

Summary report of the online seminar on mine tailings safety in the UNECE region and beyond

Held as an accompanying event to the eleventh meeting of the Conference of the Parties to the UNECE Industrial Accidents Convention

1 December 2020

United Nations Economic Commission for Europe

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A. Background and acknowledgements

The seminar on strengthening mine tailings safety in the United Nations Economic Commission for Europe (UNECE) region was held on 1 December 2020, as an accompanying event preceding the eleventh meeting of the Conference of the Parties (CoP-11) to the UNECE Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention). The seminar was held online in English and Russian, with financial support provided by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. The predominant reasons for organizing the seminar could be found in recent accidents and failures at tailings management facilities, the need to address industrial safety hotspots as highlighted by the Convention's long-term strategy (ECE/CP.TEIA/38/Add.1) and the work on improving the safety of tailings management facilities that the Convention has been carrying out for several years.

The overall aim of the seminar was to support UNECE member States, notably Parties to the Convention and the beneficiary countries of its Assistance and Cooperation Programme, in their efforts to implement the Convention by raising awareness about the Convention's role in improving mine tailings safety. An additional objective was to agree on future work and action to take by the Convention, by exchanging experiences in and beyond the UNECE region.

The seminar programme was prepared by a small group on mine tailings safety, established under the Convention's Bureau. The group, comprising Mr. Michael Struckl (Austria), Mr. Gerhard Winkelmann-Oei (Germany), Ms. Torill Tandberg (Norway) and Ms. Martine Rohn-Brossard (Switzerland), was supported by the UNECE secretariat (Ms. Franziska Hirsch and Ms. Claudia Kamke) and a consultant to the UNECE secretariat (Mr. Max Linsen).

The small group held multiple online meetings and communicated by email to prepare the seminar. It also drafted supporting documents for participants, moderators of the sessions and speakers in advance of the seminar, notably the official background document for the seminar (ECE/CP.TEIA/2020/2) and a concept draft decision on strengthening mine tailings safety in the UNECE region and beyond, for consideration by the Bureau (resulting in the draft decision ECE/CP.TEIA/2020/3, and later its updated version ECE/CP.TEIA/2020/L.1, the final version being included in ECE/CP.TEIA/42/Add.1). It also prepared the flyer containing the seminar programme. All documents were made available on the UNECE webpage.¹

Due to the COVID-19 pandemic, the organization of the seminar (which had initially been planned as a face-to-face meeting) demanded a high level of adaptability of the small group in preparing and adjusting the seminar format and programme. Thanks to the continued engagement of the members of the small group, the objectives of the seminar could be met in an online format. The successful organization and conduct of the seminar is also much obliged to the speakers from competent authorities, industries and stakeholders, and to the moderators, who managed to shape a seminar that did not compromise on interesting and relevant content, even if presentation time was shorter than in a face-to-face meeting. And

¹ Available from <https://unece.org/environmental-policy/events/seminar-mine-tailings-safety-unece-region-and-beyond>

a final word of appreciation should be extended to the seminar participants, who thanks to their participation, questions and feedback, created a relevant platform to discuss future developments and action to increase safety in mine tailings management in the UNECE region and with a global perspective.

The present report contains the conclusions and key messages from the seminar, a list of actions aimed at strengthening mine tailings management, and the results of an evaluation held following the seminar. The report was prepared by the UNECE secretariat, thanks to a financial contribution from Germany. Its contents were agreed upon by the small group on mine tailings safety.

B. Attendance

The seminar was attended by a total of 107 participants. Among the participants were representatives of 28 Parties² to the Convention, four non-Parties within the UNECE region³ and two countries outside the UNECE region.⁴

In addition, representatives of five United Nations organizations participated in the meeting: The United Nations Environment Programme (UNEP) and the United Nations Environment Programme (UNEP) / Office for the Coordination of Humanitarian Affairs (OCHA) Joint Environment Unit, the UN Economic Commission for Africa (UNECA), the United Nations Development Programme (UNDP). Representatives of the Organization for Economic Cooperation and Development (OECD), the Center for Emergency Situations and Disaster Risk Reduction (CESDRR), the Organization for Security and Cooperation in Europe (OSCE) and the World Health Organization (WHO).

Non-governmental organizations (NGOs), academic institutions and industry associations were also well-represented. NGOs present included Earthworks, the London Mining Network, the Responsible Mining Foundation and the Zoï Environment Network. Academic institutes participating were Babes-Bolyai University, the Indonesian Institute of Sciences, the Jaroslav Cerni Water Institute and the Magdeburg-Stendal University of Applied Sciences. Industry was represented by the International Council on Mining and Metals, KAZminerals, Kazzinc and Vattenfall. Public agencies and organizations that participated were the International Commission for the Protection of the Danube River and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

² Austria, Bulgaria, Croatia, Cyprus, Czechia, Estonia, European Union, Finland, France, Germany, Greece, Hungary, Italy, Kazakhstan, Latvia, North Macedonia, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Sweden, Switzerland, and the United Kingdom of Great Britain and Northern Ireland.

³ Kyrgyzstan, Tajikistan, Ukraine and Uzbekistan.

⁴ Mongolia and Sudan.

C. Seminar conclusions and key messages

The online seminar contained two thematic parts, covering three hours in total. The first part focused on an exchange of experiences in safe management of mine tailings and included three sessions: Session I provided a scene-setter in the area of mine tailing safety at the UNECE and at the global level. Session II offered a platform to exchange experiences and lessons learned from the application of the safety guidelines and methodologies for improving tailings safety in UNECE countries, while Session III combined experiences and lessons learned with proposed actions for safe management of mine tailings from stakeholders and countries in and beyond the UNECE region.

Through 5- or 10-minute presentations, statements and Q&A sessions, speakers shared their insights in key developments influencing mine tailings safety, as well as experience with management practices to prevent mine tailings accidents.

The second part of the seminar aimed at defining a pathway towards strengthened mine tailings safety, now and in the future. It included session IV on proposed actions to strengthen mine tailings safety in the UNECE region and beyond by the Industrial Accidents Convention, notably the actions lined up in a draft decision on strengthening mine tailings safety that would be presented to CoP-11 for adoption.

The seminar continued with an overview of conclusions, before drawing to a close.

This section summarizes speakers' key messages, interventions made by participants (in writing through the seminar's chat box or spoken) and seminar conclusions, following the structure of the seminar and its sessions.

I. Setting the scene in the area of mine tailing safety at the UNECE and at the global level

Session I was moderated by Ms. Torill Tandberg (Director, Directorate for Civil Protection (DSB), Norway and Chair of the Conference of the Parties to the Industrial Accidents Convention), who also opened the seminar and explained its background and objectives. The scene-setting was kicked off with a [keynote address](#) by Mr. Antonio Pedro (Expert member of the International Resource Panel (IRP) and Director of the Regional Office for Central Africa at the United Nations Economic Commission for Africa). He took a birds-eye perspective, linking **future demands for mineral resources** and pathways of resource intensity to the achievement of Sustainable Development Goals⁵ (SDGs), and showing **tendencies of circularity in material resources use**, building on several initiatives brought forward by UNECE, the European Union, the OECD and the Global Tailings Review (notably the Global Industry Standard on Tailings Management). Mr. Pedro gave the participants of the seminar some ideas and issues to consider, such as a **stronger role for governments** to enforce laws, regulations and standards and potential increased trust in the mining sector

⁵ More specifically, Mr. Pedro listed SDGs 1 (no poverty), 6 (clean water and sanitation), 7 (clean and affordable energy), 8 (decent work and economic growth), 9 (industry, innovation and infrastructure), 13 (climate action), 15 (life on land), 16 (peace, justice and strong institutions) and 17 (partnership for the goals).

thanks to technological advancement in strengthening mine tailings safety and reduced mine tailings quantities.

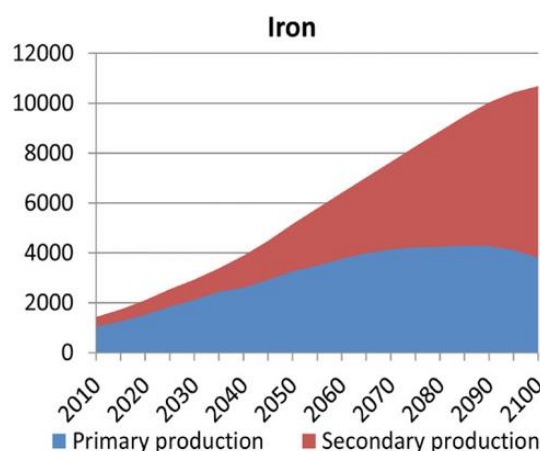


Figure 1: Forecasted future demand of iron

Next, Mr. Jan Kosmol (German Federal Environment Agency) [presented](#) how transitions of sectors towards sustainable development depend on increased use of mineral resources. He built on the previous speaker's key messages, showing study results indicating that **extraction of mineral resources will remain necessary**, even in a scenario where circularity of resources will take an important place in resources management⁶, once again highlighting the expected increase of primary resources to be extracted (up to over 400% increase for some metals used in environmental technologies for energy, transport and

agriculture for example). Mr. Kosmol further described how [climate change](#) is expected to influence mine tailings safety through sudden onset events (floods, storms and precipitation) as well as slow onset change (permafrost thaw, changes in humidity and changing weather patterns).

