State Regulation Centre of Environmental Protection and Ecological Safety of the State Agency of Environmental Protection and Forestry of the Government of Kyrgyz Republic



National action plan to reduce the use of mercury in artisanal and small-scale gold mining in the Kyrgyz Republic in accordance with the Minamata Convention on Mercury



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I. Executive summary

The World Health Organization (WHO) recognizes mercury as a strong neurotoxin and one of ten main chemicals or groups of chemicals that represent an enormous challenge to the public health. As a result of the recognition by the world community of the adverse effects of mercury and its compounds on human health and the environment caused by releases of mercury and its compounds, the Minamata Convention was developed. This is a legally binding international agreement designed to protect human health and the environment against the harmful effects of mercury. The text of the Minamata Convention was agreed in January 2013 by more than 140 countries, and adopted on October 10, 2013 in the city of Kumamoto (Japan).

In Kyrgyzstan, mercury is used in the health care and production sectors. For example, the public sector uses mercury-containing equipment in the hospitals; laboratories and other facilities have significant amounts of mercury. Also, mercury is used as an additive in vaccines.

Artisanal and small-scale gold mining is also carried out in Kyrgyzstan in different areas of the country. It is one of the main mercury-using sector of the country. Unofficial estimates suggest that between 1,200 and 75,000 people could be involved in this mining activity. Thus, Kyrgyzstan has notified the Minamata Secretariat that the country has more than insignificant use of mercury in the artisanal and small-scale gold mining sector.

It is of utmost importance to evaluate the scale of the problem associated with the use of mercury in the artisanal and small-scale gold mining sector, and to develop a National Action Plan to assess the risks of exposure to mercury in the artisanal and small-scale gold mining of the Kyrgyz Republic.

Usually, a large amount of mercury is used in the artisanal and small-scale gold mining, and often in very unsafe conditions. Since the demand for gold is growing because of its high price in the market, the use of mercury is expected to continue to grow.

The Government of Kyrgyzstan has recognized that the use of mercury in this sector exposes significant risks to human health and the environment, whereas the use of mercury for gold mining in artisanal and small-scale gold mining in Kyrgyzstan is currently not regulated in any way. And, though formally prohibited, there is no control over its enforcement.

The total number of gold diggers estimated during the study count to the minimum of 2400 peoples while officially it was registered only 11 gold-diggers. Hopefully there are no women and children workforce during digging but the household effect much during gold processing.

The total volume of gold produced by diggers is estimated to 1124 kgs of gold annually as minimum estimation. During gold processing it is estimated that mercury emissions reach at least 404 kg annually but the total quantitates of mercury used is estimates to 2500 kgs annually.

There are no observed the worst practices in the Kyrgyz Republic according to Annex C of Minamata Convention.

The main approach of the implementation of the strategy is realization of opportunities but not creating additional prohibitions. But the priorities are peoples' health within economic possibilities.

II. Introduction and background information

The main goals of the study on the National Action Plan (NAP) on the reduction of the use of mercury in the artisanal and small-scale gold mining is to explore the sphere of activities in the artisanal gold mining:

(1) identify sufficient information to inform the development of the strategies of greatest concern and identify ways to measure the progress of these strategies in reducing or eliminating the use and exposure of mercury in ASGM;
(2) identify the volume of baseline data collected in the field;
(3) develop and approve a work plan for the implementation of the strategy.

The objectives of the NAP implementation can be summarized in 4 points:

1) ensure a reliable level of understanding of the artisanal and small-scale gold mining activities in the Kyrgyz Republic;
2) identify the best and the worst gold refining practices;
3) localize the places of the highest mercury contamination caused by the ASGM activities;
4) define the flaws of the NAP.

The current socio-economic situation in the Kyrgyz Republic has led to the emergence of artisanal gold mining. Previously, in order to legitimize this process, government agencies of the Kyrgyz Republic adopted various regulatory legal acts. A recent document was the Resolution of the Government of the Kyrgyz Republic No. 524 of July 23, 2015 under the title "Regulations on the implementation of individual artisanal mining of alluvial gold in the territory of the Kyrgyz Republic."

Since this activity is not under reliable control and accounting, this assessment is a set of data from direct observations and the use of indirect indicative parameters

Earlier, there were expeditions to the sites of the most intensive artisanal gold mining with the intention of obtaining the most statistically reliable information about the scale of development, marketing, the role of artisanal mining in economic activity, the extraction technologies, the income and living conditions of miners. The study was conducted by means of a questionnaire survey according to the methodology of the United Nations Environment Program (UNEP).

The study covered the following areas of the artisanal activities: Jalal-Abad region (1) – the Ala-Buka and Chatkal districts; Naryn region (2) – the Kumbel and Toguz-Torin districts; Issyk-Kul

region (3) – the Saryjaz district; Talas region (4) – the Aral district; Batken region (5) – the Kadamjai district.

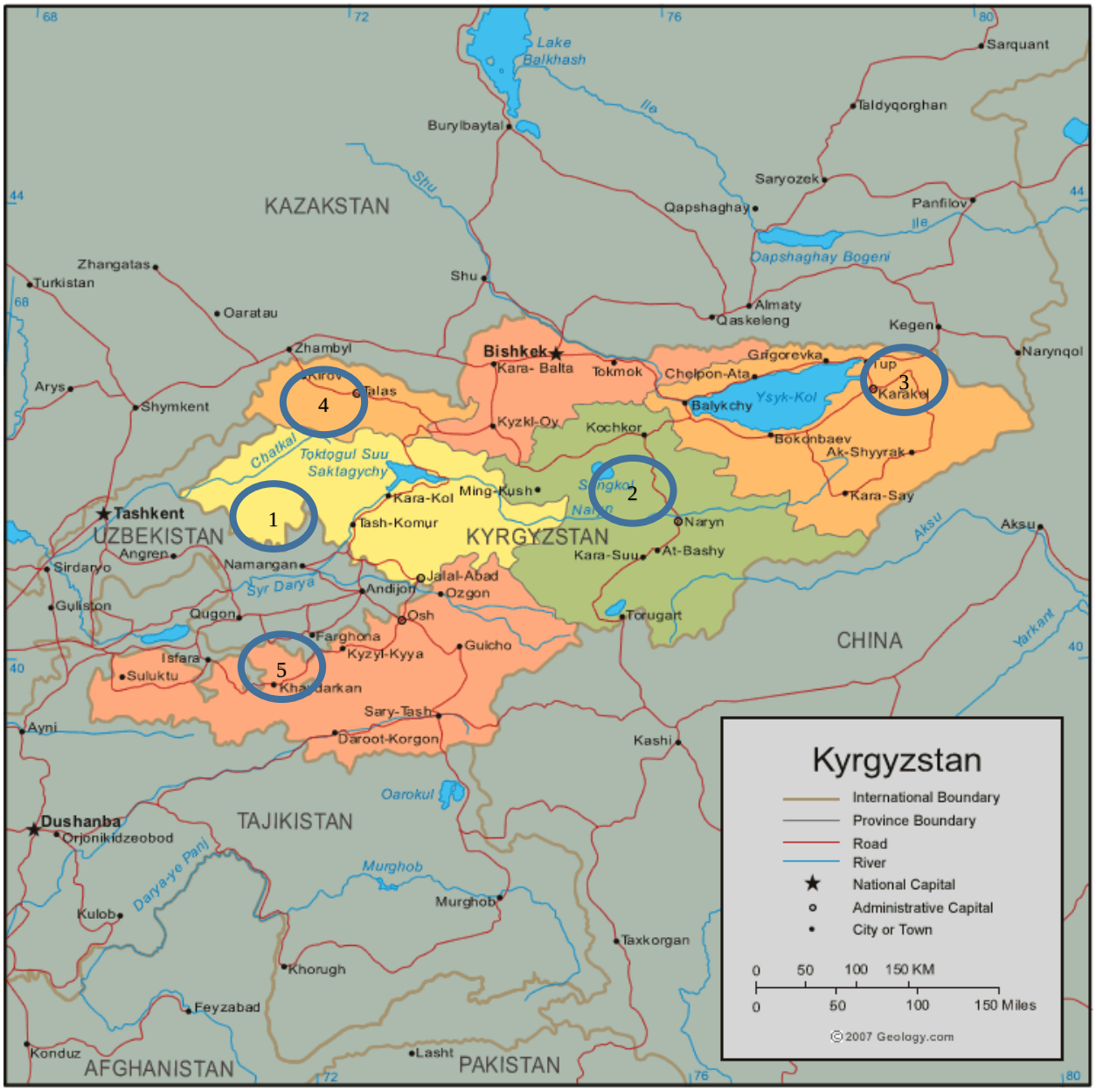


Figure 1. Kyrgyz Republic. Administrative map (in circles are areas of the artisanal gold mining activities)

III. National overview of ASGM sector

The study of ASGM activity in the Kyrgyz Republic were divided into 4 stages:

1. The review of the existing documents. The main focus was made on the previous made researches and studies (Overview of illegal gold mining, 2004 by World Bank; Trainings for gold miners; 2004 by TACIS; Explanation notes for legal act of small-scale gold mining, 2015 by Ministry of economy of the Kyrgyz Republic);
2. Interviews with different members of gold-digging community and relative industries;
3. Visits to the 5 priorities areas, which can provide safety for the reviewing crew but it is produced up to 97% of small-scale gold in the Kyrgyz Republic;
4. Finalising of the report.

The detailed information on each stage is presented further.

1. Earlier studies on artisanal mining

Placer gold mining on the territory of Kyrgyzstan has a longstanding history.

In the second millennium B.C.E., gold was extracted from the alluvium of the Chirchik river (in the lower reaches of the Chatkal river). This was noted by the famous archaeologist M. E. Masson, based on the finds of tools made of bronze and other objects found in the deposits of the Chirchik river, processed with the hands of a Bronze Age man.

Information about the development of gold-bearing placers at the beginning of our era in the mountain framing of Fergana is recorded in the ancient Chinese sources (751). The Arabic written sources of the X-XI centuries report that within the Karakhanid Khaganate, the gold was mined mostly in Fergana in the valleys of Kassansay, Sokha, Isfayram and Shakhimardan.

The largest ancient placer mines were found in the Kassansay valley on the southern slope of the Chatkal ridge. The alluvial sediments of the terraces of different levels and the bed of the river along its entire length (over 70 km) have traces of mass processing, and in large areas are completely processed. The volumes of the washed material in each of these areas exceed several million cubic meters. Based on the minimum gold grade in the Kassansay placers (250-300 mg/m^3), the volume of the mined metal can be estimated as tens of tons.

The ancient miners had a rather smart system of extraction and washing the sands with the help of ditches dug from the streams to the mining site. The gold was washed in the ditchs, the walls of which were reinforced with boulders. The gold, as reported by Abu Raikhan al-Biruni (943), was concentrated on the sheep skins. The extraction of gold from the concentrate was conceivably done by amalgamation. This is evidenced by the vessels for storing mercury found at the settlements of those times (I. A. Mezgin, 1977).

An ancient large-scale placer gold mining was also discovered in Suusamyr (Tokoilu, Kara-Bulak), in Kara-Balta (Kel), in the basin of the Chatkal river and its tributaries (Kuru-Tegerek, Sulu-Tegerek, Chanach, Chandalash, Jany-Bazar, Aktash, Naiza, etc.), in Talas (Maimak, Chonur, Kok-Kiya, Aktash), Naryn (Maly Naryn, Bashnura, Balykty, Kainar), Sokhe (Kshtut), Saryjaz (the Saryjaz, Echkili-Tash, Kuylyu placers), i.e. almost across the entire territory of Kyrgyzstan.

In the first decades of the 18th century Russia was informed of the placer gold mining in the upper reaches of the Chirchik river, that is in the Chatkal river basin in the modern territory of Kyrgyzstan. There is a description of the method of sand washing with the help of carpets (rugs), on which gold particles got stuck. According to a Tashkent merchant, four people working together could wash between 10 to 30 gold zolotniks per person a day (1 zolotnik = 4.3 g).

After Kyrgyzstan joined Russia, Russian entrepreneurs familiar with gold mining in the Urals, Altai and Siberia showed an interest in the placers of the Tien Shan mountains. There is information that in 1899, head miner Novikov panned 930 puds of gold-bearing sand on the Chandalash river, and received about 35g of gold. A test panning was also carried out at the Maimak placer.

