

Mine tailings safety: Addressing gaps to protect human beings and the environment

Intergovernmental regional consultation under
UNEA resolution 5/12 on environmental aspects of
minerals and metals management



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Overview

1. Background

- Global trends & CRMs
- Hazards and risks of TMFs
- Knowledge gaps

2. Addressing gaps

- UNECE's role
- Key instruments
- Safety Guidelines & Good Practices
- Mapping, capacity building, policy
- Resource management

3. 2030 Roadmap for Action



Global low-carbon energy transition

Why critical raw materials (CRMs) matter?



CRMs essential for renewable energy and energy storage systems

Increasing demand for CRMs is projected, creating potential shortages, trade dependency and geopolitical challenges

CRMs play a key role in achieving SDGs 7 (Energy), 9 (Innovation), and 13 (Climate Action).



Transforming Extractive Industries for Sustainable Development

MAY 2021

Extractive industries have immense potential to drive growth, support sustainable development, and reduce poverty in developing countries.



UN Policy Brief, May 2021

Extractive industries play a dominant role in the economies of 81 countries that account for a quarter of global GDP, half of the world's population and nearly 70 per cent of those living in extreme poverty.

UN priorities

- **Financing for development**
- **Governance**
- **Green Economy**
- **Just Transition**
- **Circular Economy**
- **Global collaboration.**





WORKING GROUP
ON TRANSFORMING THE EXTRACTIVE INDUSTRIES
FOR SUSTAINABLE DEVELOPMENT



UNECE

UN
environment
programme



UN Secretary General's Working Group on Transforming Extractive Industries for Sustainable Development



Develop a **common narrative and framework**



Frame an implementation initiative to
deploy recommendations



Develop **policy recommendations**, tailored to
national governments, non-state actors.



Provide a **central hub of information and
knowledge exchange** on global policy
actions, global standards, tools and best
practices.



Foster collaboration to respond better to
existing and emerging needs for state and
non-state actors.



**Align efforts with ongoing processes and
events** relevant to extractive industries

Focus on Framework on Critical Raw Materials Development in LDCs and LLDCs.

Hazards and risks of tailings management facilities (TMFs)

- TMF failures can release a tsunami-like wave of waste capable of destroying everything in its path; risks to health, infrastructure, biodiversity and natural resources and neighboring countries
- Accidental water pollution and environmental degradation of transboundary watercourses / international lakes
- Significant costs for emergency response, clean-up, economic recovery, damages and legal costs
- Natural hazards and increasingly frequent and severe extreme weather events from climate change increase risks of TMF failures – “Natech” events

TMF cyanide spill at Ridder (Kazakhstan, 2016)



Baia Mare cyanide spill (Romania, 2000)



Mount Polley tailings dam break (Canada, 2014)



Brumandinho dam collapse (Brazil, 2019)

Sources:

1. <https://siberiantimes.com/ecology/others/news/n0671-stinking-poisoned-water-flows-towards-siberia-from-mining-city-ridder-in-kazakhstan/>
2. UNEP, 2017
3. https://en.wikipedia.org/wiki/Mount_Polley_mine_disaster#/media/File:Mount_Polley_Mine_dam_breach_2014.jpg