Ms. Martine Rohn-Brossard (Deputy Head of International Affairs Division, Swiss Federal Office for the Environment, Switzerland), [focused](#) the spotlight of session I on global initiatives to address governance of mineral resources and deployment of sustainable infrastructure, by speaking about recent developments on mineral resource governance at the global level, in preparation of the fifth United Nations Environment Assembly (Nairobi and online, 22-23 February 2021 and February 2022). Within a set of ongoing initiatives that address environmental challenges, she highlighted mine tailings safety and the implementation of **UNEA resolutions on mineral resources governance (UNEP/EA.4/Res.19) and sustainable infrastructure (UNEP/EA.4/Res.5)**. She indicated the need for a holistic approach and for global/international guidelines in the area of tailings management – currently absent – which could greatly benefit from the regional experience gained through the development and use of the UNECE Safety guidelines and good practices on tailings management facilities⁷.

⁶ Adapted from Van der Voet, E., Van Oers, L., Verboon, M. and Kuipers, K. (2019), Environmental Implications of Future Demand Scenarios for Metals: Methodology and Application to the Case of Seven Major Metals. *Journal of Industrial Ecology*, 23: 141-155. <https://doi.org/10.1111/jiec.12722> (CC BY 4.0)

⁷ Available here:

https://unece.org/fileadmin/DAM/env/documents/2014/TEIA/Publications/1326665_ECE_TMF_Publication.pdf

Session I ended with the launch of a short, [animated video](#), prepared by the UNECE secretariat, on mine tailings safety. The video shows the key causes for mine tailings accidents, future challenges and the key tools applied and actions taken by the UNECE Industrial Accidents Convention to strengthen mine tailings safety.

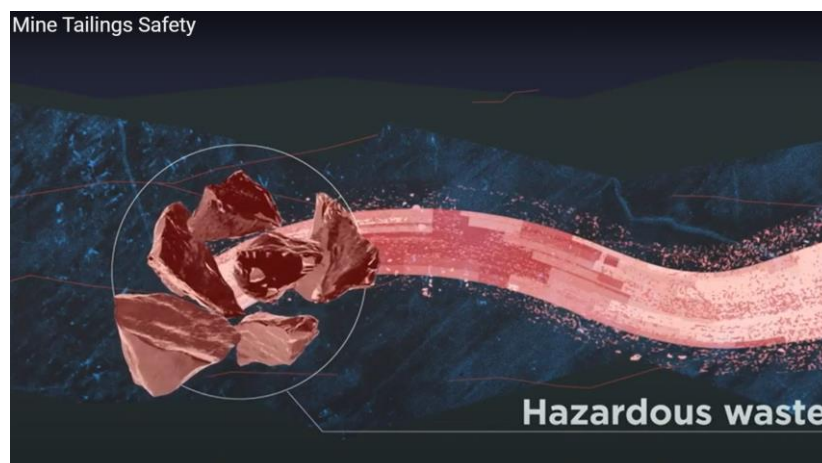


Figure 2: Still from the animated video on mine tailings safety

Session conclusions by the moderator

Ms. Tandberg concluded that the speakers in this session had shown how mine tailings safety needed to be prepared for future challenges, such as production increase and climate change. She added that the UNECE was well placed to take up the challenge of reviewing policies and implementing standards and guidelines, helping to achieve safe and sustainable mining.

II. Experiences and lessons learned from the application of the safety guidelines and methodologies for improving tailings safety in UNECE countries

Session II, also moderated by Ms. Tandberg, focused on the development of, application of and experience with the UNECE Safety guidelines and good practices for Tailings Management Facilities (TMFs).

Ms. Claudia Kamke of the secretariat to the UNECE Industrial Accidents Convention kicked off with the first [presentation](#) in this session, addressing experience with the **UNECE Safety Guidelines**, TMF methodology and transboundary cooperation in Kazakhstan, Tajikistan and beyond in Central-Asia.⁸ She recalled that the guidelines and methodology were endorsed by the governing bodies of the Industrial Accidents and Water Conventions, before explaining the TMF checklist methodology developed by the German Environment Agency based on the UNECE safety guidelines, including the **Tailings Hazard Index** to help identify hotspots of TMFs at risk, a checklist for operators to assess the safety levels of their TMFs, and a catalogue of measures to improve mine tailings safety (based on the Index and the checklist results). She then showed, using **maps of countries in Central Asia**, where these



Figure 3: UNECE Subregional workshop on mine tailings safety for Central Asia (Almaty, Kazakhstan, 20-21 November 2019)

tools had been applied and which TMFs were found to be at risk, and examples of on-site trainings and regional workshops. Ms. Kamke also stressed the need to improve inter-institutional coordination on mine tailings safety and the prevention of accidental water pollution within and beyond country borders.

Next, Mr. Gerhard Winkelmann-Oei, Co-Chair of the Joint Expert Group on Water and Industrial Accidents [presented](#) the further development of the TMF methodology under the UNECE Industrial Accidents and Water Conventions, in the context of prevention of accidental water pollution. He highlighted that the evaluation of a number of projects using the guidelines and methodology in Eastern European countries had led to the identification of some key challenges, encountered during the implementation of these projects. These

⁸ Further information about the Swiss-funded projects on strengthening mine tailings safety in Central Asia is available at: <https://unece.org/project-supporting-countries-central-asia-strengthening-safety-mine-tailings>; <https://unece.org/project-strengthen-safety-mining-operations-particular-tailings-management-facilities-tmfs>; and <https://unece.org/pilot-project-strengthen-safety-mining-operations-particular-tailings-management-facilities-tmfs>.

notably concerned the regulatory basis for inspections to be carried out, existing safety standards and the extent to which competent authorities were well-informed on TMF safety (and related allocation of resources and information sharing on the transboundary level, between countries or regions). These insights were used to develop updates of the TMF methodology. The checklist approach was updated by installing a harmonized approach across TMFs, aligning **safety requirements to the TMF life cycle** (design, operation, closure) and introducing specific hazard categories.

The Tailings Hazard Index was updated and developed into a **Tailings Risk Index**, using both hazards and exposure (of the environment and communities around a TMF) as elements in the equation. This updated methodology can be used to map TMF risk, to provide an overview of the different risks in large areas, including transboundary river basins, and to enable the **prioritization of the different types of risk** (to environment and population), to find adequate measures – among which land-use planning – to address these risks. In response to the presentation, Mr. Dijkens (former Chair of the Convention) asked if and how ecosystem restoration and health-incurred costs were included in the risk methodology, including costs of remediation after closure of a facility. This question was partly addressed by Mr. Winkelmann-Oei, who confirmed that closed sites were included in the methodology; and partly by presentations in session III.



Figure 4: Tailings Risk Index - ranking TMFs

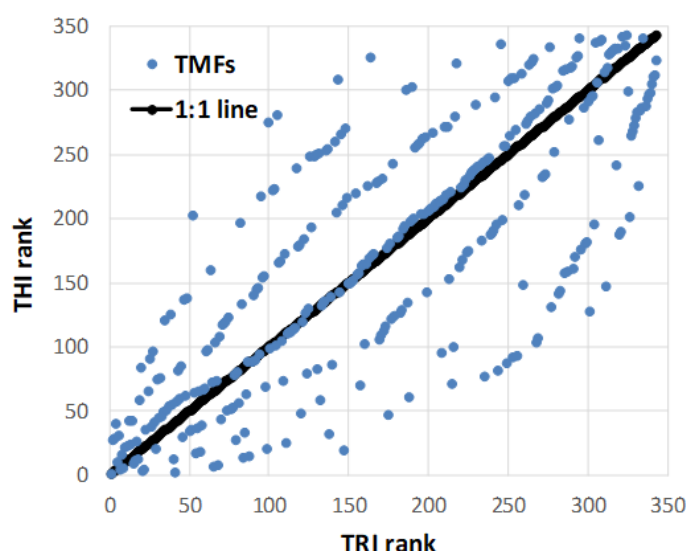


Figure 5: Tailings Hazards vs Tailings Risks

Taking a regional perspective and focusing on capacity development, Mr. Adam Kovacs of the International Commission for the Protection of the Danube River (ICPDR) [presented](#) the application of Safety Guidelines and methodology, to improve safety conditions of TMFs in the Danube River Basin in Romania and the Danube region. In comparison to the Tailings Hazard Index, he showed that half of the top priority TMF sites differed when applying the Tailings Risk Index, meaning that **taking environmental factors into account leads to a different focus of which safety measures need to be put in place**. Mr. Kovacs highlighted the next steps to assure the sustainability

of project outcomes, including a forthcoming ICPDR position paper on the TMF issue with recommendations at both technical and policy-making level, maintaining a database for Danube river basin, supporting further training and projects, and integrating the project and methodology into transboundary policy documents, namely the international part of the next **River Basin Management Plan** for the Danube river basin (to be published by end 2021).

