

*Global examples of nature-based solutions to mine industry water waste:  
From research to practice*

# **UNECE's Work and Perspectives on Strengthening Mine Tailings Safety and Governance**

Presentation by Ms. Claudia Kamke, Environmental Affairs Officer,  
UNECE Convention on the Transboundary Effects of Industrial Accidents

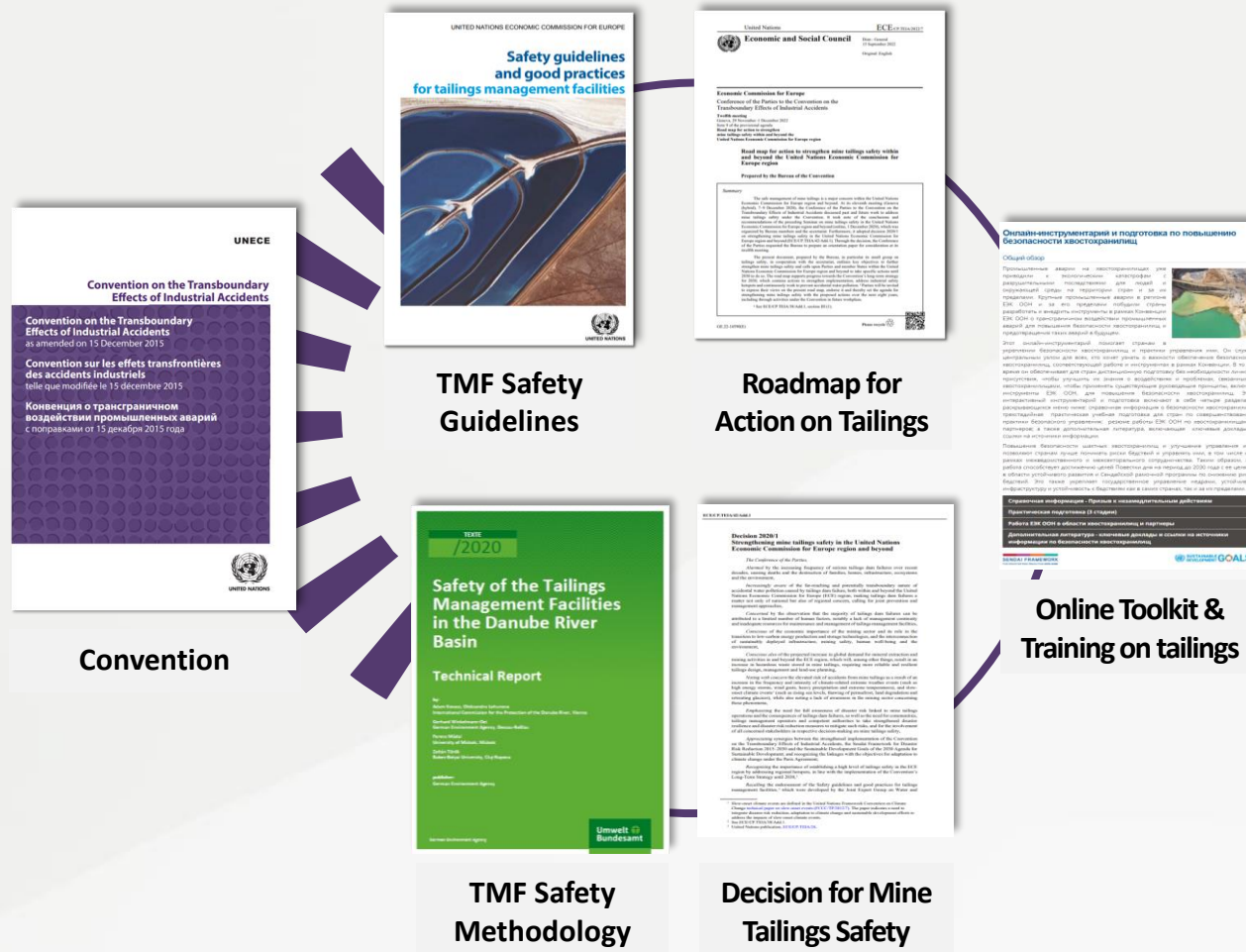
2 November 14:00-17:00, Almaty time



# UNECE Industrial Accidents Convention

## Guidance & tools available for worldwide use

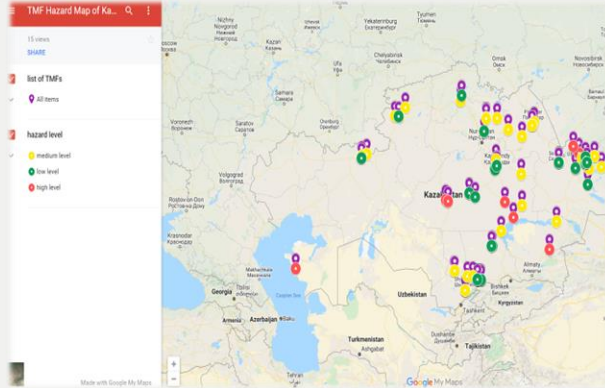
## Practical application



- Inventories & Maps of >1000 TMFs in the Danube River Basin, Ukraine & Central Asia
- On-site trainings at TMFs to build capacity & understand risks
