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Road map for action to strengthen

mine tailings safety within and beyond the

United Nations Economic Commission for Europe region

Road map for action to strengthen mine tailings safety within and beyond the United Nations Economic Commission for Europe region

Prepared by the Bureau of the Convention

Summary

The safe management of mine tailings is a major concern within the United Nations Economic Commission for Europe region and beyond. At its eleventh meeting (Geneva (hybrid), 7–9 December 2020), the Conference of the Parties to the Convention on the Transboundary Effects of Industrial Accidents discussed past and future work to address mine tailings safety under the Convention. It took note of the conclusions and recommendations of the preceding Seminar on mine tailings safety in the United Nations Economic Commission for Europe region and beyond (online, 1 December 2020), which was organized by Bureau members and the secretariat. Furthermore, it adopted decision 2020/1 on strengthening mine tailings safety in the United Nations Economic Commission for Europe region and beyond (ECE/CP.TEIA/42/Add.1). Through the decision, the Conference of the Parties requested the Bureau to prepare an orientation paper for consideration at its twelfth meeting.

The present document, prepared by the Bureau, in particular its small group on tailings safety, in cooperation with the secretariat, outlines key objectives to further strengthen mine tailings safety and calls upon Parties and member States within the United Nations Economic Commission for Europe region and beyond to take specific actions until 2030 to do so. The road map supports progress towards the Convention's long-term strategy for 2030, which contains actions to strengthen implementation, address industrial safety hotspots and continuously work to prevent accidental water pollution.^a Parties will be invited to express their views on the present road map, endorse it and thereby set the agenda for strengthening mine tailings safety with the proposed actions over the next eight years, including through activities under the Convention in future workplans.

^a See ECE/CP.TEIA/38/Add.1, section III (1).



I. Introduction

1. Mine tailings safety remains of concern for many Parties to the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) and other member States within the United Nations Economic Commission for Europe (ECE) region and beyond. Failures at tailings management facilities (TMFs) are much more likely to occur than other types of industrial accidents and can have severe consequences, such as deaths, displacement and the destruction of families, homes, infrastructure and the environment. Some TMF failures have also had far-reaching and transboundary effects. For example, in 2000, a tailings dam broke in Baia Mare, Romania, releasing about 100,000 m³ of liquid and suspended cyanide-rich tailings into the Sasa, Lapus, Some, Tisza and Danube Rivers, affecting drinking water and fish stocks in Romania, Hungary and countries downstream. Also, in 2016, part of a TMF in Ridder, Kazakhstan, failed and spilled tailings into the Ulba and Filippovka Rivers, prompting downstream communities in Kazakhstan and the Russian Federation to take precautions. This demonstrates that the prevention of TMF failures and related response measures are not just a matter of national concern but require regional and transboundary cooperation.

2. Many other TMF failures have occurred in the ECE region and worldwide, notably the dam collapse at Brumadinho, Brazil, in 2019, which resulted in the spilling of 12 million m³ of hazardous mining waste and 259 deaths. Studies also show that the consequences of tailings failures have become more severe in recent decades, resulting in higher numbers of fatalities, increased amounts of released waste and more widespread effects. When reviewing the causes of past accidents, the majority of tailings dam failures can be attributed to a lack of management continuity and inadequate resources for maintenance and management of TMFs, pointing to the fact that they are preventable if safety is put first. This will become even more important as the global demand for minerals and metals is expected to significantly increase in the coming years. Increased demands and production equate to more tailings and thus more TMFs in which hazardous waste is stored. If future TMFs are not safely designed and managed, tailings could be accidentally released into the environment with their toxic and hazardous substances. Further to addressing the inherent hazards and risks of TMFs, the consideration of environmental factors, such as natural hazard-triggered technological accidents (Natech events) and the adverse impacts of climate change as a major stress factor for TMFs, requires additional measures in all phases of a TMF's life cycle to ensure its safety and stability.

3. Thus, the present road map calls for further action to strengthen mine tailings safety. At its eleventh meeting (Geneva (hybrid), 7–9 December 2020), the Conference of the Parties to the Convention reviewed past and future work to address mine tailings safety under the Convention and adopted decision 2020/1 on strengthening mine tailings safety in the United Nations Economic Commission for Europe region and beyond (ECE/CP.TEIA/42/Add.1). In paragraph 11 of said decision, the Conference of the Parties requested the Bureau of the Convention "to prepare ... an orientation paper for consideration at the twelfth meeting of the Conference of Parties, containing proposals for further actions under the Convention in the field of mine tailings safety, taking into account the activities of other international organizations (for example, the United Nations Environment Assembly of the United Nations Environment Programme)". The Bureau's small group on mine tailings safety, comprised of representatives of Austria, Germany, Norway, Serbia and Switzerland, with the support of the ECE secretariat, prepared this road map, which the Bureau reviewed and endorsed.¹

4. The main purposes of this road map are to:

(a) Define key objectives to strengthen mine tailings safety, building on past achievements under the Convention and operationalizing commitments made through decision 2020/1;

(b) Provide direction, actions and priorities for Parties and member States within the ECE region and beyond to achieve the key objectives;

¹ The members of the small group included Mr. Gerhard Winkelmann-Oei (Germany), Mr. Michael Struckl (Austria), Ms. Laura Platchkov (Switzerland), Mr. Bojan Srdic (Serbia), Ms. Torill Tandberg (Norway, Chair of the small group) and the secretariat.

(c) Highlight activities that the ECE secretariat to the Industrial Accidents Convention could conduct to support Parties and other ECE member States, including in cooperation with other international organizations taking into account their activities.

5. Looking forward, this road map outlines how Parties, beneficiary countries of the Convention's Assistance and Cooperation Programme and other member States within the ECE region and beyond should address mine tailings safety as part of their overall efforts to provide for industrial safety and manage industrial accident risks, including as part of their disaster risk reduction efforts. It recommends short-, medium- and long-term actions to raise awareness of TMF hazards and risks, enhance cooperation and coordination across authorities, countries and organizations, and strengthen TMF safety — nationally and in a transboundary context, including across subregions and river basins.

II. Progress and achievements under the Convention, and synergies with other international organizations

6. Mine tailings safety has been a matter of concern under the Convention since its entry into force in 2000, following the accident in Baia Mare, Romania — one of the greatest environmental disasters in the ECE region. Guidance materials and tools have since been developed under the Convention to provide support for countries to strengthen mine tailings safety and prevent similar accidents.

