and measures on protecting health of artisanal and small scale miners and their families, which are reflected in national policies, programmes and action plans on health;
- Take measures to prevent ASG miners, their families, vulnerable groups and target groups including children, women, pregnant women and women in reproductive ages from exposure to mercury and its compounds and increase of social and health insurance coverage of ASG miners;
- Provide information and knowledge on negative impacts and risks of exposure to mercury and its compounds as well as occupational health and safety aspects of ASGM;
- Enable better occupational and labour safety in ASGM and ensure effective implementation of occupational health and safety norms and standards and reduce injuries and accidents in ASGM sites.

The strategies under the third objective has synergies with strategies of the Article 7 of the Convention on (a) public health and (b) prevention of vulnerable groups from exposure to mercury. There are 5 interlinked strategies.

**1<sup>st</sup> strategy:** During the stakeholders' workshop and several meetings with authorities of MoH and Public Health Institute it has been revealed that there is no need to develop an independent public health strategy, instead there is a need to conduct assessment and evaluation of the progress on implementation of the existing policies and programmes and synergize NAP strategies and actions in line with these policies. For this account, the 1<sup>st</sup> strategy takes a step to evaluate the implementation status of the ASGM related objectives and targets highlighted in several health policies: the National policy on health 2017-2026, National programme on environmental health 2016-2020, and Implementation plan to reduce negative impacts of chemicals on human health 2018-2021. Based on the evaluation, interventions on public health and social protection of miners and prevention of women and children from exposure to mercury will be identified and the Action plan will be elaborated.

**2<sup>nd</sup> strategy:** It aims to prevent miners, particularly children and women from risks to exposure to mercury will be pursued through a) regular screening and preventive medical check-up of ASG miners, b) increased technical capacities and antidote supply of aimag/soum health care organisations in order to improve detection, diagnosis, responses to chemical incidents and poisoning, and c) monitoring and treatment of mercury-related illnesses. An important part of the prevention strategy is opening up medical records of miners, development of e-health database of miners/patients and regular analysis of health data of ASG miners to ensure effective interventions. Additionally, support for ASG miners, particularly vulnerable groups to have social and healthcare insurances and access social protection programmes are envisioned under this strategy. It is also foreseen to develop a guideline and standard for diagnosis and treatment of chemical incidents and poisoning.

**3<sup>rd</sup> strategy:** It aims to provide information and knowledge on mercury, risks to exposure to mercury and occupational health and safety issues. The target groups are a) medical staff and healthcare

workers; b) miners, particularly women; c) local community. The medical staff and health care workers will be provided with learning opportunities on early detection, diagnosis and treatment of mercury-related symptoms and illnesses and work-related diseases. Interactive training module on chemicals and safety developed by WHO will be one of the training packages. The miners, particularly women miners will be provided with an opportunity to participate in trainings on mercury exposure, poisoning and symptoms, occupational health and safety. Reproductive health, sexual and family planning educational activities will target women and young miners. Gender issues will be incorporated into the curricula and training materials. Under this strategy, emphasis will be given on benefits of social and health insurances and measures will be taken to reach out every miner and convince them to have at least minimum social and health insurance packages.

**4<sup>th</sup> strategy:** It is linked to improving working and living environment, ensuring compliance with health and safety standards at mining sites and reducing traumas injuries among ASGM miners. This strategy will be implemented through enforcement of hygiene and sanitation norms as well as occupational health and safety regulations at mining sites. Since most of the ASGM takes place in remote areas sanitation facilities are non-existent or are lacking and no proper means of solid and human waste disposal is available. Therefore, measures to build public toilets and improve household solid waste disposal are required. Professional expertise in occupational health, safety and hygiene and sanitation and on the ground research and consultations are foreseen under this strategy. Solutions will be sought to establish adequate public toilets and waste disposal sites will be sought through local government's support and ASGM own investment. The strategy is aimed to ensure 100% use of safety clothing and gear by ASGM miners.

Responsibilities for all the strategies lay on MMH, MoH, PHI, Social Insurance General Office, GASI, aimag/capital and soum/district governor's offices. The technical assistance is sought from international organisations for capacity building of health care organisations.

<p><b>Objective 4.</b> Enable ASGM miners and the social groups that are vulnerable to ASGM negative impacts to gain knowledge on mercury impacts, environment, health, safety and the legislations and ensure that increased access of miners to information.</p>
<ul style="list-style-type: none"> <li>• Ensure ASGM miners' access to information on related laws and regulations, occupational health and safety, mercury free technology, mercury impacts, health and social insurance and social protection through "ASGM knowledge center", social media and local TV and media channels;</li> <li>• Organise systematic trainings to ASGM miners to provide knowledge on laws and regulations, human rights, gender, employment relations, environment, occupational health and safety, mercury impacts, sanitation and hygiene, insurances, social protection services;</li> <li>• Increase engagement of government and non-governmental organisations, educational organisations, industry associations and private sector in initiatives aimed at providing ASGM miners with decent work opportunities in economic sectors other than ASGM.</li> </ul>

The objective 4 is in line with the Article 7 of the Convention on (a) on providing information to artisanal miners and comprises of 3 strategies.

**1<sup>st</sup> strategy:** NAP recognizes the importance of constant information flow, engagement providing and collaboration between ASGM communities, NFASM, central and local government organisations. Therefore, it plans to widely use existing web-based platforms such as ASGM Knowledge Center and NFASM website. Besides, local TV channels and media will be used to disseminate information and raise local community awareness on mercury impacts on human health. To reach ASGM miners and their family members the NAP will support use of interactive telecommunication system and cost effective tools such as social media applications and short message service (SMS) technology for delivering announcements and news and for information dissemination. Forums, workshops and meetings continue to be a part of the communication and outreach strategy to engage miners and other local stakeholders.

**2<sup>nd</sup> strategy:** The strategy is about dissemination and delivery of a variety of knowledge and information by engaging civil society organisations and industry associations as well as collaborate with them to promote and organise events aimed at positively influencing attitude and behaviour of ASGM miners. For this account measures to reduce bad social phenomena such as alcohol consumption, domestic violence, harassment and sexual abuse will be undertaken. Alongside with this, collaboration with local authorities responsible child protection and the school social workers

will be sought to reduce children's engagement and labouring in ASGM. The exhibition and short video "Mercury-silent death" will be organised at soums with hard rock gold mines.

**3<sup>rd</sup> strategy:** Aimed to encourage ASG miners to learn competent skills for labour market and support their employment in economic sectors other than ASGM. This strategy entails activities to offer skill building training to ASG miners followed by paid internship and mentorship at local SMEs, assist children of miners, who dropped schools, in obtaining formal education, provide financial support for micro and small business start-up by miners, and encourage private sector as well as international development projects to participate in this initiative. Besides, decent work conditions and enforcement of labour relations including fair and equal pay, labour contract and harassment at work places will be a part of the training and information to miners.

The implementation of the 4<sup>th</sup> objective will evolve gender related issues including women empowerment in decision making, gender equality (for instance access to asset and ownership, financial service, equal employment and pay) and these issues will be a part of all trainings and events. Previous studies have demonstrated that some training activities did not result in miners' learning, knowledge and skill building and did not bring expected positive practices and changes. Therefore, knowledge and skills evaluation and assessment tools will be developed to determine effectiveness of training activities implemented.

For the 4<sup>th</sup> objective, responsible parties will include MMHI, MRPA, MLSP, Ministry of Education, Science and Culture, aimag/capital and soum/district governor's offices, NGOs, Professional Council on Mineral Resources and international organisations.

## **5.2. Workplan**

The Workplan for implementation of NAP is presented in the Table 8. In total, 13 strategies are proposed to be implemented in 2019-2023.

### **Table 8. Workplan for Implementation of NAP**

**Objective 1. To halve mercury emissions and releases and environmental pollution caused by ASGM by fully eliminating harmful technologies used for gold extraction and processing and completely stopping illegal mercury trade and hidden use in ASGM**

1	2	3	4	5	6	7	8	9	10	11	12
No	Strategies	Activities	Priority	Responsible organisation	Timeline, costs in mln MNT			Sources of finance	Total costs, mln. MNT	Outputs	Indicators
					2020	2021	2022-2023				
1.1.	To replace and eradicate gold extraction and processing technology and techniques and completely eliminate worst practices that are harmful to human health and environment	Take stepwise measures to detect and stop illegal ASGM activities that use harmful technologies and methods, including mercury use in gold extraction, whole ore amalgamation, burning in open space and buildings in residential areas	1	MMHI, MRPA, General Police Department, GASI, NEMA, Aimag and Capital Governor's Offices	20	40	40	State budget, Local budget	100	Breach linked to illegal use of mercury and its compounds in ASGM is detected, relevant measures are enforced to stop the illegal activities	Number of cases of illegal use of mercury in ASGM, rate of decline
1.2		Implement a policy and actions to restrict use of metal detector in illegal gold mining	1	MET, MRPA, General Police Department, GASI, NEMA, Almag and Capital Governor's offices	10	10		International organisations, state budget, local budget	20	Decision is issued	Order is issued
1.3		Conduct study on gold extraction and processing technology and techniques, develop feasibility study and investment plan to introduce selected technologies and take measures for introducing technologies in selected soums where hard rock gold mines are heavily concentrated and provide trainings on technology usage and maintenance and processing methods	1	MMHI, MRPA, MET, GASI, International Organizations, Private sector/ASGM partnerships and cooperatives	200	1400	1400	International Organizations, State budget	3000	Study conducted, low environmental impacts and mercury free technology is introduced	Number of plants with low environmental impacts and mercury free technology in provinces and soums with hard rock gold deposits

