

MINING POLICY DIALOG DISCUSSION PAPER

Legacy Issues in Armenia's Mining Sector, in particular, Old and Improperly Closed Abandoned Mines

This document was prepared by Shushanik Kerobyan commissioned by the AUA Center for Responsible Mining as part of the program "Mining industry Policy Dialogue, Information Platform and Youth Engagement", funded by "Transparency International the anti-corruption center" and USAID.

1. Introduction (brief description of the document)

This document summarizes the research conducted so far on the legacy issues of the Armenian mining industry, in particular, old and improperly abandoned mines and the feasibility of their further operation, presents the legislative regulation of the mining industry, points out the existing legal, policy and practical problems and gaps, and makes suggestions. The document will be presented at the upcoming stakeholders' meeting on April 16-17.

2. Research conducted in the field of the Armenian mining industry on the legacy issues, in particular, old and improperly abandoned mines

Legacy issues of the Armenian mining industry, in particular, old and improperly abandoned mines, were raised in 2016 as a result of a study on "Armenia: Strategic Mineral Sector Sustainability Assessment" conducted together with "Swedish Geological AB" company and "SLR Consulting", "Avag Solutions", the AUA Center for Responsible Mining, the Turpanjian Center for Policy Analysis with the assistance of the World Bank.

The above-mentioned issues were also addressed in the study "Environmental and Health Impact Assessment", conducted in 2020 by DMT and GTK joint venture (JV-DGA) for the development of a strategy in the mining industry of Armenia.

These studies were conducted to promote the sustainable development of the Armenian mining industry in order to develop a strategy for the development of the industry.

The problems of old and improperly abandoned mines are associated with immediate risks to the environment and human health (for example, collapses due to instability of underground or open-pit mine workings, the occurrence of acid mine drainage, etc.), as well as long-term environmental risks.

As a result of the research, the following problems were identified:

1. the mineral reserves of many previously exploited mines are not fully depleted, and they may be made available for future use,
2. previously exploited mine areas were not subjected to recultivation,
3. the current information about the terrain of these areas and the degree of their danger is not equivalent, therefore, it is necessary to register these areas, to assess the danger emanating from them,

4. not all mineral reserves can have sufficient value, and their recycling may be economically unprofitable, so the obligations to implement measures to restore the territories of these mine areas and mitigate disasters remain with the state.

During 2018, the Ministry of Environment of the Republic of Armenia¹, as a result of field studies conducted in Lori, Aragatsotn, Kotayk, Ararat, Gegharkunik, Vayots Dzor and Syunik Provinces, identified 44 abandoned/ownerless areas and 5 closed tailings occupied by subsurface waste, in order to create an information base of abandoned/ownerless production dumps of subsurface waste and closed facilities.

As a result of the summary of the studies, a preliminary general plan of further actions was proposed, according to which:

1. to assess the impact of abandoned/ownerless production dumps of subsurface waste and closed facilities on the environment and public health, it is necessary to conduct thorough monitoring,
2. discuss the issues of conservation of specific mines and write-off of residual reserves with the authorized body in the field of subsurface use.
3. measure the areas subject to biological treatment, rehabilitation,
4. develop and implement localized, specific programs of recultivation,
5. identify the nature of technogenic pollution in the areas of subsurface landfills/tailings located in forest or specially protected areas, and take steps to reduce/neutralize the negative effects,
6. after the implementation of rehabilitation works, plan the implementation of a long-term environmental monitoring program, which will prevent all potential environmental risks.

3. Legislative regulations on the legacy of the Armenian mining industry, in particular, old and improperly abandoned mine

Currently, the legal relations in the mining industry of Armenia are regulated by a number of interrelated laws, in particular, the RA Subsurface Resources, RA Civil, RA Water, RA Land, RA Tax and RA Administrative Offenses Codes, as well as the RA Laws "On Environmental Control", "On Waste", "On State Regulation of Technical Safety", "On Environmental Impact Assessment and Expertise" and related by-laws and international conventions.