7. The *Safety guidelines and good practices for tailings management facilities* (ECE/CP.TEIA/26) (Safety Guidelines), developed by the Joint Expert Group on Water and Industrial Accidents (Joint Expert Group), contain safety principles and recommendations for Governments, competent authorities and TMF operators. The Safety Guidelines were endorsed and recommended for application in practice by the Conference of the Parties to the Convention, at its fifth meeting (Geneva, 25–27 November 2008),² and the Meeting of the Parties to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), at its fifth session (Geneva, 10–12 November 2009).³

8. To support countries in the practical implementation of the Safety Guidelines, the German Environment Agency, under the auspices of the Industrial Accident Convention, developed a methodology for improving TMF safety (TMF Methodology).⁴ The TMF Methodology has been updated over time and now includes: (a) indices to rank TMFs according to their hazard and risk and land-use planning aspects; (b) a checklist to examine technical safety requirements and technical measures; and (c) a measure catalogue to determine actions that need to be taken.⁵ It has been applied through a series of dedicated capacity-building projects implemented under the Convention's workplans, including in Armenia, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Ukraine and Uzbekistan, with the support of Germany and Switzerland.⁶ The TMF Methodology has also been applied in river basins to identify, map and improve the safety of TMFs, notably by the riparian countries in the Danube, Dniester and Syr Darya River basins, with the support of Germany, the Global

² ECE/CP.TEIA/19, para. 61.

³ ECE/MP.WAT/29, para. 64.

⁴ Adam Kovacs and others, "Safety of the Tailings Management Facilities in the Danube River Basin", Technical Report No. 185/2020 (Dessau-Roßlau, Germany, German Environment Agency, 2020).

⁵ Adam Kovacs, "Safety of the Tailings Management Facilities" is the latest update of the methodology for improving tailings management facility (TMF) safety, and was completed in cooperation with the International Commission for the Protection of the Danube River through a project in the Danube River basin. The Methodology is available at <https://unece.org/info/Environment-Policy/Industrial-accidents/pub/369164> (in English and Russian).

⁶ Since 2013, the German Environment Agency has provided in-kind support to TMF projects, notably in Ukraine (2013–2015 and 2016–2017), the Caucasus (2017–2019) and Kyrgyzstan (2020 and 2021). Since 2017, the Swiss Federal Office for the Environment has provided financial support for the implementation of TMF projects in Kazakhstan (2017–2019), Tajikistan (2019–2021), Central Asia (since 2020) and Uzbekistan (since 2021). A list of all TMF projects, including weblinks, is available at https://unece.org/environment-policy/industrial-accidents/online-toolkit-and-training-strengthening-mine-tailings#accordion_2.

Environment Facility and the European Union.⁷ This has significantly improved the mapping and awareness of tailings risks, including of their possible transboundary effects, enabling riparian countries to integrate them into river basin management plans and joint contingency plans. The Joint Expert Group has provided invaluable support in implementing many of these projects.

9. The Safety Guidelines and the TMF Methodology, applied as a part of the above-mentioned assistance projects under the Convention's auspices, have taken mine tailings safety to a new level in the ECE region. The development of inventories and maps of TMFs at the national and subregional levels has significantly improved understanding and governance of related hazards and risks and transboundary cooperation. Local on-site training sessions at TMFs, conducted under the auspices of the Convention, have resulted in the identification of measures to overcome safety issues, often in cooperation with neighbouring countries. In order to compile and share information and knowledge on these tools and experiences, and to promote their use, the Convention secretariat developed the Online Toolkit and Training for Strengthening Mine Tailings Safety,⁸ which also acts as a broad-ranging mine tailings safety information hub with links to other ECE activities, partner organizations' related projects and activities and links to related resources. The Online Toolkit also showcases the ECE "Mine Tailings Safety" video, which introduces the Safety Guidelines, the TMF Methodology and other tools, and the technical "Training video about the Tailings Management Facilities (TMF) Safety Methodology", developed by the German Environment Agency, the non-governmental organization (NGO) Sustainable Development Platform and the Regional Environmental Centre for Central Asia, that explains the TMF Methodology in more detail. Both videos are available in English and Russian.

10. Some countries, supported by the Convention secretariat, have also used the tools under the Assistance and Cooperation Programme's Strategic Approach to address mine tailings safety. Notably, Central Asian countries used, for the first time, their existing national self-assessments and action plans to highlight gaps and determine specific actions that need to be taken to address TMF risks, and to prevent Natech events. Many of the actions align with the Safety Guidelines and the TMF Methodology and relate to those contained in the present road map. Several countries of Central Asia have also developed action plans to strengthen mine tailings safety through the implementation of related recommendations contained in their ECE environmental performance reviews. Furthermore, several countries of Central Asia have set up or taken steps to initiate inter-institutional working groups on mine tailings safety and the prevention of accidental water pollution, with the aim, among other things, of strengthening inter-institutional and stakeholder coordination at the national level.

11. The Conference of the Parties has actively sought to promote the above-mentioned achievements (see figure below), to encourage all countries within and beyond the ECE region to use the existing guidelines and tools and to address the governance of mine tailings issues under the Convention. To this end, a Seminar on mine tailings safety in the ECE region and beyond (online, 1 December 2020)⁹ was organized ahead of the eleventh meeting of the Conference of the Parties. The Seminar, which led to the production of a background note

⁷ A project in the Danube River basin (2019–2020), implemented by the International Commission for the Protection of the Danube River with German Environment Agency funding, resulted, among other things, in the mapping of more than 300 TMFs. The Global Environment Facility funded a project to improve TMF safe management in the Dniester River basin (2018–2020), implemented jointly by the United Nations Economic Commission for Europe (ECE) (led by the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention)), the Organization for Security and Cooperation in Europe and the United Nations Development Programme, resulting, among other things, in the mapping of 31 TMFs. The TMF Methodology is also being applied in a project in the Syr Darya River basin (since 2021) — thanks to funding by the European Union Water Initiative and National Policy Dialogues on Integrated Water Resource Management — with the identification of more than 60 TMFs. Further information about these projects, including weblinks, is available at https://unece.org/environment-policy/industrial-accidents/online-toolkit-and-training-strengthening-mine-tailings#accordion_2.

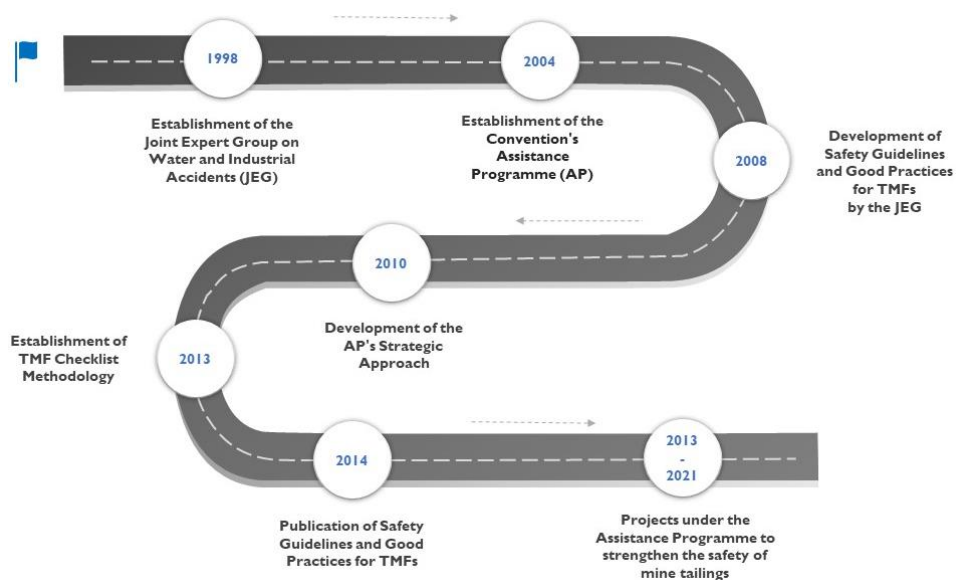
⁸ Available in English and Russian at <https://unece.org/environment-policy/industrial-accidents/online-toolkit-and-training-strengthening-mine-tailings>.