1.4		Take measures to create economic incentives in support of low environmental impact and mercury free technology technique (including ASGM miners' credit and savings cooperatives, bank loans and international projects funding).	1	MoF, MMHI, BoM, International organisations	30	30	500	International Organizations, State budget	560	Increased economic incentives and support for low environmental impacts and mercury free technology plants in ASGM	Loan taken by artisanal miners from the commercial banks and financial institutions, by purpose and type
1.5		Develop procedures and standards for ASGM processing plant operations	1	MMHI, MRPA	15	15	0	International Organizations	30	Procedures and standards for ASGM processing plants developed and implementation started	Number of applicable procedures and standards related to ASGM processing
1.6	To monitor and prevent mercury pollution, emissions and releases caused by artisanal and small-scale mining and processing, carry out research on risks and exposures to mercury and reduce mercury contaminated and eroded areas through remediation and neutralization	Conduct mercury inventory every 2 years at national level	1	MET, MMHI, Soum Governor's Offices, NGOs, International Organisations		100	100	International Organizations	200	Mercury inventory conducted. Registration and data on illegal uses mercury in ASGM is in place.	Amount of mercury used in ASGM, kg, rate of decline
1.7		Conduct environmental pollution monitoring of mercury contaminated areas in ASGM sites that have potential for illegal and hidden use of mercury and identify affected zones	1	MET, International organisations and NGOs	30	150	250	State budget, international organisations	430	Monitoring of mercury contaminated areas in ASGM site is conducted, affected zones are identified. Measures to prevent from potential risks are taken.	The number of ASGM sites where environmental pollution monitoring has taken place.
1.8		Conduct study on best practices to remediate and neutralize areas contaminated by mercury, implement pilot projects and take stepwise measures for remediation and neutralisation	1	MET, MRPA, International organisations and private sector	50	500	1500	State budget, local budget, International organisations	2050	Neutralize and rehabilitate mercury contaminated and polluted areas	Size of mercury polluted and contaminated areas that have been cleaned and neutralized, hectare

1.9.	Conduct environmental monitoring in the mercury contaminated areas where previously neutralisation and rehabilitation was done and identify and estimate level of mercury in water, soil and air	1	MET, International organisations	30	50	220	State budget, international organisations	300	Environmental monitoring is conducted in previously rehabilitated and neutralized areas which were mercury contaminated, mercury level in air, water and soil is estimated	Level of mercury in soil, air and water, microgram
1.10	Promote “Frugal Rehabilitation Methodology” to aimags and soums through target-oriented trainings and implement rehabilitation of areas degraded by ASGM by engaging professional organizations and local communities	2	Aimag and Capital Governor’s Offices, MRPA, MET, international organisations and private sector	80	420	1700	ASGM organisations, local budget, International Organizations	2200	Total areas degraded by ASGM activities	Size of rehabilitated areas degraded by ASGM activities, hectare. The number and rate of ASGM partnerships and cooperatives who did rehabilitation
1.11.	Take measures to ensure that miners place rehabilitation fees in the Collective fund for rehabilitation	2	Aimag and Capital Governor’s Office, MMHI, MRPA, MET	15	15	20	Local budget, State budget	50	Miners collected fund in the Collective Fund. Increased rehabilitation works funded by funds from Collective fund is increased.	Total amount of fund in Collective Fund, expenditure mln MNT
1.12	Maintain the data on the location and size of degraded and eroded land from ASGM, rehabilitation costs, size of rehabilitated areas and expenditure in relevant information database	2	MMHI, MET	10	10	10	State budget	30	Relevant data available in the Environmental information database.	Expanding relevant data available in the Environmental information database.

1.13	Take measures to track, detect, stop illegal mercury trade and stop illegal mercury use in ASGM	Identify border points that have substantial risks of cross-border as well as domestic mercury trade (shopping centers, markets, wholesale trade centers, blacksmith workshops, medical centers and laboratories using mercury storage facility) and elaborate an Action plan for implementation	1	General Police Department, GASI, General customs authority, Aimag and capital governor's offices	30	50	150	State budget, International Organizations	230	Improved effectiveness of tracking, detecting and stopping activities of the government in relation to illegal mercury trade cases	Number of cases detected which are related to illegal mercury trade. Amount of mercury transported and traded illegally.
1.14		Investigate enterprises that use toxic and dangerous chemicals in production and take measure to enforce "Regulation of storing, transporting, using and disposing toxic and dangerous chemicals"	2	GASI, MET, MMHI, NEMA, Aimag and capital governor's offices	10	20	40	State budget, local budget	70	Monitoring is carried out resulting in better compliance by enterprises with the Regulation on storing, transporting and using and disposing toxic and dangerous chemicals in response to monitoring. Better control over the implementation	Number of enterprises that went through monitoring and took actions in response, level of compliance with the Regulation
1.15		Take measures to ensure protection and safety of mercury stock warehouse	1	General Police Department, NEMA	0	100	200	State budget, International Organizations	300	Special building for stocking, disposal of mercury according to he decision of the Court	Amount of investment in building for stocking and disposal of mercury, mln MNT

1.16		Strengthen knowledge and qualifications of border, customs and police staff to inspect, detect and monitor illegal trade of mercury	1	General Police Department, NEMA, GASI, MMHI, MET, International organisations	20	30	30	International organisations, State budget	80	Improved capacity of border, customs and police staff to fight against illegal activities and crime related to mercury trade resulting in reduced illicit mercury related cases and costs of damages and losses	Number of border, customs and police staff attended capacity building trainings, number of trainings
1.17		Ensure adequate supply of equipment and clothing for officers in charge of illegal mercury trade track and detection to ensure their safety and occupational health and sanitary conditions		General Police Department, NEMA, GCA, GASI	50	70	150	State budget, International Organizations	270	Track and control of illegal mercury trade and supply	Amount of investment made in purchase and supply of equipment and clothing for relevant officers, in MNT
<b>Objective 2. Reinforce optimal system and structure and mandates of the central public administration regulating ASGM, ensure interministerial coordination, enhanced stakeholders' engagement and collaboration and capacity building and enable optimal implementation of ASGM related laws and regulations</b>											
2.1	<b>Strengthen and optimize accountability mechanism, inter-ministerial coordination, institutional structure and mandate for enforcement of Regulation on extraction of minerals</b>	Establish ASGM inter-ministerial council for effective coordination and implementation of regulations, programs and policies on ASGM and NAP and approve its membership and procedures for operations	1	MMHI, MET						Interministerial council, procedure for operation of the Council	Resolution to establish interministerial council, membership and procedure for operations, the number of decisions by the Council

2.2		Make assessment of existing policies and legislations regulating ASGM, including land use for ASGM, permits and licenses, gold supply and trading, international and domestic market, labour relations and make necessary revisions of inconsistencies, overlaps and gaps.	1	MMHI, MET, International Organisations	20	30		State budget, International Organizations	50	Assessment of the policy and legal framework amendments and renewal	The number of renewed, newly developed and amended laws, regulations and policies
2.3		Conduct assessment on the progress of implementation of the Regulation for extraction of minerals through ASM	1	MMHI		20		International organisations	20	Assessment on the progress of implementation of Regulation on ASM	Implementation level and rate of Regulation on ASM
2.4		Obligate ASGM organisations to provide report to the soum governor's offices and ensure that soum Governor's office identifies next actions, based on reports and performance of ASG miners' organisations, and incorporate into soum development policy and programme	1	Aimag and Capital Governor's Offices						Harmony and synergy of local development policies and planning with the Regulation on ASGM followed by implementation	The number of ASGM related measures incorporated into aimag and soum development policy documents and allocated budget
2.5		Provide methodological advice and instructions to ASGM partnerships and cooperatives to take measures in response to results of monitoring and evaluation and to remedy their violations and breaches	2	GASI, MET, MMHI, MRPA, Aimag and Capital Governor's Offices	10	20	30	State budget, local budget	60	Improved results of monitoring and evaluation activities	Number of entities involved in monitoring and evaluation, number of breaches and violations, by types and number of ASGM that remedied irregularities

2.6		Ensure that soum Governor's Office takes measures to oversee the implementation of decisions on illegal mining operations and environmental damages and make publicly available and open records and ASGM's actions and performance on implementation	1	Aimag and Capital Governor's Offices, GASI, NGO		10	30	State budget, local budget	40	Mining in areas without permits is ceased and reduced breaches.	Number and size of ASG mining areas with permits and licenses; ASG areas illegally used, number of ASG miners in these areas.
2.7		Conduct ASM Survey every three years, estimate ASGM indicators necessary for measuring NAP implementation progress	1	NSO, Aimag and Capital Statistical Division, MET and MMHI		225	225	State budget, International organisations	450	Evaluation of implementation of the NAP	Number and type of the ASGM by region, aimag and soum.
2.8		Identify gold reserve sites to be used for ASGM purpose at national level, update registration and make the information open and accessible to ASG miners	2	MRPA		50	100	State budget	150	Accurate, timely and open access of ASG miners to information on land	Size of mining areas available for ASGM, hectares
2.9.		Carry out registration of miners	1	Aimag and Capital Governor's Offices, MMHI	50	30	30	State budget, International Organizations	110	Information of the ASG miners	The number of registered ASG miners, by age and gender, database on artisanal gold miners
2.10.	<b>Enhance capacities of government staff and strengthen physical resources of research institutions and laboratories</b>	Strengthen physical and human capacities of research organizations affiliated to MET and provide assistance to raise funds and implement pilot projects	2	MET		100	100	State budget, International Organizations	200	Pilot project	The number of projects, amount of fund used in research projects, mln MNT
2.11		Strengthen capacity of staff (staff in charge of environment, OHS, research and analysis, land and licensing, technology etc.) of central and local government organizations to provide advisory and methodological support and deliver training and advocacy activities on	1	MMHI, MET, MRPA, Aimag and Capital Governor's Offices, Soum and District Governor's Offices International Organisations	30	30	40	State budget, international Organizations	100	All the government staff in charge of ASG are trained resulting in increased knowledge and skills of government staff to provide training, methodological	Number of staff from relevant organisations who attended educational activities, by gender. Type of educational materials., printed and electronic

		occupational health and safety, mercury impacts and risks, Minamata convention8 environment and rehabilitation methods through Training of Trainers (ToT) and provision of learning and teaching materials, manuals, guidelines and information.								advices and advocacy and awareness raising activities. Educational technology and methods and training outputs are improved.	
2.12		Further improve technical conditions of ASM Information Database of MRPA to enable relevant administrators from local government to access, download and upload data and information	1	MRPA	50	30	30	State budget, international Organizations	110	ASM Database at the MRPA	Number of data uploaded by relevant local government administrators to the ASM database by type
2.13		Develop a procedure to purchase, store and transport and assay gold mined through ASGM	1	BoM, MMHI		30	10	State budget, international Organizations	40	Approval of the Regulation on trading, storage, transportation and assaying of gold supplied by ASGM	Approved procedure
2.14		Ensure better control over origin of gold mined by ASGM through improving Due diligence of BOM	1	BoM, MMHI, International organisations		20	10	State budget	30	Approval of amendments and changes to the Due Diligence of BoM	Gold sold to BoM by ASGM partnerships and cooperatives, kgs/percentage in total gold sold
2.15		Assess feasibility of establishing gold trade centers affiliated to BoM, allowing branches of commercial banks to engage in gold trading as well as setting up specialised gold exchange in aimag centers and organise necessary policy dialogues and knowledge exchange and capacity building trainings and workshops	1	BoM, MMHI	30	50	50	State budget, international Organizations	130	Branch of National Assaying Laboratory	Number of gold trading centers or branches of BoM and commercial banks engaged in gold trade locally, amount of gold purchased, kg.