Following the presentations, two country representatives made interventions. Mr. Farkhat Seifulov of the Ministry for Emergency Situations of the Republic of Kazakhstan, acknowledged the projects presented and reflected on the implementation of the Industrial Accidents Convention in national regulation and policies. He highlighted a mapping exercise for TMF safety and the organization of trainings based on the implementation of the TMF methodology presented in this session. He mentioned that thanks to **partnerships and the projects of the Assistance and Coordination Programme of the Convention**, funded by the Swiss Federal Office for the Environment, authorities and stakeholders in Kazakhstan are improving their understanding of the provisions under the Convention on a daily basis, and more specifically building experience and good practice in tailings management. The Convention and its projects are contributing to the implementation of national projects as well, which helps in establishing **coordination and cooperation between countries** in a more efficient and effective manner, creating a constructive dialogue. He called on other countries in the region to accede to the Convention, as it would improve their potential to ensure the safe management of mine tailings.

Next, Mr. Ardasher Mirzozoda, Deputy-Head of the State Supervision of Safe Work in Industry and Mining Supervision Service under the Government of the Republic of Tajikistan, thanked UNECE and international donors for their support in implementing the projects mentioned in this session. He provided an outlook towards the **accelerated industrialization and increased demand for raw materials** to this end, leading to more acute safety issues. Support received through the Project on strengthening TMF safety in Central Asia, funded by Switzerland, including its workshops, mentioned in this session was very important for Tajikistan. He regretted the current pandemic, hampering another workshop to take place as planned, but he assured that the methodology explained throughout the session had been widely adopted, and that various legal proposals have been issued to **improve mine tailings safety and the transboundary impacts of its accidents**.

Session conclusions by the moderator

Ms. Tandberg summarized the key conclusions of session II, observing that tailings safety is a matter of regional concern, which calls for closer transboundary cooperation on this matter. She called the audience's attention to outdated safety standards and management practices and the need to update national regulations and policies. At the basis of this was the recommendation, shared by speakers in this session, to secure a broader uptake of the UNECE Safety Guidelines and TMF methodology in all Central Asian countries to ensure harmonized safety standards and approaches, addressing also the need to improve inter-institutional cooperation and coordination, as well as an improved management approach towards the safe management of mine tailings and the prevention of accidental water pollution.

III. Experiences, lessons learned and proposed actions for safe management of mine tailings from stakeholders and countries in and beyond the UNECE region

Moderated by Mr. Michael Struckl, Vice-Chair of the Industrial Accidents Convention, this session accommodated presentations by representatives of industry, stakeholders and countries beyond the UNECE region. It included an open discussion, based on questions shared with participants before the seminar.

Mr. B. Otgonbayar, Senior Officer of the Technics and Technology Division at the Mining Policy Department of the Ministry of Mining and Heavy Industry of Mongolia [introduced](#) the legal framework under which mining and environmental protection are integrated in Mongolia. He then provided clear visuals of how increased production of mineral resources

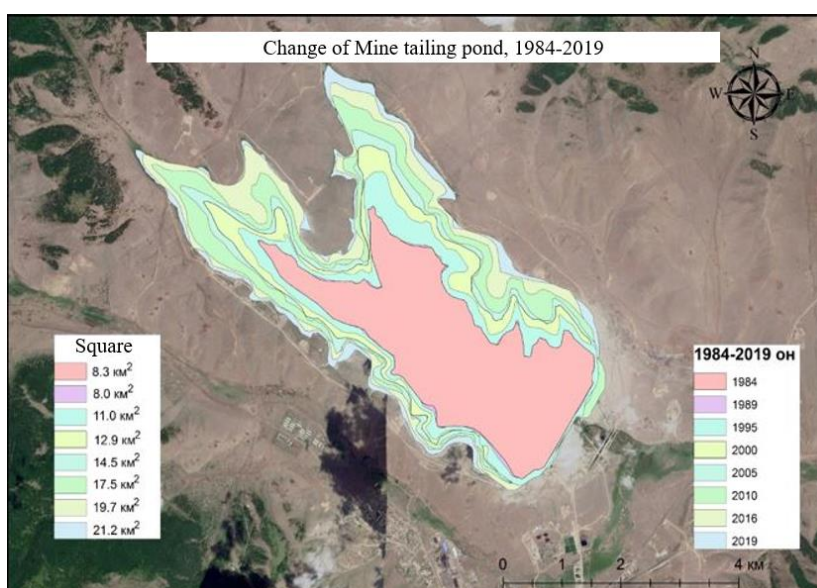


Figure 6: Increase of mine tailings pond surface in Mongolia between 1984 and 2019

at an extraction site in Mongolia led to a **threefold increase in surface of its tailings pond**. Mr. Otgonbayar further explained that mine waste can also consist of waste dust, an example of which showed that over half of the surface dedicated to mine waste storage contained dry mining waste.

The presentation also included key elements of the infrastructure needed for a safe

functioning of the tailings management system, including a hydraulic transportation system, tailing ponds, effluent water discharge system and an environmental protection (waste treatment) system.

Following the presentation, Mr. Richard Harkinson of the London Mining Network inquired if the Mining Policy Department of Mongolia had information available on fully constructed, four-wall mine tailings containment structures, in addition to the dam construction shown in the presentation, which was recognized to be a relevant point, addressed by Mr. Otgonbayar after the seminar.

Representing the International Council on Mining and Metals (ICMM), Ms. Diane Tang-Lee [presented](#) the [Global Industry Standard for Tailings Management](#) and follow-up actions to support its implementation. She described how the standard was developed in response to the human and environmental tragedy caused by the tailings accident at the Córrego de Feijão mine in Brumadinho in 2019. ICMM, in cooperation with the United Nations Environment Programme (UNEP) and Principles for Responsible Investment (PRI) convened a global tailings review, and subsequently drafted the Global Industry Standard for Tailings Management with the ambition to establish it as an international standard. Ms. Tang-Lee explained that the standard, which was drafted following an extensive public consultation process, aims to **strengthen existing**



Figure 7: The Global Industry Standard for Tailings Safety in a nutshell

environmental, social and governance requirements in the mining industry, covering the entire tailings facility lifecycle – from site selection, design and construction, through management and monitoring, to closure and end-of-life. After showing examples of requirements for companies to be met in order to meet the standard, she looked ahead to the implementation of the standard, considering **necessary changes in national legislations** and policies as well as potential for investors to support mining companies with its implementation.

Next, Mr. Guy Halpern of the OECD [focused](#) on the challenge of orphaned or abandoned mine sites, which he defined as sites without a known owner, or of which the owner is unable or unwilling to carry out site rehabilitation. Mr. Halpern approached the risks posed by orphaned or abandoned sites from an economic angle, applying a green growth lens. He

 **Secondary mining/re-commercialisation of waste**



- Some sites may have economically recoverable metals in waste
 - inefficient mining practices by modern standards
 - associated metals were not economically valuable at the time
 - Gold, copper, iron and coal mines are of particular interest
- Reprocessing of waste provides opportunity to bring disposal up to modern standards
- Does not use public funds
- Contributes to green growth

Figure 8: addressing abandoned/orphaned sites with a green growth lens

explored possibilities of **rehabilitation of sites thanks to recovery of precious metals** from orphaned sites, applying a method of reprocessing involving concentration of tailings and using adequate mineral processing solutions to liberate the valuable metals. According to Mr. Halpern's explanations, the tailings residues can be dewatered and dry stacked, and the water treated and

properly disposed back to nature (if environmental quality standards are met). Key hurdles to implement this process are lack of publicly available, up-to-date geological information, risk perception issues such as concerns about environmental liabilities and regulatory stability – especially if such processes are to be rolled using with private investor’s funds. As long as environmental costs are not properly priced, profit margins may be too slim when compared to traditional royalty rates. Mr. Halpern concluded that for the mining sector to incorporate circular economy/green growth principles into mining in the UNECE region, the **information on mine sites and recoverable metals should become publicly available** and up to date. He mentioned an example from Australia, where the government of Queensland was establishing a draft Risk and Prioritisation Framework for Abandoned Mine Management and Rehabilitation, ranking sites on criteria including perspective, infrastructure, reprocessing, land-use and potential for renewables. To address risk perception issues by the private sector, a consistent and reliable regulatory framework would be needed.