- Creation of Interinstitutional Working Groups on Tailings Safety and the Prevention of Accidental Water Pollution (IIWGs) in Central Asia
- Subregional/transboundary cooperation on tailings safety

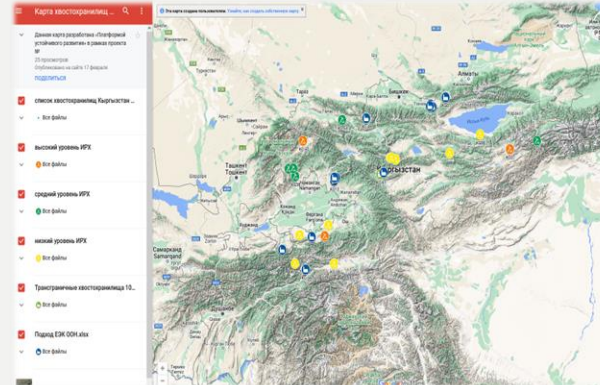
# Inventories and maps of 237 TMFs in Central Asia

## TMF mapping in Kazakhstan



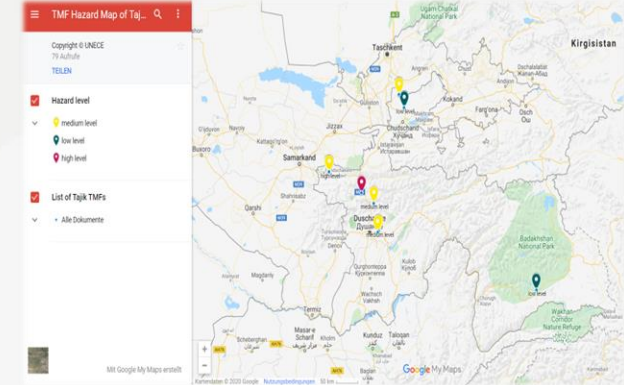
✓ Inventory and mapping of **121 TMFs**

## TMF mapping in Kyrgyzstan



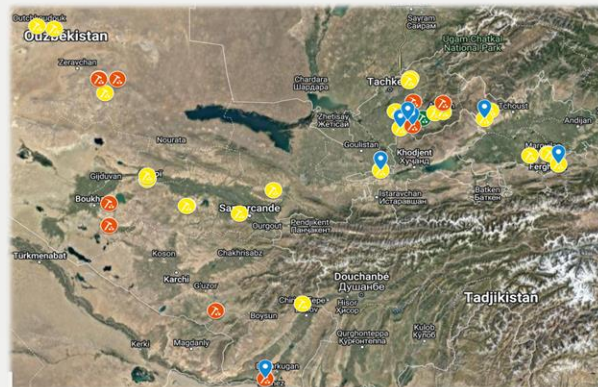
✓ Inventory and mapping of **62 TMFs**

## TMF mapping in Tajikistan



✓ Inventory and mapping of **13 TMFs**

## TMF mapping in Uzbekistan



✓ Inventory and mapping of **41 TMFs**

All TMFs were assessed using the [TMF Methodology](#), incl. Tailings Hazard (THI) and Tailings Risk (TRI) Indexes