The new Code regulating the legal relations of the mining industry, "On the Subsurface resources of the Republic of Armenia" (entered into force on January 1, 2012), defined the concepts of *technogenic mine* and *industrial landfills*, which allowed the use of the accumulation of rocks formed as a result of the study, extraction or processing of minerals as a technogenic source of raw materials. It was also decided that allocations made by the subsurface users should be used on monitoring, in order to ensure the safety and health of the population of industrial landfills and adjacent communities, and to develop measures to prevent further disasters, within the timeframe provided by the mine closure plan. However, according to the law "On Making Amendments and Additions to the RA Code on Subsurface Resources", adopted on October 18, 2016, the concept of *technogenic mines* was withdrawn, and the concept of *subsurface waste*

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management was given. Together with the application for the acquisition of the right to subsurface use, financial guarantees must be submitted to the authorized body to ensure the implementation of the measures of the subsurface waste management plan (subsurface waste generation, installation, storage, observation of waste facilities, disaster prevention, elimination of consequences in case of accidents, as well as reclamation of areas of subsurface waste facilities). If the subsurface user does not carry out the measures provided for in the Management Plan, the authorized body (in this case, the Ministry of the Environment), implements the measures established by the plan at the expense of the financial means provided under the financial guarantee.

The mentioned amendment to the RA Code on Subsurface Resources also provides for the granting of permits for the processing of subsurface waste together with the right to subsurface use or separately, as well as establishes technical requirements and criteria for the construction of subsurface waste facilities.

As a result of the amendments made to the RA Code on Subsurface Resources on July 16, 2020 .

- 1 . Upstream tailings dam construction should be ruled out in Armenia (Article 50, Part 1, Paragraph 1.3, subparagraph C),
- 2 . The right to extract a metallic mineral is granted if the mineral resources have been confirmed by the results of the subsurface examination during the 5 years preceding the day of application submission, and the mineral reserves that have been assessed earlier than the specified period can be provided for use only after their revaluation and confirmation by the authorized body (Article 27, Part 1, Paragraph 1.1 and Article 49, Part 1).

4. The institutional framework for granting permission for the operation of legacy, in particular, old and improperly abandoned mines in the mining industry of Armenia, and ensuring the conditions for the mineral extraction

The Ministry of Territorial Administration and Infrastructure of the Republic of Armenia is responsible for developing and ensuring the implementation of the state policy in the field of mining industry, which, according to the RA Code on Subsurface Resources, the right to subsurface use is granted with the single window concept. In particular, the right to extract minerals is granted on the basis of positive expert opinions *on technical safety and environmental impact* received from the RA Ministries of Emergency Situations and Environment regarding mineral extraction projects.

The inspection bodies of urban development, technical and fire safety, environmental protection are responsible for monitoring the fulfillment of the conditions stipulated by expert opinions, as well as the obligations stipulated by the subsurface use agreement concluded between subsurface users and the authorized body, the fulfillment of the conditions of the extraction project in accordance with the procedure established by the RA Code on Subsurface Resources, the laws "On Environmental Control" and "**On the organization and Conduct of Inspections in the Republic of Armenia**".

5. An example of international standards and best practice on the issue under discussion

Previously exploited mines in Albania are provided for subsurface use as a result of negotiations with the Government. The basis for the latter is the principle of distribution of obligations between the state and the future subsurface user on taking on obligations related to the solution of environmental problems inherited by the state.

6. The main legislative and institutional issues and gaps identified in the topic under discussion

Having studied the above-mentioned legislative regulations, as well as the research conducted so far, we have identified the following legislative issues and gaps that need a more urgent response today.

Currently, 4 out of 22 non-exploited out of 43 metal mines registered in the state balance were exploited during the Soviet years: these are the central section of the Kapan copper mine, the Alaverdi copper-pyrite mine, the Akhtala barite-polymetallic mine, and the Dastakert copper-molybdenum mine. The subsurface users, with the exception of Dastakert, refused the permits obtained for the extraction of minerals from these 3 mines until 2012.

The Kapan copper mine was developed by an open and underground method. Underground excavations of the mine - some mines, boreholes, intersections, mines wells -were conserved in accordance with the procedure established by the RA Government Resolution No. 485-n of March 31, 2005 "On Approval of the procedure for liquidation and termination (conservation) of mining excavations", and the area of the open pit was not recultivated, since not all of the mine reserves are depleted, and residual reserves could be made available for use. In the areas adjacent to the mine, there is accumulated waste from subsurface use in industrial landfills.

