UNECE Group of Experts Coal Mine Methane and Just Transition
Task Force on Safe Operations and Closure of Coal Mines

Fifth Meeting
11 June 2024
15:30 - 17:00 (Geneva time)

Summary

Item 1. Adoption of the agenda

2. The Chair of the Task Force, Ms. Alicja Krzemien, opened the session. The draft agenda was adopted without any changes.

Item 2. Presentation on environmental issues linked to closing of mines, with a focus on water (global perspectives and experiences from Poland)

Presentation by David Ellison on environmental issues linked to closing of mines, with a focus on water (global perspectives)

3. The presenter emphasized the benefits of restoring landscapes, particularly after open-faced mining, by focusing on the significant role of tree and forest cover in the hydrological cycle and climate regulation. He introduced the concept of precipitation recycling, where increased evapotranspiration from forests contributes to higher rainfall over land. Mr. Ellison argued that restoring the historically lost 40-50% of forest cover could substantially increase rainfall and improve the global hydrologic cycle.

He highlighted two primary cooling benefits of forests: carbon sequestration and increased cloud cover, which reflect solar radiation back into space. Restoring forests could have a positive impact on the Earth's energy balance, potentially exceeding the current imbalance of 0.79 watts per squared meter. While the carbon sequestration benefits of forests are widely accepted, the cooling effect due to cloud cover and reflectivity is less understood but equally important.

The presenter addressed common misconceptions about albedo (reflectivity), demonstrating that while forests absorb sunlight due to their dark color, they facilitate evapotranspiration, which cools the land surface and contributes to cloud formation. He noted that deforestation leads to less infiltration and groundwater recharge, increasing runoff and reducing atmospheric moisture, thereby exacerbating land warming. He supported his arguments with examples of successful landscape restoration in Brazil and China, showing dramatic improvements in local climates and landscapes and concluded by advocating for the restoration of degraded landscapes, particularly after mining, to leverage the cooling and hydrological benefits of tree and forest cover. Each tree, he asserted, acts as a carbon sink, cooling tower, and potential source of future rainfall, emphasizing the crucial role of vegetation in mitigating climate warming.

During the Q&A session, Task Force members asked the presenter's opinion on the evapotranspiration index across different types of vegetation, specifically comparing coniferous forests, broadleaf forests, and other vegetation. The presenter clarified that while conifers have higher evapotranspiration rates, both conifers and broadleaf forests significantly outperform croplands in this regard. He emphasized the importance of having substantial tree cover, especially in arid landscapes where trees can aid in infiltration and groundwater recharge. He noted that wetlands also have high evapotranspiration rates due to their combination of open water and tree cover.

Mr. Ellison stressed the necessity of achieving a minimum level of tree and vegetation cover to maximize groundwater infiltration and recharge, regardless of the landscape type. He mentioned that while additional tree cover can alter the local water balance, achieving this minimum level is crucial for the health of the landscape.

The conversation then shifted to the economic viability and incentives for tree planting. The presenter pointed out that trees are one of the cheapest and most beneficial tools for climate mitigation, offering numerous ecosystem services such as carbon sequestration, water purification, and flood mitigation. He also highlighted that tree cover can support recreational activities and wood production.

Task Force members noted that evapotranspiration is just one of many ecosystem services provided by vegetation and emphasized the need to consider various ecosystem services, including food production, especially in areas where local communities rely on agriculture for their livelihoods. They underscored the importance of balancing tree cover with the need for food security and economic viability.

The presenter responded by reinforcing the need for a minimum level of tree cover to enhance ecosystem functionality and support agricultural productivity. He acknowledged the challenge of balancing agricultural use and ecosystem restoration but insisted that without improving the landscape's ecological health, food security cannot be sustained.

The session concluded with appreciation for the interactive discussion and a transition to another presentation on water issues related to underground coal mining.

Presentation by Ewa Janson on environmental issues linked to closing of mines, with a focus on water (experiences from Poland)

The presenter discussed the environmental impact of coal mining in Poland, focusing on surface and groundwater bodies. Ms. Janson's presentation addressed historical and current issues, emphasizing the transition process, environmental problems, and legislative requirements.

The following key topics were presented:

1. History of Coal Mining in Poland:
    - Coal mining in Poland began nearly two centuries ago.
    - Peak production was in the 1980s with 200 million tons annually from 65 mines.

- Transition began in 1989, reducing active mines to about 30% and current production to 15 million tons annually.

2. Environmental Impact and Mine Water Management:
   - The environmental impact is significant due to interconnected mines.
   - A company is responsible for dewatering abandoned mines to prevent water hazards and surface destabilization.
   - Approximately 400 cubic meters per minute of mine water are discharged, leading to high salinity levels in surface waters.
3. Challenges with Mine Water:
   - High salinity (chlorides and sulfates) from deep mining activities poses treatment challenges.
   - Legislative derogations allow the discharge of saline waters into rivers.
   - The salinity has led to ecological issues, including algal blooms and the Odra River catastrophe.
4. Potential Solutions and Projects:
   - There's potential for using mine water for heating, but systemic and legislative support is lacking.
   - Small-scale projects have shown feasibility, but large-scale implementation is hindered by financial and infrastructural barriers.
5. Future Outlook and Research Needs:
   - There's a need for comprehensive water management models for the entire coal basin.
   - Collaborative efforts with governmental and industrial partners are essential.
   - Further research is required to explore the full potential of mine water use and address long-term environmental impacts.

During the discussion, Task Force members raised questions about water pumping discrepancies and potential geothermal energy use. The presenter clarified the complexities of hydrogeological conditions and the lack of incentives for geothermal projects despite technical feasibility.

Item 3. Update on Task Force Activity 1: Catalogue of mine closure studies

9. No discussion took place under this agenda item due to time constraints. The Secretariat will follow up with Task Force members to ask for updates on activities status via email.

Item 4. Update on Task Force Activity 2: Catalogue of business models to promote sustainable local economic growth

9. No discussion took place under this agenda item due to time constraints. The Secretariat will follow up with Task Force members to ask for updates on activities status via email.

Item 5. Any other business

10. There were no points raised under AOB. The Chair and the Secretariat thanked participants for their time and involvement in the call and closed the meeting.

Participants:

Task Force Chair	1. Alicja Krzemien
Task Force Members	2. Alexey Shlyapin 3. Pedro Riesgo Fernández 4. Kamenik Matjaž 5. Angel Esparza 6. Evgeny Alexeyev 7. Clark Talkington 8. Michal Drabik
Presenters	9. David Ellison 10. Ewa Janson
UNECE Forests Unit	11. Florian Steierer
Secretariat	12. Chiara Giamberardini