⁹ More information on the Seminar is available at <https://unece.org/environmental-policy/events/seminar-mine-tailings-safety-unece-region-and-beyond>.

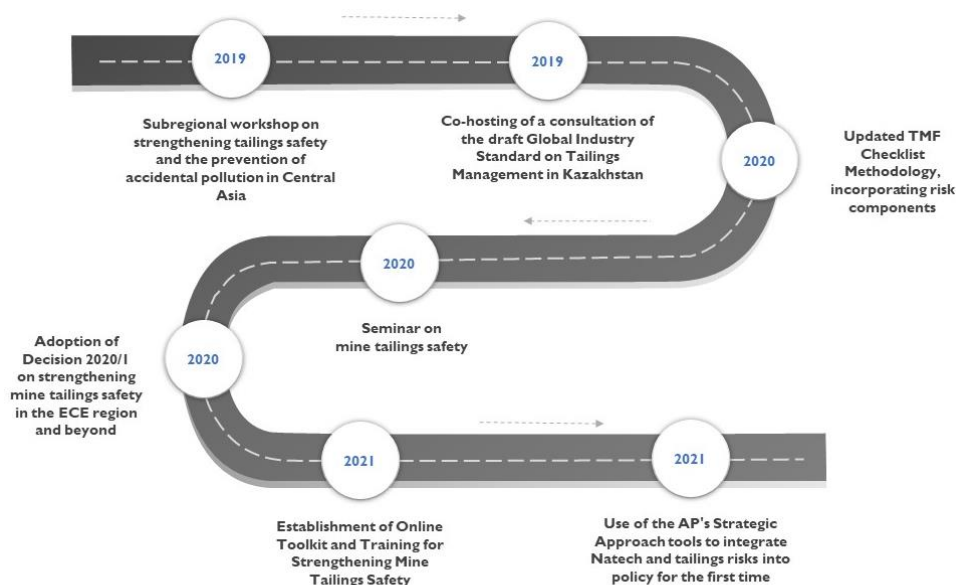
(ECE/CP.TEIA/2020/2) and a summary report,¹⁰ raised awareness of the Convention's role in improving mine tailings safety and highlighted experiences within the ECE region and beyond. Subsequently, Parties reached a consensus on the next steps to strengthen mine tailings safety in the ECE region and beyond through their adoption of decision 2020/1.

12. Decision 2020/1 represents the first decision since the adoption of the Convention through which Parties agreed to take a number of specific actions to strengthen tailings safety. Among other things, in the decision, the Conference of the Parties urges Parties to: review their legislation and policies on mine tailings storage and management against international good practices, such as the Safety Guidelines (para. 5); and facilitate the application of the Safety Guidelines, the TMF Methodology and other good practices (para. 2). It calls on Parties to improve inter-institutional and stakeholder coordination at the national, local and transboundary levels (para. 4), recalls that TMFs should be reported as part of the hazardous activities under the Convention (para. 8), and requests Parties to increase their efforts to prevent accidents caused by more frequent and severe extreme weather events as a result of climate change (para. 10). Other countries within and beyond the ECE region are invited to take the same actions.

Timeline of achievements of relevance to mine tailings safety under the Convention



¹⁰ The seminar report is available at https://unece.org/sites/default/files/2021-03/Report%20mine%20tailings%20seminar_1%20Dec%202020.pdf.



Note: The Assistance Programme was rebranded the Assistance and Cooperation Programme in 2018.

13. Mine tailings safety has also gained much visibility in the international policy arena. In addition to ECE, other international organizations and intergovernmental bodies have been addressing and cooperating on mining safety, including in relation to tailings. At its fourth session (Nairobi, 11–15 March 2019), the United Nations Environment Assembly of the United Nations Environment Programme (UNEP) adopted resolution 4/19 on mineral resource governance, which placed mine tailings safety on the agenda for that field.¹¹ As a follow-up, UNEP, in cooperation with the Convention secretariat, held online subregional consultations on mineral resource governance for Western and South-Eastern Europe (25 August 2020) and Eastern Europe, the Caucasus and Central Asia (27 August 2020). At its fifth session (Nairobi (online), 22–26 February and 28 February–2 March 2022), the United Nations Environment Assembly of UNEP adopted resolution 5/12 on environmental aspects of minerals and metals management,¹² among other things, to: convene an intergovernmental process with the aim of developing proposals to enhance the environmental sustainability of metals and minerals along their full life cycle; take stock of existing activities and actions to enhance the environmental sustainability of mineral and metals, including tools, guidelines, etc.; strengthen scientific, technical and policy knowledge with regard to sand; and compile a report on knowledge gaps regarding environmental aspects of tailings management.

14. Previously, in cooperation with GRID-Arendal, UNEP had issued the report *Mine tailings storage: Safety is no accident — A rapid response assessment*.¹³ UNEP also co-convened the process to develop a Global Industry Standard on Tailings Management¹⁴ through the Global Tailings Review — a joint initiative with the International Council on Mining and Metals and the Principles for Responsible Investment. At the suggestion of UNEP, the Convention secretariat joined forces with UNEP and the International Council on Mining and Metals to hold a subregional consultation that preceded the ECE Subregional workshop on strengthening mine tailings safety in Central Asia (Almaty, 20–21 November 2019). The consultation (Almaty, 18–19 November 2019)¹⁵ resulted in a robust discussion among representatives of national and local government authorities, industry and civil society

¹¹ UNEP/EA.4/Res.19; a related report on progress in the implementation of resolution 4/19 on mineral and resource governance (UNEP/EA.4/14).

¹² UNEP/EA.5/Res.12.

¹³ Charles Roche, Kristina Thygesen and Elaine Baker, eds. (Nairobi and Arendal, Norway, UNEP/GRID-Arendal, 2017).

¹⁴ See <https://globaltailingsreview.org/global-industry-standard>.

¹⁵ Information on the consultation is available at <https://unece.org/info/Environmental-Policy/Industrial-Accidents/events/349701>.

on the draft Global Industry Standard, which was subsequently launched in August 2020. UNEP is currently working in partnership with the Principles for Responsible Investment to support the establishment of an independent multi-stakeholder institute — the Global Tailings Management Institute — which will oversee the implementation of the Global Industry Standard as of 2023. Other international organizations are also working on issues in relation to mine tailings safety, and the ECE secretariat has significantly enhanced its cooperation with many of them over the past years (see section II below).