2.16		Make investment to strengthen technical and technological capacities of National Assaying Laboratory and enable condition for establishing local assaying divisions in aimags and soums where ASGM is heavily concentrated.	2	BoM, ASM	50	50	100	State budget, international Organizations	200		Number of assaying units in aimags
2.17	<b>Introduce market-based mechanism to support responsible ASGM</b>	Promote internationally recognized responsible mining standards and certifications such as Fair mined certification, OECD Due diligence, provide technical assistance to ASG organisations to introduce these standards and increase export of eco gold	1	BoM, MMHI, and international organisations	50	50	50	International organisations	150	Increased amount of gold supplied by ASG organisations that met Fair mined certification criteria and increased rate of eco gold for export	Number of ASG organisations that met criteria of Fair mined certification.
2.18		Provide support to the BoM to export fair mined eco gold to international market	2	BoM, MMHI, International organisations		50	50	International organisations	100		Amount of fair mined eco gold exported to international market by BoM, kgs
2.19		Take initiatives to introduce voluntary reporting in ASGM and organise national forums, trainings and provide advisory service to interested ASGM partnerships	2	MET, MMHI, Aimag and Capital Governor's Offices, international organisations		20	20	International organisations	40	Environmental Impact Assessment Report at ASGM area	Number of forums and trainings on voluntary environmental reporting of ASGM, number of ASGM partnerships and cooperatives participated.
<b>Objective 3. By 2023, to achieve 80.0% health care service to ASG miners and increase of social and health insurance coverages of artisanal and small scale gold miners by implementing public health and social protection strategies aimed at improving health and occupational safety of the miners and their families and preventing vulnerable groups, especially children, women and pregnant women from exposure to mercury</b>											

3.1	<b>Implement specific strategies and measures on protecting health of artisanal and small scale miners and their families, which are reflected in national policies, programmes and action plans on health</b>	Make assessment on progress of implementation of ASGM related objectives and actions reflected in National policy on health 2017-2026 (Strategy 2.4.1.2), National programme on environmental health 2016-2020 (Strategy 3.6.3), and Implementation plan to reduce negative impacts of chemicals on human health 2018-2021, identify interventions and take measures for effective implementation.	1	MoH, NCPH	20	20	20	State budget, international organisations	60	Assessment on progress of implementation of ASGM related objectives and actions reflected in National policy on health, National programme on environmental health and Implementation plan to reduce negative impacts of chemicals on human health	Level and rate of implementation of strategies and measures on ASGM reflected in said policy, programme and action plan
3.2		Conduct health assessment of ASG miners and their families and identify needs for health care service and treatment	1	MoH, NCPH		100	50	International Organizations	150	Needs for health care service to ASGM miners, baseline data on ASG miner's health status	Number of health assessment conducted, number of ASG miners, by gender
3.3		Monitor and enforce implementation of the "Regulation on reporting registering and assessing poisoning from chemicals"	2	MoH	10	10	20	State budget	40	Registration and monitoring of mercury related poisoning and illnesses at ASGM	Number of cases of poisoning and illnesses caused by mercury use in ASGM, type of illnesses
3.4		<b>Take measures to prevent ASG miners, their families, vulnerable groups and target groups including children, women, and pregnant women</b>	Open and maintain a health records of every artisanal miner, create health registration and monitoring system to process and analyse the ASG miners' health data	1	Aimag and Capital Governor's Offices, Soum and district health organisations	10	10	20	Local budget	40	Health records of all ASG miners coverage healthcare service

3.5	<b>from exposure to mercury and its compounds and increase of social and health insurance coverage of ASG miners</b>	Strengthen the system of providing regular check-up and preventive medical screening service to ASG miners to reduce occupational diseases and risks of mercury and toxic chemicals' poisoning and ensure follow up treatment and regular monitoring	1	MoH, MLSP, NCPH, OHS		80	70	International Organization, State budget	150	Periodic and preventive health examination	Number of illnesses and diseases of ASG miners, types
3.6		Establish a system to ensure frequent check-up, preventive medical screening and health care service targeted at women miners, pregnant women miners, women of reproductive ages and children from miners' families	1	MoH, NCPH, MLSP, OHS	30	20	50	State and local budget, international organisations	100	Periodic and preventive health examination	Number of ASG women miners and children who had medical examinations, screening, and check-up.
3.7		Improve technical capacities and antidote supply of aimag/soum health care organisations to be used in detection, diagnosis, responses to chemical incidents and poisoning, monitoring and treatment of mercury-related illnesses	2	MoH		150	100	State budget	250	Improved technical capacities and antidote supply of aimag/soum health care organisations, capacities of local medical staff detection, diagnosis, responses to chemical incidents and poisoning, and treatment	Number of ASG miners who had been treated by aimag and soum health organisations, by type of diseases
3.8		Develop a guideline and standard for diagnosis and treatment of chemical incidents and poisoning	1	MoH, NCPH		50	50	International organisations, state budget	100	Approved guideline and standard for diagnosis and treatment of chemical incidents and poisoning	Number of approved standard MNS 6460: 2014, MNS 6448: 2014, MNS 6495: 2014 as a guideline

3.9		Take measures to ensure full coverage of ASG miners in health and social insurances and enable target groups to fully access social protection and healthcare services	1	Aimag and Capital Governor's Offices, Soum and District Governor's Offices	10	15	15	Local budget	40	Social and health insurance coverage of ASG miners	Number of ASG miners who have health and social insurance. Number of ASG miners who got social welfare service
3.10.	<b>Provide information and knowledge on negative impacts and risks of exposure to mercury and its compounds as well as occupational health and safety aspects of ASGM</b>	Provide a guidance and instructions on diagnosis and treatment of chemical incidents and poisoning to medical and healthcare staff and conduct regular trainings on how to detect, diagnose and treat physical and mental changes and diseases due to exposure to mercury	1	MoH, NCPH		80	50	State budget, international organisations	130	Training will result in improved knowledge of medical staff on diagnosing and treating mercury poisoning and illnesses. Improved quality of health care services to ASG miners.	The number of trainings organised, participants from local health organisations
3.11		Promote, disseminate and introduce Interactive training module on chemicals safety developed by WHO, promote mobile phone applications and provide instructions on usage	1	MoH, NCPH	20	40	40	International organisations	100	Training technique and methodology will improve resulting in better training outputs.	Number of trainings in which the said interactive training programme was used and the number of participants from health organisations
3.12		Train medical and healthcare staff of aimags and soums with ASGM sites on diagnosis and treatment of occupational diseases, work related illnesses and emergency medical services in case of injuries and traumas	1	MoH, NCPH	30	30	30	State budget, International organisations	90	Improved capacities of local medical staff in diagnosis and treatment of occupational diseases and effective responses to emergency cases	Number of medical doctors and health staff of aimag and soum health organisations in targeted trainings
3.13		Provide soum medical staff with the information necessary to promote and consult on consequences of mercury and its impacts on human health	1	MoH, NCPH, Aimag and Capital Governor's Offices	20	20	40	State budget, International Organizations	80	Increased access to mercury related information including impacts on human health	Types and number of information about mercury disseminated

3.14		Disseminate information and deliver knowledge on mercury impacts on human health and risks to exposure to local community, miners as well as vulnerable groups that are vulnerable to exposure	1	MoH, NCPH, NGOs	25	40	40	State budget, International organisations	105	Increased public (local community and miners) awareness on consequences and impacts of mercury (Hg), reduced risk of exposure to mercury	Number of local people of which miners and target group representatives who participated in trainings
3.15		Provide reproductive health, sexual and family planning education to young miners and the women	1	MoH, NCPH	25	25	30	International Organizations , State budget	80	Trainings on reproductive health, sexual education and family planning are provided to young miners and women resulting in reduced risks to STD and unplanned pregnancy	Number trainings in the areas of reproductive health and sexual education and family planning, number of ASG miners participated, by age and gender
3.16		Distribute information on the benefits of health and social insurance services, aids and services covered by the insurances, importance of social insurance, pensions and allowances to ASG miners through Soum Social Insurance Divisions and reach out every miner by effectively using national and local TV channels, social media and ICT tools	1	GASHI, Aimag and Capital Governor's Offices, Soum Governor's Officers, NGOs	20	20	30	International organisations	70	Improved knowledge and understanding about insurance types and benefits. Increased rate of miners covered by insurances	Number of ASG miners who participated in events on health and social benefits of which number of ASG miners who got health and social insurance, by gender
3.17	<b>Enable better occupational and labour safety in ASGM and ensure effective implementation of occupational health and safety norms and standards and reduce injuries and</b>	Jointly with local government authority introduce sanitary and hygiene procedure at ASGM sites and solve the problems relate to household solid waste collection, transportation, and disposal and pit toilets	2	Aimag and Capital Division of Specialized Inspection, Aimag and Capital Governor's Offices, NGOs	0	50	50	Private sector, local budget	100	Improved conditions of public toilets and waste disposal areas. Reduced waste stock in miming sites. Reduced risks of communicable and non-communicable disease spread	Number of public toilets and waste disposal sites at ASGM sites that meet sanitation and hygiene criteria