The next stage of the development of alluvial deposits continued in the 30s and 40s of the last century. It started with the unregulated mining of the placers of the Chatkal district by small groups of miners, the number of which was gradually increasing. The areas of their activity also expanded, gradually covering the valleys of the rivers of Chatkal, Chandalash, Kassansay (Jalal-Abad region now), Naryn, At-Bashi, Kumbel (Naryn rigion), as well as a number of the rivers of the southern Kyrgyzstan – the Sokh, Ak-Bura, Kok-Su (the Alay valley in the Batken region). Miners also penetrated into such remote areas as Suusamyr and Saryjaz, where they worked on spits and shallows during the low-water periods.

A spontaneous artisanal mining of placers gradually went under the regulation of the state-owned Sredazzolotorazvedka Trust. By the end of the 30s, a total number of legal miners reached 2,000. The miners united into joint ventures of up to 40 or more people, but on the placers they worked in groups of 3-5 people, which is convenient when digging deep shafts and tunnels. The terraces of various levels, the floodplain areas with a close placer bedding rock, river spits, and proluvial river fans were mined. Those areas were considered profitable if it was possible to pan 1g of gold per person per day. The gold was washed in wooden trommels and in sluices using only muscular strength. Amalgamation was used to get gold from concentrates. The mined gold was accepted by the Sredazzolotorazvedka Trust.

In the forties, the annual gold production at the Kumbel mine reached 25 kg. Based on the total number of miners (2,000 people) and the productivity of their work, the total amount of the gold mined on the territory of Kyrgyzstan for a season of 4 months can be estimated as 200-250 kg.

Due to the prospecting work, the entire territory of Kyrgyzstan was explored in a short time and many gold-bearing sites were found. This proved that a successful artisanal gold mining is possible.

Geological parties searched and assessed the placers in the areas of artisanal gold mining. The most successful operations were carried out at the Kumbel mine, where the stocks of gold were counted. The artisanal mining operations were wrapped up after the end of the Second World War.

In the eighties of the last century, the intensive prospecting and study of placer deposits restarted. For 10 years in the territory of Kyrgyzstan, more than 40 placer deposits were explored, which at that time were of industrial importance because of the high world prices for gold. Some of them (Kuru-Tegerek, Sulu-Tegerek, Karatyube, Buzuk, Baymak, Karaunkur placers) were explored thoroughly, which made it possible to carry out industrial mining operations. Those deposits were estimated between 500 kg to 1 ton of metal each. The average gold grades are low ranging from 200-250 mg/m^3 to 0.5-1 g/m^3, although in some areas, the gold grades were up to 30 g/m^3.

In the 90s of the last century, the development of placers was carried out by mining artels of up to 20-40 people using sluice boxes and trommel scrubbers with a capacity of up to 40 m^3 per hour. The Altyn-Kum artel at the Sulu-Tegerek placer mined 34 kg of gold during one summer season. In 1994-1994, the Kyrgyzaltyn state-owned concern was developing the Chandalash-Nizhny placer. Now the remains of the placer are being exploited by individual miners. Private companies mined the placers in the basins of the rivers of Tokoilu, Karabulak, Kumbel group, Balykty, At-Bashi.

In 1993-1994, the following gold-placer deposits were involved in mining: Kumbelsu, Birlusu, Orto-Tokoy, Kalai, Ishtamberdy, Nizhniy Chandalash, Sulu-Tegerek, Kuru-Tegerek, Tokoilu, Kara-Bulak and Verkhne-Suusamyrskiy.

The closure of the operations of most private companies in the second half of the nineties of the last century was caused by the fall in the price of gold on the world market, the mining out of the aindividual placers (Kumbelsu, Birlusu, Saryjel), a poor organization of work (Balykty), and the flaws in the legal system that barely protects gold miners from arbitrary interference of local authorities and other government agencies.

Now, the organized artisanal gold mining operations have resumed. The artel mining of placers is being carried out at the licensed Kynda placers in the Aksai valley and at the placer of Karabulak in Suusamyr. In the old alluvial gold areas of Chatkal, Kassansay and Naryn, a wave of individual informal artisanal mining has reemerged. In the areas most accessible for mining, there is a growing number of miners equipped with very primitive tools of work - a pick axe and a shovel.

For a few years, the most accessible areas had been totally mined out, and in many places miners switched to the underground sand mining by digging prospecting shafts and tunnels.

2. Geographical distribution of artisanal mining

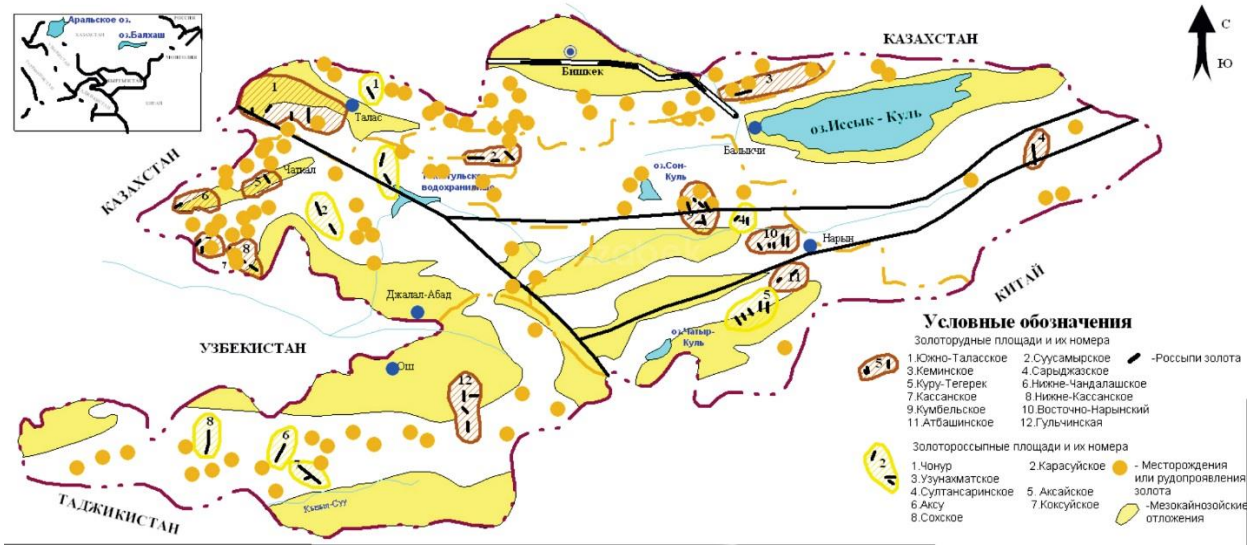


Figure 2. Kyrgyz Republic. Location of main placer gold deposits.

Geographical distribution of the main placer gold mines in the Kyrgyz Republic:

Brown line is root gold blocks and its numbers (1 – South Talas, 2 – Suusamyr, 3 – Kemin, 4 – Sary-Djaz, 5 – Kuru-Tegerek, 6 – Nizhne-Chandalash, 7 – Kassan, 8 – Nizhne-Kassan, 9 – Kumbel, 10 – Vostocnho-Naryn, 11 – Atbashy, 12 – Gulcha)

Yellow line is placer gold blocks and its numbers (1 – Chonur, 2 – Karasu, 3 – Uzunahmat, 4 – Soltonsary, 5 – Aksai, 6 – Aksu, 7 – Koksu, 8 – Soh).

Orange circle is gold deposit.

Yellow solid shading is Mezo-Cainozoic rocks.

No.	Name of the district	Number of mining sites				Estimated number of miners
		Small*[1] (<100)	Average*[2] (100–1000)	Large*[3] (>1000)	Total	**2400**
1	Valley of the Kassan River with tributaries	100	30	12	142	400
2	Residual placers of Chaar	100	20	2	122	150
3	The area of the Tereksay deposit	100	20	0	120	150
5	Naiza-Tugai	50	0	0	50	50
6	Nizhny Chandalash	50	0	0	50	50
7	Jartysu	50	0	0	50	50
8	Chakmaksu	50	0	0	50	50
9	Chanach	80	0	0	80	100
10	Bashky-Terek	80	0	0	80	100
11	Kuru Tegerek	80	0	0	80	100
12	Sulu Tegerek	80	0	0	80	100
13	Uzun-Akhmat River Valley	100	20	5	125	150
14	Karasu River Valley	80	0	0	80	100
15	Suusamyr River Valley	30	0	0	30	30
16	Tokoilu	10	0	0	10	10
17	Karabulak	10	0	0	10	10
18	Chonur	30	0	0	30	30
19	Assy	20	0	0	20	20

20	Kok-Kiya	10	0	0	10	10
21	Taldy-Bulak	10	0	0	10	10
22	Aktash	10	0	0	10	10
23	Aral village	20	0	0	20	20
24	Naryn River Valley (before Naryn city)	100	20	0	120	150
25	Maly Naryn	80	0	0	80	100
26	Bashnura	20	0	0	20	20
27	Chyrpykty	30	0	1	31	30
28	Ardakty	20	0	0	20	20
29	Kumbelsu	20	0	1	21	20
30	Berlusu	20	0	0	20	20
31	Saryjel	30	0	0	30	30
32	Kara-Unkur	20	0	0	20	20
33	Baibolot	30	0	0	30	30
34	Salton Sary	20	0	3	23	20
35	Aksai Valley	30	0	0	30	30
36	Kyndy	30	0	0	30	30
37	Atbashi River Valley	50	0	0	50	50
38	Jangiger	30	0	0	30	30
39	Ulan	30	0	0	30	30
40	Kainar	20	0	0	20	20
41	Balykty	20	5	1	26	20
42	Sary-Jaz River Valley	10	0	0	10	10
43	Gulcha River Valley	10	0	0	10	10
44	Sokh River Valley	10	0	0	10	10

*[1] – small scale digging site according to this study is less 1 gr daily gold producing place where 1-2 diggers work.

*[2] – average scale digging site according to this study is 5 – 10 gr daily gold producing place where 3-5 diggers work together.

*[3] – large scale digging site according to this study is more 10 gr daily gold producing place where more than 5 diggers work together.

3. Information on gold mining and processing

Most miners work 3-4 months a year because of hard working conditions and unfavorable climate and environmental factors. At the same time, artisanal gold mining in the Naryn region may last about 6-7 months and usually includes a warm season. In the southern regions, for example, in Chatkal, the climate and environmental conditions make it possible to conduct gold mining all year round. In addition, it is necessary to take into account a seasonal nature of the agricultural work, since most miners work on their farm lands and household plots as well.

As a rule, the miners give preference to secondary high-lying bar placers and placers located in the floodplain and above-floodplain terraces adjacent to the watercourse know as alluvial placers. They eliminate the time-consuming transportation of sands to the washing places, but at the same time they have to spend a full working day in the cold water.

The sands are washed in metal or wooden bateaus or dippers. Less often, makeshift sluice boxes are used, which are short wooden gutters lined with patterns, which are used as corrugated rubber carpets, usually used in car interiors This technique increases labor productivity, but is accompanied by large losses of gold due to the short length of the sluice and the impossibility of a full-fledged washing of the clay fraction.

The development of placers, localized in high terraces, requires either the delivery of sands to the river, or the rise of water to the place of extraction. In addition, the thickness of the peat in the high terraces is large and forces to go through dangerous underground workings.



Figure 3. Naryn. Gold diggers' dugout (common temporary lodge).



Figure 4. Naryn. Gold digger in adit (abandoned in Soviet time).



Figure 5. Naryn, Digger in selfmade adit.

Prospectors are totally unaware of the mining system usually practiced by organized artels. The miners of the last century always carried out exploration work aimed at outlining the productive body of the placer. Now individual gold miners do not carry out such work and try to track down gold-bearing streams in the process of mining. As a result, their workings acquire the appearance of bizarrely branching ditches and, of course, are accompanied by excessive labor costs and losses. On the placers of high terraces with significant peat thickness, sometimes leased equipment such as wheeled bulldozers, excavators, pumps are used. Occasionally, adits are dug, the maximum of which has a length of up to 50 m. The walls of adits and deep trenches are sometimes fastened with boulders.