III. Roles and responsibilities of Parties and other stakeholders in strengthening mine tailings safety

15. Several stakeholders have important roles to play — independently and in cooperation with each other — in advancing mine tailings safety. Parties are the key stakeholders and main drivers of progress when it comes to setting the legislative and policy basis and ensuring its implementation and review. They have legal obligations under the Convention to take appropriate measures (e.g., through the setting of safety standards, conducting audits and inspections) aiming to protect human beings and the environment from industrial accidents, further to their commitments as per decision 2020/1. While the national government authorities are key in complying with these obligations, the involvement of local level authorities is also important. Other ECE member States, including several beneficiaries of the Assistance and Cooperation Programme, some also non-Parties, have committed to the implementation of the Convention¹⁶ and are encouraged to take the actions set out in decision 2020/1. Other ECE member States and States Members of the United Nations beyond the ECE region, including the Parties to the Water Convention, serviced by ECE, are also invited to take the actions for Parties to the Industrial Accidents Convention and member States within the ECE region and beyond to strengthen tailings safety set out in section III below.

16. The Industrial Accidents Convention secretariat, possibly in cooperation with other parts of ECE, such as its Sustainable Energy Division, has the role of supporting current and future Parties to address challenges in mine tailings safety, to the extent feasible, in line with the activities included in and financed as part of the Convention's workplans. The draft workplan 2023–2024 (ECE/CP.TEIA/2022/11) includes activities on improving implementation, preventing accidental pollution, strengthening partnerships and increasing capacity related to tailings in countries of Eastern and South-Eastern Europe, the Caucasus and Central Asia. The secretariat's support for actions by Parties and other ECE member States and the scope of its cooperation with partner organizations are subject to the funding of the respective workplan activities.

17. Other international organizations are also actively working to address challenges in mine tailings safety, with some looking particularly at strengthening community engagement (the Organization for Security and Cooperation in Europe (OSCE), the United Nations Development Programme (UNDP)) and others leading environmental remediation efforts for uranium legacy sites (notably through the International Atomic Energy Agency Coordination Group for Uranium Legacy Sites). ECE cooperates with numerous partner organizations, notably with the Organisation for Economic Co-operation and Development (OECD), OSCE, the United Nations Office for Disaster Risk Reduction (UNDRR), UNEP, UNDP and the European Commission Joint Research Centre, among others. These organizations have different or complementary expertise in mine tailings safety; they also have different constituents, who may address the objectives outlined in this road map from different angles. When preparing this road map, the ECE secretariat held consultations with these organizations, as well as internally, involving the secretariats to the Water Convention and the Committee on Sustainable Energy, in order to build on existing cooperation and identify further possible joint actions. Commonly agreed actions are included in section III (A)–(E) below.

18. There are other stakeholders, including regional organizations, with which the ECE secretariat cooperates on an occasional basis. Outreach to and involvement of additional stakeholders will also remain essential. River basin organizations play a role in advancing mine tailings safety in shared water (river/lake) bodies, notably by bringing riparian countries

¹⁶ Information on the high-level commitment is available at <https://unece.org/environmental-policy/events/high-level-commitment-meeting>.

together to coordinate and facilitate the identification of risks and the prevention of accidental water pollution and joint contingency planning. Industry bears the key responsibility for implementing safety measures, needing to comply with the legislation and safety standards provided by Governments. In many instances, industry associations and NGOs have also developed their own standards and guidance¹⁷ and provide platforms to exchange information (e.g., the International Commission on Large Dams). Civil society actors advocate for and generate awareness on mine tailings safety, often drawing attention to environmental and health-related impacts. Furthermore, academia has supported knowledge development on mine tailings safety and sheds light on the evidence base of policy and the development of new tools, technologies and methodologies. Lastly, in accordance with the Convention's article 9, the public should also be enabled to participate in decision-making affecting them, for example, in decision-making on the siting of mine tailings. Overall, Parties should facilitate outreach to and involvement of stakeholders to implement the key objectives listed in section III below.

IV. Five key objectives and related actions to strengthen mine tailings safety

19. Major TMF failures have led to loss of lives, adverse impacts on human health and the destruction of the built and natural environments. Through decision 2020/1, Parties to the Convention expressed alarm at the increasing frequency of serious tailings dam failures over recent decades, observing that the majority of tailings accidents can be attributed to human factors and that the effects of climate change pose elevated risks of tailings accidents. Moreover, they recognized that the demand for many minerals is projected to increase in the coming decades, meaning that more TMFs will be built, and old ones may be reopened in the ECE region and beyond. This includes minerals needed to produce clean energy technology, with projections showing that demand for graphite, lithium and cobalt could increase by more than 450 per cent by 2050.¹⁸

20. While significant progress has been made in addressing TMF hazards and risks under the Convention, more work needs to be done to step up action to strengthen safety, manage related hazards and risks to prevent TMF failures first and foremost, and be able to promptly mitigate their effects. All Parties and member States within the ECE region should use the guidelines and tools that have been developed and cooperate with each other, the ECE secretariat, other relevant organizations and stakeholders in doing so. States Members of the United Nations beyond the ECE region are also invited to make use of the existing guidelines and tools.

21. This section sets out five key objectives (objectives A–E) to strengthen mine tailings safety and address ongoing challenges building on the Convention's strengths, its long-term strategy until 2030, decision 2020/1, the outcomes of the TMF seminar, United Nations Environment Assembly of UNEP resolutions 4/19 and 5/12 and existing partnerships and cooperation with other international organizations and stakeholders.

22. Each of the objectives contains a summary, a proposed approach to achieve the objective, actions to be taken by Parties and member States within the ECE region and beyond, actions to be taken by the ECE secretariat and joint or complementary actions to be taken by the ECE secretariat and other international organizations or stakeholders (see tables 1–5 below). The actions set out in this road map should not preclude additional actions with similar aims taken under the auspices of other international organizations, while efforts will be made to coordinate and seek synergies where feasible. Parties will be invited to facilitate outreach to and involvement of the necessary stakeholders, including industry, academia and civil society.

¹⁷ For example, the Australian National Committee on Large Dams Guidelines, available at www.ancold.org.au/?page_id=334.

¹⁸ Kirsten Hund and others, *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition* (Washington D.C., World Bank, 2020).

A. Understanding tailings management facility-related risks within and across national borders

23. The Industrial Accidents Convention obliges Parties to identify hazardous activities within their jurisdictions for the purposes of undertaking preventive measures, setting up preparedness measures and ensuring that potentially affected Parties are notified of such activities (art. 4 (1)). Many TMFs are considered “hazardous activities” within the scope of the Convention (art. 1 (b)). The Guidelines to facilitate the identification of hazardous activities for the purposes of the Convention (Location Criteria) (ECE/CP.TEIA/38/Add.1 and ECE/CP.TEIA/12, annex II, decision 2004/2) provide a means for their identification. Furthermore, the Safety Guidelines and the TMF Methodology¹⁹ enable countries to index and map TMF hazards and risks. In decision 2020/1, the Conference of the Parties recommended that all ECE member States use the Safety Guidelines with a view to their harmonized application in the region and urged Parties to facilitate the application of the Safety Guidelines and the TMF Methodology. As mentioned above, ECE has facilitated many projects to assist countries in applying these instruments.²⁰

24. One key challenge is the lack of knowledge of the existence of TMFs across the ECE region, including knowledge of their current state and condition – whether active, inactive, abandoned, legacy or orphaned and/or capable of causing transboundary effects. Progress has been made in identifying TMFs through the application of the Safety Guidelines and the TMF Methodology in projects under the auspices of the Convention, implemented with the support of the Joint Expert Group, particularly in the Caucasus, Central Asia, Eastern Europe and the Danube River basin. However, several Parties and other ECE member States remain unaware of all the TMFs within their jurisdictions and their hazards and risks. This precludes effective preventive and preparedness measures from being taken and notifications from being sent to countries that could potentially be affected by TMFs capable of causing transboundary effects, in line with the Convention’s requirements. Moreover, the lack of awareness of TMFs impedes the development of ECE region-wide and comprehensive global overviews– hence, no such comprehensive database exists, despite efforts by UNEP to move in this direction and the European Commission Seveso Plants Information Retrieval System Dashboard for Seveso establishments in the European Union member States.²¹ New innovations and initiatives, such as downsizing tailings sites by reusing ore sand, also improve understanding of reducing TMF-related risks.²²

¹⁹ The TMF Methodology covers all TMFs, not just those that fall under the scope of the Convention.