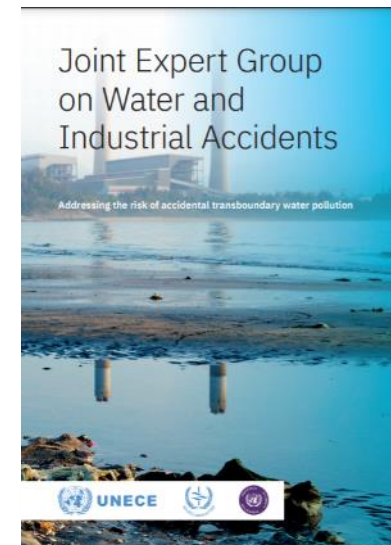
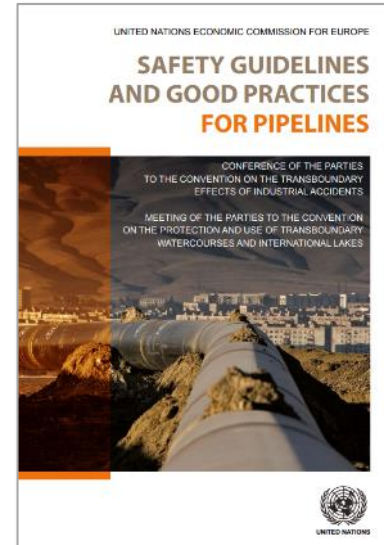
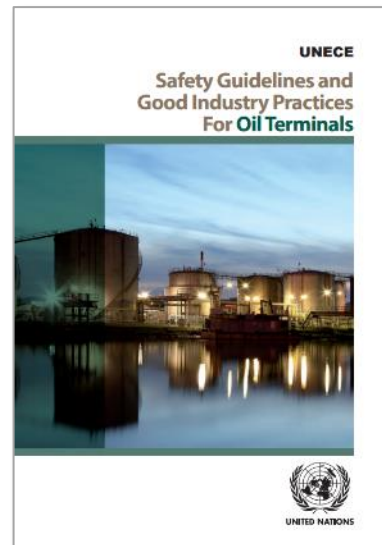
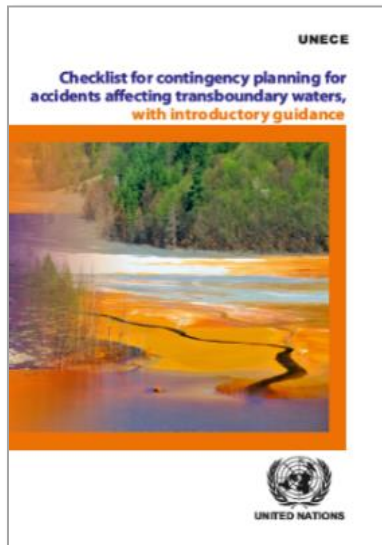
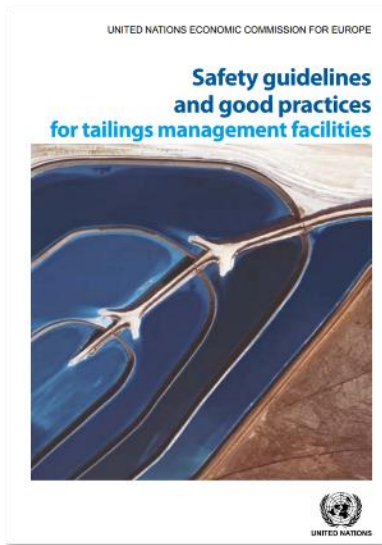
Key knowledge gaps / needs

- Lack of knowledge of TMFs across countries, regions and the globe; need to know the number of TMFs, their location, state, condition and possible of transboundary effects to understand and address hazards and risks
- Effective management of TMF risks to prevent accidents; international instruments, frameworks and guidelines support the development of national policies and platforms for policy coherence and governance
- Preventing accidental water pollution from TMF failures and preparedness to mitigate possible effects, including in cooperation with neighbouring and riparian countries and through river basin commissions
- Ensuring adaptation to climate change encompasses TMFs and the possible effects of climate change are considered in TMF safety (risk assessment, safety measures, contingency plans, etc.)
- Ensuring the public has access to information on TMFs, effective public participation in decision-making on TMFs and access to justice, including across borders for transboundary aspects
- Regular exchanges of information and knowledge across countries and regions and capacity-building activities incl. to address TMF safety against climate change, cybersecurity, public health emergencies, war
- Integration of the hazards and risks of TMFs (including Natech risks) into laws, policies and strategies at the national, local, river basin commissions levels, and measures to address them
- Enhancing national coordination and working with all stakeholders to address TMF risks; essential for authorities to coordinate across borders and prepare joint and harmonized preparedness and response measures in case of transboundary effects