The sands are washed to a gray concentrate. Then the concentrate is dried and blown to the state of black concentrate with the loss of a thin fraction of gold. The small gold particles are extracted using amalgation. Black concentrate can already be sold to a dealer, but sometimes the nitric acid extraction is used to remove sulphides and iron oxides.

In Kyrgyzstan, the use of mercury in gold mining is prohibited by law, but it must be admitted that neither the authorities nor public environmental organizations can control the use of mercury technology in gold extraction.

According to the Regulation on prospecting for the extraction of stream gold in the production of works related to gold mining, an individual prospector has the right to use permitted technologies and equipment, limited in productivity and exclusively the gravity method of gold extraction. It is strictly prohibited for individual miners to use the technology of gold extraction with the use of

potent toxic substances such as cyanidation, amalgamation, etc. An individual miner must independently ensure compliance with the labor safety rules, the protection of subsoil, and environmental, and is responsible for violations in accordance with the current legislation. However, no prohibitive documents apply to miners. Large miners use mercury and nitric acid to extract gold and they understand that it is illegal but there is no way for them to extract gold in the current situation another.



Figure 6. Naryn. Self-made rumble.

Penetration of mercury into the bodies of miners is possible in the form of vapors through the lungs, partly through the gastrointestinal tract. Penetration is also possible through the unbroken skin when squeezing out mercury from the amalgamated concentrate. Mercury has the ability to be deposited in parenchymal organs. The occurrence of acute mercury intoxication is extremely rare and only under industrial conditions in the emergency situations. Miners, under the condition of continued exposure to mercury in high concentrations, are likely to develop chronic intoxication. The severity of clinical symptoms depends on the duration and massiveness of mercury exposure, and on the individual sensitivity of the body.

The initial stage of intoxication is characterized by a neurotic syndrome with a pronounced vegetative disturbances of a sympathetic-tonic orientation. Hyper-function of the thyroid gland is possible with the associated "eye" and other symptoms. Mercuric encephalopathy proceeds with a peculiar disorder of the psyche "mercurial erytism" a combination of increased excitability with painful shyness. Signs of polyneuritis may appear.

Changes in the internal organs at chronic mercury intoxication have a dysregulatory nature and occur according to the type of visceroneurosis. Intestinal dyskinesia, gastritis, functional disorders of the cardiovascular system are most often.

Compliance with the basic rules for handling mercury will certainly reduce or eliminate its impact on the miner. The greatest danger is the use of mercury by many miners because of pollution of the watercourses. An example is the Kumbelsu placer. In the forties of the last century, miners widely used amalgamation procedure. After the termination of mining, over time, the

concentration of mercury in the water returned to normal, but significant amounts of it settled on the bedrock. In 1994, the works was resumed without the use of amalgamation, but because of the stirring of river sediments enriched with free mercury, the concentration of this metal in the water exceeded many times the maximum permissible concentration (MPC). Currently, local individual miners at the Kumbelsu placer receive mercury in the process of gold mining.
The contamination of watercourses with mercury by miners is an acute environmental problem in the Kyrgyz Republic and requires the most careful and urgent attention.
Of course, after the development of the site, no reclamation is carried out.
There is a high number of miners with colds caused by primitive working conditions and uneasy life. Miners at the work site do not even have a tent to hide in bad weather. A great harm to the health of miners is associated with their feet and hands being always in the icy mountain waters. Daily exposure to cold water can lead to serious diseases associated with regular hypothermia.
The study has revealed a high injury rate among miners associated with ignorance or disregard for elementary work safety rules. At best, the walls of the workings are supported by river boulders.
The concentrate obtained during prospecting activity is of 575 fineness of gold.

4. Assessment of mercury use in artisanal mining

The using of mercury during ASGM were estimated by calculation method i.e. it was impossible to make it instrumentally due to unsafe situation for monitoring crew.
Mercury vapors are rather heavy and poorly dispersed, but they are well transported by air currents over fairly long distances in the form of a stable "cloud". Such "clouds" and streams can spread chaotically down the terrain and appear in the most unexpected places.
Thus, contaminated areas during non-industrial mining are not localized, they can be found in residential buildings and outbuildings where miners live and work, along river channels, and pits around villages where miners live and work in dumps.
A methodology for identification of the areas contaminated with mercury:
- Acute mercury poisoning, chronic characteristic manifestations;
- Instrumental monitoring;
- Concomitant pollution of the environment: discharge of the spent nitric acid on the ground (in the summer season, such places can be found by specific damage to vegetation).

Mercury removal method	**Emissions to atmosphere**	**Release with water**	**Solid wastes**	**Risks of mercury loss to land**
Burning of mercury without retort	96-98 %	2-5 %	Up to 1% (with fabric, suede)	High risk of spilling mercury with water on the ground
Burning of mercury using a retort	0 %	2-5 %	The same	Release with vapours at poor tightness

Dissolution in nitric acid	1-2 % with nitrogen oxide vapors	2-5 %	About 10% when separating mercury from acid About 98% - if mercury is not collected	High risk of soil contamination with nitric acid mixed with mercury
Note	Subsidence to the ground	Outwash only		

Evaporation of mercury without retort

The total number of miners included in the assessment is 500 people (Large)

The amount of original mercury is approximately 1:1 (1 part of visible gold is 1 part of mercury) according to the average figures as per usage of mercury during soviet time when mercury was legal and this figures were confirmed by miners.

Approximately 50% is returned to the jar by extrusion/filtration of excess mercury.

Received compound: 50% gold and 50% mercury

Calculation per 1 g of gold per day - 0.5 g of mercury (min 0.2), losses to the environment 100%: specific value of losses by components (g):

0.49g Hg/1g Au emission,

0.015g Hg/1g Au release,

0.005g Hg/1g Au losses

A working cycle - 225 days a year

The number of artisanal miners enriching gold with amalgamation is 250 people.

Total in the Kyrgyz Republic kg of mercury per year: N * 10g Au/day * 225 days * g: 1000

Emission - 275 kg Hg

Releases - 8.4 kg Hg

Losses - 2.8 kg Hg (max.)

Totally, a maximum emissions of 286 kg of mercury per year, a minimum of 114 kg of mercury per 0.562 tons of Au.

Other losses: 1-2 kg of mercury leakage (negligence, incaution).

Dissolution of mercury in nitric acid

Total number of miners included in the estimate - 500 people (Large)

The amount of source mercury is about 1:1 (1 part of visible gold 1 part of mercury).

Approximately 50% is returned to the jar by extrusion/filtration of excess mercury.

Received compound: 50% gold and 50% mercury

Calculation per 1g of gold per day – 0.5 g of mercury (min 0.2), losses to the environment 13-100%:

0.008 g Hg/1g Au emission

0.015 g Hg/1g Au release

0.05 g Hg/1g Au waste (10% of miners) and 0.49 g waste (90% of miners),

A working cycle - 225 days a year

Number of miners enriching gold by amalgamation with nitric acid (250 people)

Totally in the Kyrgyz Republic kg of mercury per year: N * 10 g Au / day * 225 days * g: 1000

Emissions -4.5 kg Hg

Releases -8.4 kg Hg

The rest-251 kg Hg (max.).

Totally, a maximum of 289 kg of mercury per year, a minimum of 116 kg of mercury per 0.562 tons of Au.

Other losses: 1-2 kg of mercury leakage (negligence, imprudence)

The total mercury loss in the Kyrgyz Republic from gold mining activities is 233÷578 kg per year, i.e. an average of 404 kg of mercury, or 360 kg of mercury/1 ton of gold.

Of these, by component (on average):

Emissions into the atmosphere– 195.4 kg/year

Releases – 11.7 kg/year

Solid waste – 177.4 kg/year

Other losses – 2-4 kg

Continued illegal use of mercury for enrichment of gold-containing concentrates and raw materials

Taking into account the maximum estimate of the volume of gold mining by ASGM using mercury as minimum to 1124 kgs and its approximate losses during the amalgamation of concentrates (10-20%), the total emissions of mercury for the amalgamation of gold may be in the range of 404 kgs as minimum but the baseline estimates of the quantities of mercury used is 2500 kgs.. Probably, for the same purposes, the mercury that is released during the processing of gold and mercury-containing human-induced raw materials can also be used. In the middle of this range lies the estimated value of 6 tons of mercury totally used per year, which is unofficial information provided by a person involved in the production of the secondary mercury and who did not want to give information on the supply of mercury to gold mining enterprises officially. The compliance between the estimated number and the unofficial information on the amount of mercury used for amalgamation of gold-containing raw materials confirms the reliability of the calculations.

5. Legal issues

Currently, in the field of regulation of artisanal gold mining in the Kyrgyz Republic, a resolution of the Government of the Kyrgyz Republic "On approval of the Regulation on the implementation of individual artisanal mining of alluvial gold in the territory of the Kyrgyz Republic" of July 23, 2015 No. 524 is in place.

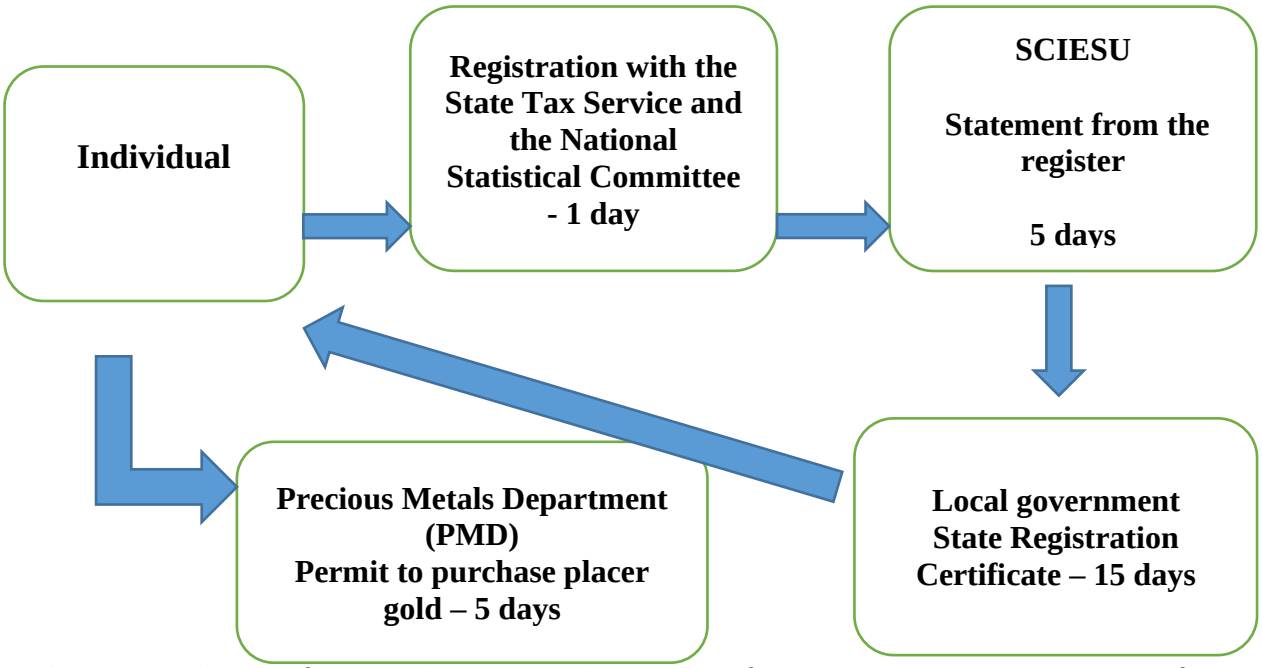
Subsoil areas with alluvial mineralization not included in the Cadaster of Deposits and Occurrences of Mineral Resources of the Kyrgyz Republic can be developed by an individual artisanal method in accordance with the above Regulations. However, alluvial gold mining is prohibited:

a. at the licensed sites, regardless of the type of mineral, except for oil, gas and water;
b. at competitive sites, regardless of the type of mineral, except for oil, gas and water;
c. at auction sites, regardless of the type of mineral, except for oil, gas and water;
d. at protected areas;
e. protected areas of water bodies;
f. pasture lands;
g. border areas.