3.18	<b>accidents in ASGM sites</b>	Improve enforcement of "Regulation on Safety of Artisanal Mining" and ensure that every artisanal miner use labour protective clothing and safety gears	1	MLSP, Aimag and Capital Governor's Offices, NEMA, GASI	20	20	20	Private sector, local budget	60	Every miner's use of safety clothing and gears. Reduced accidents and injuries.	Use of safety clothing and gear by ASGM Miners, number of ASGM miners, rate. Number of accidents and injuries in ASGM sites
<b>Objective 4. Enable ASG miners and the social groups that are vulnerable to ASGM negative impacts to gain knowledge on mercury impacts, environment, health, safety and the legislations and ensure that increased access of miners to information.</b>											
4.1	<b>Enable ASG miners' access to information on ASG related laws and regulations, mercury free technology, occupational health and safety norms and standards, mercury impacts, health and social insurance and protection through online platform, social media and local media channels</b>	"Support "ASM knowledge center" by enriching the platform with simple, user friendly and visual information and news on ASGM regulation and compliance, low environmental impact and mercury free technology, fair mined gold, mercury impacts, health, occupational safety, social protection and develop user friendly, simple and visual	1	MMHI, MRPA, NGOs	30	30	40	State budget, International Organizations	100	Information of online platform	Number and type of information uploaded to online platform
4.2.		Further develop Facebook-based platform and ensure easy access and use of the information available on online platform	1	MMHI, NGOs	30	30	40	International Organizations	100		Number of registered users of online platform, number of queries.
4.3		Broadcast documentary film and short videos through local TV channels and disseminate news on mercury impacts on human health, mercury free technology and responses in cases of exposure to mercury targeting specific groups	1	MoH, Aimag and Capital Governor's Offices	10	10	30	Local budget, International Organizations	50	Enhanced knowledge and understanding of local community and targeted groups about mercury impacts on human health, mercury free technology and responses in cases of exposure.	The number of news, documentary films and videos broadcasted on local TV and published in local media, by type of media. Level of knowledge of target groups about mercury impacts and changes in their attitudes.

4.4	<b>Organise systematic trainings to ASG miners to provide knowledge on laws and regulations, human rights, gender, employment relations, environment, occupational health and safety, mercury impacts, sanitation and hygiene, insurances, social protection services</b>	Assist and collaborate with NGOs and industry associations in organising trainings, campaign and events for ASG miners to provide knowledge and information on legal framework, human rights, gender, labour relations, environment, health and safety, mercury impacts and social protection and support initiatives that positively influence ASG miners' behaviours and attitudes	1	MLSP, Aimag and Capital Governor's Offices, NGOs	30	30	40	International Organizations	100	Enhanced capacities of trainers of NGOs and industry associations to provide educational and advisory service to miners.	Number of NGOs and industry associations that organised educational and awareness raising activities targeted at miners, number of participants, by gender. Level of acquired knowledge
4.5		Show the exhibition "Mercury-Silent Death" in soums with primary rock deposits and organise campaign and events to raise awareness on mercury impacts	1	MET, Center for fresh water and natural resources, Aimag and Capital Governor's Offices	50	50	50	International organisations	150	Exhibition	Number of exhibition number of people who visited the event
4.6		Develop special training modules and a set of materials on mercury impacts, necessity not to get involved in illegal use, trade, storage and transportation of mercury and immediate measures in cases of accidental exposure to mercury and organize regular campaigns and trainings for target groups by engaging Governor's office, health centers and schools at soum level where ASGM is concentrated.	1	MoH, NCPH, NGOs	30	20	30	International organisations	80	Special training modules and a set of materials	Number of soums that received the training programme and package, number of packages distributed, number of events organised by soums using the material, number of participants by gender

4.7		By engaging CSOs that work in the areas of protecting rights of disabled people, prevent risks of disability due to inadequate use of mercury, develop handouts and materials targeted to disabled people, disseminate information	2	MLSP	30	20	30	International organisations	80	Information availability regarding usage of mercury and it's risks	The number of disabled people who obtained information and knowledge
4.8		Take measures to prevent and disputes, crime, domestic violence among miners and between miners and local community	2	Aimag and Capital Governor's Offices, Soum Governor's Offices and NGOs	10	10	20	Local budget	40	Measures organised at soum level	Number of measures and number of ASG miners participated by gender
4.9		Organize trainings and awareness raising events on children's rights and protection in collaboration with local authorities responsible for children and families and by engaging school social workers and other relevant stakeholders and reduce engagement and labouring of children in ASGM activities	2	MLSP, Aimag and Capital Governor's Offices		5	10	Local budget	15	Reduced number of child employment and involvement in ASGM, reduced violation of children's rights	The number of children in ASGM, b region, aimag. Level of knowledge of ASG miners on children rights and protection.
4.10	<b>Increase engagement of government and non-governmental organisations, educational organisations, industry associations and private sector in</b>	In collaboration with the international projects targeted to reduce poverty, increase employment opportunities and improve sustainable livelihood of rural community support and co-finance miners' micro business and work in other economic sectors	1	Aimag and Capital Governor's Offices, MLSP	20	30	50	Soum Development Fund, International organisations, grants and donations	100	Implementation of international projects and programmes at soums	The number of ASG miners who left to work in economic sectors other than ASGM as a result of international project interventions, by gender

4.11.	<b>initiatives aimed at providing ASG miners with decent work opportunities in economic sectors other than ASGM</b>	Collaborate with the private sector, industry associations and civil society to involve ASG miners, especially women and young people in knowledge and skill building trainings necessary to work in other economic sectors, identify employment opportunities and other related issues that could be solved within Corporate social responsibility of private sector and make collaborative efforts and joint actions for implementation	1	Aimag and Capital Governor's Offices, MLSP, MMHI, NGOs, Private sector	20	50	50	Local budget, private sector	120	Enhanced effectiveness of public private partnership resulting in job increases in sectors other than ASGM. Reduced employment of women and children in ASGM	The number of events aimed at employment and work skill building, number of ASG miners participated, number of ASG miners who shifted to economic sectors other than ASGM
4.12		Implement measures targeted to help women miners and single mothers/miners participate in formal and informal education, obtain skills and work experiences needed to work in other economic sectors by providing internships, mentorships and casual and part time work and by finding jobs in economic sectors other than ASGM	1	Aimag and Capital Governor's Offices, MLSP, NGOs, Private sector	30	50	50	State budget, international organisations	130	Trainings, internships, ASG miners who shifted to other sectors.	Number of ASG miners participated in targeted trainings, mentorships and internships of which women miners and single mothers /miners
4.13		Take measures to enable children and young people, who dropped school, to complete secondary and vocational education, formal and informal education and obtain secondary education and increase access of miners' children to school	2	MECSS, MLSP, Aimag and Capital Governor's Offices							Increased educational level of children and young people from ASGM families
<b>GRAND TOTAL</b>					<b>1115</b>	<b>5235</b>	<b>8410</b>		<b>14760</b>		

### 5.3. Steps for Implementation

The National Action Plan will be implemented in two phases over five years:

I step (2019-2020)

II step (2021-2023)

The implementation of the National Action Plan will result in the following:

- Illegal gold mining and illegal use of mercury will decrease, artisanal and small scale gold mining activities will be into integrated organizational forms and management, the negative impacts on the environment and human health will be reduced and responsible artisanal and small scale mining will be scaled up.
- Participation of non-governmental organizations, citizens and business entities in the policy development, decision-making and implementation of state policy on artisanal and small scale gold mining will increase and decisions of public state organisations will be enforced in a comprehensive and coherent manner.
- Artisanal and small scale miners' and citizens' knowledge and understanding about environmental protection, occupational and health safety and protection from pollution, exposures and from hazards will be increased.
- Vulnerable groups including children and women, especially pregnant women will increase their capacities to protect themselves and their families from potential risks of exposures to mercury, injury, poisoning, and mercury related illnesses will decrease;
- Employment in local area will increase, thus contribute to livelihood of citizens and bring positive impacts on the composition of the budget revenue;
- Citizens will protect their health and the environment from potential environmental pollution risks caused by artisanal and small scale mining activities, have ability to reduce its impacts and good practice and reduce economic damage due to environmental and health deterioration;
- With the development of responsible artisanal and small scale gold mining, elimination of outdated technology. which is harmful to human health and environment, will be in place and eventually bring increased economic benefits;
- Increased awareness of artisanal and small scale gold miners about environmental protection, laws and traditions on environmental protection will result in reduced crime against the environment and reduced budget expenditures.

## VI. EVALUATION MECHANISM

### 6.1. Implementation Mechanism

The inter-agency council will be established and operational to oversee and ensure harmony and coordination of activities for formalization, enable responsible practices in ASGM sector and ensuring sustainability and continuity of the NAP implementation. The membership composition of the Council will be approved jointly by the Minister responsible for environment and the Minister responsible for geology and mining.

The state central administrative organization (Ministry) responsible for environment will provide leadership for overall implementation and coordination of the NAP.

The implementation of the NAP will engage the below line ministries and agencies:

- The Ministry of Mining and Heavy industry;
- The Ministry of Environment and Tourism;
- The Ministry of Health;
- The Ministry of Labour and Social Welfare;
- National Human Rights Commission;
- The Mineral Resources and Petroleum Authority;
- The Bank of Mongolia;
- General Agency of Specialized Inspection;
- Department of Standardization and Metrology (Precious Metal Assaying Department);
- National Emergency Management Agency (Mining Rescue Service Unit);
- General Authority for Social and Health Insurances (GASHI);
- Governor's offices of aimags (province) and the capital Ulaanbaatar; and

- Governor's offices of soums and districts.

The state central administrative organisations (Ministries), the state and local administrative organisations are responsible to incorporate actions of the NAP in the annual plan and budget. Non-governmental organizations, private sector and ASGM miners should engage actively in the implementation of the NAP, participate in the capacity and skill building training activities and surveys. A key player representing the interests of ASGM community is NFASM.

The Action plan of the Government, sectoral policies, and state investment programmes, medium-term development policy of aimag/capital and primary directions for socio-economic development of soum/district will reflect the NAP activities.

The NAP implementation will be ensured through effective collaboration, partnership and engagement of the Government, private sector, non –governmental organisations, private sector and the international organisations.

## **6.2. Evaluation Mechanism**

The state central administrative organization (Ministry), responsible agency of the Government, aimag Governor's offices and Capital Mayor's office will produce the report on implementation of the NAP and submit to the state central administrative organization responsible for environment (Ministry of Environment and Tourism).

The state central administrative organization responsible for environment (Ministry of Environment and Tourism) will review the report and if necessary, conduct independent monitoring and evaluation. Based on the findings and recommendations of the monitoring and evaluation it may be possible to make changes and amendments to the NAP in accordance with relevant laws, regulations and procedures.