UNECE's role for strengthening tailings safety

- Only UN regional economic commission with legal instrument covering TMFs and roadmap for strengthening TMF safety
- Specific instruments and guidance that apply to TMF safety (available worldwide)
- Secretariat to global and regional treaties on protection of human beings and the environment:
 - Industrial Accidents Convention:
 - Identification of hazardous activities and notification to neighbouring / riparian countries
 - Preventive measures, e.g. risk analysis, operator training, monitoring, land-use planning
 - Preparedness, e.g. on-site and off-site contingency planning, early warning and notification systems
 - Response, e.g. readiness, joint / coordinated measures, mutual assistance
 - Transboundary cooperation
 - COP adopted Decision 2020/1 on strengthening mine tailings safety in the UNECE region and beyond
 - Water Convention: Prevention of accidental water pollution
 - Aarhus Convention: Access to information, public participation in decision-making, access to justice in environmental matters; and Pollutant Release and Transfer Registers Protocol: public access to information
 - Espoo Convention: Environmental impact assessment in a transboundary context
- Sustainable resource management and classification
 - United Nations Framework Classification for Resources (UNFC)
 - United Nations Resource Management System

Safety guidelines, good practices and checklists, jointly developed under the UNECE Industrial Accidents and Water Conventions



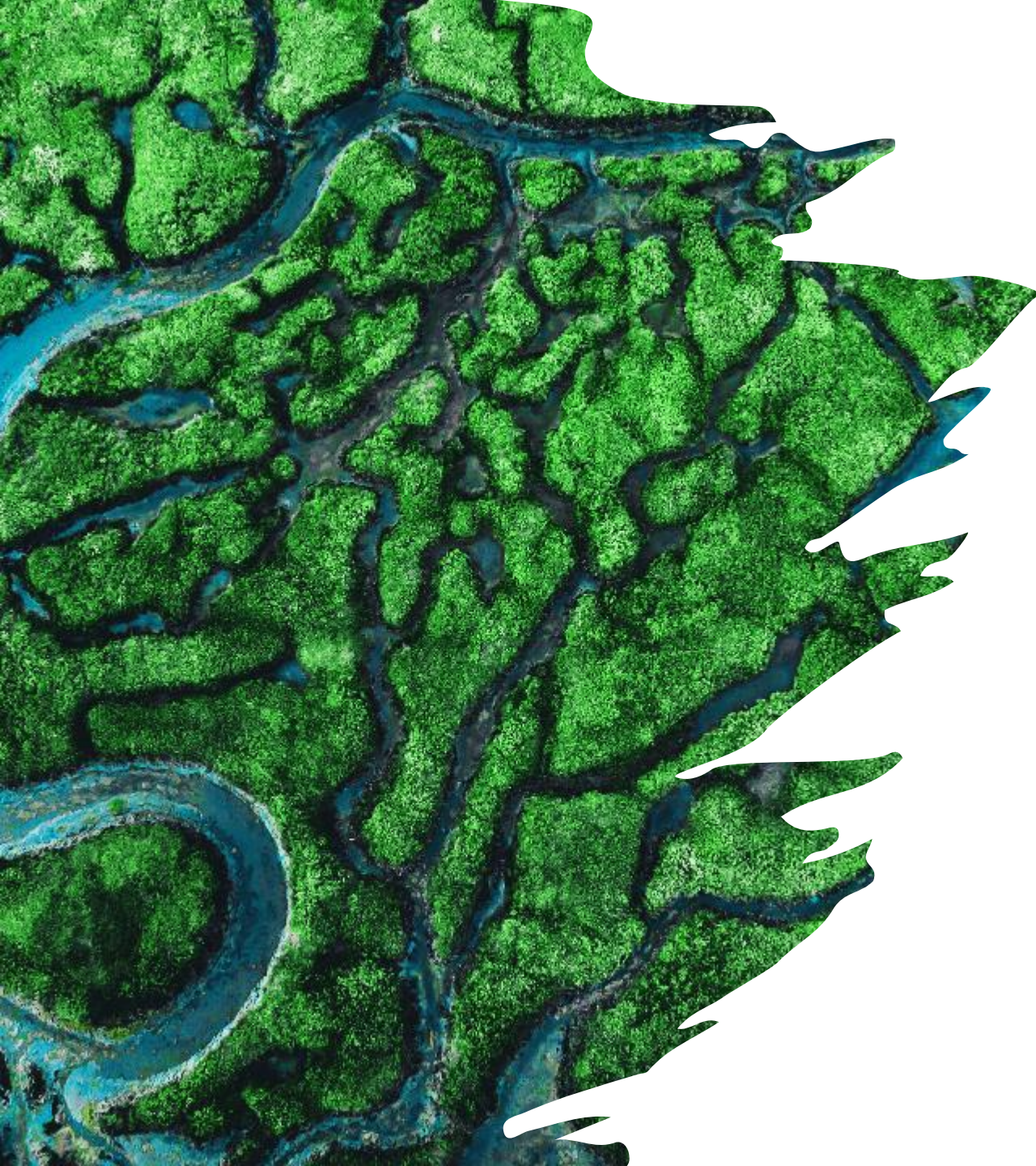
Safety guidelines and good practices for tailings management facilities