The process of obtaining a certificate of an individual miner includes the following steps:

I. An individual shall be registered with the bodies of the state statistics and the state tax service under the Government of the Kyrgyz Republic to get a patent for individual entrepreneurs.
II. A registered individual entrepreneur shall apply to the authorized state body for the implementation of state policy in the sphere of subsoil use (State Committee for Industry, Energy and Subsoil Use of the Kyrgyz Republic – SCIESU) to obtain information from the registry, with respect to their activities as an individual miner.
III. SCIESU within 5 days shall consider the application and issue a statement from the Consolidated Registry.

IV. Individual entrepreneur shall submit a statement and a certified extract from Consolidated register of SCIESU to the local government administration.
V. Local administration shall consider the application within 15 days and make a decision on the issuance/rejection of certificate of registration of the individual miner engaged in the extraction of placer gold.
VI. Information about the issuance of the certificate shall be recorded in the Register of Individual Entrepreneurs of artisanal activities by local government.



Thus, as can be seen from the diagram, it takes 25 days for an average miner to get a certificate of individual miner. It takes another 5 days to get a permit for the purchase of placer gold, which is issued by the Department of Precious Metals under the Ministry of Finance of the Kyrgyz Republic, the issuance of which is regulated by the Resolution of the Government of the Kyrgyz Republic "On approval of the Temporary Regulation on the procedure for issuing a permit for the purchase of placer gold and gold-containing concentrate in the Kyrgyz Republic" of December 29, 2015 No. 894. To obtain a permit for the purchase of placer gold and gold-containing concentrate, the following documents shall be submitted to the Department of Precious Metals under the Ministry of Finance of the Kyrgyz Republic:

a) Application in the prescribed form;
b) A copy of the state registration certificate;
c) A copy of the document confirming the registration of the applicant with the tax authorities at the place of state registration of the applicant (copy of TIN);
d) Copies of constituent documents;
e) Decision or protocol on the appointment of the head of the legal entity or power of attorney to represent the interests of the applicant;
f) Certificate of absence of tax debts;
g) Documents confirming ownership or other legal basis for the ownership of premises required to carry out the declared activity;
h) Copies of the certificate of verification of measuring instruments.

6. Self-management of artisanal mining

As part of preparing of the NAP, consultations were held with various representatives of stakeholders. And all of them reported and confirmed that there are no self-management is ASGM sector. The only possibility of organizing for gold miners is criminal sector.

7. Mercury market and supply

Currently, 9 primary gold deposits are being developed in the Kyrgyz Republic - Kumtor, Bozymchak, Solton-Sary, Terekkan, Ishtamberdy, Jamgyr, Kara-Kazyk, Taldy-Bulak Levoberezhny, Kuranjailoo, which produced 239,132 tons in 10 years, of which 85% falls on Kumtor.

Gold mining from placers is carried out at the following deposits: Sulu-Tegerek, Kara-Tyube, Buzuk, Baimak, Chanach, Kumbelsu, Kyndy, Tokoiluu, Kara-Bulak and Zhartsuu, which produced 1138.273 kg over 10 years.

According to the available data, mercury is not used at either of the above facilities.

The official mining of mercury is carried out by two enterprises, the Khaidarkan Combine and the Chauvai-Ken company, which produced a total of 80 tons of primary mercury in 2019.

There no official information of delivery of mercury from above factories to the local market. But mercury usage by the gold miners is completely illegal. From time to time in the media there is information about detention of the sellers of mercury with a volume of 10 to 400 kg of metallic mercury without information of source of the mercury but according to non-standardized package it may be recycled and primary mercury.

Amalgation is required only for large miners, when a significant amount of metallic concentrate with dispersed (invisible) gold has accumulated.

Mercury, as a rule, is bought in batches of 150 grams using connections with other miners for each enrichment process.

The price of mercury varies depending on the demand from 1,500 KGS to 7,000 KGS for 150 grams

8. Economic components

The extracted gold in the form of a concentrate is sold by miners to illegal buyers, who then resell it to local dentists, jewelers, etc. There are reports of significant smuggling of rough gold to neighboring countries.

The government has made an attempt to regulate this process. The Provisional Regulations ordered miners to sell rough gold to the state-owned gold turn-in shops created by Kyrgyzaltyn in several regions of the country. However, only a small part of the miners uses this service.

According to a survey, at least 60 kg of gold is mined in the Jalal-Abad region, and at least 70 kg in the Naryn region during a washing season. However, less than 1.5 kg of gold was delivered to the state-owned gold turn-in shops; most of it is still going into the hands of private purchasers. The same conclusion was made by specialists of the Avista company, who had carried out the TACIS program surveying artisanal mining in the Chatkal region in 2001. According to their estimates, the annual gold production in the region reached 50-60 kg. At the same time, the gold turn-in shop received 1,400 g of gold from the Chatkal gold mining sites from August to December 2001 (including gold from the Chuuldak indigenous deposit), which is about 1/10 of the expected production.

Such a situation is caused most likely by the difference in price and service. The Provisional Regulation stipulates a complex system of payment for the delivered gold (see Annex III), which take into account the purity of the gold, and the costs of maintaining the gold turn-in shop, transportation, affinage, taxes. There are only two state-owned gold turn-in shops in the Naryn and Jalal-Abad regions located at a long (20-70 km) distance from the mining site. Studies have shown that private buyers are present at all sites. Only 27 people took part in the survey. They offer a price comparable to the world one and even higher, which the state-owned gold turn-in shops cannot offer. At the same time, they purchase products locally and pay right away. Buyers provide the miners with the simplest equipment and means of extracting gold. Buyers didn’t prove to monitoring crew any information of mercury source but gold miners confirm that they can help to obtain mercury.

Bishkek jewelry stores, as state-licensed gold turn-in shops, buy and sell gold bars with a fineness of 9999 at a price of 600 KGS per gram. Obviously, private dentists and jewelers prefer to buy gold from miners at 400 KGS per gram and have the opportunity to increase the purchase price up to 500-550 KGS, creating an insurmountable competition with the state-licensed gold turn-in shop.

At the seminar, despite the above, the miners spoke in favor of opening the gold turn-in shops, of course, on acceptable terms:

a. price of take in gold based on London-stock market;
b. possibility of long-term (3+ years) contracts for gold selling;
c. possibility based on the above contract to get bank’s credits;
d. protection of the law enforcement system from crime;
e. court justice.

The solution to this problem is seen in the elimination or sharp decrease of taxes on individual artisanal activities and the legalization of the purchase of gold by private entrepreneurs.

The reserve for increasing the marketing efficiency of artisanal mining is the establishment of sales channels for nuggets of gold and platinum group metals, incidentally mined by miners.

9. Socio-demographic information

The minimum number of gold-miners which were taking in account in this study is 2400 people. This quantity of diggers is those who confirm that ASGM is their minor income. But officially has permission of gold-miner only 11 people.

The maximum numbers of gold-miners in the Kyrgyz Republic may reach 75 000 people which have another basic income:

Employment in mining on a rotational basis – 30%

Employment in agriculture as needed – 50%

Other employment – 20%

As a rule, gold-diggers have experience as migrants, mainly in Russia and Kazakhstan, mainly in the construction industry. As soon as possibility for work in above regions become economically reliable, the most of them will move again.

Employment by artisanal miners brings a greater economic effect than labor migration.

Interested in learning and applying new technologies.

The government is perceived as a barrier to activity

During the study there were no mentioned women working in ASGM in the field. The local miners from Sary-Jaz region give information about 1 woman who was engaged on ASGM but it looks like local legend without any reliable proof.

Women and children effect on ASGM and mercury because of settlements' location close to mine sites, amalgation of gold in household areas and storage facilities of mercury just inside house-living spaces.

10. Environmental protection

Since in most cases, river-bar placers and the deposits of low terraces of rivers and streams are mined, the scale of destruction of the fertile layer is insignificant. Although during the study, involvement of the high river terraces in mining was noted, with the destruction of the fertile layer and the felling of floodplain forests, the wood of which is mainly used for cooking and heating. And the scale of this impact will increase.

There are no tailings or places for storing the soil layer, gangue and unwashed materials. After enrichment, the remains of the materials are disposed of as construction waste at regular landfills of the nearest residential area.

In addition, after the mining of the site, no reclamation is carried out by miners.

According to the results of the study, miners (illegally) use reagents, including potent and dangerous ones (acids, mercury amalgam). In this case, the risk for the environment is in spills and leakages of spent reagents onto the ground and into watercourses, which, as a rule, leads to local disturbances of the biocenosis.

Now, the illegal activities of miners using reagents and mining the river terraces are in no way controlled by the government bodies responsible for environmental protection. Thus, artisanal mining activities are not subject to environmental insurance, damages fees, regulations and penalties for non-compliance with regulations.

It should be noted that the Kyrgyz Republic currently does not conduct a large-scale environmental monitoring at the government level. All types of monitoring carried out now are predominantly of local level. The areas where miners work are not covered by state environmental monitoring, which is the main tool for monitoring and taking corrective measures.

11. Information on the health of population

According to the current regulatory legal acts, an individual miner has the right to use technologies and equipment that are limited in productivity and exclusively by the gravitational method of extracting gold. It is strictly forbidden to use the technology of gold extraction with the use of potent toxic substances (cyanidation, amalgamation, etc.). An individual miner must independently ensure compliance with the safety rules for work, protection of subsoil, and environment, and is responsible in accordance with the current law.

However, the study showed that no prohibitive documents apply to miners. Miners are using or have used mercury and nitric acid to extract gold, and also some unknown Chinese powders, which was not possible to obtain during the project but which according to specific properties may be mercury, nitric acid or other high-polluted substance. According to the head of the Department of Occupational Diseases of the Kyrgyz State Medical Academy, Ch. K. Chonbasheva, it is unlikely that inhalation of high concentrations of toxic nitrogen oxides released by nitric acid can cause human poisoning under the conditions of individual mining activities conducted in the open air. Exposure to lower concentrations for a long period may lead to the development of chronic intoxication with a predominance of symptoms of respiratory tract irritation and general resorbtive action. With this effect, chronic laryngitis, pharyngitis, trachitis, bronchitis, bronchial asthma, pneumosclerosis, emphysema occur. Introduction of infection can lead to bronchiectasis, followed by the formation of pulmonary-heart failure. Functional disorders of the central nervous system, myocardial dystrophy, dysfunction of the gastrointestinal tract and liver may develop.

Studies have found a high incidence of colds in miners caused by primitive working conditions and unsettled life. Many miners at the work site do not even have a tent to shelter in bad weather. There are many complaints about the loss of health associated with the constant presence of the feet and hands of the miners in the cold mountain water. Everyday exposure to cold water can lead to serious illnesses associated with regular hypothermia.

The study has revealed a high injury rate among miners associated with ignorance or neglect of elementary work safety rules. In the best case, the walls of the workings are fastened with river boulders.

A lack of use of respiratory and skin protection equipment: respirators, gloves, aprons, etc., was noted everywhere. When particles and vapors of reagents get on the skin and inside the body (orally and by inhalation) can lead to severe injuries to a person (for example, burns of the respiratory tract and skin) and to the chronic accumulation of hazardous stuffs in the body. It should be noted that miners do not undergo medical check-ups, neither regular nor specialized ones (mercury, metals in blood and urine).

It was also noted that the miners are illiterate in protecting their own health and their family members, who may indirectly suffer from the activities of the miner. Thus, the following actions can pose threats to family members: storage of strong acids and mercury in a residential building, accidental spills of reagents on the floor in the house or on the economic territory, evaporation of the reactive mixture within the residential area, etc.

IV. National objectives and reduction targets

Setting national objectives and targets to reduce the use of mercury in the artisanal and small-scale gold mining is crucial in achieving a common understanding among all stakeholders of the objectives and expected outcomes of the implementation of the National Action Plan.

Within the framework of this NAP, the following achievable targets are adopted as objectives:

- Create, coordinate, develop and implement National Strategies and Regulations that contribute to improving the situation in the artisanal and small-scale gold mining and related sectors, and promote the use of alternative sources of livelihood, where possible, as well as the application of environmental protection and safety measures to protect miners and the local population living around the ASGM sites by September 2023;
- Develop incentive measures for individual miners to implement environmental protection measures, including reclamation, rehabilitation and neutralization of the past and current mining sites across the country by 2022;
- Develop legislative measures to protect miners and prevent harmful effects in residential areas;
- Create organized groups of individual miners in the form of regional divisions of professional communities that will be able to express the needs of the artisanal and small-scale gold mining sector by June 2022;

- Determine the goals and tasks of the State Committee for Industry, Energy and Subsoil Use in the form of authorities on keeping the Cadastre and accounting for mining at gold-alluvial deposits, as well as the small and smallest hard rock gold deposits by March 2022;
- Strengthen the role of the State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic in terms of control and supervision of environmental protection in the artisanal gold mining;
- Ensure that 100% of gold production is free of mercury and other toxic substances by the march of 2025 due to mandatory domestic sales of gold to the jewelry and banking sectors after having received opinion of an independent laboratory on the content of mercury;
- Reduce the level of mercury exposure to the environment of 70% from the current level.