The state central administrative organization responsible for environment will present the progress of implementation of the NAP to the Government in the 1<sup>st</sup> quarter of the next year. In accordance with the requirements of the Minamata Convention the state central administrative organization responsible for environment shall submit the report on the implementation of NAP to the Secretariat of Minamata Convention every three years.

To monitor the implementation of the NAP it is considered to take the following actions:

- Estimate and update data to be used for monitoring NAP. This will involve the expansion of territorial coverage of mercury inventory by adding other gold mining sites (hard gold deposit sites and estimation of ASGM related indicators using data of the ASM Survey conducted by the National Statistics Office of Mongolia.
- Develop or renew methodology for collection, processing and dissemination of statistical information necessary for estimating indicators to be used for monitoring purposes of NAP implementation;
- Further develop the online environmental database ([www.eic.mn](http://www.eic.mn)), part "Hazardous and toxic chemicals" and incorporate and maintain data on pollution caused by ASGM and mercury emission.

## **6.3. Indicators for Measuring Progress**

The Table 9 shows indicators for measuring progress of NAP implementation. To estimate these indicators the following statistical data sources, administrative data sources and data from surveys could be used:

- Data on gold grading from the National Assaying Laboratory;
- Data on gold sold to the Treasury Fund of the Bank of Mongolia;
- Administrative data produced by the MRPA including data on land and licenses for ASGM;
- Export data of Customs authority;
- Land degradation and land rehabilitation data;
- Other administrative data collected and processed by central state and local state organisations.
- Survey report on ASM and non-observed economy survey carried out by the National Statistics Office.

In addition to the above-mentioned data Household socio-economic survey, Population and housing census and Establishment census carried out by NSO could also be used.

Currently, the Sustainable Artisanal Mining project, funded by SDC Swiss Agency for Development and Cooperation, funds the “The ASM Survey” which brings a lot of valuable data to serve as baseline data.

The survey should be carried out every 4 years through state funding or through funding of other projects.

Findings, data and information collected by research and academic organisations, NGOs and international development agencies will also be used for monitoring and evaluation.

**Table 9. Indicators for measuring progress of NAP implementation**

No	Objectives	Strategies	Indicators	Baseline (2017)	Target	Responsible organization
					/2023/	
1	2	3	4	5	6	
1	<b>Objective 1: To halve mercury emissions and releases and environmental pollution caused by ASGM by fully eliminating harmful technologies used for gold extraction and processing and completely stopping illegal mercury trade and hidden use in ASGM</b>	To replace and eradicate gold extraction and processing technology and techniques and completely eliminate worst practices that are harmful to human health and environment	Number of gold processing plants with mercury-free technology	1	8	Ministry of Mining and Heavy Industry, Mineral Resources and Petroleum Authority
2		To monitor and prevent mercury pollution, emissions and releases caused by artisanal and small-scale mining and processing, carry out research on risks and exposures to mercury and reduce mercury contaminated and eroded areas through remediation and neutralization	Soums which had mercury pollution studies (primary gold deposit)	1	9	Ministry of Environment and Tourism
3			Amount of mercury contaminated areas that have been cleaned and neutralized, hectare (Accumulated data from 2008 and 2015)	60.7	No less than 90 hectares	Ministry of Environment and Tourism, Mineral Resources and Petroleum Authority, Aimag and capital governor's offices
4		Take measures to track, detect, stop illegal mercury trade and stop illegal mercury use in ASG	Decrease in mercury related crimes, percentage	x	50%	National Police Agency, General Agency for Specialized Inspection, Customs Agency
5			Amount of mercury used in ASGM, kg (Potential use estimated by international methodology, 2018)	235.413	117,5	Ministry of Environment and Tourism (MET)
6	<b>Objective 2. Reinforce optimal system and structure and mandates of the central public administration regulating ASGM, ensure interministerial coordination, enhanced stakeholders' engagement and collaboration and capacity building and enable optimal implementation of ASGM related laws and regulations</b>	Strengthen and optimize accountability mechanism, inter-ministerial coordination, institutional structure and mandate for enforcement of Regulation on extraction of minerals	Percentage of ASG miners working in mining sites with permits and licenses	72,7	100	Ministry of Mining and Heavy Industry (MMHHI)
7		Increase capacities of government staff and strengthen physical and material resources of research institutions and laboratories	Number of staff of national and local government organizations who participated in the capacity building activities	280	No less than 500	MET, MMHI, Aimag and Capital Governor's Offices
8			Number of precious metal assaying units in aimags	1	2	Bank of Mongolia (BoM)
9		Introduce market-based mechanism to support responsible ASGM	Total amount of gold extracted by ASG miners, kg	212	125,2	Bank of Mongolia (BoM)
10	of which amount of eco gold, kg		2	6		

11	<b>Objective 3: By 2023, to achieve 80% healthcare service to ASG miners and increase of social and health insurance coverages by implementing public health and social protection strategies aimed at improving health and occupational safety of artisanal and small scale gold miners and their families and preventing vulnerable groups, especially children, women and pregnant women from exposure to mercury</b>	Implement specific strategies and measures on protecting health of artisanal and small-scale miners and their families, which are reflected in national policies, programmes and action plans on health	Trainings on diagnosis mercury poisoning and treatment of physical and mental changes due to exposure to mercury, number	x	20	Ministry of Health (MOH), National Center for Public Health, Aimag and capital governor's offices
12			Medical staff who had trainings on diagnosis mercury poisoning and treatment of physical and mental changes due to exposure to mercury in local health centers	20	150	Ministry of Health, National Center for Public Health, Aimag and capital governor's offices
13		Take measures to prevent ASG miners, their families, vulnerable groups and target groups including children, women, pregnant women and women in reproductive ages from exposure to mercury and its compounds and increase of social and health insurance coverage of ASG miners	Percentage of female ASG miners who had health assessment and check up	Not available	Achieve 80% of women ASG miners	Ministry of Health, National Center for Public Health, Aimag and capital governor's offices
14			Percentage of children injured out of the children who were engaged in ASGM	66,7	0	Ministry of Health, National Center for Public Health, Aimag and capital governor's offices
15			Children exposed to hazardous chemical substances, percentage	2,6	0	Ministry of Health, National Center for Public Health, Aimag and capital governor's offices
16		Provide information and knowledge on negative impacts and risks of exposure to mercury and its compounds as well as occupational health and safety aspects of ASGM	Number of local citizens participated in training and workshops about mercury harm and exposure in local area	360	5000	Ministry of Environment and Tourism, Ministry of Health, National Center for Public Health, Aimag and capital governor's offices
17		Enable better environmental health in ASGM and ensure effective implementation of occupational health and safety norms and standards and reduce injuries and accidents in ASGM sites	Use of occupational safety clothing and gear by ASG miners, percentage	75.6	95,6%	Ministry of Labour and Social Protection, Ministry of Mining and Heavy Industry
18		<b>Objective 4. Enable ASG miners and the social groups that are vulnerable to ASGM negative impacts to gain knowledge on mercury</b>	Ensure ASG miners' easy and timely access to information on related laws and regulations, mercury free technology, occupational health and safety, mercury impacts, health and	Number of information on mercury and mercury free technology available on the website of ASM Knowledge Center	20	100

19	<b>impacts, environment, health, safety and the legislations and ensure that increased access of miners to information</b>	social insurance and social protection through "ASM knowledge center", social media and local TV and media channels	Increase in online access for ASM Knowledge Center, percentage	x	75% increase	Ministry of Mining and Heavy Industry,
20		Organise systematic trainings to ASG miners to provide knowledge on laws and regulations, human rights, gender, employment relations, environment, occupational health and safety, mercury impacts, sanitation and hygiene, insurances, social protection services by engaging government and non-governmental organisations and industry associations	Percentage of ASG miners who attended trainings on laws and regulations, safety, health, gender and human rights etc.	17	60	Ministry of Mining and Heavy Industry, Ministry of Environment and Tourism, Ministry of Labour and Social Protection, Ministry of Health, General Agency for Specialized Inspection, National Police Agency
21		Increase engagement of government and non-governmental organisations, educational organisations, industry associations and private sector in initiatives aimed at providing ASG miners with decent work opportunities in economic sectors other than ASGM	Number of ASG miners, who found casual/temporary/permanent jobs in economic sectors other than ASGM	Not available	700	Aimag and Capital Governor's Offices, MLSP

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**ANNEX 1. TERMS OF REFERENCE OF THE WORKING GROUP****MINISTRY OF ENVIRONMENT AND TOURISM OF MONGOLIA  
RESOLUTION OF MINISTRY**

12 September 2017

No A/268

Ulaanbaatar city

**Re: Establishing Working Group**

Pursuant to Paragraph 24.2 of Section 24 of Mongolian Law on Government, and the Project Cooperation Agreement between the UNEP and the Ministry of Environment and Tourism enabling activity “Development of National Action Plans for Small Scale Gold Mining in Mongolia” Project RESOLVES hereby:

1.To establish a working group to develop National Action Plan for Small Scale Gold Mining in Mongolia in compliance with Annex C of the Minamata Convention with following representatives:

**Head of Working Group:**

T.Bulgan Director, Green Development and Planning Department,  
Ministry of Environment and Tourism

**Members of Working Group:**

S.Erdenetsetseg Senior Officer, Green Development Policy and Planning  
Department, Ministry of Environment and Tourism

M.Tulga Officer, Green Development Policy and Planning  
Department, Ministry of Environment and Tourism

Ch.Tsogtbaatar Officer, Mining Policy Department, Ministry of Mining  
and Heavy Industry

B.Khulan Officer, Policy Coordination Department, Ministry of Mining  
and Heavy Industry

R.Myagmarjav Officer, Fiscal Policy and Planning Department,  
Ministry of Finance

Ts.Namchinsuren Officer, Science and technology Policy Department, Ministry  
of Education, Culture, Science and Sports

B.Batmunkh Officer, Employment Policy Implementation Coordination  
Department. Ministry of Labour and Social Protection

Ts.Adyakhishig Director, Human Rights Education and Research Division,  
National Human Rights Commission

O.Amarsanaa Officer, Mining Production and Technology Division, Mineral  
Resources and Petroleum Authority

U.Ulziitsetseg Environment Inspector, General Agency for Specialized  
Inspection

B.Munkhbayar Customs Inspector, Monitoring and Evaluation Department,  
General Authority for Customs

D.Narantuya Officer, Social Insurance Policy Implementation and Research  
Department, General Authority for Health and Social Insurance

Sh.Munkhtulga Officer on Chemistry, Bacteriology and Radiation, National  
Emergency Management Agency

R.Davaadorj Head of Epidemiology and Management Unit, Public Health  
Institute

D.Baatartsol Head of Center for environmental health and Toxicology,  
Public Health Institute

T.Enkhtsetseg Senior Governance and Policy Expert, Sustainable Artisanal  
Mining Project

D.Bayarmaa  
B.Erdene

Executive Director, ASM National Federation  
Director, Mongolian Environmental Civil Council

**Secretary to Working Group:**

G.Purevsuren National Project Coordinator, "Development of National Action Plans for Small Scale Gold Mining in Mongolia" Project

2.To assign to the Head of Working Group (T.Bulgan) the duty to oversee the development of the National Action Plan accordance with the Annex C of the Minamata Convention.