Mr. Pierre de Pasquale, Head of Stakeholder Engagement at the Responsible Mining Foundation (RMF) then [presented](#) the key findings on tailings risk management from the Responsible Mining Index report that was published in 2020, with a focus on the UNECE region and with a strong plea for leadership and decision-making in this area. He presented indexed performance of mining companies operating in countries of the UNECE region, showing their performance in terms of public disclosure (one thirds of the companies had low scores), effective management (all companies scoring well-below society’s expectations), availability of data on the site/tailings

management level (one fifth scoring the full score, 50 percent with the lowest score). Importantly, the data presented showed that many **companies are not committed to prevent discharging mine tailings into lakes or rivers**. Mr. De Pasquale indicated

that sector stakeholders

have a choice to clearly articulate ambitions for the sector, including if it wants to contribute either to an ever increase in tailings and extreme events with dam bursts and disasters, or to a decrease in tailings and safe tailings storage tailings ponds. He further highlighted the role of governments and the private sector. Governments have a responsibility to plan and fund circular economy, incentivise recycling, and for those materials that are essential to societies, licence “essential” needs. Mining companies on the other hand, can future-proof their business models through implementation of responsible mining practices and prioritization of investments into **economic, environmental and social governance (EESG) policies and practices**.

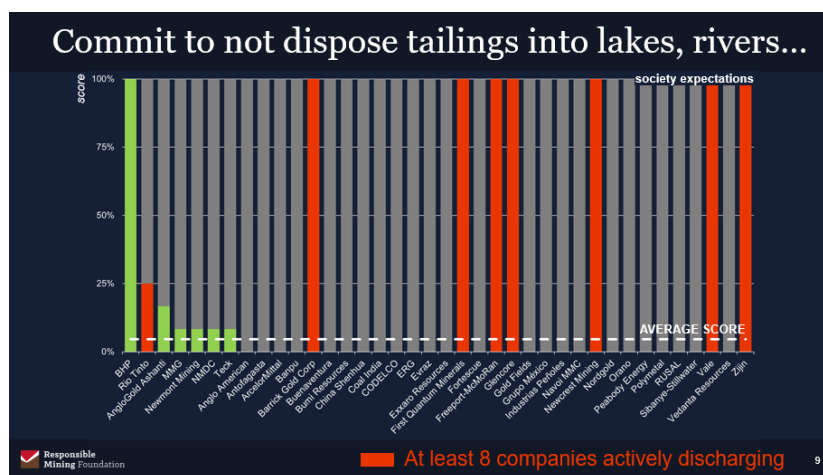


Figure 9: Companies' commitment on mine tailings discharge

Mr. Struckl reflected on the presentations provided in this session and shared his observation that **safety management, land-use planning and environmental aspects** have made their way over the years from being developed and applied by the nuclear industry, to being adopted by the process industry and now also by industrial safety and mine tailings management communities as well. He thanked the presenters for their contributions and turned to the interactive part of this session, opening the floor for speakers who wished to respond to the questions communicated to the seminar participants before the meeting and in the chat. These questions were the following:

- *Which experiences, lessons learned or good practices related to the safe management of mine tailings could you share, in view of the existing national challenges and international developments in the area of mineral resource governance?*
- *What are, in light of current challenges and megatrends, the actions you are taking or planning to take to strengthen policy and governance to improve mine tailings management, and manage and reduce related disaster risks?*

Ms. Gulfia Shabaeva of the State Committee of Industry, Energy and Subsoil Use of Kyrgyzstan built on the presentations in the session and the questions for discussion, starting with the observation that the **majority of mining sites – including their tailings management facilities – are located 2000 meters** above sea level. This calls for specific measures, for example related to prevention of accidents but also concerning contingency planning. She further indicated how ongoing transboundary cooperation with Kazakhstan on the safe management of two tailings sites is appreciated, including topics such as operational safety, processing, **prevention of accidents caused by natural hazards** and contingency planning. She further mentioned the work on the restoration of tailings sites at the Issyk-Kul lake, recalling that national rules had been established for preservation of natural sites, which in turn included the development of an inventory of abandoned ‘legacy’ tailings and hazardous materials. Following a Roundtable on hazardous tailings, which offered a platform for a wide range of institutions dealing with industrial safety, recommendations for further work on increasing safety of mine tailings were formulated, including a regular update of the inventory and the creation of a specific sub-registry for hazardous tailings. The ambition is to implement recommendations of this Roundtable in 2021, and to scale up this work– including with the assistance of the German Federal Environment Agency.

The final intervention in this session was made by Ms. Tamara Kutonova, Global Environment Facility Project Regional Coordinator at the OSCE, who [presented](#) the project results of an [inventory of tailings storage facilities in Ukraine and Moldova](#).⁹ The project used the UNECE methodology for improving TMF safety to make a detailed **inventory of 32 TMFs** at risk, and to create a database of 465 TMFs (and their respective safety assessments) in Ukraine. The TMFs situated in Ukraine were in many cases **prone to flood risks**, and Ms.



Figure 10: Tailings Storage Facilities in the Dnieper River Basin

transboundary consequences in the Dniester River Basin. She recalled that this river basin was home to 8 million people. The river basin was hit by a transboundary event related to a tailings accident in 1983, polluting among other things the water used for the production of drinking water for the city of Chisinau. Ms. Kutonova concluded with a presentation on the key recommendations of the project, including a modern accounting system to integrate the TMF database, emergency preparedness measures for the State Emergency Service to consider, including an updated risk assessment methodology, and recommendations to the Ministry of Environment on **updating its regulatory framework on industrial and mining waste**.

Session conclusions by the moderator

Mr. Struckl concluded from the presentations and interventions in this session that economic development and social and environmental safety were closely linked. Whereas prevention was a financial cost, cleaning up after a disaster was an economic loss. Another conclusion he drew was that progress had been made in planning, inspection and setting standards, but that steps needed to be taken to implement these practices and to be transparent about the success of their implementation. He further concluded that the UNECE Safety Guidelines and related methodology can be useful tools for countries outside the region. UNECE should share its experience and knowledge with those countries wishing to apply these tools (for example through the activities of the Joint Expert Group on Water and Industrial Accidents).

⁹ As part of the GEF-UNECE-OSCE-UNDP project “Enabling Transboundary Cooperation and Integrated Water Resources Management in the Dniester River Basin”, see also <https://dnister-commission.com/en/news/large-scale-study-on-the-state-of-tailings-storage-facilities-in-the-dniester-basin>.

IV. Proposed actions to strengthen mine tailings safety in the UNECE region and beyond by the Industrial Accidents Convention

Mr. Max Linsen, consultant at the secretariat to the Industrial Accidents Convention, presented the updated [draft decision on strengthening mine tailings safety in the UNECE region](#), for adoption at the eleventh Conference of the Parties to the Industrial Accidents Convention (and adopted at the time of publication of this report). He provided background on how mine tailings safety and management had been handled under the Convention in the past, including why this issue was relevant under the Convention.

Draft decision on
[strengthening mine
tailings safety](#) in the
UNECE region and
beyond

Updated version:
ECE/CP.TEIA/2020/L.1

Max Linsen, Consultant
1 December 2020



Mr. Linsen expressed the ambition for this seminar to capture the main findings and present them as an integral part of the decision, as the Conference of the Parties would be requested to take note of the seminar conclusions when adopting the decision.

Figure 11: UNECE draft decision on strengthening mine tailings safety

He then explained how the decision was drafted, containing two parts – an introductory part, which addresses why and in which context action to strengthen mine tailings safety is proposed, and an action part, containing proposed actions for the Parties to the Convention to carry out. In the introductory part of the decision, the **need for action**, the link of mine tailings safety to the Convention and its earlier products¹⁰, and wider global trends that are relevant for mine tailings safety in the UNECE region and beyond were included. The operative part contained actions on enhanced **implementation of existing instruments, institution capacity, legal and regulatory frameworks**, a call for resources and funding, enhanced **information sharing** and addressing **global trends** that are relevant for the UNECE

¹⁰ See the Safety guidelines, checklist methodology, Tailings Hazard Index and Tailings Risk Index presented in session II, as well as the animated video presented in session I.

region by linking to initiatives by international organizations, such as the United Nations Environment Assembly.