National objectives and targets for reducing the use of mercury in the artisanal and small-scale gold mining in the Kyrgyz Republic should be periodically reviewed during the implementation of the requirements of the National Action Plan and updated as necessary.

V. Implementation strategy

1. Strategies

a. Measures to eliminate worst practices

Annes C, Paragraph 1 (b) of the Minamata Convention requires that NAP include measures to eliminate the following four worst practices in ASGM:

- whole ore amalgamation;
- open burning of amalgam or processed amalgam;
- burning of amalgam in residential areas; and
- cyanide leaching in sediment, ore or tailings to which mercury has been added, without first removing the mercury

In preparation for writing the NAP, 4 worst practices were not noticed in the territory of the Kyrgyz Republic.

To address this issue, it is proposed:

- develop a training program to inform miners on the methods to reduce the use of mercury, including concentration enhancement and mercury-free methods;
- provide technical assistance to gold miners and gold buyers regarding, particularly, the use of retorts, mercury capture devices and proper storage of mercury;
- consider the land-use planning mechanisms that protect environmental resources and residential areas

    - prohibiting work with mercury at a distance of less than 100 meters from freshwater resources;
    - dumping of mining tailings into or near water bodies;
    - burning amalgam in residential areas.
- assisting local communities in the ASGM area to develop the infrastructure needed for localized and well-managed amalgamation operations
    - centralized amalgamation plants
- identification of sites containing polluted tailings and development of a strategy for localization and/or processing of tailings.

Measures to reduce mercury releases into water bodies and land that can be taken immediately:

Management of tailings

- place tailings on a clay or laterite soil-lined pit of several meters deep;
- locate at least 100 meters away from any water body;
- when the pit is full, cover it with 1 meter of clay or laterite, then compact, cover with soil, and restore vegetation.

Important variables that impact the stability of tailings include climate, hydrologic situation, seismic intensity and landslide hazards, and geologic features.

- Warn the population about the presence of mercury-contaminated tailings
    - appropriate signs
    - fences that restricts access to the facility for people, livestock and wild animals
    - record the coordinates of mercury-contaminated tailings sites for future protective and/or corrective actions.

Localized amalgamation.

- special area for amalgamation
    - contained,
    - controlled,
    - centralized
    - distant from sensitive ecological and human receptors
- amalgamation should be conducted in a water-tight amalgamation barrel.

Mercury storage

- Protocol for the environmentally safe storage of mercury
    - Resilient vessels with a little water on top;
    - Stored on an impervious surface;
    - The cap should be tightened and tape should secure the cap to the bottle;

- A proper label should mark the bottle as mercury and as toxic.
- Kept in a safe place out of the reach of children;
- Cannot be stored in a residential area.

Mercury capture and recycling

Using retorts or other devices to capture mercury

Cleaning and activating mercury uses a simple solution of table salt or caustic soda (sodium hydroxide) and a battery.

Management of contaminated sites

Development of guidance on the management of mercury-contaminated sites.

Long-term strategies to reduce and eliminate the use of mercury

Transition of miners to mercury-free methods or to lower-mercury concentrate-amalgamation (in extreme cases)

Concentrate-amalgamation

Gold miners first concentrate the gold in the ore, resulting in a much smaller mass to which mercury is applied. Gravity is a common method of concentration as gold is much heavier than other minerals. Concentration can be done with relatively simple equipment (such as traditional panning or sluice boxes) or more advanced technologies including shaker tables, centrifugal concentrators and/or jig concentrators. This method works best when gold is adequately liberated naturally or by proper milling and grain size sorting.

Partial amalgamation

This term is used when miners first extract the easily separated gold before amalgamation, for example by panning or using a shaking table to separate the coarse fraction. This can greatly reduce the amount of mercury used because it is applied to a lesser amount of gold. It also has the advantage of producing a stream of mercury-free gold that may have marketing advantages and further accelerate the transition to completely mercury-free production.

Mercury-free techniques

Gravity-only concentration with direct smelting. In some cases, gravity concentration alone may be sufficient to create a high concentration ore that can then be directly smelted. For concentrates greater than 25% gold, the gold can be extracted from the other minerals by heating it with a compound (a flux like borax or lithium) that lowers the melting point of the other minerals allowing the gold to coalesce. An added benefit of this method is that direct smelting can in some cases extract unliberated gold from other minerals and increase overall recovery, which serves as an economic incentive. This is typically true mainly for hard rock deposits. Under field conditions direct smelting can typically only be performed on masses less than 100 grams, and thus is not suitable for low concentration, higher volume concentrates.

The combination of concentration and direct smelting is a good alternative to mercury use. However, the level of concentration required is high and therefore can lead to gold loss to the

tailings. When implementing this technique, care should be taken to recognize the possible loss of gold to tailings and to implement practices that minimize or eliminate this potential reduction in gold production.

The “borax method” is a short-hand term for a range of methods to improve the concentration of gold in ore without using mercury, so that the ore can be directly smelted (with borax or another flux).

Borax does not replace mercury directly in gold extraction process. It is used at a different stage of the process, that is, during smelting. Nor is it always a mercury-free process as miners often use borax in conjunction with mercury. In order to be able to directly smelt gold ore using borax, the concentration in the ore must be around 25% or greater. To create such high grade material improved concentration methods must be applied. These improved concentration methods (and the subsequent use of borax) do not represent a simple one-to-one replacement of mercury for another chemical, but usually require new or improved processing techniques, and will generally require training and assistance to promote their adoption.

Chemical leaching. To recover gold that may have been lost to the tailings in the concentration process, chemical leaching of various types can be employed. An integrated milling-gravity-leaching system may be used where coarse gold is captured by gravity concentration and the rest by leaching. The most common chemical leaching method uses cyanide. Both cyanide and mercury are toxic, however cyanide is a degradable compound that can be destroyed and is not persistent in the environment. Cyanide can obtain very high recovery rates - often 90%. Because of this, the use of cyanide is increasingly being used in ASGM. Unfortunately, cyanide and other chemicals used in leaching are very hazardous and have resulted in severe local contamination in ASGM, and therefore these methods are only suitable for well-organized and trained miners who can comply with chemical management protocols.

Magnetic separation. Simple mineral separation techniques, such as magnets to remove iron-containing minerals, can help upgrade mineral concentrates to a level that can be directly smelted. Most mineral deposits, both hard rocks and alluvial deposits, contain some magnetic minerals (mainly magnetite). These minerals are very dense and can account for a relatively large percentage of gold concentrate. They can be removed with a simple magnet even before amalgamation or direct smelting, thus further improving the quality of the concentrate.

Flotation. This is a process that uses different chemical properties of mineral surfaces to produce a concentrate. Bubbles (froth) are made with soap or other chemical substance in an ore "pulp" (made from finely ground ore and water). The surface properties of gold and sulfide particles cause them to attach to the bubbles as they rise through the pulp separating these particles from other minerals in the ore, like quartz. The bubbles make a froth that collects at top of the tank. The froth is removed and dried to form a concentrate, which can then be further processed on site or sold to other processors.

b. Steps to facilitate formalization or regulation

The main focus of regulation of ASGM is the Kyrgyz Republic is provision of opportunities but not to create additional obstruction.

The main obstacle for gold-miners is absence of accessible credits. As soon as it will be possible to get cheap money for further legal activity – many of miners become work safe and legal.

Annex C, Paragraph 1 (c) of the Minamata Convention requires:

- develop and implement a plan for stakeholder engagement and participation in the formalization process;
- introduce small mining entrepreneurship in the field of ASGM;
- perform policy and regulatory review, and amend laws and regulations as necessary to encourage formalization
    - review of the institutional capacity required by formalization and identify resources to enhance this capacity;
    - consider strategies to improve monitoring and enforcement of ASGM requirements;
    - facilitate access to markets by improving laws, regulations and administration related to gold sales;
- consider using special tax regimes, royalties, and fees as incentives for formalization;
- develop initiatives to improve miner access to credit and financial management skills.

c. Strategies to reduce emissions, releases and risks of exposure

In accordance with paragraph 1 (e) of Annex C of the Minamata Convention, pollution control measures are basically in the form of prohibitions or restrictions on resources or methods, namely:

- restriction of extraction in riverbeds and ecologically vulnerable areas;
- restriction on the use of mercury technologies with additional incentives for gold miners and processors to use mercury-free technologies;
- elaboration of requirements for the acquisition, import, use and storage of mercury or other toxic and hazardous materials in the context of prospecting gold mining;
- unsatisfactory treatment of mining waste;
- deforestation of floodplain forests.

Ways to address these issues are possible through:

- licensing of mercury dealers through
    a) import approval;

b) coordination of mercury sales.

- a register of all internal transactions for the sale and purchase of mercury with data:
  - identification data of the seller and the buyer
  - the amount of mercury in this operation
  - place and date of its execution.
  - requirements for declarations for the transport of mercury
    - by using barcodes
  - devices of the global positioning system
  - monitoring of leakage of internal sources of mercury
- Register of mining waste and tailing
  - with the focus to the residential landfills
  - elaborate tailings management strategy to prevent risk of exposure.
- Prevention of miners' exposure
  - personal protective equipment
  - designated controlled areas if concentrate amalgamation is occurring.

d. Managing trade of mercury and mercury compounds

Paragraph 1 (f) of Annex C of the Minamata Convention requires that strategies for regulating trade in mercury be included in the National Action Plan, namely that consideration be given to issue:

- The procedures needed to ensure that the intended use of imported mercury is documented, monitored and controlled;
- An indication by the exporter that the mercury was not obtained from a prohibited source and mechanisms to ensure this control.
- What criteria and assessment procedures should be applied to assess the feasibility of authorizing the import of mercury for use in ASGM. Evaluation procedures should include mechanisms to determine whether imports are consistent with the measures and objectives specified in the NAP.
- Formulation of conditions for the issuance of consent or refusal to import mercury.

As a first step, countries may consider establishing an ad hoc working group composed of representatives of relevant public authorities (environment, distributive trade, extractive industries and customs, as well as local authorities, for example) to participate in the implementation of the strategies.

Activities may include:

- Review of domestic mercury legislation and regulations:
    a) domestic use and processing of mercury;
    b) trade at the international level;

c) non-compliance with international norms and rules.

- identification of "problem points" or other factors affecting mercury trade:
    a) using amalgam for dental fillings;
    b) production of mercury-containing products (lamps);
    c) decommissioning of chlor-alkali production facilities;
    d) Active primary mining of mercury in the region.

- Study of the volume and routes of mercury trade flows across borders and within the country:
    - comparison of data from different databases.
- Study of the sources of illicit mercury imports, covering existing or likely mercury entry points into the country, and its distribution networks through country.
    - possible smuggling routes;
    - Interpol and the Secretariat of the Basel, Stockholm and Rotterdam Conventions have developed an e-learning module for law enforcement officials on trade control of hazardous substances.

- Analytical toolkit prepared to combat crimes against forest resources and wildlife by the International Consortium to Combat Wildlife Crime.