- Developed by the Joint Expert Group on Water and Industrial Accidents (JEG)
- Endorsed at Industrial Accidents Convention CoP-5 (2008) and Water Convention MoP-5 (2009)
- Aim to reduce frequency and severity of TMF failures
- Provides safety principles and recommendations for:
 - Governments
 - Competent authorities
 - TMF operators
- Includes aspects related to:
 - Pre-construction and construction
 - Operation and management
 - Facility inspections
 - Identification, assessment, management of abandoned sites
 - Emergency planning
- TMF Methodology was developed to support countries in the practical application of the guidelines, which provides a Tailings Hazard Index, Tailings Risk Index, Checklist methodology and Measure Catalogue

Activities for Capacity building, fostering governance and policy cooperation

- TMF inventory project across Central Asia: 237 TMFs identified across Central Asia with 59 or 25% capable of causing transboundary effects, funding by Switzerland, Germany and the EU
- TMF mapping: 343 TMFs identified under the Project 'Capacity development to improve safety conditions of tailings management facilities in the Danube River Basin – Phase I: North-Eastern Danube countries', carried out by the International Commission for the Protection of the Danube Rive (ICPDR) and financed by Germany
- On-site trainings to understand risks in Kazakhstan and Tajikistan; project reports contain results of TMF Methodology application and recommendations for operators and competent authorities to improve TMF safety
- Establishment of Interinstitutional Working Groups on Tailings Safety and the Prevention of Accidental Water Pollution (IIWG) in Kazakhstan and Tajikistan (and discussion for one in Uzbekistan)
- UNECE-UNDRR project 'Addressing technological/industrial accident risks in national DRR policies and plans of Kyrgyzstan and Tajikistan'
- [Online toolkit](#) developed to assist countries in strengthening TMF safety and management practices



UNECE's agenda on Sustainable Resource Management

Social viability

Financing projects

UNFC and UNRMS

Traceability and transparency

Environmental risk reduction

United Nations Framework Classification for Resources (UNFC)