²⁰ An overview of past and ongoing projects, including related weblinks, is available under the tab “UNECE’s mine tailings work and partners” of the Online toolkit and training for strengthening mine tailings safety, available at <https://unece.org/environment-policy/industrial-accidents/online-toolkit-and-training-strengthening-mine-tailings>.

²¹ See the data available at <https://tailing.grida.no/>; The Seveso Plants Information Retrieval System Dashboard is available at <https://espirs.jrc.ec.europa.eu/en/espirs/content>.

²² For more information on ore sand, see Artem Golev and others, Ore sand: a potential new solution to the mine tailings and global sand sustainability crises: Final report (n.p., University of Geneva/University of Queensland, Australia, 2022).

Table 1
Objective A and the related actions to strengthen mine tailings safety

Summary of objective A, proposed approach to its achievement and actions to be taken

Objective summary	Parties and member States within ECE region and beyond better understand TMF-related risks within their jurisdictions and ensure that appropriate measures are taken to prevent accidents and mitigate their effects, including in transboundary context
Proposed approach to achieve objective	Parties and member States within ECE region and beyond should: review available international instruments and tools and ensure their application in order to best identify TMFs and related hazards and risks and to take respective actions to enhance mine tailings safety; and map TMF risks to understand where to prioritize their actions and notify all potentially affected countries of TMFs capable of causing transboundary effects
Actions for Parties and member States within ECE region and beyond	<p>Collect and provide data on TMFs that fall under scope of Convention when reporting on hazardous activities during tenth reporting round (2019–2023) and subsequent rounds;²³ regularly review and update TMF data</p> <p>Apply Safety Guidelines and TMF Methodology to identify, map and improve safe management of TMFs and work towards their harmonized application in ECE region²⁴</p> <p>Conduct mapping and inventory exercises, inclusive of active, inactive, abandoned, legacy and orphaned TMFs and those with transboundary risks, and share these data with ECE secretariat to develop regional overview and ensure relevant information is available to affected public</p> <p>Complete notification template for all TMFs with potential transboundary effects and use it to inform all potentially affected countries²⁵</p> <p>Conduct on-site training sessions to support identification of TMF hazards and risks, including environmental factors/natural hazards and risks (e.g., flooding, permafrost thawing, fires), and how to address those nationally and across</p>

²³ In line with decisions 2020/1, para. 8, and 2020/2, para. 10.

²⁴ In line with decision 2020/1, paras. 2–3.

²⁵ In line with decision 2020/2, para. 8.

Summary of objective A, proposed approach to its achievement and actions to be taken

Actions by ECE secretariat	<p>borders with short-, medium- and long-term measures</p> <p>In cooperation with Working Group on Implementation, monitor progress made by Parties and other ECE member States in identifying TMFs and related hazards and risks and subsequent preventive and preparedness measures taken, including notification procedures (e.g., through national implementation reports)</p> <p>Support countries in identification, mapping and notification processes, including enabling transboundary contingency planning, through activities and projects under Assistance and Cooperation Programme</p> <p>Promote and support use of Safety Guidelines, TMF Methodology and Online Toolkit and Training for Strengthening Mine Tailings Safety to ensure that countries have continuous remote assistance with up-to-date information on guidelines and tools</p>
Joint or complementary actions by ECE secretariat and other international organizations	<p>ECE secretariat to facilitate countries sharing respective data with UNEP on its development of global tailings portal through GRID-Arendal</p> <p>Jointly promote Safety Guidelines, TMF Methodology and GISTM with UNEP through discussions with Parties and other ECE member States and presentations</p>

Abbreviations: GISTM, Global Industry Standard on Tailings Management.

B. Addressing tailings management facility risks through policy and governance

25. Once TMFs have been identified and their risks understood, another challenge is to effectively manage those risks and take all actions necessary to prevent possible accidents. International legal and policy instruments, such as the Convention and the Sendai Framework for Disaster Risk Reduction 2015–2030 have been developed to provide a basis for national policymaking and governance to address such disaster risks and to facilitate related transboundary and international cooperation. Many Parties and member States within the ECE region and beyond have subsequently established national policies and strategies to reduce the risks of disasters, including at TMFs. National disaster risk reduction policies developed in line with the Sendai Framework routinely cover natural hazards and risks, whereas technological hazards and risks should also consistently be addressed, including those of TMFs, and their interlinkages understood, such as Natech events. The Convention, as a legal instrument for technological risk reduction under the Sendai Framework,²⁶ and the

²⁶ The long-term strategy of the Convention until 2030 states that the Convention's overall vision is to significantly increase industrial safety and reduce the risk of technological disasters by ensuring its full implementation, its wide recognition as a legal instrument for risk reduction under the Sendai

guidelines and tools developed under its auspices, provide a means for countries to work towards the integration of these elements and move towards a multi-hazard/multi-risk approach away from the prevailing siloed approach.

26. Countries in the ECE region have begun to enhance policy coherence and governance accordingly, including by establishing dedicated platforms. Kazakhstan and Tajikistan, for example, have established Inter-Institutional Working Groups on Tailings Safety and the Prevention of Water Pollution that enable coordination and cooperation across national (and local) authorities, operators, academia, NGOs and other stakeholders, with the support of the ECE secretariat through projects to strengthen mine tailings safety in Central Asia, implemented with the support of Switzerland. In addition, Serbia has established a National Policy Dialogue on Industrial Safety. Future work under the Convention should aim to further advance the integration of these elements into and across relevant policy domains, such as disaster risk reduction, environmental policy, land use and urban planning, in order to enhance the management of TMF risks and mitigate exposure and vulnerabilities.