The resulting strategies may include:

- Coordination and training of trade officials on issues related to compliance with Article 3 requirements and prevention of illegal shipments into the country;
- Coordination with neighboring countries as necessary - the introduction of harmonized trade and tax regimes and cooperation in enforcement, including preventing or minimizing the illicit trade in mercury;
- Expanding the baseline estimates to include data on the mass balance of mercury in the country, covering all sources of mercury.

e. Strategies for involving stakeholders in the implementation and continuing development of the Plan

The strategy for involving stakeholders in the implementation of the National Action Plan is to:

- identify key non-government actors that are familiar with ASGM activities;
- provide incentives for stakeholders to participate in consultation sessions;
- engage leaders at the community level;

- hold consultation meetings in or nearby communities affected by mining and processing;
- establish and maintain a communication schedule between all stakeholderskey non-state actors familiar with asgm activities;

- mining enterprises:
  - conflicts in land use;
  - access to mining areas;

- mandatory participation of miners (legal or illegal);
- identification of underrepresented groups (women, youth exposed to the local population, etc.);

Organizations representing stakeholders must be operational and legitimately represent the interests of a particular stakeholder.

f. Public health strategy on mercury exposure to miners and local communities

Paragraph 1 (h) of Annex C of the Minamata Convention requires that NAP include "a public health strategy on the exposure of artisanal and small scale gold miners and their communities to mercury", which should include:

- gathering of health data;
- training of health workers on the effects of mercury;
- development of protocols for the treatment of the health effects of mercury exposure, including mercury exposure during ASGM work;
- sources for raising awareness about mercury and its associated hazards;
- the fullest possible inter-sectoral cooperation of ministries and departments responsible for health and related issues.

Priority should be given to protecting human health, even in the absence of specific data for the region.

g. Preventing exposure of vulnerable population to mercury

According to this NAP, It is planned "strategies to prevent the exposure of vulnerable populations, particularly children and women of child-bearing age, especially pregnant women, to mercury used by artisanal and small-scale gold mining". In addition, vulnerable populations may also include those people who heavily rely on eating fish that may be contaminated because of ASGM activities:

- targeted outreach and awareness-raising activities on the dangers of child labor associated with mercury in the ASGM regions with the participation of community leaders, parents and children;
- regulations prohibiting the use of child labor in mining activities by imposing penalties on

employers;

- conducting inspections by government officials to prevent child exposure to mercury;
- information sharing about child labor with the relevant government agencies and UN agencies.

Another related problem is the exposure of children who are not working, but who are present at the ASGM sites because their mothers lack child care, and the exposure of the fetus during pregnancy. The NAP may address this issue by ensuring that:

- There is targeted outreach and awareness-raising on the risks of mercury exposure for the fetus and the child in ASGM communities—including with community leaders and women—on the issue of children's use of mercury;
- Non-government actors working on ASGM include the issue of children's mercury exposure into their programs and share information on child labor with relevant government and UN agencies;
- The ministry of education and family are made aware of the risks from mercury to childhood development in ASGM areas and the need to consider support for families that would help prevent children's exposure to mercury;
- Development of health care services to prevent, treat and provide assistance to populations exposed to mercury and mercury compounds.

h. Strategies to inform the local population at gold mining sites

Paragraph 1 (j) of Annex C of the Minamata Convention requires providing information to artisanal and small-scale gold miners, gold processors and affected local communities, and:

- develop an outreach plan specific for affected communities;
- establish miner training programs for reduced- and –zero-mercury mining practices;
- identify appropriate means of communication;
- establish linkages between other on-going development activities.

The following should be taken as determining factors of the effectiveness of information:

a) focusing on specific topics
   a.health protection
   b. safety of miners
   c.improving the efficiency of gold extraction;
b) use of different teaching methods
   a.small discussion groups
   b. simulation activities
   c.use of new equipment for safety and mining operations
   d. videos and other multimedia tools
   e.role-playing games, etc.;
c) providing social pressure to eliminate inappropriate practices
   a.use of protective clothing;

d) establishment of common values
    a. health promotion
    b. child safety;
e) sharing experiences in the use of new technologies to develop new skills;
f) development of a system of training of trainers among the local population.

2. Work plan

Strategy	Actions	Priority	Main stages of activity	Timeline implementaion	Source of funding	Cost of realization in USD	Expected results	Indicator
Measures to eliminate worst practices	training program for miners and representatives of the mining sector	High	Methods for reducing the use of mercury; Increasing the concentration of gold output; Mercury-free beneficiation techniques.	January 2022 – September 2022	UNEP	35,000	Creating awareness of the real dangers of mercury.	List of events, list of participants, surveys of participants
	support for gold miners and gold buyers	Average	Technical assistance on the use of retorts, mercury capture devices and proper storage of mercury.	June 2022 – December 2023	UNEP	50,000	Raising awareness of the sector about modern technologies	Support of the Safe Mercury Information System, list of meetings and events held.
	consideration of land-use planning mechanisms	High	Protection of natural resources and human settlements; Prohibition of the work with mercury at a distance of less than 100 meters from freshwater resources; Discharge of mining tailings	September 2022 – December 2022	UNEP	25,000	Introduction of regulatory restrictions for the protection of natural resources and human settlements.	The developed draft of the regulatory legal act.

			into or near water bodies; Burning amalgam in residential areas.					
	Providing assistance to the local population to establish centralized amalgamation plants	Low	Justification of the points of creation of centralized enterprises based on the existing enterprises.	January 2023 – May 2023	UNEP	35,000	Together with gold buyers, the creation of objects of mass enrichment of gold.	Register of potential and existing enterprises, and publication of the data on the Safe Mercury portal.
Measures to promote formalization or regulation	Stakeholder Engagement Plan	Average	Developing a stakeholder engagement plan; The procedure for its implementation; Stakeholder participation.	January 2022 – December 2024	UNEP	35,000	Members of a diverse and qualified working group for NAP implementation	List of participants, an order on the establishment of a working group, holding of regular meetings and keeping their minutes.
	Small Mining Business in ASGM	High	Amendments to the regulations in the field of subsoil use to facilitate the activities of miners in ASGM.	January 2022 – June 2022	No	No	Article concerning artisanal gold mining in the Subsoil Code of the Kyrgyz Republic	Participation in the meetings of the working group, proposed norms to the Subsoil Code
	regulatory and legal changes to promote ordering	Average	an analysis of the institutional capacity required to carry out	June 2022 – December 2023	UNEP	25,000	Amendments to legislative and executive acts	Drafts of necessary normative legal acts,

			streamlining activities and the identification of the resources required to strengthen this capacity; Consider possible strategies to improve control and ensure compliance with ASGM requirements					analysis of regulatory impact
	facilitating market access	Average	Improvement of laws, regulations and administrative management related to the sale of gold	January2023 – December 2023	UNEP	25 000	Amendments to legislative and executive acts	Drafts of necessary normative legal acts, analysis of regulatory impact
	introduction of incentives to formalize legal gold mining	Average	Reduction of the tax burden for gold turn-in shops; Special tax regimes and payments for miners	June 2022 – December 2023	UNEP	35,000	Amendments to regulatory legal acts for obtaining of a license for prospecting activities online.	The beginning of the issuance of permits for prospecting activities on-line; The spread of the turn-in gold shops.
	facilitating access to financial services	High	development of initiatives aimed at expanding the access of gold	September 2022 – December 2024	UNEP	420,000	Implementation of the "2 kg Project", when for $70,000, equal to the cost of 2 kg of gold, it is possible to give a loan at a reduced rate for	Starting of 6 pilot projects and, upon reaching their self-

			miners to loan services; Improvment of the financial management skills				mercury-free mining and enrichment technologies.	sufficiency, use the obtained profit for the next 6 projects.
Strategies to reduce emissions, losses, and risks of exposure to mercury	licensing of mercury traders	Average	through import approval; coordination of mercury sales.	September 2022 – December 2023	UNEP	25,000	Creation of a methodology for licensing mercury turnover based on the requirements of the EAEU.	Identification of an authority responsible for licensing trade in mercury and its areas of responsibility.
	register of all internal transactions for the sale and purchase of mercury with data	High	- with seller and buyer data ercury during the operation - Place and date of its performance	January 2023 – December 2023	UNEP	35,000	Based on the above methodology, creating a section on the Safe Mercury portal with an on-line database.	Permanent catalogue of mercury movement operations
	declarations for the carriage of mercury	Average	- Barcodes - Devices of the System of Global Positioning on containers during transportation	March 2023 – December 2023	UNEP	50,000	Based on the above two measures, monitoring the movement of mercury using GPS beacons	Visualization of mercury movement routes in the closed part of the Safe Mercury portal.
	monitoring of leakage of internal sources of mercury	Low	Drone-based regular monitoring system.	September 2022 – December 2024	UNEP	450,000	Implementation of a tool for regular monitoring of mercury pollution based on aerial photography using 2 drones (Northern and Southern Kyrgyzstan)	Publication of measurements of mercury contamination in the closed part of the Safe Mercury portal.

	tailing management	High	Identification of objects containing contaminated residues of mining both legal and illegal; Strategy of their processing.	January 2023 – May 2023	UNEP	50,000	Review of mercury and gold tailings as new type of the mineral resource - anthropogenic deposits according to UN framework of mineral resources.	Catalog of tailings with estimated data on the content of mercury and gold.
Regulation of trade in mercury and mercury compounds	review of domestic legislation and regulations	Average	domestic use and recycling of mercury; trade at the international level; non-compliance with international norms and rules.	September 2022 – December 2022	UNEP	25,000	Conclusion on the state of the regulatory framework as a result of recent regulatory changes	Report, public hearings, minutes of hearings, list of participants
	identification of "problem points"	High	using amalgam for dental fillings; production of mercury-containing goods (lamps); decommissioning of plants for chlor-alkali production; active primary mining of mercury in the region.	January 2023 – June 2023	UNEP	35,000	Qualitative and quantitative assessment of mercury	Report, presentation of materials, publication of reports.
	study of the volumes and routes of movement of	High	comparison of data from different databases. a	January 2023 – June 2023	UNEP	35,000	Report based on public data and expert assessments	Publication of the report.

	mercury trade flows across borders and within the territory of the country:		study of the sources of illegal mercury imports, covering existing or probable points of import of mercury into the country, and its distribution networks throughout the country. possible ways of smuggling;					
	training law enforcement officials on the control of trade in hazardous substances	Average	Based on an electronic module prepared by Interpol and the secretariats of the Basel, Stockholm and Rotterdam conventions	June 2023 – September 2023	UNEP	50,000	Capacity building of law enforcement agencies	A program of the seminar, list of participants, survey of participants.
	coordination of the activities and training of officials in charge of mercury trade	Low	Based on analytical tools developed to combat forest and wildlife crime by the International Wildlife Crime Consortium.	June 2023 – September 2023	UNEP	50,000	Capacity building of civil servants and the non-governmental sector	Round tables and seminars, list of participants, survey of participants.
	coordination, within the EAEU and with neighboring countries, to	Low	Introduction of harmonized trade and tax regimes, and enforcement cooperation.	September 2023 – December 2023	UNEP	50,000	Creation of permanent interstate advisory councils.	Round tables and seminars, list of participants,

	prevent or minimize the illicit trade in mercury							survey of participants.
	Expansion of baseline assessments	Low	Data on the mass balance of mercury in the country, covering all sources of mercury.	December 2023 – December 2024	UNEP	35,000	Amendments to the regulatory legal acts on the mercury turnover.	Draft normative legal acts.

Strategies for engaging stakeholders in the implementation and further development of the plan	key non-state actors familiar with ASGM activities		Providing incentives for stakeholders to participate in consultations; involvement of local community leaders; holding advisory meetings in the areas affected by gold mining and processing; drafting and maintaining a communication schedule between all stakeholders.	January 2022 – December 2024	UNEP	75,000	Creation of a permanent working group and holding regular meetings.	Order on the creation of a working group, the programs and minutes of meetings, list of participants.
	mining enterprises		Conflicts in land use; access to mining areas.	September 2023 – December 2023	UNEP	35,000	Regulation of interaction between mining companies and miners	Creating a tool for resolving conflict situations at the formal or informal level
	Miners		Legal; Illegal.	September 2022 – December 2023	UNEP	50,000	Raising awareness among all artisanal groups about NAP and the expected results of its implementation.	Round tables, list of participants.
	Other groups of populations		Women, youth, etc.	September 2022 – December 2023	UNEP	50,000	Raising awareness of other population groups in the regions where ASGM operates about NAP and the expected results of its implementation.	Round tables, list of participants.