Session conclusions by the moderator

Ms. Tandberg concluded that the draft decision on strengthening mine tailings safety in the UNECE region and beyond was future-oriented, responded to trends such as climate change and highlighted the link between the work on mine tailings safety and the long-term strategy of the Convention. She also acknowledged the link between mine tailings safety under the Industrial Accidents Convention and other relevant international organizations' work (for example the United Nations Environment Assembly). Mr. Winkelmann-Oei added that the German Federal Environment Agency found in a comparison between failures at TMFs and installations listed under the EU Seveso Directive over the last decade, that TMFs are 50 times more dangerous than 'Seveso installations.' Ms. Tandberg then invited Parties and partners to the Convention to suggest actions to support implementation of the decision. She finally stated that capacity building and interinstitutional coordination would be key to effective implementation of the actions proposed in the decision.

V. Seminar conclusions and closing

Ms. Tandberg presented the preliminary [key conclusions](#) of the seminar. She explained that these conclusions would be transformed into an [informal document](#) that would be presented to the Conference of the Parties (available in English and Russian), so that the findings of the seminar could be **adopted by the Conference of the Parties** at its eleventh meeting as an integral part of the draft decision on strengthening mine tailings safety in the UNECE region and beyond. The conclusions would also be incorporated into an annex to the report of the Conference of the Parties (ECE/CP.TEIA/42), following its note-taking of them. Ms. Tandberg then **thanked all participants** of the meeting for joining this online seminar, the secretariat to the Industrial Accidents Convention for taking care of the practical arrangements and organizing the event, and the small group on mine tailings safety for preparing the programme of the seminar.

Actions to strengthen mine tailings safety in the UNECE region and beyond

- Use the Safety guidelines and good practices for tailings management facilities and the Methodology for improving TMF safety
- Facilitate the application of the abovementioned Safety guidelines and Methodology and other good practices
- Improve inter-institutional and stakeholder coordination at the national and local levels and across borders, and increase transparency
- Review legislation and policies on mine tailings storage and management against international good practices such as the Safety guidelines; work towards setting a standard for good practices for tailings management facilities
- Use the tools available: the self-assessments and action plans, to signal needs and to request support in overcoming capacity constraints
- Make available funds to support the capacity-building activities in countries of Eastern and South-Eastern Europe, the Caucasus and Central Asia
- Include tailings management facilities in the identification and notification of hazardous activities and report on these as part of national implementation reports
- Make information on location-specific tailings management hazards and risk publicly available
- Increase efforts to strengthen tailings safety and prevent failures, in view of the elevated risk of such accidents posed by the increasing frequency and severity of extreme weather events as a result of climate change.
- Prepare further actions under the Convention in the field of mine tailings safety, taking into account the activities of other international organizations (e.g. the United Nations Environment Assembly)

D. Participants' evaluations of the seminar

Following the seminar, participants were invited to fill out an online evaluation form, which was published in English and Russian, using an online poll-service. The evaluation focused on the participants' experience, the quality of the sessions and relevance of topics addressed. 21 out of the 107 participants filled out and submitted the online evaluation. The key findings from the evaluation are presented in this section, focusing on specific suggestions provided by the respondents. Given the relatively low number of responses, the quantitative results of the evaluation are presented in nominal figures rather than percentages.

Annex 1 presents a more detailed overview of answers provided.

I. Quality of organizational aspects

Overall, the respondents indicated to have experienced the seminar as very positive. This was consistently indicated responding to various elements, such as the overall quality, the quality of the organization, the clarity of communication, the quality of interpretation, the ease of joining the seminar using an online platform, and the support by the secretariat.

II. Quality of the substance

Respondents indicated that the seminar sufficiently addressed international developments on the management of mine tailings¹¹ as well as possible responses to these challenges¹². One respondent deviated from this viewpoint and expressed to have found elements of the seminar of poorer quality, indicating that the contents of presentations were repetitive and that the technical detail could be increased.

To the majority of respondents, the seminar increased their knowledge of existing legal instruments¹³, such as the Industrial Accidents Convention, and tools increasing the safe management of mine tailings facilities¹⁴ such as the UNECE Safety guidelines.

The information presented and discussed during the seminar was found helpful or very helpful¹⁵ or somewhat helpful¹⁶, and it increased awareness and/or improved understanding about actions countries can take to improve mine tailings safety within the UNECE region¹⁷.

¹¹ 20 out of 21

¹² 18 out of 20

¹³ 18 out of 20

¹⁴ 19 out of 21

¹⁵ 19 out of 21

¹⁶ 2 out of 21

¹⁷ 20 out of 21

Discussions during session III were found useful, while one respondents indicated that examples of joint contingency plans and how the countries apply them could have been worked out further, together with examples of early warning systems.

Relating to the objectives of the seminar, respondents were generally positive about the seminar as a platform for raising awareness of the urgency to strengthen national governance, policies and operational measures related to the safety of mine tailings facilities, exchanging of ideas on strengthening mine tailings safety and providing input into the future work of the Convention. For strengthening existing and building new partnerships, the seminar was found slightly less useful¹⁸.

Regarding presentations, the majority of respondents found all presentations useful, with special mentioning of presentations by, Mr. Kovacs, Mr. De Pasquale, Ms. Rohn, Ms. Tang-Lee and, and Mr. Winkelmann-Oei, and of the presentations in session III.

Concerning follow-up activities by the Convention after the seminar, in relation to mine tailings safety, 11 respondents¹⁹ skipped the question, which was presented as an open questions with free text.

Other respondents proposed to:

- Raise the awareness and role of the Convention in its future work on tailings and for the global debate on mineral resource management.
- Publish guidance and/or organize workshops focusing on the following themes:
 - accident scenarios of possible failures modes (including the human factor);
 - warning, alert and alarm systems;
 - risk assessment
- Remind Parties to the Convention that the identification and notification of hazardous activities shall comprise mine tailings facilities and requested to report on these as part of their national implementation reports.
- Promote the TMF checklist methodology in UNECE states, and facilitate the application of the methodology for different case studies for other river systems.
- Investigate how to reuse tailings and find viable approaches for them to be used as a secondary raw material
- Further implement the developed guidelines and instruments in the concerned countries
- Organize sub-regional seminars on mine tailings safety.
- Strengthen mine tailings safety through further application of the UNECE Safety Guidelines and a related TMF methodology in Danube region by organizing regional/subregional activities.

¹⁸ 4 answers possible, 'very useful', 'useful', 'somewhat useful' or 'not useful'. 4 out of 21 indicating either 'somewhat useful' or not 'useful'

¹⁹ 10 respondents skipped and one provided 'I don't know' as an answer, therefore included in the total skipped.