Approved and signed by

MINISTER

D.OYUNKHOROL

## **ANNEX 2. SUMMARY OF FINDINGS FROM SOCIO-ECONOMIC, LEGAL AND HEALTH RELATED SURVEYS AND MERCURY**

Throughout the world, artisanal and small-scale gold mining (ASGM) sector extensively use elemental mercury in gold mining, namely for beneficiation of gold containing ores. Despite the fact that mercury provides cheap and efficient method to obtain gold from ores; it is a very dangerous process and lead to significant mercury exposure and health and environmental risks when used without ensuring safety.

Recognizing that mercury is a chemical of global concern owing to its long-range atmospheric transport, its persistence in the environment once anthropogenically introduced, its ability to bioaccumulate in ecosystems and its significant negative effects on human health and the environment and jointly agreeing on necessity of mitigating hazards and risks associated with mercury, number of countries adopted the Minamata Convention on Mercury in 2013.

Government of Mongolia devotes attention to minimizing mercury use, protecting population health and avoiding from environmental pollution, such as soil, subsequently ratified Minamata Convention on Mercury on 30 April, 2015.

Minamata Convention on Mercury aims at protecting human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds and states-parties to the convention take an obligation to conduct a comprehensive national level study on mercury and develop and implement a National Action Plan that outlines its efforts to reduce mercury use by formal and informal ASGM miners, to ban mercury use, to replace mercury with less toxic substances and eliminating devastating damages caused by mercury use.

Government of Mongolia, in partnership with Global Environment Facility (GEF) and United Nations Environmental Program (UNEP), has implemented “Development of NAP for Artisanal and Small-Scale Gold Mining in Mongolia” Project since 2017. As part of the project, its designated research teams carried out 4 main studies, including “Overview study on current legal, economic and institutional framework for developing NAP for ASGM sector”, “Mongolia national overview study on ASGM sector and mercury inventory”, “Socio-economic study on formal and informal artisanal gold miners” and “Artisanal miners’ health survey” in 2018 with the purpose of collecting baselines data for developing National Action Plan.

For these surveys, wide variety of information sources and previous literatures were used coupled with field observation, research, interview and discussions. Resultants findings fully matched with findings of previous surveys that covered ASGM sector.

Exploitation of minerals through artisanal mining has long been a disputed issue that entailed serious difficult-to-resolve issues, but long-lasting and shared commitments, initiatives and efforts of artisanal miners, non-government organizations, international partners, legislative and executive institutions resulted in progress and consequent creation of national legal framework for ASGM sector, which regulate ASGM sector by Mineral Law, Land Law, Sub-Soil Law, Law on Waste, Law on Toxic and Dangerous Chemicals, Law on Employment Promotion, Misdemeanor Law and Criminal Code.

Minerals Law described “artisanal mining” as activities carried out by citizens in legally set-forth form of partnership or cooperative or unregistered partnership by exploiting deposits that are economically unviable deposits or deposits by tailings and the law obliges to regulate affairs pertaining to artisanal mining by a regulation endorsed by Cabinet. Following the law, Government of Mongolia issued a resolution #151 in 2017 and endorsed “Regulation for mineral exploitation by artisanal mining”. Moreover, Minister of Labor and Social Welfare and the Minister of Mining made a joint decree #A/115, A/123 on 23 June, 2017 and approved “Safety rules for artisanal mines”.

In Mongolian settings, State Great Khural, Cabinet, line ministries, coordinating and implementing agencies and local government agencies, respectively, are in charge of developing, approving and implementing and monitoring natural resources and mining sector policy and actions as assigned by Constitution of Mongolia, Law on Government of Mongolia, Law on Legal Status of Ministries and Law on Administrative and Territorial Units and Their Management, which provides more in-depth regulation.

Despite regulatory framework for artisanal mining has been set, there is need to change the current framework that is entirely regulated by Cabinet resolution to regulation by stand-alone law, and to eliminate gaps and coincidences in current legislations pertaining to artisanal mining.

Both formal and informal small-scale artisanal gold mining remains as important sectors creating sources for livelihoods for millions of people in developing countries. Likewise, ASGM sector sustains livelihoods of more than 20 000 people, including 5000 artisanal miners directly employed in ASGM sector and their family members in Mongolia.

In Mongolia, it is considered that mercury use started in Mongolian gold mining sector in 1990ies. Reasons for mercury use in ASGM sector is found same as other countries, such as easy to use; no need for large human resources and equipment; effectiveness in use in the field; affordability and availability; low level of awareness of artisanal miners on its destructive impact on human health and environment; ignorance of devastating impact despite knowledge; extensive spread of livelihoods below the poverty line; lack of alternative choices; limitations of revenues sources and weak inspection and oversight by law enforcement agencies.

As of present, number of artisanal miners in Mongolia remains unstable with periodic volatility. Number of informal artisanal gold miners that are highly mobile and use difficult and toxic technology, working in the unpermitted fields, not paying taxes and not taking any environmental responsibilities depend heavily on socio-economic situation and vary from time to time. In particular, number of illegal, informal artisanal miners hit its peak in the years following natural disasters, such as dzud, and during the years of economic recessions.

Mongolian National Statistics Office, in cooperation with Swiss Development Cooperation, conducted first-of-its-kind survey among artisanal miners in 2012 covering a total of 13 400 target respondents. Of these target population, 78.2% or 10 500 worked in the ASGM sector. A follow-up survey, made in 2016, covered 6948 artisanal miners from 15 aimags and 1 district of Ulaanbaatar, of which 5108 (73.5%) worked in ASGM sector. 72.3% of these 5108 miners, or 3693 of them, were organized into formal structure while remaining 27.7% or 1415 were informal artisanal miners.

If the findings of these two surveys are compared, it shows that number of people working in ASGM sector decreased two-folds during past four-year period.

Survey teams of "Development of NAP for Artisanal and Small-Scale Gold Mining in Mongolia" Project sampled 15 soums of 5 aimags, out of 15 aimags mentioned above, including Bayangol, Mandal soums, Tunkhel village of Selenge aimag, Bornuur and Zaamar soums of Tuv aimag (both in Central region), Bayan-Ovoo, Galuut, Bumbugur and Jargalant soums of Bayanhongor aimag and Bureghangai soum of Bulgan aimag (both in Hangai region) and Yesunbulag, Taishir, Tsogt, Altai and Chandmani soums of Gobi-Altai aimag (Western region) and carried out a survey in January- April, 2018. This survey covered 375 respondents, including both formal and informal artisanal gold miners in the target area, as well as gold traders.

Of all 375 respondents to the survey, 67.7% were male and 32.3% were female (survey excluded children under age 16). Citizens of age 16- 25 accounted for 5.3% of respondents, age 26-35 for 29.1%, age 36-45 for 30.9%, age 46-55 for 26.9% and age 56 or more for remaining 7.7%. This demonstrates economically active people account for the vast majority of people working in ASGM sector.

In terms of geographical location, Gobi-Altai, Bayanhongor, Selenge and Tuv aimags have more intensive ASGM sector as opposed to other aimags with artisanal mining sector and the largest number of formal and informal miners work in these three aimags.

As specified in the Law on Toxic and Dangerous Chemicals, Government of Mongolia is obliged to approve and update the list of chemicals that are banned and restricted for import into Mongolia, from time to time, and notify the list to relevant international organizations. Subsequently, Cabinet inserted mercury in "List of toxic and dangerous chemicals restricted for use in Mongolia", endorsed by Government of Mongolia resolution #95, Annex 2 (2007) and banned use of mercury in ASGM sector.

A national level inspection, carried out in 2007-2008, on enforcement of Law on Toxic and Dangerous Chemicals, found more than 120 points covering 53.4 hectares of land in 36 soums of 10 aimags with contamination of mercury and cyanide, namely over 200 000 tons of slimes,

base rocks and water points, followed by seizing and destroying 147 mills used for processing gold ores with mercury technology.

With the purpose of introducing mercury-free technology and providing single stop ore processing service for artisanal gold miners, ore processing workshops were established in three aimags, but the accessibility to and availability of these services have been limited requiring miners to travel hundreds of kilometers, to wait for extended hours due to heavy workload, to pay higher prices and due to failure of fair allocation of gold after processing slimes; owing to these hindrances, mercury use still remains hidden in areas with hard rock gold deposits.

According to information provided by Customs General Department, no mercury has been imported into Mongolia since 2008; however illegal transboundary trading of mercury still occurs. In addition, repeated media coverage in mercury leaks, loss, attempting to sell and transportation of mercury demonstrate widespread mercury trade and demand.

Hidden use of mercury is not limited by informal artisanal miners, but also some formal artisanal miners that are formed in compliance with legislations, equipped with necessary machinery, and organized in formal structure for responsible operations, likely use this technologically dangerous metal.

Surveys reveal that Selenge aimag's Bayangol soum as the soum with highest probable use of mercury, Selenge aimag as the aimag with highest use and Central region as the region with high use of mercury.

As part of national overview research, soil, slimes and slime water samples were collected during a field study in January- April, 2018, from Malgar Mountain field in Selenge aimag's Bayangol soum and ore processing workshops in Gobi-Altai aimag's Yesunbulag, Altai and Chandmani soums, respectively, and the results show that mercury content in samples does not exceed permissible level.