Public health strategy on exposure to mercury for gold miners and communities	integrated health data collection;	High	Identifying gaps in the health information collection system; Elaboration of a methodology for collecting information; Creation of a unified information system for recording sensitive data.	September 2022 – December 2023	UNEP	120,000	Getting an idea about the health of the population in the ASGM regions and the main problems.	Database on the human potential in the ASGM regions.
	training for health workers	Average	On the mercury exposure; on the diagnosis of the effects of mercury exposure.	September 2022 – December 2023	UNEP	50,000	Raising awareness of the harm of mercury among health workers	A program of training seminars, list of participants, surveys of participants.
	develop treatment protocols	High	the health effects of mercury; exposure to mercury during ASGM operations.	January 2023– June 2023	UNEP	35,000	Creation of modern protocols for diagnosis and treatment of mercury poisoning based on the available equipment and materials in the field of healthcare in the regions.	Protocols for the diagnosis and treatment of mercury poisoning, approved by the Ministry of Health of the Kyrgyz Republic
	sources of awareness of mercury and its hazards;	Average	Development of communication strategy; Implementation of the strategy.	June 2022 – December 2024	UNEP	200,000	Raising awareness of a wide range of stakeholders.	A monthly series of publications of videos, articles,

								materials in social media and media.
	Inter-sectorial collaboration of ministries and departments responsible for health and related issues.	Low	Creation of an interdepartmental working group.	June 2022 – December 2024	UNEP	50,000	Raising awareness of a wide range of stakeholders.	Order on the establishment of a working group, holding regular meetings.

Preventing vulnerable populations to mercury exposure	outreach and awareness-raising on the risk of child labor associated with mercury in ASGM regions;	High	Development of training programs for integration into school curricula; Training sessions and workshops with community leaders, parents and children.	June 2022 – December 2023	UNEP	75,000	Raising awareness of the dangers of mercury	Program of training seminars, list of participants.
	regulatory legal acts in the field of labor legislation	Average	Prohibition on the use of child labor in mining activities; Introduction of penalties for employers; Conducting control checks by government officials to prevent children's exposure to mercury.	September 2022 – December 2022	UNEP	50,000	Improvement of labor legislation in order to increase pressure on employers to curb child labor	Draft normative legal act, public discussions.
	information sharing	Low	On the identified cases of child labor by the relevant state bodies and UN agencies.	June 2022 – December 2024	No	No	Informing the relevant authorities about the use of child labor	written and electronic messages
	The problem of exposure of children who do not work at the mine but are	High	Development of medical services for prevention, treatment and assistance to	June 2022 – December 2024	UNEP	250,000	Raise local awareness of the hazards of mercury, support the establishment of early childhood and school education	Program of training seminars, list of participants, memorandums

	present at the site of the ASGM because mothers cannot send their children to child care and the problem of exposure to fetuses during pregnancy.		populations that were exposed to mercury and mercury compounds.					with a wide range of stakeholders on the creation of school and preschool institutions
Community awareness strategies in gold mining locations	focusing on specific topics	Average	Health care; safety of miners; improving the efficiency of gold extraction.	June 2022 – December 2024	UNEP	50,000	Raising awareness of local people and miners	Program of training seminars, list of participants.
	use of various teaching methods		Small discussion groups; simulated activities; the use of new equipment to ensure safety and conduct mining operations; videos and other multimedia tools; role-playing games, etc.;	June 2022 – December 2024	UNEP	25,000	Raising awareness of a wide range of stakeholders	Program of training seminars; list of participants.
	social pressure to eliminate inappropriate practices		Use of protective clothing; Curbing the use of mercury technologies, etc.	January 2023 – December 2023	UNEP	50,000	Harmonization of control checks of miners with the state bodies on the basis of the developed legal acts	Inspection reports

	establisment of common values		Health promotion; children's safety;	January 2023 – December 2023	UNEP	15,000	Introduction of a positive attitude to the work	Series of posters, billboards and handouts
	sharing of best practices		Application of new technologies; development of new skills.	January 2023 – December 2024	UNEP / equipment manufacturers	15,000 / 35,000	Practical trainings on the use of modern technologies	Training program, list of participants
	Training of trainers among the local population		Training system for local community leaders; Certification of experts.	January 2024 – December 2024	UNEP	75,000	Permanent experts and expert groups among the local population on the use of mercury-free technologies	Advanced training courses, knowledge assessment system, certification of experts through the Ministry of Education and State Geology

VI. Performance evaluation mechanism

The Interdepartmental Working Group (IWG) will define and coordinate the implementation of the NAP, introduce appropriate practices to phase out mercury technologies, and monitor the sustainability and implementation of NAP activities. Membership in the IWG will be a joint decision of the bodies responsible for the implementation of the environmental policy of the Kyrgyz Republic and the body responsible for the implementation of the subsoil use policy of the Kyrgyz Republic. The head of the IWG will be the head of the environmental department.

Representatives of the following departments of the Kyrgyz Republic will be members of the IWG:
Ecology and Climate Committee
Ministry of Energy and Industry
State Agency for Geology and Subsoil Use
Ministry of Health and Social Development
Ministry of Finance and Economy
Ministry of Emergency Situations
Human rights committee
National Bank
National Academy of Sciences
Local executive authorities
State executive bodies and local self-government bodies will report on the work done on an annual basis and approve the annual work plans.

Non-governmental organizations, businesses and miners should be more active in the implementation of NAP actions, participate in increasing the competencies of participants and ways to implement the principles of rejection of harmful technologies in a practical plane. The key representative of the miners' interests will be the Kyrgyz Society of Subsoil Experts (COEN).

Regional development strategies in the context of ayil okmotu should include the actions of this NAP.

The implementation of the National Action Plan is possible only with effective interaction, partnership and joint work of the state, the private sector, the non-governmental sector and international organizations.

The mechanism for assessing the implementation of the NAP will include annual reports from ministries, departments and local self-government bodies submitted to the Committee on Environment and Climate of the Kyrgyz Republic.

The Committee on Ecology and Climate, in turn, will analyze the information received and, if necessary, conduct independent assessments on their implementation. On the basis

of recommendations and identified inconsistencies, it is possible to amend the NAP, especially in the event of changes in the regulatory framework of the Kyrgyz Republic.

The state body responsible for the implementation of the policy in the field of environmental protection, by March 31 of each year, will submit to the Government of the Kyrgyz Republic a report on the implementation of the NAP for the previous calendar year. In accordance with the requirements of the Minamata Convention, every 3 years the same report will be submitted to the Convention Secretariat.

To control the implementation of the NAP, it is assumed:

• Assessment and updating of the NAP data. In particular, it is planned to involve in the implementation of the plan an increasing number of ayil okmotus, which are exposed to mercury pollution less than the priority areas of gold mining. In the future, it is planned to include areas with already mothballed gold mining, but which were subjected to mercury pollution;

• Updating and clarifying the methodology for assessing and analyzing information on the main indicators of artisanal mining;

• Further development of the Safe Mercury portal symap.kg.

The table below shows the main indicators for assessing the implementation of the NAP, which will be obtained through the following main channels:

- Information on gold purchases from the Department of Precious Metals of the Ministry of Finance and Economy of the Kyrgyz Republic;
- Information on gold sales by the National Bank of the Kyrgyz Republic;
- Information on gold mining and licenses issued in the country from the State Agency for Geology and Subsoil Use;
- Data from the Customs Service;
- Data on land degradation and rehabilitation from the State Committee for Land Resources;
- Other data that may be useful in the context of the NAP;
- Reports of the National Statistical Committee.

In addition, research on the socio-economic situation in the country, the population and the level of its participation from non-governmental organizations will also be an important part of the NAP

Strategy	Actions	Indicator	Time frame	Responsible body
Measures to eliminate worst practices	training program for miners and representatives of the mining industry	List of events held, list of participants, polls of participants	January 2022 - September 2022	Non-governmental sector
	support for gold miners and gold buyers	Support for the information system "Safe Mercury", a list of meetings and events.	June 2022 - December 2023	Private sector
	consideration of land-use planning mechanisms	Developed draft regulatory legal act.	September 2022 - December 2022	State Agency for Land Resources
	helping local people to set up centralized amalgamation facilities	Register of potential and existing enterprises with the publication of data on the portal "Safe Mercury".	January 2022 - May 2023	Private sector
	Reducing the impact of tailings	Catalog of tailings with estimated data on the content of mercury and gold.	January 2023- May 2023	State Agency for Geology and Subsoil Use
Measures to promote formalization or regulation	stakeholder engagement plan	List of participants, order to establish a working group, regular meetings and their minutes.	January 2021 - December 2023	Ecology and Climate Committee
	Small mining business in the field of SDZ	Participation in meetings of the working group, proposed norms of the Subsoil Code	January 2022 - June 2022	Non-governmental sector
	regulatory changes to promote streamlining	Drafts of the necessary regulatory legal acts, analysis of the regulatory impact	June 2022 - December 2023	Ecology and Climate Committee
	facilitating market access	Draft necessary regulations, regulatory impact analysis	January 2023 - December 2023	Ministry of Economy and Finance
	introducing incentives to streamline legal gold mining	Start of issuing permits for mining activities on-line;	June 2022- December 2023	State Agency for Geology and Subsoil Use
	facilitating access to financial services	Wide distribution of gold reception cash registers.	September 2022 - December 2024	Private sector
Strategies to reduce emissions, losses, and risks of exposure to mercury	licensing, mercury traders	Identification of the authority responsible for licensing the mercury trade and its areas of responsibility.	September 2022 - December 2023	Ministry of Economy and Finance
	register of all internal transactions for the sale and purchase of mercury with data	Permanent catalog of operations for the movement of mercury	January 2023 - December 2023	Ministry of Economy and Finance
	declarations for the transport of mercury	Visualization of routes of movement of mercury in the closed part of the portal "Safe Mercury"	March 2023 - December 2023	Customs Service

	monitoring of leakage of internal sources of mercury	Publication of measurements of mercury contamination in the closed part of the Safe Mercury portal.	September 2022 - December 2024	Ecology and Climate Committee
Regulation of trade in mercury and mercury compounds	overview of domestic legislation and regulations	Report, public hearings, minutes of hearings, list of participants	September 2022 - December 2022	Non-governmental sector
	identification of "problem points"	Report, presentation of materials, publication of reports.	January 2023 - June 2023	Non-governmental sector
	study of the volumes and routes of movement of mercury trade flows across borders and within the territory of the country:	Publication of the report.	January 2023 - June 2023	Customs Service and Ministry of Finance and Economy
	training for law enforcement officials on the control of trade in hazardous substances	Seminar program, list of participants, survey of participants.	June 2023 - September 2023	Ministry of the Interior
	coordination and training of officials in charge of mercury trade	Round tables and seminars, list of participants, survey of participants.	June 2023 - September 2023	Non-governmental sector
	coordination, within the EAEU and with neighboring countries, to prevent or minimize illegal trade in mercury	Round tables and seminars, list of participants, survey of participants.	September 2023 - December 2023	Ministry of Finance and Economy
	expansion of baseline assessments	Draft regulations.	December 2023 - December 2024	Ecology and Climate Committee
Stakeholder Engagement Strategies for Implementation and Continuing Plan Development	key non-state actors familiar with ASGM activities	Order on the creation of a working group, programs and minutes of meetings, list of participants.	January 2022 - December 2024	Ecology and Climate Committee
	mining enterprises	Creation of a tool for resolving conflict situations at a formal or informal level	September 2023 - December 2023	Private sector
	Prospectors	Round tables, list of participants.	September 2022 - December 2023	Non-governmental organizations
	Other population groups	Round tables, list of participants.	September 2022 - December 2023	Local governments
Public health strategy on exposure to	comprehensive collection of health data;	Database on the human potential of the ASGM.	September 2022 - December 2023	Ministry of Health

mercury for gold miners and communities	training for health workers	Program of training seminars, list of participants, polls of participants.	September 2022 - December 2023	Non-governmental sector
	develop treatment protocols	Protocols for the diagnosis and treatment of mercury poisoning, approved by the Ministry of Health of the Kyrgyz Republic	January 2023 - June 2023	Ministry of Health
	sources for raising awareness of mercury and its hazards;	Monthly series of publications of videos, articles, materials in social networks and mass media.	June 2022 - December 2024	Non-governmental sector
	intersectoral interaction of ministries and departments responsible for health and related issues.	Order on the creation of a working group, regular meetings.	June 2022 - December 2024	Ecology and Climate Committee
Preventing exposure of vulnerable populations to mercury	outreach and awareness-raising activities on the hazards of child labor associated with mercury in SDS regions;	Program of training seminars, list of participants.	June 2022 - December 2023	Non-governmental sector
	regulatory legal acts in the field of labor legislation	Draft normative legal act, public discussions.	September 2022 - December 2022	Ministry of Health and Welfare
	information exchange	Written and electronic communications	June 2022 - December 2024	Ecology and Climate Committee
	The problem of exposure to mercury for children who do not work in the mine, but are present at the site of ASGM, since mothers cannot send their children to child care, as well as exposure to the fetus during pregnancy.	Program of training seminars, list of participants, memorandums with a wide range of stakeholders on the creation of school and preschool institutions	June 2022 - December 2024	Ministry of Education
Community awareness strategies in gold mining locations	focusing on specific topics	Program of training seminars, list of participants.	June 2022 - December 2024	Non-governmental sector
	using different teaching methods	Program of training seminars, list of participants.	June 2022 - December 2024	Non-governmental sector
	providing social pressure to eradicate inappropriate practices	Inspection reports	January 2023 - December 2023	Ecology and Climate Committee
	affirmation of shared values	Series of posters, billboards and handouts	January 2023 - December 2023	Non-governmental sector

	experience exchange	Training program, list of participants	January 2023 - December 2024	Ecology and Climate Committee
	Training of trainers for local communities	Advanced training courses, knowledge assessment system, certification of experts through the Ministry of Education and State Geology	January 2024 - December 2024	Non-governmental sector

Vii. Applications

1. Terms of reference for working groups

Terms of Reference Template for Implementation Teams

"National Action Plan to Reduce the Use of Mercury in Gold Prospecting"

Project name:

Implementation of the activities of the "National Action Plan to Reduce the Use of Mercury in Gold Prospecting in the Kyrgyz Republic".