Table 2

Objective B and the related actions to strengthen mine tailings safety

Summary of objective B, proposed approach to its achievement and actions to be taken

Objective summary	Parties and member States within ECE region and beyond integrate, where relevant, TMF hazards and risks as part of technological disaster risks into their industrial safety and disaster risk reduction policies and governance structures
Proposed approach to achieve objective	Parties and member States within ECE region and beyond should review and update their legislation and policies to ensure that TMF hazards and risks are sufficiently covered as part of technological disaster risks. This could be done, for example, by developing annexes on technological disaster risk (comprising respective TMF hazards and risks) to national strategies and action plans developed under the Sendai Framework. Parties and member States within ECE region and beyond should also ensure policy dialogues across authorities to ensure coordination and cooperation on TMFs (e.g., through IIWGs, NPDs on Industrial Safety and Sendai Framework national platforms)
Actions for Parties and member States within ECE region and beyond	<p>Review their national legislation, policies and strategies to ensure implementation of Convention's provisions and decision 2020/1; facilitate implementation of Safety Guidelines, TMF Methodology and guidance materials and tools related to mine tailings safety; and update them as needed²⁷</p> <p>Consider results of risk assessments of TMFs when developing and updating policies/ decision-making procedures on land-use planning and siting of TMFs, including in transboundary contexts</p> <p>Establish and/or further develop dedicated national coordination mechanism (e.g., IIWG)</p>

Framework for Disaster Risk Reduction 2015–2030, and its contribution to the achievement of the Sustainable Development Goals (ECE/CP.TEIA/38/Add.1).

²⁷ In line with decision 2020/1, para. 5.

Summary of objective B, proposed approach to its achievement and actions to be taken

	<p>comprised of all relevant authorities, operators and other stakeholders to hold policy dialogues and cooperate on managing TMF risks; mechanism should: cover transboundary elements and cooperation;²⁸ and ensure respective linkages with Sendai Framework national platforms</p> <p>Ensure integration of actions to mitigate identified risks, exposure and vulnerabilities into policies and planning tools, including, among others, disaster risk reduction, environmental protection, land-use planning and urban development</p> <p>Participate in intergovernmental process that UNEP will facilitate following adoption of UNEA of UNEP resolution 5/12</p>
Actions by ECE secretariat	<p>Support countries in reviewing and (as needed) updating their legislation and policies on mine tailings safety and technological disaster risks against Convention, decision 2020/1 and other international instruments and tools (e.g., Safety Guidelines)</p> <p>Promote uptake and integration of technological hazards and risks, including in relation to TMFs, where relevant, into national (and local) disaster risk reduction strategies developed under Sendai Framework</p> <p>Support countries in establishing IIWGs or NPDs on Industrial Safety to address TMF risks (among others, technological disaster risks) and facilitate linkages with Sendai Framework national platforms</p>
Joint or complementary actions by ECE secretariat and other international organizations	<p>ECE secretariat to support implementation of UNEA of UNEP resolution 5/12 by: contributing to UNEP report on gaps regarding environmental aspects of tailings management and subregional expert group discussions on tailings; jointly organizing awareness-raising events (e.g., on margins of UNEP-organized events or meetings of CoP); and inviting UNEP to participate in IIWGs in countries to create awareness of GISTM with policymakers in ECE region</p> <p>ECE secretariat to participate in Working Group on Transforming Extractive Industries for Sustainable Development,²⁹ established by Secretary-General and co-led by regional commissions, UNEP and UNDP, including to: contribute to joint mapping and knowledge hub; raise awareness of mine tailings safety; and raise</p>

²⁸ In line with decision 2020/1, para. 4.

²⁹ Further information is available at <https://unece.org/unece-and-sdgs/working-group-transforming-extractive-industries-sustainable-development>.

Summary of objective B, proposed approach to its achievement and actions to be taken

profile of ECE secretariat's work on tailings safety, in cooperation with ECE Sustainable Energy Division

ECE secretariat to cooperate with UNDRR to integrate TMF-related hazards and risks, among others, into national disaster risk reduction strategies and action plans and establish linkages with national Sendai Framework platforms

Abbreviations: CoP, Conference of the Parties; IIWG, Inter-Institutional Working Group; NPD, National Policy Dialogue; UNEA, United Nations Environment Assembly.

C. Prevention of and preparedness for accidental water pollution from tailing management facilities to ensure water quality

27. Many TMF failures have led to accidental water pollution within the ECE region and beyond. Structural degradation, breakage, collapsing and leaks have caused TMFs to release tailings that have led to soil and groundwater contamination and the pollution of watercourses and lakes. Parties have recognized that, for many TMFs, accidental water pollution can quickly spread and have far-reaching and potentially transboundary implications. Past accidents have also shown the cost implications that accidental water pollution can have for countries and businesses in terms of clean up and remediation. Due to the severity of accidental water pollution, the Joint Expert Group prepared the Safety Guidelines and supported many countries in their application, including through the TMF Methodology, in dedicated projects to prevent TMF failures from causing accidental water pollution.

28. Building on past work, Parties and member States within the ECE region and beyond need to ensure that TMF-related risks near watercourses and lakes and in river basins are identified and mapped. Subsequently, these risks need to be integrated into water management plans and river basin management plans, jointly managed at a transboundary level and integrated into the development of joint or harmonized contingency plans. Such planning should entail preventive measures to ensure that TMFs do not cause accidental water pollution, and preparedness measures to ensure readiness to rapidly remediate in the event of such accidents occurring.

Table 3

Objective C and the related actions to strengthen mine tailings safety

Summary of objective C, proposed approach to its achievement and actions to be taken

Objective summary

Parties and member States within ECE region and beyond effectively manage TMFs to prevent accidental water pollution and be prepared to mitigate effects of accidents, including in cooperation with neighbouring and riparian countries and through river basin commissions

Proposed approach to achieve objective

Parties and member States within ECE region and beyond should: identify tailings risks in river basins and work towards their integration into industrial safety and water policies; consider lessons learned from past accidents; ensure that contingency plans are prepared, harmonized or joint with neighbouring countries; conduct exercises at TMFs located in reach of water sources; and ensure coordination between all relevant authorities, riparian countries and through river basin commissions

Summary of objective C, proposed approach to its achievement and actions to be taken

Actions for Parties and member States within ECE region and beyond	<p>Establish and maintain policy dialogues on efforts to strengthen TMF safety to prevent accidental water pollution and to further understand elevated risks posed by adverse impacts of climate change through national coordination mechanisms (see related action under objective B) and across countries</p> <p>Conduct multi-hazard, multi-risk mapping exercises in river basins, including TMFs, using Safety Guidelines and TMF Methodology, and ensure information available to affected public³⁰</p> <p>Develop internal and external contingency plans, including joint or harmonized plans for TMFs with neighbouring and riparian countries and through river basin commissions; test these plans through exercises, and review and refine them</p> <p>Strengthen public information and public participation in preparation of contingency plans to ensure readiness in case of TMF failures, including early warning systems</p> <p>Continue to cooperate through JEG to address and mitigate accidental water pollution risks, such as through collection of lessons learned from past TMF accidents, including those that led to accidental water pollution and those caused by Natech events; provide JEG with information on such accidents</p>
Actions by ECE secretariat	<p>Raise awareness of TMF risks, including need to integrate them into river basin management plans to prevent accidental water pollution, and support countries in managing these risks through implementation activities and Assistance and Cooperation Programme projects with beneficiary countries and river basin commissions</p> <p>Promote interlinkages between Industrial Accidents and Water Conventions through the JEG, NPDs on IWRM and on Industrial Safety, when disseminating information on prevention of, preparedness for and response to TMF failures and when jointly engaging in networks (e.g., river basin commissions)</p>
Joint or complementary actions by ECE secretariat and other international organizations	<p>ECE secretariat to work with EC JRC, OECD and UNEP, to support mainstreaming of prevention of accidental water pollution, including from TMFs, as part of IWRM and NPDs on IWRM and Industrial Safety</p>

Abbreviations: EC JRC, European Commission Joint Research Centre; IWRM, Integrated Water Resources Management; JEG, Joint Expert Group.