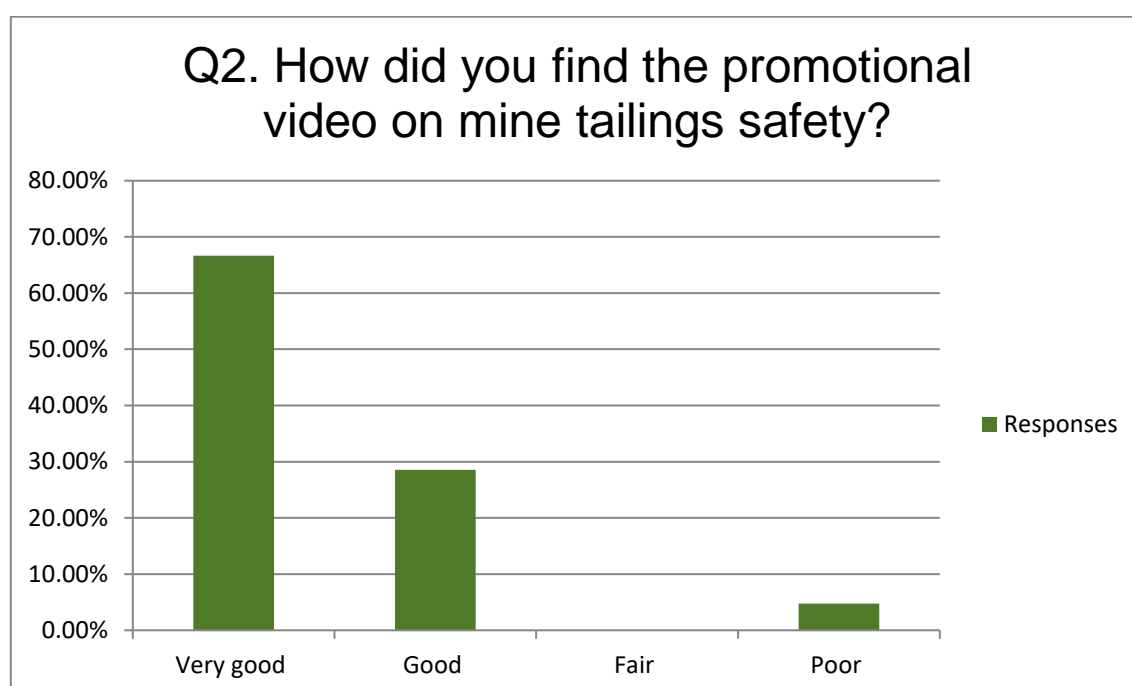
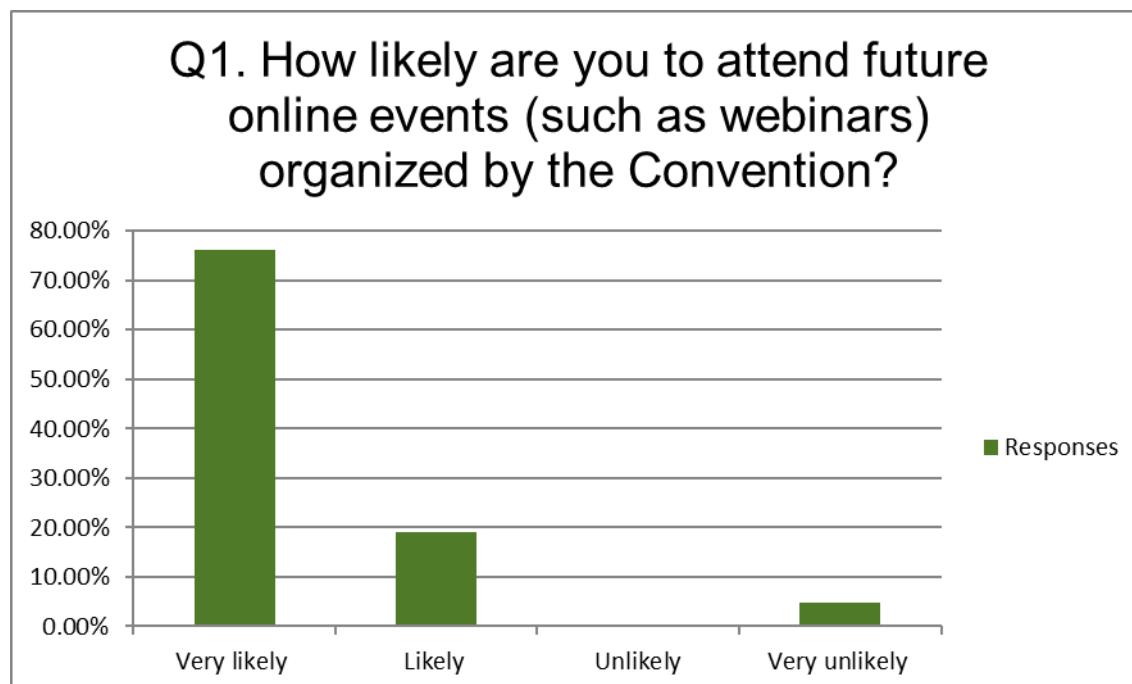
III. Key lessons learned for future online events

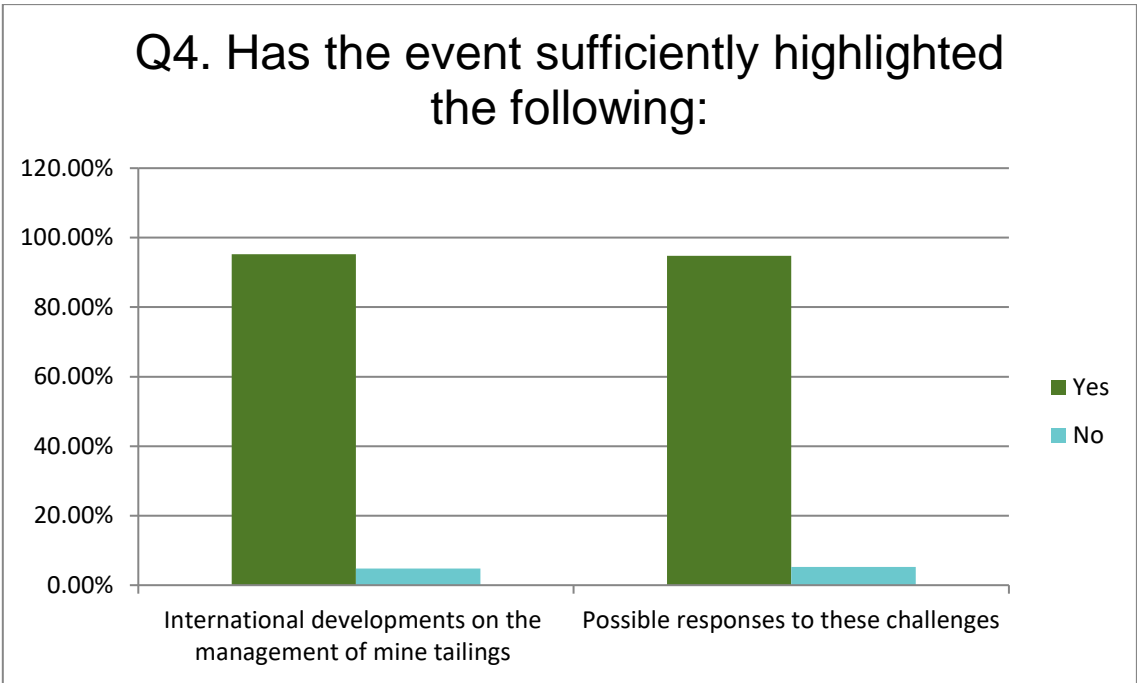
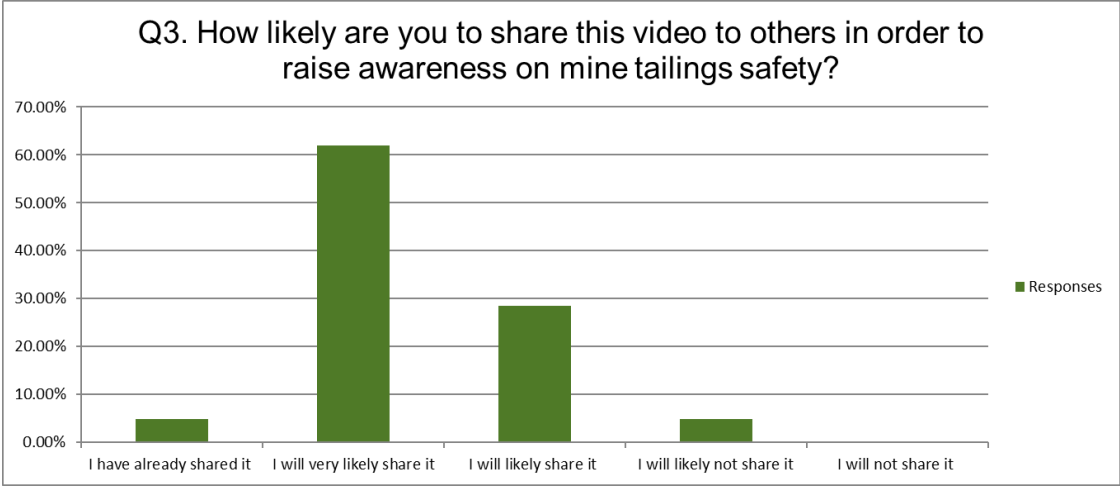
Regarding the organizational aspects, feedback by respondents were in line with immediate feedback provided during the seminar, by participants using the chat function, expressing an overall positive evaluation of the event.