Customer:

Center for State Regulation of Environmental Protection and Ecological Safety of the Committee on Ecology and Climate of the Kyrgyz Republic.

Short info:

Mercury is recognized by the World Health Organization as a potent neurotoxin and one of the top ten chemicals of significant public health concern. As a result of the recognition by the world community of the adverse effects of mercury and its compounds on human health and the environment, caused by the release of mercury and its compounds, the Minamata Convention was developed. It is a legally binding international agreement designed to protect human health and the environment from the harmful effects of mercury. The text of the Minamata Convention was agreed in January 2013, by more than 140 countries, and was adopted on October 10, 2013 in the city of Kumamoto (Japan). The Convention has been ratified by 133 states as of September 1, 2021. The Convention entered into force on August 16, 2017 following its ratification by 50 countries that have become a legal Party to the Convention.

The Kyrgyz Republic is a supporter of the Minamata Convention on Mercury and agrees on all the necessary conditions for its ratification in the near future. Kyrgyzstan does not have specific laws or regulations for the management of mercury. There is a generalized structure for chemical, toxic and hazardous substances, which include mercury. The Law on Health Care, the Law on Environmental Protection, the Resolution of the Government of the Kyrgyz Republic on the procedure for state registration of potentially toxic chemicals has the right to regulate, authorize and register the import of products of interest to health and the environment,

including pharmaceuticals, medicines, devices and medical equipment, and dental amalgams with mercury. The Environmental Protection Act controls the production, development, sale, storage and use, as well as the final disposal of solid and liquid waste from any source (toxic), including mercury-containing products. The Dangerous Goods and Hazardous Waste Regulations regulate the transport of dangerous goods in accordance with the United Nations Recommendations on the Transport of Goods and Road Hazardous Wastes. Regulatory legal acts of the Kyrgyz Republic in the field of public health determine which type of profession and activity is dangerous, as well as which substances, the production of which is prohibited, restricted or subject to conditional use. Anthropogenic emissions of mercury into the atmosphere and water bodies are regulated by the Law on Ambient Air and technical regulations on sanitary and hygienic rules.

In the Kyrgyz Republic, mercury has been used for gold mining since the 1940s, but then its use was discontinued. At present, the republic is engaged in artisanal gold mining in all regions of the country and is one of the main sectors using mercury. It is estimated that between 2,400 and 75,000 people are involved in this activity. In 2016, Kyrgyzstan notified the Minamata Secretariat that the country has more than negligible mercury emissions from the gold prospecting sector, estimated at 1,300 kg of mercury per year.

As the demand for gold continues to grow, the use of mercury is expected to continue to grow. The Kyrgyz government has recognized that the use of mercury in this sector poses significant risks to human health and the environment. The use of mercury for gold mining in artisanal and small-scale gold mining in Kyrgyzstan is currently formally prohibited, but there are no enforcement mechanisms for this ban.

In addition, in Kyrgyzstan, several problems hinder the national environmentally sound management of mercury: the lack of reliable data on mercury imports and the lack of legislation to eliminate the use of mercury in the artisanal and small-scale gold mining sector.

The Minamata Convention is consistent with the Constitution of the Kyrgyz Republic when it states that the state has a duty to protect the health and environment of its residents.

Within the framework of the activities of each working group, it is planned to solve one of the strategies to reduce the use of mercury in gold mining.

Duration of this task:
3 years
Location:
Republic of Kyrgyzstan. Field, laboratory and office work and research.

Liabilities:

Strategy	Actions	Time frame	Expected results
Measures to Reject Worst Practices	training program for miners and representatives of the mining industry	June 2022 – September 2022	Create an understanding of the real dangers of mercury.
	support for gold miners and gold buyers	June 2022 – December 2023	Raising awareness of the sector representatives about modern technologies.
	consideration of land-use planning mechanisms	September 2022 – December 2022	Introduction of regulatory restrictions to protect natural resources and human settlements.
	helping local people to set up centralized amalgamation facilities	June 2023 – May 2023	Creation of facilities for mass gold enrichment together with gold buyers.
	Reducing the impact of tailings	June 2023 – May 2023	Together with Gosgeologiya, determination of points of extraction of man-made deposits of mercury and gold.
Measures to promote harmonization or regulation	stakeholder engagement plan	June 2022 – December 2024	Composition of a versatile and qualified working group for the implementation of the NAP
	Small mining business in the field of ASGM	June 2022 – June 2022	Article related to artisanal gold mining in the Subsoil Code of the Kyrgyz Republic
	regulatory changes to promote streamlining	June 2022 – December 2023	Amendments to legislative and executive acts
	facilitating market access	January2023 – December 2023	Amendments to legislative and executive acts
	introducing incentives to streamline legal gold mining	June 2022 – December 2023	Amendments to the regulatory legal acts for online obtaining a license for artisanal activities
	facilitating access to financial services	September 2022 – December 2024	Implementation of the "Project 2 kg", when for $ 70,000, equal to the cost of 2 kg of gold, it is possible to give a loan at a reduced rate for

			mercury-free mining and enrichment technologies.
Strategies to reduce emissions, losses and risks of exposure to mercury	licensing, mercury traders	September 2022 – December 2023	Creation of a methodology for licensing the turnover of mercury based on the requirements of the EAEU.
	register of all internal transactions for the sale and purchase of mercury with data	January 2023 – December 2023	Based on the above methodology, creating a section on the Safe Mercury portal with an on-line database.
	declarations for the transport of mercury	March 2023 – December 2023	Based on the above two measures, monitoring the movement of mercury using GPS beacons
	monitoring of leakage of internal sources of mercury	September 2022 – December 2024	Implementation of a tool for regular monitoring of mercury pollution based on aerial photography using 2 drones (Northern and Southern Kyrgyzstan)
Regulation of trade in mercury and mercury compounds	overview of domestic legislation and regulations	September 2022 – December 2022	Conclusion on the state of the regulatory framework as a result of recent regulatory changes
	identification of "problem points"	January 2023 – June 2023	Qualitative and quantitative assessment of the amount of mercury
	study of the volumes and routes of movement of mercury trade flows across borders and within the territory of the country	January 2023 – June 2023	Report based on public data and expert assessments
	training for law enforcement officials on the control of trade in hazardous substances	June 2023 – September 2023	Enhancing the competence of law enforcement agencies
	coordination and training of officials in charge of mercury trade	June 2023 – September 2023	Enhancing the competence of civil servants and the non-governmental sector

	coordination, within the EAEU and with neighboring countries, to prevent or minimize illegal trade in mercury	September 2023 – December 2023	Creation of permanent interstate advisory councils.
	expansion of baseline assessments	December 2023 – December 2024	Amendments to the regulatory legal acts regarding the mercury turnover.
Stakeholder Engagement Strategies for Implementation and Continuing Plan Development	key non-state actors familiar with SRS activities	January 2022 – December 2024	Creation of a permanent working group and holding regular meetings.
	mining enterprises	September 2023 – December 2023	Regulation of interaction between mining companies and miners
	Prospectors	September 2022 – December 2023	Raising awareness of all groups of miners about the NAP and the expected results of its implementation.
	Other population groups	September 2022 – December 2023	Raising awareness of other groups of the population in the regions of ASGM activity about the NAP and the expected results of its implementation.
Public health strategy on exposure to mercury for gold miners and communities	comprehensive collection of health data;	September 2022 – December 2023	Gaining an understanding of the health of the population in the ASGM regions and gaining an understanding of the main problems.
	training for health workers	September 2022 – December 2023	Raising awareness of the dangers of mercury in health care workers
	develop treatment protocols	January 2023– June 2023	Creation of modern protocols for the diagnosis and treatment of mercury poisoning based on the available equipment and materials in the field of healthcare in the regions.

	sources for raising awareness of mercury and its hazards;	June 2022 – December 2024	Raising awareness of a wide range of stakeholders.
	interpectoral interaction of ministries and departments responsible for health and related issues.	June 2022 – December 2024	Raising awareness of a wide range of stakeholders.
Preventing exposure of vulnerable populations to mercury	outreach and awareness-raising activities on the hazards of child labor associated with mercury in ASGM regions;	June 2022 – December 2023	Raising awareness of the local population about the dangers of mercury
	regulatory legal acts in the field of labor legislation	September 2022 – December 2022	Modernization of labor legislation in order to increase sanctions pressure on employers to suppress child labor
	information exchange	June 2022 – December 2024	Informing the relevant authorities about the use of child labor
	The problem of exposure to mercury for children who do not work in the mine, but are present at the site of ASGM, since mothers cannot send their children to child care, as well as exposure to the fetus during pregnancy.	June 2022 – December 2024	Raising awareness of the local population about the dangers of mercury, supporting the creation of preschool and school education
Community awareness strategies in gold mining locations	focusing on specific topics	June 2022 – December 2024	Raising awareness of local people and miners
	using different teaching methods	June 2022 – December 2024	Raising awareness of a wide range of stakeholders
	providing social pressure to eradicate inappropriate practices	January 2023 – December 2023	Coordination with state bodies of control inspections of miners based on the developed regulatory legal acts
	affirmation of shared values	January 2023 – December 2023	The introduction of a positive attitude in activities

	experience exchange	January 2023 – December 2024	Practical trainings on the application of modern technologies
	Training of trainers for local communities	January 2024 – December 2024	Permanent experts and expert groups among the local population on the use of mercury-free technologies

VIII. List of interviewed specialists for the study.

	Stakeholder type	Location	Contact person	Telephone	e-mail
1	Miner	Kyzyl-Tokoi Chatkal	Mirlan Myrzaev	0773493370	No
2	Miner	Kyzyl-Tokoi Chatkal	Absalam Telmurzaev	No	No
3	Miner	Kyzyl-Tokoi Chatkal	Almaz and Erkin	No	No
4	Civil servant	Naryn	Rudbek Abdyraev	0559094941	No
5	Miner	Emgekchil	Nurbek	0778643820	No
6	Miner	Naryn	Ryskul	0709464800	No
7	Equipment Supplier	Emgekchil	Igor Terentyev	No	iterentev@gmail.com
8	Gold reception box	Naryn	Stalbek Akmatov	0554290029	kgzerger@gmail.com
9	Mini-refining factory	Bishkek	Rinat	0707000008	No
10	Miner	Bishkek	Chyntemir	0707070513	No
11	Community leader	Kara-Balta	Cholpon Dyikanbayeva	0770285507	No
12	Community leader	Eki-Naryn	Turgunbek Atabekov	0557844784	No
13	Gold buyer	Naryn	Kabayev	No	No
14	Community leader	Bishkek	Ishimbay Chunuev	0700571871	ichunuev@gmail.com