³⁰ In line with decision 2020/1, paras. 2–3.

D. Prevention of natural hazard-triggered industrial accidents (Natech events) and adaption to climate change

29. Natural hazards and the adverse impacts of climate change pose additional risks to the safety and long-term reliability of TMFs. In decision 2020/1, Parties noted with concern the elevated risk of accidents from mine tailings as a result of an increase in the frequency and intensity of climate-related extreme weather events (such as high energy storms, wind gusts, heavy precipitation and extreme temperatures) and slow onset climate events (such as rising sea levels, thawing of permafrost, land degradation and retreating glaciers). For example, some weather events can lead to flooding and the overflow of TMFs; others can lead to leaks through drying out, or trigger micro-seismic events that could weaken tailing impoundments and, in extreme cases, create fatal breaches through the cracking of structures.³¹ In view of these and other scenarios, the Conference requested Parties to increase their efforts to strengthen tailings safety and prevent failures, and invited other countries to do the same.

30. Increased adaptation to the adverse impacts of climate change is necessary to prevent TMF accidents early on in the design phase and through siting, and to ensure that risks associated with TMF accidents can be effectively managed. Natech risks and climate change need to be considered in risk assessments and evaluations, safety measures and contingency planning and reflected in relevant guidance, policy and expert dialogues. Future work should ensure that Natech risk management and climate change adaptation are integrated into the management of TMFs and all industrial facilities.

Table 4

Objective D and the related actions to strengthen mine tailings safety

Summary of objective D, proposed approach to its achievement and actions to be taken

Objective summary	Parties and member States within ECE region and beyond take further actions to limit exposure and vulnerability to natural hazards that could trigger TMF failures and adapt to climate change and its adverse impacts, particularly in view of how these affect safe management of TMFs
Proposed approach to achieve objective	Parties and member States within ECE region and beyond should take actions to integrate Natech risk management and climate change adaptation into measures to safely manage TMFs and seek to learn lessons from past accidents triggered by natural hazards and climate-related events
Actions for Parties and member States within ECE region and beyond	<p>Integrate Natech risks into TMF safety management plans and respective reviews (e.g., audits, evaluations) by authorities</p> <p>Review scientific evidence and engage with scientific experts on adverse impacts of climate change to understand how these can have an impact on safe management of industrial facilities, particularly TMFs, and how to best adapt to ensure safety</p> <p>Review existing risk assessment methodologies and update them as needed to include Natech risks and compounding risks from climate change (e.g., frequent major floods)</p>

³¹ The importance of adapting to climate change has been extensively covered in the Working Group II contribution to the Intergovernmental Panel on Climate Change Sixth Assessment Report, available at www.ipcc.ch/report/ar6/wg2/.

Summary of objective D, proposed approach to its achievement and actions to be taken

	<p>Improve adaptation to climate change risks, including through contingency planning and conducting (transboundary) exercises for Natech accident scenarios, taking possible domino effects into account</p> <p>Implement decision 2022/1 on strengthening Natech risk management in the ECE region and beyond</p>
Actions by ECE secretariat	<p>Support development of future dedicated guidance for preventing Natech accidents, specifically at TMFs, including compilation of lessons learned from past accidents</p> <p>Raise awareness of need to include Natech and climate change risks in work areas under Convention and in work in river basins, in cooperation with Water Convention (e.g., at workshops and through JEG) and in view of scientific evidence (e.g., IPCC reports)</p> <p>Continue to implement existing and new capacity-building projects to address needs of countries of EECCA and SEE, including on Natech risk management and climate change adaptation having an impact on TMFs in policy and legislation</p>
Joint or complementary actions by ECE secretariat and other international organizations	<p>ECE secretariat to contribute to development and finalization of OECD/United Nations guidance on Natech risk management, under OECD leadership and in cooperation with EC JRC, UNEP/OCHA Joint Environment Unit and OECD Natech project steering group, with reference, where appropriate, to TMF-related hazards and risks</p> <p>ECE, in cooperation with OECD, to support promotion and implementation of outcomes of ECE/OECD Seminar at twelfth meeting of CoP, Natech brochure and forthcoming draft Natech guidance</p> <p>ECE secretariat to support, in cooperation with EC JRC, sharing of experiences and lessons learned from past Natech accidents at TMFs in ECE region, notably by making information available to countries of EECCA and SEE, including Russian-speaking countries</p> <p>ECE secretariat, in cooperation with UNDP, to support countries of EECCA and SEE in efforts to strengthen institutional capacity, policies and resilience to climate change impacts related to tailings</p>

Abbreviations: EECCA, Eastern Europe, the Caucasus and Central Asia; IPCC, Intergovernmental Panel on Climate Change; OCHA, Office for the Coordination of Humanitarian Affairs; SEE, South-Eastern Europe.

E. Exchange of information and knowledge and capacity-building

31. Many stakeholders, including national authorities, international organizations, river basin commissions, industry associations, civil society and academia (see section II above), have collected information and generated knowledge on the safe management of TMFs and lessons learned from past accidents. At times, these have fed into (updated) policies and safety measures. Although many successful initiatives have been developed and events held to bring these stakeholders together, such information, knowledge and lessons learned need to be made more accessible across organizations, countries and authorities in order to ensure that everyone has access to the relevant information and can take subsequent action to address challenges. Future work should be based on existing activities, knowledge and tools, and should continue and, where necessary, enhance the exchange of information and knowledge.

32. The Convention's convening power can be used to bring stakeholders and experts together and review existing and emerging issues in mine tailings safety, including the added risks posed by climate change and natural hazards, cybersecurity and more. This will enhance understanding of current challenges and how methodologies, tools, technologies, experiences, good practices and lessons learned can be shared and used (or updated) to overcome them. Such exchanges also provide a basis for further aligning actions amongst stakeholders in order to address challenges in a synergetic way and to avoid any duplication of work.

