United Nations ECE/ENERGY/GE.4/2023/5

Economic and Social Council

Distr.: General
27 February 2023

English only

Economic Commission for Europe

Committee on Sustainable Energy

Group of Experts on Coal Mine Methane and Just Transition

Eighteenth session
Geneva, 20-21 March 2023
Item 5 of the provisional agenda
Report on implementation of the work plan for 2022-2023

Coal mine closure in Albania and Serbia

Note by the Secretariat

I. Introduction

1. In 2022, the United Nations Economic Commission for Europe (ECE) was requested to develop a study analysing the local geological and mining conditions in Albania and Serbia and to develop technical, principle-based guidelines for designing and implementing a programme for an efficient, safe, and environmentally conscious mine closure in those countries.

2. This document summarizes the draft of the study to allow the members of the Group of Experts on Coal Mine Methane and Just Transition to familiarize themselves with its content and provide their feedback during the eighteenth session of the Group. This feedback will be incorporated in the final version of the study.

II. The scope and the purpose of the study

3. The goal of the study is to provide a theoretical background for actions to reclaim the mined land and mitigate hazards such that the land is suitable for repurposing and sustainable development.

4. The document is designed to improve both the beneficiary countries' national capacities to close coal mines, to ensure that the post mining sites are environmentally safe and safe for the population, and that at the end of the process the reclaimed land is ready for further use unrelated to coal mining.

5. The study analyses the below-listed problems related to mine closure and identifies specific actions to address them taking into account the local circumstances in Albania and Serbia:

(a) Management and remediation of groundwater and surface water drainage systems;

(b) Prevention of air pollution from fugitive gases such as methane, carbon dioxide, and others;

(c) Extinguishing and preventing underground coal fires, or those that occur in waste dumps;

(d) Monitoring of subsidence of mined lands and prevention of other ground surface movement; and

(e) Monitoring and remediation of chemical pollutants that may leach from mine waste dumps.

6. The above actions are critical prerequisites to the sustainable redevelopment of land post-mining. Successful results depend upon accurate identification of the risks and hazards and following appropriate mitigative and corrective actions to reclaim and remediate the land.

7. Completion of the post-mining reclamation and remediation processes are critical preconditions for repurposing mined land for future use.

8. Virtually every action of the mine closure process is associated with a risk, and some of the related hazards can occur even many years after closure. As a result, the proper closure of the underground infrastructure should be done to provide the required safety level over the long term. Among the long list of hazards associated with mine closure, the most important are those related to gas (methane), fire, dust, water, and subsidence.

III. Actors involved

9. Since neither Albania nor Serbia has sufficient in-country expertise in the fields in question, ECE was requested to help.

10. To deliver the requested task, the Central Mining Institute (Główny Instytut Górnictwa - Instytut Badawczy, hereafter GIG) from Poland was hired by ECE to provide technical expertise, analyse the situation in the beneficiary states, and draft the document.

11. Poland has one of the biggest coal industries in Europe and the Group of Experts on Coal Mine Methane and Just Transition cooperates closely with Polish stakeholders. In 2017, an International Centre of Excellence on Coal Mine Methane (ICE-CMM) operating under the auspices of the Group of Experts was established in Poland.

12. GIG is the host of ICE-CMM in Poland. It has well-proven expertise in all matters related to coal mining, including mine closure and land repurposing. GIG has highly qualified specialists and experience in developing studies, analysis, and reports similar to the one that was requested by Albania and Serbia.

13. To support GIG's work and ensure that it had access to the necessary local data and stakeholders, two local consultants, one from each of the beneficiary countries were hired.

14. GIG's and the local consultants' work was monitored, supervised, guided, and assessed by the Bureau of the Group of Experts on Coal Mine Methane and Just Transition. The latter also reviewed and approved a draft of the study.

IV. Methodology

15. The document was prepared based on a thorough literature review, information obtained during a fact-finding mission to Albania and Serbia, and the input provided by the local consultants.

16. A fact-finding mission to Albania and Serbia was conducted to obtain relevant information and data at the source. It consisted of 3 mine site visits, one in Serbia at the Soko mine, and two in Albania at the Valias and Memaliaj mines, and a workshop. The workshop provided an opportunity for discussion of an early draft of the study with local stakeholders. The stakeholders provided valuable feedback on the gathered materials, analysis, problems that were identified, and proposed recommendations.

V. The overview of the study

17. This document assesses the local geological and mining conditions in Albania and Serbia and offers technical, principle-based guidelines for designing and implementing a programme for efficient, safe and environmentally conscious mine closure there. It also provides information about possible hazards related to closure of underground coal mines, and identifies the environmental aspects which need to be addressed during the process of mine closure and post-mining land repurposing.