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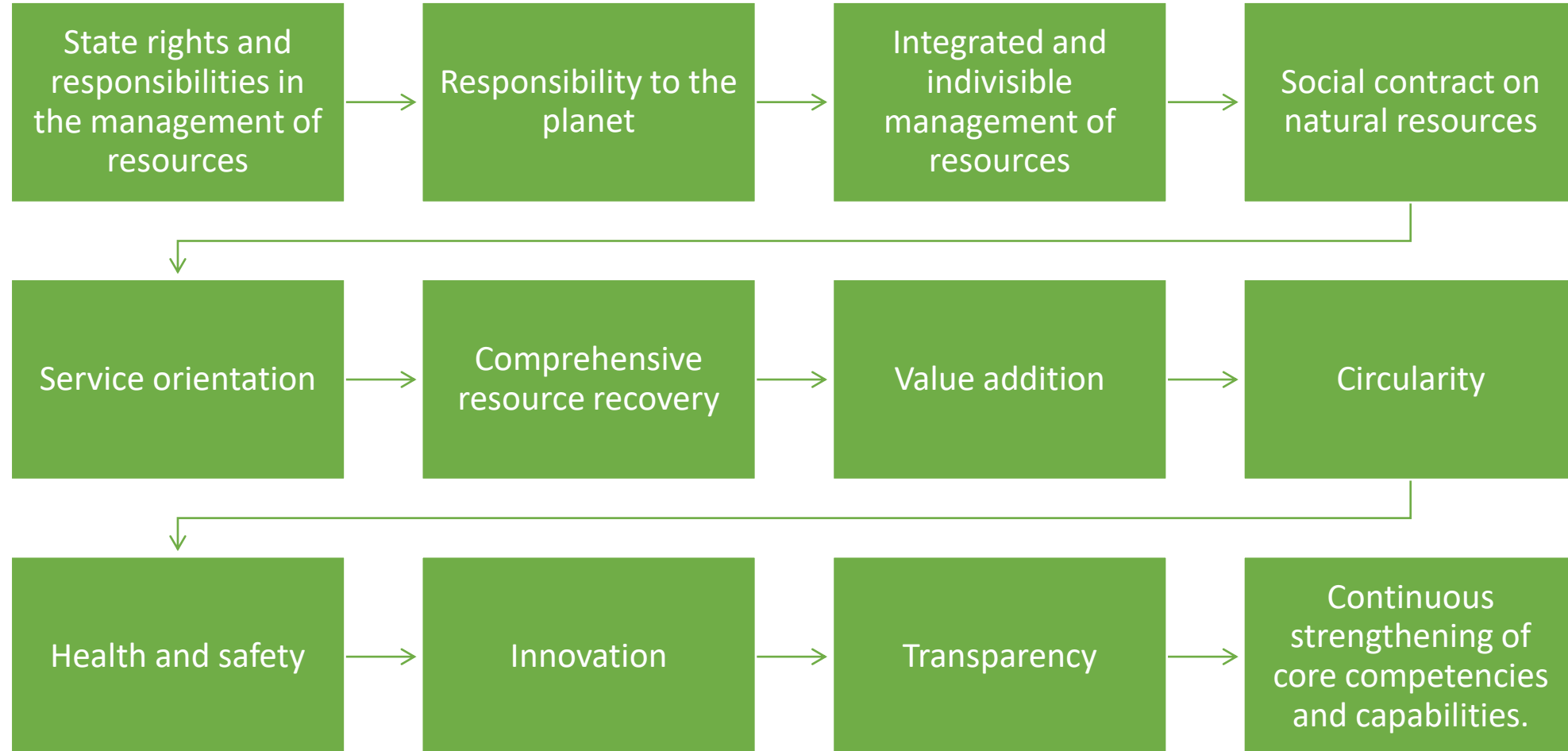
- Applicable across resources and countries
- Includes environmental, social, and economic dimensions

United Nations Resource Management System

Based on 12 Fundamental Principles



UNECE



**Economic Commission for Europe**Conference of the Parties to the Convention on the
Transboundary Effects of Industrial Accidents**Twelfth meeting**

Geneva, 29 November–1 December 2022

Item 9 of the provisional agenda

**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. * 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.

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



Roadmap for action to strengthen mine tailings safety within and beyond the UNECE region

- Developed by Industrial Accidents Convention's Bureau and UNECE secretariat, in consultation with OECD, OSCE, UNDRR, UNEP, UNDP and EU Joint Research Centre
- Endorsed by Industrial Accidents Convention CoP-12 (Geneva, December 2022)
- Purpose:
 - Defines five key objectives to strengthen mine tailings safety
 - Provides direction, actions and priorities for countries to achieve the key objectives
 - Highlights activities that UNECE, in cooperation with partner organizations, can conduct to support countries in implementation
- Intended use: Parties and member States within and beyond the UNECE region

Objective A – Understanding TMF-related risks within and across national borders

Actions to be taken by Parties and member States within and beyond the UNECE region

- ✓ Collect and provide data on TMFs when reporting on hazardous activities; regularly review and update TMF data

Objective B – Addressing TMF risks through policy and governance

Actions to be taken by Parties and member States within and beyond the UNECE region

- ✓ Establish / further develop national coordination mechanisms (e.g. IIWGs) to cooperate on managing TMF risks, covering also transboundary context

Objective C – Prevention and preparedness for accidental water pollution from TMFs

Actions to be taken by Parties and member States within and beyond the UNECE region

- ✓ Develop internal and external contingency plans, including joint or harmonized plans for TMFs with neighbouring and riparian countries

Objective D – Prevention of Natech events and climate change adaptation

Actions to be taken by Parties and member States within and beyond the UNECE region

- ✓ Review existing risk assessment methodologies and update them to include Natech risks and compounding risks from CC

Objective E – Exchange of information and knowledge and capacity-building

Actions to be taken by Parties and member States within and beyond the UNECE region

- ✓ Foster regular exchange of information and knowledge about good practices, lessons learned and innovations for TMF safety (among competent authorities, international organizations, NGOs, TMF operators, academia and experts)

Thank you for your attention

For more information: www.unece.org/env/teia

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