Further on, special attention must be paid to the current constraint that both the state environment inspectors overseeing artisanal miners and customs and quarantine inspectors checking border passing of mercury trade are not equipped with professional tools and devices that detect mercury.

Summary of findings from a survey on artisanal miners health unveils 8.2- 17% of artisanal small-scale gold miners suffer from mercury poisoning and related diseases. Results of hair, blood and urine samples and environmental parameter specimen collected from artisanal miners and their operational areas prove that mercury use has shifted to hidden form.

8.4% of respondents to the survey said they previously used mercury, 6.4% saw how it is used and 10.7% said they felt negative health impact caused by mercury. Majority of miners are aware of general adverse effects of mercury on health, such as negative effects on respiratory organs, damage to kidney and heart, effects on neural system, lead to infertility and negative impact on the environment, but don't know how mercury affects their health, what organs are damaged, signs and symptoms and prevention ways while more than 20% don't know it is dangerous. They are willing to get information and have training on these adverse effects; this might be connected to the assumption that there is some hidden use of mercury occurring.

In terms of prevalent diseases among artisanal miners, respiratory and gastric diseases, kidney and backbone diseases dominate among them; mainly due to their working environment, condition and excessive dust. In particular, occurrence of respiratory diseases tends to increase in the past years, with evidence that several miners died due this type of disease. Negative impact on health, which is posed by mercury that miners used in the past, might occur at any time in the future.

Health centers in the soums with ASGM sector lack capacity to detect, diagnose, prevent and provide medical help on mercury and chemicals poisoning and diseases caused by professional mining practice and to disseminate health education and improve public health. They have no technical and laboratory resources for detecting chronic and acute mercury poisoning and for conducting environmental and biological monitoring.

Health insurance coverage for artisanal miners is insufficient and most of them are in need for medical assistance, e.g. from professional medical specialists for in-depth treatment.

There is no health database on informal miners, public and medical health care for them is inadequate and coordination among different units and branches are weak.

Majority of artisanal miners lacks knowledge on legislations and their access to information is found to be uneven.

As for informal artisanal miners, almost no household members in their family work in other sectors showing that their employment and household economics depend heavily on their work in the ASGM sector.

ASGM operations make contributions to not only households' livelihoods, but also it brings positive impact for local development by creating jobs in rural areas, making positive contribution to fiscal revenue generation, impacting positively on households' livelihoods, creating sources for livelihoods for vulnerable groups and making contributions to local aid and donation funds.

During the past years, ASGM operations have become highly organized and formalized; however, there is a steady need to clarify the common areas for ASGM operations, increase bindings environmental responsibilities of citizens engaged in artisanal mining, increase awareness and knowledge of miners on legislations and broadly raise awareness on hazards of mercury among the population.

As of present, legal, political, institutional and social basic framework for ASGM sector has been set; however number of work must be made to address pressing issues and optimize the incumbent interventions step-by-step, including making informal artisanal miners organized into formal structures; creating legal framework for network of procuring, valuing and selling artisanal gold; resolving social issues of miners; optimizing the taxation systems; endorsing technical regulations and guidelines setting the maximum limit of minerals permitted for exploitation by artisanal mining methods; and ceasing use of toxic chemicals, particularly hidden and illicit supply and use of mercury.

### **ANNEX 3. BUDGET FOR IMPLEMENTATION OF THE NAP**

The sources of financing NAP implementation will be as below:

- State and local budget;
- Fees for natural resource use (as indicated in the laws and regulations on environmental protection);
- Grants and loans of international development agencies;
- Funding from private sector organisations;
- Funding from ASGM partnerships and cooperatives;
- Other eligible sources.

## Budget for NAP Implementation

Goal: To reduce mercury pollution from ASGM, ensure environmental sustainability and safeguard safe and healthy environment for people									
Objective 1. To halve mercury emissions and releases and environmental pollution caused by ASGM by fully eliminating harmful technologies used for gold extraction and processing and completely stopping illegal mercury trade and hidden use in ASGM									
No	Strategies	Actions	2020 (mln. MNT)	2021 (mln. MNT)	2022-2023 (mln. MNT)	Sources	Total (mln. MNT)	State/local budget (mln.MNT)	International (mln. MNT)
1.1	<b>To replace and eradicate gold extraction and processing technology and techniques and completely eliminate worst practices that are harmful to human health and environment</b>	Take stepwise measures to detect and stop illegal ASGM activities that use harmful technologies and methods, including mercury use in gold extraction, whole ore amalgamation, burning in open space and buildings in residential areas	20	40	40	State budget, Local budget	100	100	
1.2		Implement a policy and actions to restrict use of metal detector in illegal gold mining	10	10		International organisations, state budget , local budget	20	10	10
1.3		Conduct study on gold extraction and processing technology and techniques, develop feasibility study and investment plan to introduce selected technologies and take measures for introducing technologies in selected soums where hard rock gold mines are heavily concentrated and provide trainings on technology usage and maintenance and processing methods	200	1400	1400	International Organizations, State budget	3000	100	2900
1.4		Take measures to create economic incentives in support of low environmental impact and mercury free technology technique (including ASG miners' credit and savings cooperatives, bank loans and international projects funding).	30	30	500	International Organizations, State budget	560	20	540
1.5		Develop procedures and standards for ASG processing plant operations	15	15		International Organizations	30		30
1.6		Conduct mercury inventory every 3 years at national level		100	100	International Organizations	200		200
1.7		Conduct environmental pollution monitoring of mercury contaminated areas in ASGM sites that have potential for illegal and hidden use of mercury and identify affected zones	30	150	250	State budget, international organisations	430	100	330

1.8	<b>research on risks and exposures to mercury and reduce mercury contaminated and eroded areas through remediation and neutralization</b>	Conduct study on best practices to remediate and neutralize areas contaminated by mercury, implement pilot projects and take stepwise measures for remediation and neutralisation	50	500	1500	State budget, local budget, International organisations	2050	500	1550
1.9		Conduct environmental monitoring in the mercury contaminated areas where previously neutralisation and rehabilitation was done and identify and estimate level of mercury in water, soil and air	30	50	220	State budget, international organisations	300	50	250
1.10		Promote "Frugal Rehabilitation Methodology" to aimags and soums through target-oriented trainings and implement rehabilitation of areas degraded by ASGM by engaging professional organizations and local communities	80	420	1700	ASGM organisations, local budget, International Organizations	2200	300	1900
1.11		Take measures to ensure that miners place rehabilitation fees in the Collective fund for rehabilitation	15	15	20	Local budget, State budget	50	50	
1.12		Maintain the data on the location and size of degraded and eroded land from ASGM, rehabilitation costs, size of rehabilitated areas and expenditure in relevant information database	10	10	10	State budget	30	30	
1.13		Identify border points that have substantial risks of cross-border as well as domestic mercury trade (shopping centers, markets, wholesale trade centers, blacksmith workshops, medical centers and laboratories using mercury storage facility) and elaborate an Action plan for implementation	30	50	150	State budget, International Organizations	230	50	180
1.14		Investigate enterprises that use toxic and dangerous chemicals in production and take measure to enforce "Regulation of storing, transporting, using and disposing toxic and dangerous chemicals" (Joint Resolution of Minister of Environment, Minister of Health and NEMA, No28/40/29 dated 3 Feb. 2009)	10	20	40	State budget, local budget	70	70	
1.15		Take measures to ensure protection and safety of mercury stock warehouse		100	200	International organisations and state budget	300	100	200
1.16		Strengthen knowledge and qualifications of border, customs and police staff to inspect, detect and monitor illegal trade of mercury	20	30	30	International organisations	80		150

1.17		Ensure adequate supply of equipment and clothing for officers in charge of illegal mercury trade track and detection to ensure their safety and occupational health and sanitary conditions	50	70	150	International organisations	200		200
<b>Objective 2. Reinforce optimal system and structure and mandates of the central public administration regulating ASGM, ensure interministerial coordination, enhanced stakeholders' engagement and collaboration and capacity building and enable optimal implementation of ASGM related laws and regulations</b>									
2.1	<b>Strengthen and optimize accountability mechanism, inter-ministerial coordination, institutional structure and mandate for enforcement of Regulation on extraction of minerals</b>	Establish ASGM inter-ministerial council for effective coordination and implementation of regulations, programs and policies on ASGM and NAP and approve its membership and procedures for operations				State budget, International organisations			
2.2		Make assessment of existing policies and legislations regulating ASGM, including land use for ASGM, permits and licenses, gold supply and trading, international and domestic market, labour relations and make necessary revisions of inconsistencies, overlaps and gaps.	20	30		State budget, International Organizations	50	5	45
2.3		Conduct assessment on the progress of implementation of the Regulation for extraction of minerals through ASM		20		International organisations	20		20
2.4		Obligate ASGM organisations to provide report to the soum governor's offices and ensure that soum Governor's office identifies next actions, based on reports and performance of ASG miners' organisations, and incorporate into soum development policy and programme				Local budget			
2.5		Provide methodological advice and instructions to ASGM partnerships and cooperatives to take measures in response to results of monitoring and evaluation and to remedy their violations and breaches	10	20	30	State budget, local budget	60	60	
2.6		Ensure that soum Governor's Office takes measures to oversee the implementation of decisions on illegal mining operations and environmental damages and make publicly available and open records and ASGM's actions and performance on implementation		10	30	State budget, local budget	40		40
2.7	Conduct ASM Survey every four years, estimate ASGM indicators necessary for measuring NAP implementation progress		225	225	State budget, local budget	450		450	
2.8	Identify gold reserve sites to be used for ASGM purpose at national level, update registration and		50	100	State budget	150			