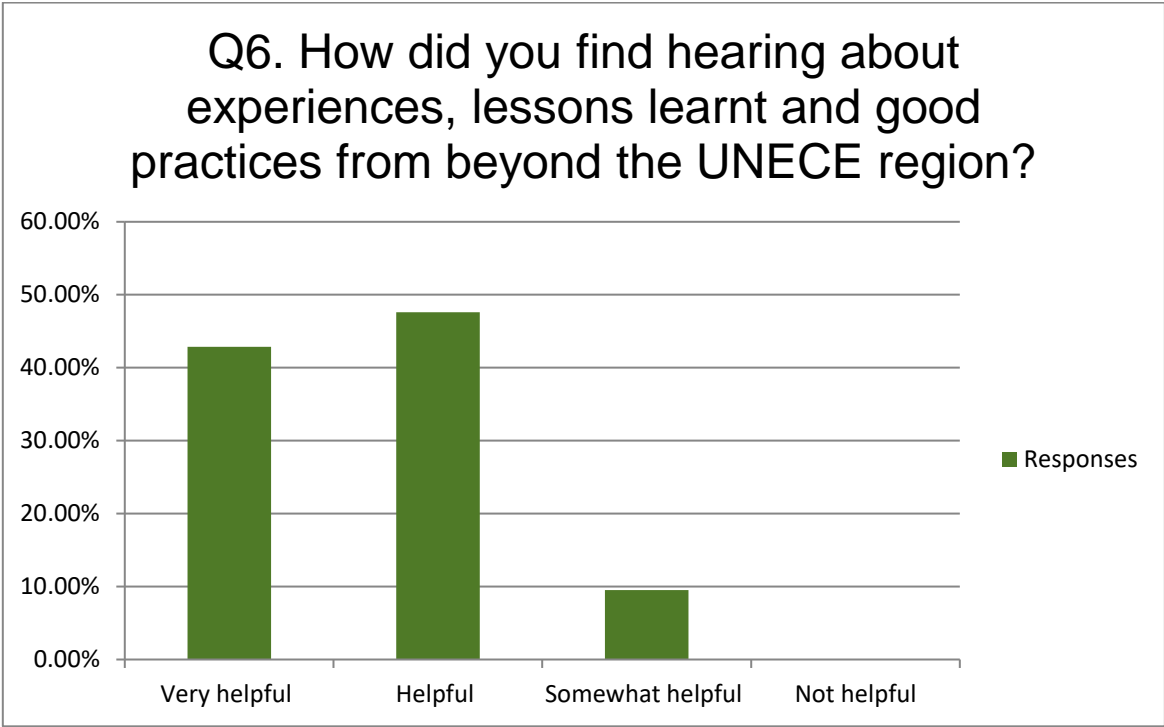
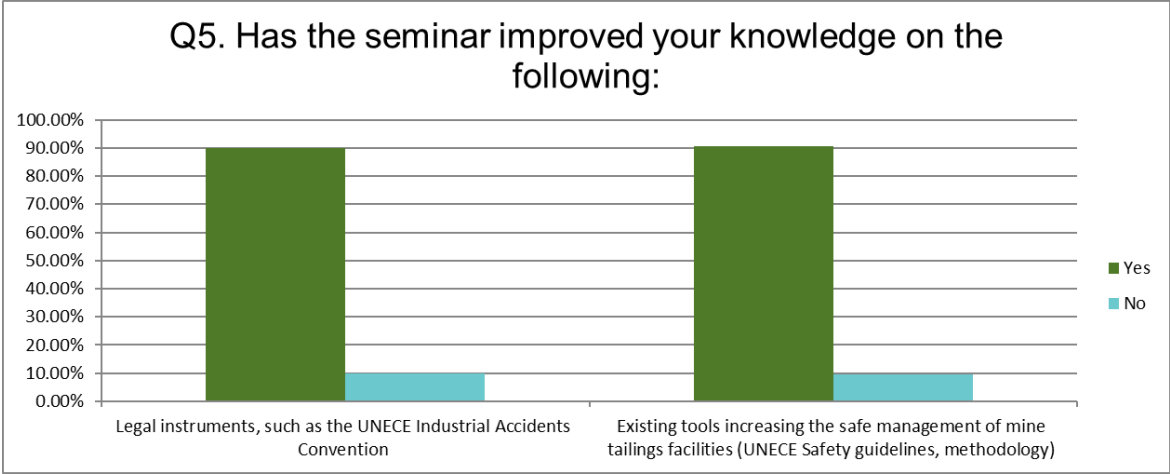
One key observation resulting from the evaluation relates to the usefulness of the seminar as a platform to strengthen or build partnerships. This experience could be improved by planning face-to-face meetings, or by rethinking the setting, format and conduct of future online meetings. A smaller number of participants may change the perceived hurdles to forge partnerships, more space for interactive discussion through written and spoken interventions may also improve the experience in this respect. Here, limitations of the online nature of a meeting should however be taken into account: while substantively, online meetings seem to be able to replace face-to-face meetings, the interactions between speakers, participants and moderators are limited to virtual and digital modes of communication, likely having an effect on the perceived quality of human interaction during an online event. Online seminars and workshops require a tailored approach to support building partnerships, and can therefore be of added value as occasional, topical and short events, addressing well-defined issues of interest in the future.

Regarding content, the main point following the evaluation regarding improvements of future events relates to the inclusion of early warning systems and contingency plans when addressing mine tailings safety, in addition to the elements included in the seminar programme listed in this report.

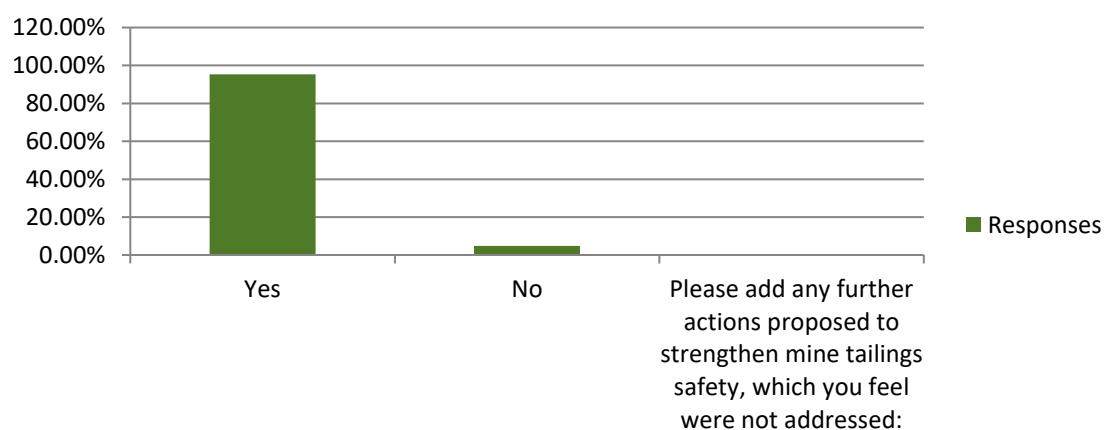
Annex I – Online evaluation form and summary of results