Table 5

Objective E and the related actions to strengthen mine tailings safety

Summary of objective E, proposed approach to its achievement and actions to be taken

Objective summary	Parties and member States within ECE region and beyond regularly exchange information and knowledge on TMF risk management and related experience and expertise amongst each other and with other key stakeholders
Proposed approach to achieve objective	Parties and member States within ECE region and beyond should use Convention and UNEA of UNEP as policy forums to convene and discuss information and knowledge on TMFs. Setting-up of a subnetwork on TMFs in to-be-established interactive network on implementation of Convention, as well as a separate policy group, could be considered. Parties should also convey information, knowledge and technology they have developed and consider supporting beneficiary countries that have expressed related needs
Actions for Parties and member States within ECE region and beyond	As part of to-be-established interactive network to exchange information and share experiences about implementation of Convention (recommendation from Convention's Working Group on Implementation), foster regular exchange of information and knowledge about good practices, lessons learned and innovations for TMF safety; this should include discussion amongst representatives of competent authorities, international organizations, NGOs, TMF operators, academia and tailings experts Consider developing policy group on mine tailings safety to support Parties and beneficiary countries in implementing the actions in this road map and UNEA of UNEP resolution 5/12

Summary of objective E, proposed approach to its achievement and actions to be taken

	As Assistance and Cooperation Programme beneficiary country, apply Strategic Approach with its benchmarks to: include TMFs and Natech risks, among other aspects, in (updated) self-assessments and action plans; ³² and identify and express needs for capacity-building
Actions by ECE secretariat	<p>Develop interactive network to exchange information and knowledge about Convention's implementation, including subnetwork on TMF safety</p> <p>Support use of Convention as policy forum to convene on issues in relation to mine tailings safety, for example, through establishment of separate policy group, service its meetings and give presentations on ECE secretariat's activities on mine tailings safety</p> <p>Support countries in implementing their policies and developing their national governance structures through Assistance and Cooperation Programme projects</p>
Joint or complementary actions by ECE secretariat and other international organizations	ECE secretariat to invite all partners that work on TMF safety to join and participate in interactive network and to also welcome their constituents

V. Next steps: Short-, medium- and long-term priorities

33. Together, the five above-mentioned objectives set out an agenda for strengthening mine tailings safety until 2030 and beyond. They provide a path for Parties and member States within the ECE region and beyond, the ECE secretariat and other international organizations and stakeholders to build on past achievements, ensure the application of the Safety Guidelines and other tools that have been developed and more fully address the challenges in safely managing TMFs. The actions provided under each objective need to be implemented on an ongoing basis and will result in short-, medium- and long-term outcomes. Progress should be regularly discussed at meetings of the Conference of the Parties. Over time, this will lead to: the prevention of TMF failures and their devastating consequences within and across countries, contributing to the vision of achieving zero harm; and stronger preparedness and response measures, including in a transboundary context, in the event of an accident.

34. When defining a way forward and priority actions, it is crucial to take into account the fact that countries: are at different levels of implementation of the Convention; have different needs; and vary in the pace of their progress, depending on numerous factors, including their capacities. Further strengthening the implementation of the Convention and improving transboundary cooperation will be fundamental to making progress in the implementation of the above-mentioned actions, in particular for beneficiary countries of the Assistance and Cooperation Programme. Through the exchange of information, the promotion of good practice, and joint work on the topic in the ECE region and beyond, the Convention can play a key role in promoting progress throughout the region and facilitate the harmonization of practices and mutual learning. Such a way forward will facilitate the implementation of the proposed actions on strengthening tailings safety under the Convention.

³² In line with decision 2020/1, paras. 6 and 10.

35. During the biennium 2023–2024, all Parties and other ECE countries should advance their understanding of TMFs, including those with potential transboundary effects, and review their existing policies and governance platforms to ensure that the hazards and risks identified are adequately covered. Existing working groups and national coordination mechanisms on the Convention or disaster risk reduction could be used for this purpose; alternatively, the establishment of new coordination mechanisms, such as inter-institutional working groups on tailings safety and the prevention of accidental water pollution, could be considered. Parties and other ECE member States should make adjustments in their national policies and legislation, as needed, including aligning with the Safety Guidelines and TMF Methodology, addressing Natech risks and adapting to climate change. Parties should systematically report on TMFs as part of their hazardous activities as of the tenth reporting round (2019–2022) and consider a possible update of the location criteria to more fully cover TMF-related risks.³³ Parties and other ECE member States should also report to the thirteenth meeting of the Conference of the Parties (e.g., during a round table) on their notifications of TMFs with potential transboundary effects to potentially affected countries³⁴ and on their identification of TMF-related risks, past accidents, challenges and their efforts to address those. These will be important steps towards improving the joint understanding and governance of risks across borders. As such, they will provide a basis for enhancing exchanges amongst countries and international cooperation under the Convention. The ECE secretariat's related support, including for the more specific actions outlined in section III above, is included in the draft workplan for 2023–2024 and will be integrated into future workplans under the Convention. The degree of support provided by the ECE secretariat will depend on the financial resources made available by the Parties to implement respective workplan activities.

36. During the biennium 2025–2026, the information and efforts reported by Parties and other ECE member States through their national implementation reports and at the thirteenth meeting of the Conference of the Parties should be used to prepare an overview of TMFs in the ECE region. Depending on the availability of data and funding, the ECE secretariat could develop an overview of TMFs, including possibly existing hazards, risks and hotspots. This would facilitate the joint understanding and governance of risks among countries, Parties' notification of TMFs with possible transboundary effects to potentially affected countries and their initiation of related consultations. Furthermore, the ECE secretariat could make use of this overview to facilitate a multi-stakeholder dialogue on strengths and challenges across the ECE region and develop a road map for addressing existing and newly identified gaps; it could also make respective contributions to reports of other international and intergovernmental organizations (e.g., UNEP). This work, taking into account related work of ECE partners and other international organizations, could be presented at a policy-level event at the fourteenth meeting of the Conference of the Parties (e.g., on good practices, climate change implications, mine tailings safety and lessons learned, etc.) and further shared at the upcoming intergovernmental consultations mandated by United Nations Environment Assembly of UNEP resolution 5/12. The work and decisions taken by Member States at the sixth session of the United Nations Environment Assembly of UNEP and beyond could also inform, and further support, the implementation of the Convention and its work on tailings safety.

37. As for long-term priorities, Parties and other ECE member States, supported by international organizations, river basin commissions, industry, civil society and academia, should aim to further establish and promote the Convention, including the guidelines and tools developed thereunder, as the leading instrument to enhance mine tailings safety, by improving the understanding and governance of TMFs at the national, local and transboundary levels. Building on past achievements, Parties and other ECE member States should put their experience and their information and knowledge on TMFs to use and provide a model for addressing TMF-related risks across the globe. They should ensure the coordination and cooperation of all relevant stakeholders, including within and across

³³ Recommendation by the Working Group on Implementation, resulting from the Seminar on good practices and lessons learned in implementing the United Nations Economic Commission for Europe Industrial Accidents Convention (Geneva (hybrid), 3–4 February 2022).

³⁴ The notification template developed under the Convention can be used in this regard. It is available at www.unece.org/fileadmin/DAM/env/documents/2020/TEIA/Guidelines_and_good_practice/ENG_sample_HA_notification.pdf.

borders, and support them in fulfilling their respective roles in order to build a robust safety culture around TMFs. All stakeholders should also remain attentive to new and emerging developments in managing TMF-related risks, including underexplored challenges posed by natural hazards, climate change, cybersecurity and more, which provide an opportunity to collaborate and mobilize resources to jointly implement and operationalize the road map. Ultimately, Parties, other ECE member States and supporting stakeholders should aim to fully address TMF risks and ensure that no more TMF failures occur in order to protect human beings and the environment.