2.9		make the information open and accessible to ASG miners						150	
		Carry out registration of miners	50	30	30	State budget, International Organizations	110	20	90
2.10	<b>Enhance capacities of government staff and strengthen physical resources of research institutions and laboratories</b>	Strengthen physical and human capacities of research organizations affiliated to MET and provide assistance to raise funds and implement pilot projects		100	100	State budget, International Organizations	200	50	150
2.11		Strengthen capacity of staff (staff in charge of environment, OHS, research and analysis, land and licensing, technology etc.) of central and local government organizations to provide advisory and methodological support and deliver training and advocacy activities on occupational health and safety, mercury impacts and risks, Minamata convention <sup>8</sup> environment and rehabilitation methods through Training of Trainers (ToT) and provision of learning and teaching materials, manuals, guidelines and information.	30	30	40	State budget, international Organizations	100	10	90
2.12		Further improve technical conditions of ASM Information Database of MRPA to enable relevant administrators from local government to access, download and upload data and information	50	30	30	State budget, international Organizations	110	30	80
2.13		Develop a procedure to purchase, store and transport and assay gold mined through ASGM		30	10	State budget, international Organizations	40	10	30
2.14		Ensure better control over origin of gold mined by ASGM through improving Due diligence of BOM		20	10	State budget	30	10	20
2.15		Assess feasibility of establishing gold trade centers affiliated to BoM, allowing branches of commercial banks to engage in gold trading as well as setting up specialised gold exchange in aimag centers and organise necessary policy dialogues and knowledge exchange and capacity building trainings and workshops	30	50	50	State budget, international Organizations	130	60	70

2.16		Make investment to strengthen technical and technological capacities of National Assaying Laboratory and enable condition for establishing local assaying divisions in aimags and soums where ASGM is heavily concentrated.		100	100	State budget, international Organizations	200	100	100
2.17	<b>Introduce market-based mechanism to support responsible ASGM</b>	Promote internationally recognized responsible mining standards and certifications such as Fair mined certification, OECD Due diligence, provide technical assistance to ASG organisations to introduce these standards and increase export of eco gold	50	50	50	International organisations	150		150
2.18		Provide support to the BoM to export fair mined eco gold to international market		50	50	International organisations	100		100
2.19		Take initiatives to introduce voluntary reporting in ASGM and organise national forums, trainings and provide advisory service to interested ASGM partnerships		20	20	International organisations	40		40
<b>Objective 3. By 2023, to achieve 80.0% health care service to ASG miners and increase of social and health insurance coverages of artisanal and small scale gold miners by implementing public health and social protection strategies aimed at improving health and occupational safety of the miners and their families and preventing vulnerable groups, especially children, women and pregnant women from exposure to mercury</b>									
3.1	<b>Implement specific strategies and measures on protecting health of artisanal and small scale miners and their families, which are reflected in national policies, programmes and action plans on health</b>	Make assessment on progress of implementation of ASGM related objectives and actions reflected in National policy on health 2017-2026 (Strategy 2.4.1.2), National programme on environmental health 2016-2020 (Strategy 3.6.3), and Implementation plan to reduce negative impacts of chemicals on human health 2018-2021, identify interventions and take measures for effective implementation.	20	20	20	State budget, international organisations	60	30	30
3.2		Conduct health assessment of ASG miners and their families and identify needs for health care service and treatment		100	50	International Organizations	150		150
3.3.		Monitor and enforce implementation of the "Regulation on reporting registering and assessing poisoning from chemicals"	10	10	20	State budget	40	40	
3.4	<b>Take measures to prevent ASG miners, their families, vulnerable groups and target groups including children, women, and pregnant women from exposure to mercury and its</b>	Open and maintain a health records of every artisanal miner, create health registration and monitoring system to process and analyse the ASG miners' health data	10	10	20	Local budget	40	40	
3.5		Strengthen the system of providing regular check-up and preventive medical screening service to ASG miners to reduce occupational		80	70	International Organizations, State budget	150	50	100

3.6	<b>compounds and increase of social and health insurance coverage of ASG miners</b>	diseases and risks of mercury and toxic chemicals' poisoning and ensure follow up treatment and regular monitoring							
		Establish a system to ensure frequent check-up, preventive medical screening and health care service targeted at women miners, pregnant women miners, women of reproductive ages and children from miners' families	30	20	50	State and local budget, international organisations	100	50	50
3.7		Improve technical capacities and antidote supply of aimag/soum health care organisations to be used in detection, diagnosis, responses to chemical incidents and poisoning, monitoring and treatment of mercury-related illnesses		150	100	State budget	250	100	150
3.8		Develop a guideline and standard for diagnosis and treatment of chemical incidents and poisoning		50	50	State budget and international organisations	100	40	60
3.9		Take measures to ensure full coverage of ASG miners in health and social insurances and enable target groups to fully access social protection and healthcare services	10	15	15	Local budget	40	40	
3.10	<b>Provide information and knowledge on negative impacts and risks of exposure to mercury and its compounds as well as occupational health and safety aspects of ASGM</b>	Provide a guidance and instructions on diagnosis and treatment of chemical incidents and poisoning to medical and healthcare staff and conduct regular trainings on how to detect, diagnose and treat physical and mental changes and diseases due to exposure to mercury		80	50	State budget, international organisations	130	20	110
3.11		Promote, disseminate and introduce Interactive training module on chemicals safety developed by WHO, promote mobile phone applications and provide instructions on usage	20	40	40	International organisations	100		100
3.12		Train medical and healthcare staff of aimags and soums with ASGM sites on diagnosis and treatment of occupational diseases, work related illnesses and emergency medical services in case of injuries and traumas	30	30	30	State budget, International organisations	90	30	60
3.13		Provide soum medical staff with the information necessary to promote and consult on consequences of mercury and its impacts on human health	20	20	40	State budget, International Organizations	80	20	60
3.14		Disseminate information and deliver knowledge on mercury impacts on human health and risks to	25	40	40	State budget, International organisations	105	25	80

3.16		exposure to local community, miners as well as vulnerable groups that are vulnerable to exposure							
		Provide reproductive health, sexual and family planning education to young miners and the women	25	25	30	International Organizations, State budget	80	20	60
3.16		Distribute information on the benefits of health and social insurance services, aids and services covered by the insurances, importance of social insurance, pensions and allowances to ASGM miners through Soum Social Insurance Divisions and reach out every miner by effectively using national and local TV channels, social media and ICT tools	20	20	30	International organisations	70		70
3.17	<b>Enable better occupational and labour safety in ASGM and ensure effective implementation of occupational health and safety norms and standards and reduce injuries and accidents in ASGM sites</b>	Jointly with local government authority introduce sanitary and hygiene procedure at ASGM sites and solve the problems relate to household solid waste collection, transportation, and disposal and pit toilets		50	50	Private sector, local budget	100	20	80
3.18		Improve enforcement of "Regulation on Safety of Artisanal Mining" and ensure that every artisanal miner use labour protective clothing and safety gears	20	20	20	Private sector, local budget	60	10	50
<b>Objective 4. Enable ASGM miners and the social groups that are vulnerable to ASGM negative impacts to gain knowledge on mercury impacts, environment, health, safety and the legislations and ensure that increased access of miners to information.</b>									
4.1	<b>Enable ASGM miners' access to information on ASGM related laws and regulations, mercury free technology, occupational health and safety norms and standards, mercury impacts, health and social insurance and protection through "ASM knowledge center", social media and local media channels</b>	"Support "ASM knowledge center" by enriching the platform with simple, user friendly and visual information and news on ASGM regulation and compliance, low environmental impact and mercury free technology, fair mined gold, mercury impacts, health, occupational safety, social protection	30	30	40	State budget, International Organizations	100	15	85
4.2		Further develop Facebook-based platform of ASM Knowledge Center and ensure easy access and use of the information available on ASM Knowledge Center	30	30	40	International Organizations	100	10	90
4.3		Broadcast documentary film and short videos through local TV channels and disseminate news on mercury impacts on human health, mercury free technology and responses in cases of exposure to mercury targeting specific groups	10	10	30	Local budget, International Organizations	50	10	40

4.4	<b>Organise systematic trainings to ASG miners to provide knowledge on laws and regulations, human rights, gender, employment relations, environment, occupational health and safety, mercury impacts, sanitation and hygiene, insurances, social protection services</b>	Assist and collaborate with NGOs and industry associations in organising trainings, campaign and events for ASG miners to provide knowledge and information on legal framework, human rights, gender, labour relations, environment, health and safety, mercury impacts and social protection and support initiatives that positively influence ASG miners' behaviours and attitudes	30	30	40	International Organizations	100		100	
4.5		Show the exhibition "Mercury-Silent Death" in soums with primary rock deposits and organise campaign and events to raise awareness on mercury impacts	50	50	50	International organisations	150		150	
4.6		Develop special training modules and a set of materials on mercury impacts, necessity not to get involved in illegal use, trade, storage and transportation of mercury and immediate measures in cases of accidental exposure to mercury and organize regular campaigns and trainings for target groups by engaging Governor's office, health centers and schools at soum level where ASGM is concentrated.	30	20	30	International organisations	80		80	
4.7		By engaging CSOs that work in the areas of protecting rights of disabled people, prevent risks of disability due to inadequate use of mercury, develop handouts and materials targeted to disabled people, disseminate information	30	20	30	International organisations	80		80	
4.8		Take measures to prevent and disputes, crime, domestic violence among miners and between miners and local community	10	10	20	Local budget	40	40		
4.9		Organize trainings and awareness raising events on children's rights and protection in collaboration with local authorities responsible for children and families and by engaging school social workers and other relevant stakeholders and reduce engagement and labouring of children in ASGM activities		5	10	Local budget	15	15		
4.10		<b>Increase engagement of government and non-governmental organisations, educational organisations, industry associations and</b>	In collaboration with the international projects targeted to reduce poverty, increase employment opportunities and improve sustainable livelihood of rural community support and co-finance	20	30	50	Soum Development Fund, International organisations,	100	20	80

	<b>private sector in initiatives aimed at providing ASG miners with decent work opportunities in economic sectors other than ASGM</b>	miners' micro business and work in other economic sectors				grants and donations			
4.11		Collaborate with the private sector, industry associations and civil society to involve ASG miners, especially women and young people in knowledge and skill building trainings necessary to work in other economic sectors, identify employment opportunities and other related issues that could be solved within Corporate social responsibility of private sector and make collaborative efforts and joint actions for implementation	20	50	50	Local budget, private sector	120	20	100
4.12		Implement measures targeted to help women miners and single mothers/miners participate in formal and informal education, obtain skills and work experiences needed to work in other economic sectors by providing internships, mentorships and casual and part time work and by finding jobs in economic sectors other than ASGM	30	50	50	State budget, international organisations	130	30	100
4.13		Take measures to enable children and young people, who dropped school, to complete secondary and vocational education, formal and informal education and obtain secondary education and increase access of miners' children to school				State budget, local budget			