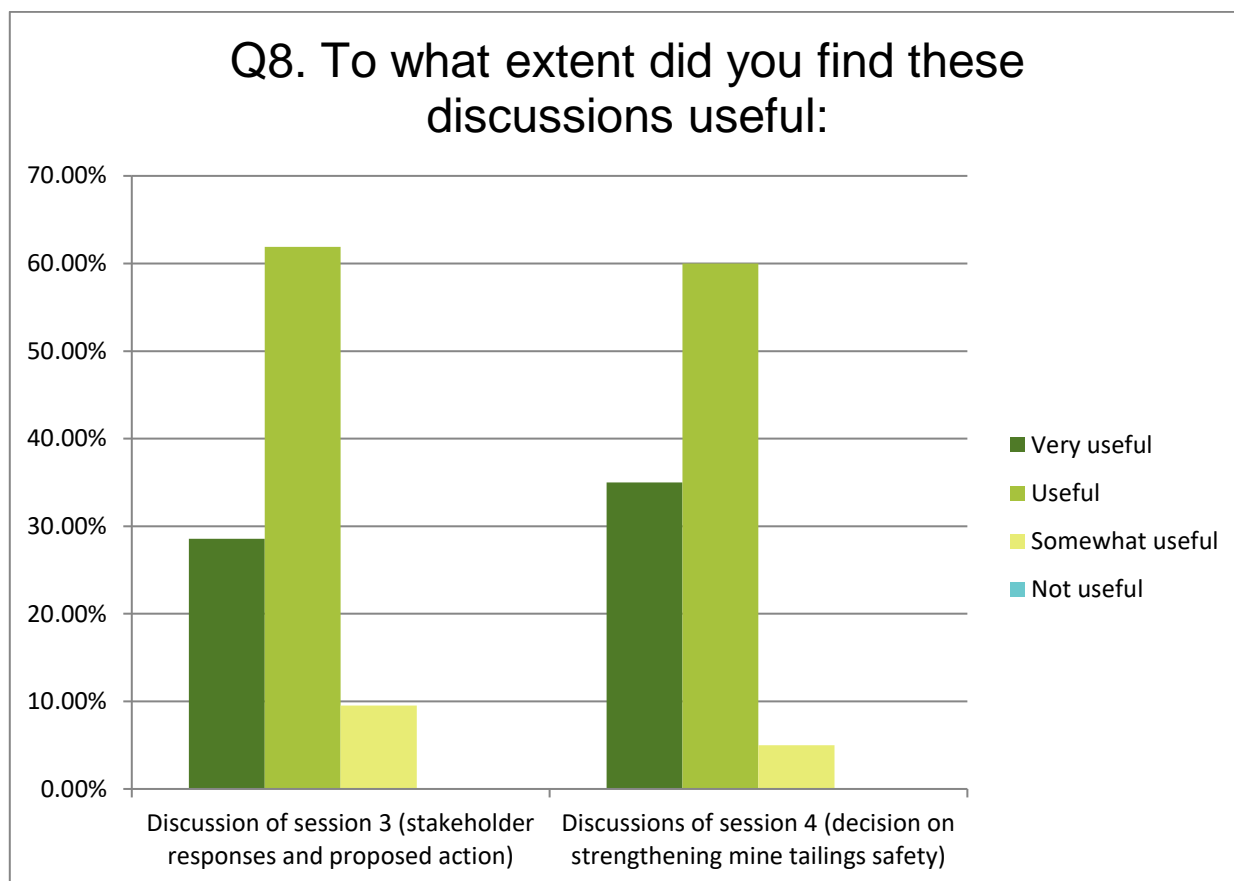


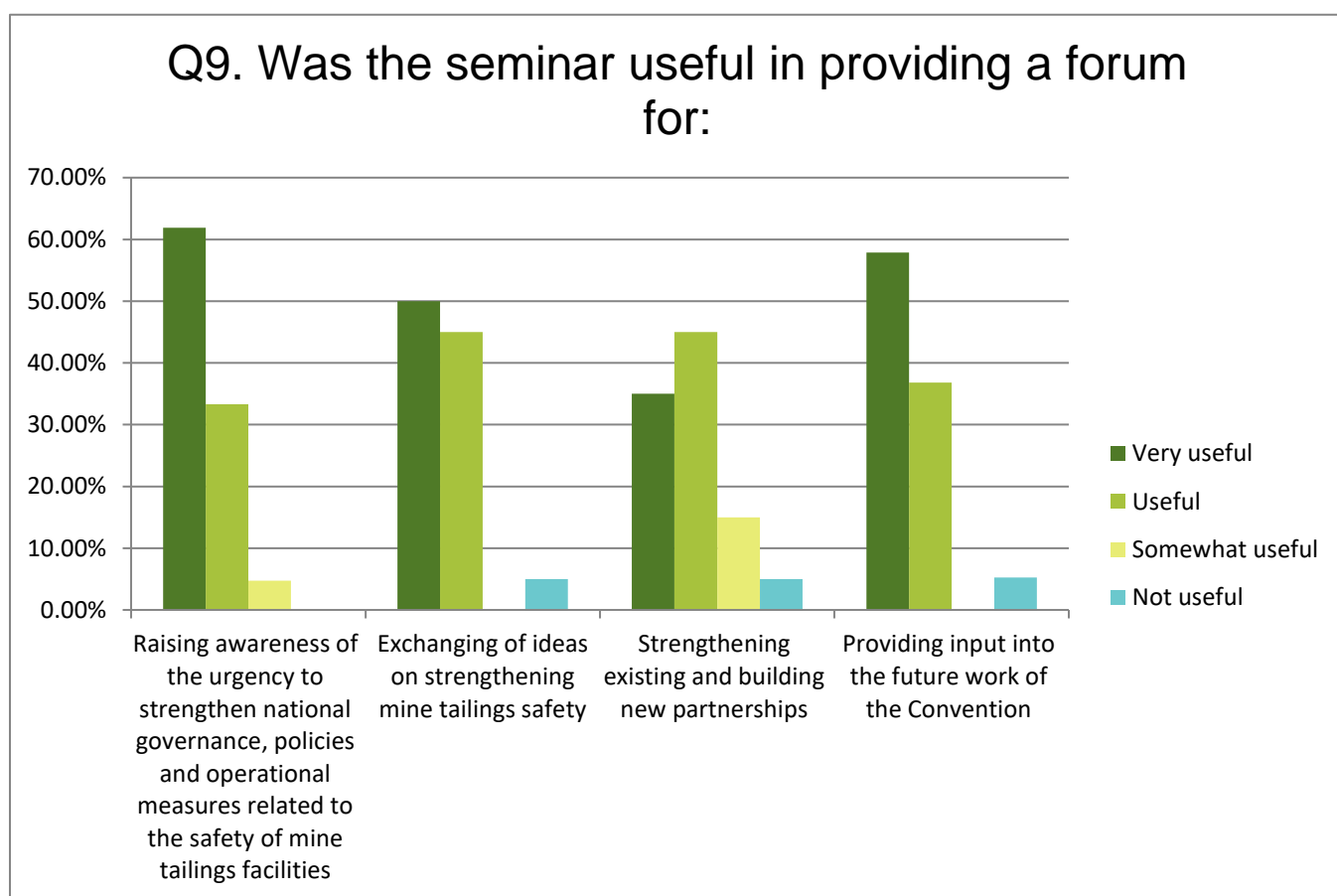




Q7. Has the Seminar raised your awareness and/or improved your understanding about actions countries can take to improve mine tailings safety within the UNECE region?







Q10. Which presentation(s) did you find most useful during the Seminar?

Respondents	Response Date	Responses
1	Dec 15 2020 01:59 PM	Mine tailings safety
2	Dec 15 2020 12:33 PM	Presentation by Pierre De Pasquale: Managing Tailings Risks: a time for meaningful decisions and real leadership. and presentation by Adam Kovac: The application of the UNECE safety guidelines and a related TMF methodology in Romania and the Danube Region.
3	Dec 14 2020 04:44 PM	"Prevention of accidental pollution from mine tailings" (Co-chair of the JEG)
4	Dec 09 2020 07:18 PM	Gerhard Winkelmann-Oei
5	Dec 09 2020 06:04 PM	Mr. Gerhard Winkelmann-Oei
6	Dec 07 2020 05:31 AM	All
7	Dec 03 2020 07:07 PM	The presentations of Mr. Gerhard Winkelmann-Oei and Mr. Adam Kovacs
8	Dec 03 2020 03:18 PM	Session 3: Experiences, lessons learned and proposed actions for safe management of mine tailings from stakeholders and countries in and beyond the UNECE region
9	Dec 03 2020 02:50 PM	Recent developments on mineral resource governance at the global level (Martine Rohn Brossard)
10	Dec 03 2020 01:21 PM	Technical presentation by Gerhard Winkelmann-Oei. Great work behind it!!
11	Dec 03 2020 01:09 PM	All presentations are useful.
12	Dec 03 2020 01:06 PM	All presentations are useful
13	Dec 03 2020 01:01 PM	1. The application of the UNECE Safety Guidelines and a related TMF methodology in Danube region 2. Tailings Storage Facilities in Ukraine
14	Dec 03 2020 12:58 PM	Mr Adam Kovacs: The application of the UNECE safety guidelines and a related TMF methodology in Romania and the Danube Region: Assessing the hazard potential of TMFs.
15	Dec 01 2020 12:41 PM	Presentation on the Global Industry Standard for Tailings Management ICMM
16	Dec 01 2020 12:41 PM	Pierre De Pasquale, RMF

Q11. What do you believe should be the follow-up activities by the Convention after this seminar, in relation to mine tailings safety?

Respondents	Response Date	Responses
Column1	Dec 15 2020 01:59 PM	Mine tailings safety
1	Dec 15 2020 12:33 PM	To raise awareness and the role of the Convention in its future work on mine tailing and for the global debate on mineral resource management.
2	Dec 14 2020 04:44 PM	Guidance and/or workshops focusing on the following themes: accident scenarios of possible failures modes (including the human factor); warning, alert and alarm systems; risk assessment
3	Dec 09 2020 07:18 PM	Parties to the Convention should be reminded that the identification and notification of hazardous activities shall comprise mine tailings facilities and requested to report on these as part of their national implementation reports.
4	Dec 03 2020 07:07 PM	Promotion of the TMF checklist methodology in UNECE states, the application of the methodology for different case studies for other river systems.
5	Dec 03 2020 03:18 PM	how to reuse the tailing? can it be used as a secondary raw material? or can we make value of tailing?
6	Dec 03 2020 02:50 PM	I don't know
7	Dec 03 2020 01:21 PM	Further implementation of the developed guidelines and instruments in the concerned countries
8	Dec 03 2020 01:09 PM	Organisation of sub-regional seminars on this topic.
9	Dec 03 2020 01:01 PM	Strengthen mine tailings safety through further application of the UNECE Safety Guidelines and a related TMF methodology in Danube region by organizing regional/subregional activities