18. The document starts with an analysis of the current situation of open and closed coal mines in Albania and Serbia, focusing on those countries' reserves, exploitation methods, infrastructure, coal production, employment, and the investments in mine closure.

(a) There are currently no active state-owned underground coal mines in Albania, and only two small private active mines continue operations, with a combined output of approximately 240,000 tonnes in 2021. Many coal mines that operated in Albania in the past are currently abandoned or dormant. While on a number of occasions there were plans to revive the coal industry in the country to ease the social burden caused by its closure, none of them have materialized to date. Furthermore, there are many negative factors, all of which are discussed in the study, that testify against reasonability of any such projects;

(b) In Serbia, underground coal mining is carried out by the state-owned company JP PEU Resavica. It was established in 1992 and includes eight underground coal mines situated in the southern and the central part of the country, which in 2020 produced, cumulatively, approx. 379,000 tonnes of coal.

19. Then the study describes the geological characteristics of the coal seams and the mining conditions in the beneficiary States.

20. The study describes the general problems related to mine closure, and assesses the presence and the scale of each of them in Albania and Serbia. In that context, the focus is given to groundwater and surface water, gas hazards (mainly methane and carbon dioxide), underground coal fires, subsidence, chemical pollutants, and fires in waste dumps.

21. The document also evaluates the potential to repurpose mined lands in Albania and Serbia for future development, analysing in particular the possibility to utilize the land for green energy generation. To evaluate the feasibility of various options, the study applies the premises of the scenarios developed under the two projects developed by the Research Fund for Coal and Steel's (RFCS), namely POTENTIALS[1] and GreenJOBS,[2] and uses them as a basis for its analysis.

(a) The first of the above-mentioned RFCS-funded projects assesses synergistic potentials of the end-of-lifecycle coal mines and coal-fired power plants, analysing the situation from a broad perspective that includes the closely related neighbouring industries and the local just transition plans;

(b) The second project focuses, in turn, on leveraging the competitive advantages of the end-of-lifecycle underground coal mines with the aim of maximising the green and quality jobs creation.

22. Finally, the report offers technical, principle-based guidelines for mining hazards during shaft closures and suggests a general closure procedure that could be applied to the underground coal mines in Serbia.

VI. Conclusions and recommendations

23. The effects of coal mining may appear many years after cessation of extraction activities and therefore continuous monitoring of post-mining areas in both countries is

[1] https://potentialsproject.eu/

[2] https://greenjobsproject.uniovi.es/

strongly recommended, especially if development of residential buildings is planned, or has already occurred in such areas.

A. Albania

24. Albania's economic development makes post-mining areas attractive to entrepreneurs. Therefore, having a large potential for being repurposed, they should be continuously and carefully monitored, especially in terms of water quality and land deformation in the areas around the shafts.

25. Analysis of Albania's coal reserves, estimated at 130 million tonnes, shows that, in theory, there is a possibility to restart coal extraction. However, the complexity of geological and mining conditions and the history of the local underground coal mining indicate that the economic viability of such undertaking is questionable, leaving aside the environmental aspects.

26. The most promising directions for repurposing former mining land in Albania are to utilize them for development of green energy generation infrastructure, in particular photovoltaic farms, as the climate and weather conditions in the country are favourable for such projects.

27. Another option for utilizing the Albanian mining infrastructure is to create drinking water reservoirs, as the location of the mines indicates that the areas on their surface can be utilized for urban construction (near Tirana), or for agricultural purposes.

B. Serbia

28. The complicated tectonic conditions pose serious problems for any potential mining efficiency improvements in Serbia.

29. GIG’s analyses of coal reserves indicates that only three out of eight active coal mines in Serbia: RMU "Soko", RMU "Štavalj" and RL "Lubnica", have sufficient coal reserves to justify potential planning for longer-term exploitation. However, all these mines are characterized by natural hazards, including those related to methane, water, and fire, which make any such plans questionable. In addition, the assessment is based solely on the magnitude of the reserves and does not take into account other considerations such as environmental impact assessments, the public health costs associated with the continued operation of the mines, and/or the country’s international environmental commitments.

30. In RMU “Soko” and RMU “Štavalj”, the first step should be to recover and economically utilize coal mine methane (CMM). That would improve the safety of the current production and provide a basis for a new business case after the mine is closed.

VII. Next steps

31. The Group of experts on Coal Mine Methane and Just Transition stands ready to support Albania’s and Serbia’s efforts related to coal mine closure and land repurposing and welcomes any opportunity to cooperate with both countries on other relevant projects.