According to Paragraph 8 of the procedure approved by the above-mentioned resolution, in case of dry conservation of mountain ditches, the existing drainage systems continue to operate and provide drainage from mountain ditches. During the entire dry conservation period, all major excavations should be inspected in accordance with the conservation project no later than every 2 years. The examination should be performed under conditions of free movement and ventilation. According to Paragraph 25 of the same procedure, the control over the compliance with the requirements for the conservation of mountain excavations is carried out by the authorized body.

Currently, the mineralized water flowing from the underground excavations of the mine, from the mines to the Earth's surface, can cause long-term environmental problems. This fact indicates that in the underground excavations of the mine, the groundwater level rises due to poor drainage or no drainage at all.

It should be noted that in 2017 (for a period of 2 years) the authorized body issued a permit for geological research to extract metals from the mineralized water flowing from the outlet of the new transport mine of the central mine of Kapan copper mine of Syunik region of the RA.

The Alaverdi copper-pyrite and the Akhtala barite-polymetallic mines were developed by underground method. The underground excavations were conserved. However, there are accumulations of subsurface waste in the areas adjacent to the mine. The reserves of these mines are also not depleted and can be provided for use. The mineral extracted from the mines was recycled in the area adjacent to the mines, and the tailings accumulated in the Nazik tailings storage facility.

The Dastakert copper-molybdenum mine was developed by an open method. The residual reserves of the mine were provided for use, but the company's subsurface use right was terminated in 2020. During the Second World War, the mineral extracted from the mine was recycled in the area adjacent to the mine, and the tailings were accumulated in the Dastakert tailings storage facility.

The reserves of the above-mentioned 4 mines can be provided for use only after their revaluation and reapproval by the authorized body.

It should be noted that the requirements for the revaluation of reserves are established by **paragraph 48 of the RA Government Resolution N274-n** of March 14, 2013, according to which the stocks are subject to reapproval, if:

- 1) new minerals or types have been discovered during the course of operational exploration,
- 2) the requirements of standards or technical conditions for the quality of mineral raw materials have been changed,
- 3) there is an increase in reserves (more than 50%);
- 4) more than 30% of the approved balance reserves has not been confirmed or has lost its industrial value as a result of the mine exploration results;
- 5) the natural conditions of the mine, the requirements for assessing the impact on nature and the environment, the technologies of extraction and processing of mineral raw materials and other objective conditions have been changed, which leads to an increase (decrease) in profit by 20 percent or more.

The information required by paragraph 48 of this resolution (obtained during the operation of mines) is necessary for the development of reserve revaluation programs, and it is submitted to the authorized body after the expiration of the subsurface use right or in case of refusal. Therefore, the authorized body should manage the complete geological information of the previously partially exploited mines, including detailed information on the residual reserves of the mine by mineral bodies (veins), as well as the previous mining project, it should be available to the public, otherwise the work on revaluation of reserves of partially exploited mines is unrealistic.

Among the main indicators of economic evaluation (feasibility) of further exploitation of partially exploited mines it is necessary to highlight studies on the stability of mountain excavations, ventilation, groundwater presence in the pits, their penetration, as well as on the possibilities of creating drainage channels, acid drainage, their further use or replacement with new excavations, and the development of measures for their safe operation, on the basis of which a new extraction project should be developed.

Work on the development of safety measures for the further operation of partially exploited mines, depending on the mining and geological, mining and technical conditions and the number and volume of mountain excavations is time-consuming and requires large financial resources, but the RA legislation does not provide permits to organizations for conducting such important research.

As a result of the above-mentioned gaps in the legislation for granting rights to extract minerals from previously partially exploited mines, the state cannot fully manage (grant the right to subsurface use) all state-owned mineral resources, and it also should invest larger financial resources to implement priority measures to reduce the negative impact on the environment from the mining area.

As a result of the amendments made to the RA Code on Subsurface Resources on July 16, 2020, the legal regulations related to the of mine closure (physical closure, including the closure of subsurface waste facilities and monitoring after the closure of subsurface waste facilities) and the presentation of the mine closure program (Article 58.1) have improved, but they do not regulate the safety issues of further operation of partially exploited mines or mountain excavations as a result of the termination and refusal of the right to subsurface use.

Particular attention should be paid to the fact that during 2020, and after that, in case of termination of the right to extract metallic minerals, the protection issues of the extracted areas of the mineral will also be inherited by the state, if the legislation does not provide for appropriate regulations. The protection problems of subsurface waste facilities may be inherited by the state, if those subsurface users have not submitted a plan for subsurface waste management - financial guarantee in accordance with Article 80, Part 10 of the RA Subsurface Code.

As a result of geological studies carried out in the mines of the Republic of Armenia in different years (pre-Soviet, Soviet and post-Soviet), subsurface waste generated during the passage of underground excavations, the empty rocks in the mines that enclose the ores on the sides and cover them, minerals classified as non-

balance reserves are placed on the territories of study or mines, on the surface of the earth as subsurface waste without recultivation of their surfaces in order to develop a technological scheme for extracting metals. The information on these was summarized by the RA Ministry of Environment.

The restoration of the above-mentioned facilities, as well as the implementation of long-term environmental monitoring programs in the facilities after the rehabilitation works was inherited by the state (for example, Tandzut gold-bearing quartzite, Fioletovo gold mine, Hagvi copper mine (this is not included in the list of 43 mines recorded on the balance of mineral reserves), Gladzor polymetallic mines, Hankadzor copper reserve mine, deposits of mercury in Zangakatun (Sovetashen) and Khosrov, Vernashen lead-zinc deposits, etc.).

There are 23 tailings on the territory of the Republic of Armenia, of which 9 are conserved. 8 of them were conserved in the Soviet years. 5 of the existing tailings are currently unattended, of which 4 are conserved and 1 is the Terterasars tailings, which is considered to be operational. It turns out that the conservation of the Terterasars tailings must be carried out with state funds.

As a result of the amendments made to the RA Code on Subsurface Resources on July 16, 2020 (Article 50, Part 1, paragraph 1.3, subparagraph C), the construction of upstream tailings dam should be ruled out in the RA, but it becomes an obstacle to obtaining the right to subsurface use, since there are no standards and rules established by law for the construction and operation of downstream tailings.

7. Preliminary recommendations for policy development to improve the current situation

In order to improve the current situation, taking into account the fact that the Government of the Republic of Armenia has initiated a strategy for the development of the mining industry, the following urgent proposals are important, which are necessary to solve the environmental problems that have been inherited, as well as the installation and protection of the tailings generated as a result of ore processing for new subsurface use.

Urgent recommendations

Implement legislative changes.

1. Prior to the commissioning of partially exploited mines, provide economic entities with the opportunity to assess the possibility of further safe operation or their replacement of previously excavated mines. In order to assess the environmental and social impact resulting from the (formerly) operation of the mine, as well as measures to eliminate them, in particular, carry out the *cost-benefit* calculation necessary for the reassessment of the mine resources.

2. Establish preferential conditions in the process of granting the right to subsurface use and extraction of minerals for partially exploited mines, if the economic entity undertakes to eliminate the consequences of the negative impact on the environment that arose in the past as a result of mining from this field, and to preserve the former subsurface waste facilities.

3. In case of providing the mines with the approved reserves as a result of the geological studies carried out before 2017, establish in the concluded contracts the obligations of protection of the subsurface waste objects arising as a result of the geological study.

4. Establish appropriate standards for the construction and operation of tailings to eliminate obstacles to the granting and realization of the right to subsurface use.



5. Make primary geological materials on partially exploited mines and detailed information on the residual reserves of the field available to the public, as well as increase online access to already digitized geological stock materials, especially in the context of COVID-19 pandemic.

Non-urgent recommendations

1. Establish a legislative framework for not passing on to the state the problems of protecting the territories extracted by minerals in the case of the denial of the right to extract subsurface minerals.
2. Take measures to fulfill the requirements of Part 10 of Article 80 of the RA Code on Subsurface Resources.