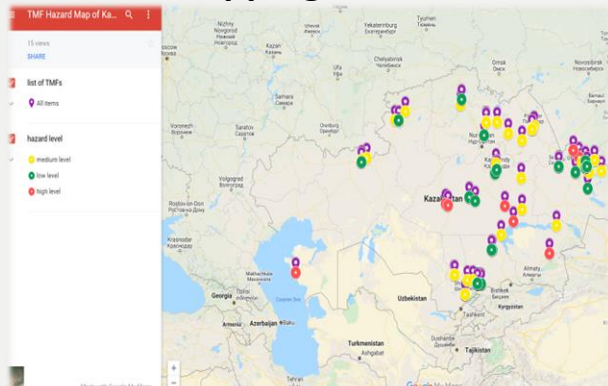
## TMF mapping in Syr Darya river basin



✓ Inventory and mapping of **61 TMFs**

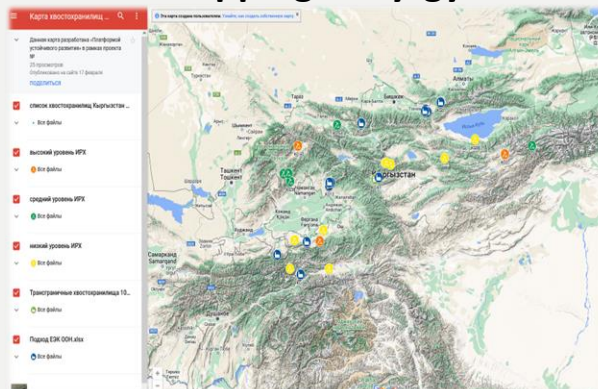
# 59 TMFs in Central Asia with potential transboundary effects

## TMF mapping in Kazakhstan



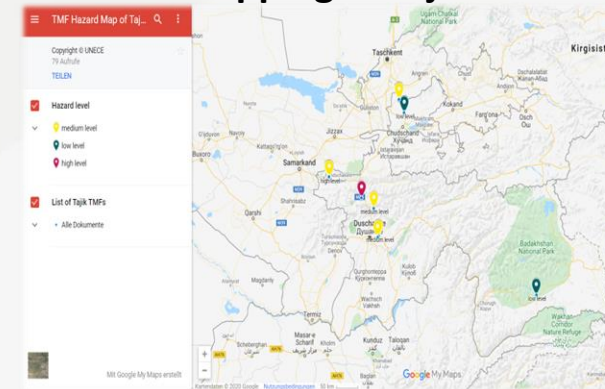
7 TMFs could have transboundary effects

## TMF mapping in Kyrgyzstan



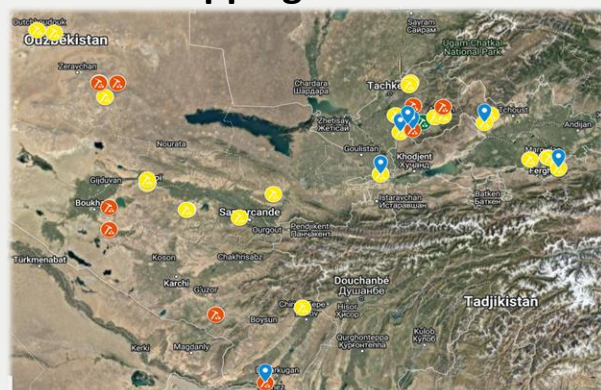
38 TMFs could have transboundary effects

## TMF mapping in Tajikistan



4 TMFs could have transboundary effects

## TMF mapping in Uzbekistan



10 TMFs could have transboundary effects

59 out of 237 TMFs may have potential transboundary effects → 25%

## TMF mapping in Syr Darya river basin



33 TMFs could have transboundary effects  
→ 19 in KYR, 10 in TAJ and 4 in UZB

# Capacity-building to understand risks

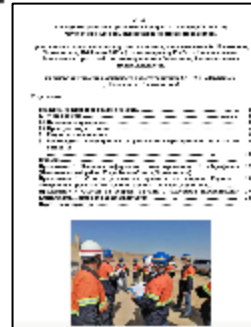
## On-site training in Kazakhstan (2019)

- Held in Kokshetau 11-13 June together with Kyrgyzstan and Tajikistan
- On-site training report was prepared based on safety evaluation of «Altyntau Kokshetau» TMF

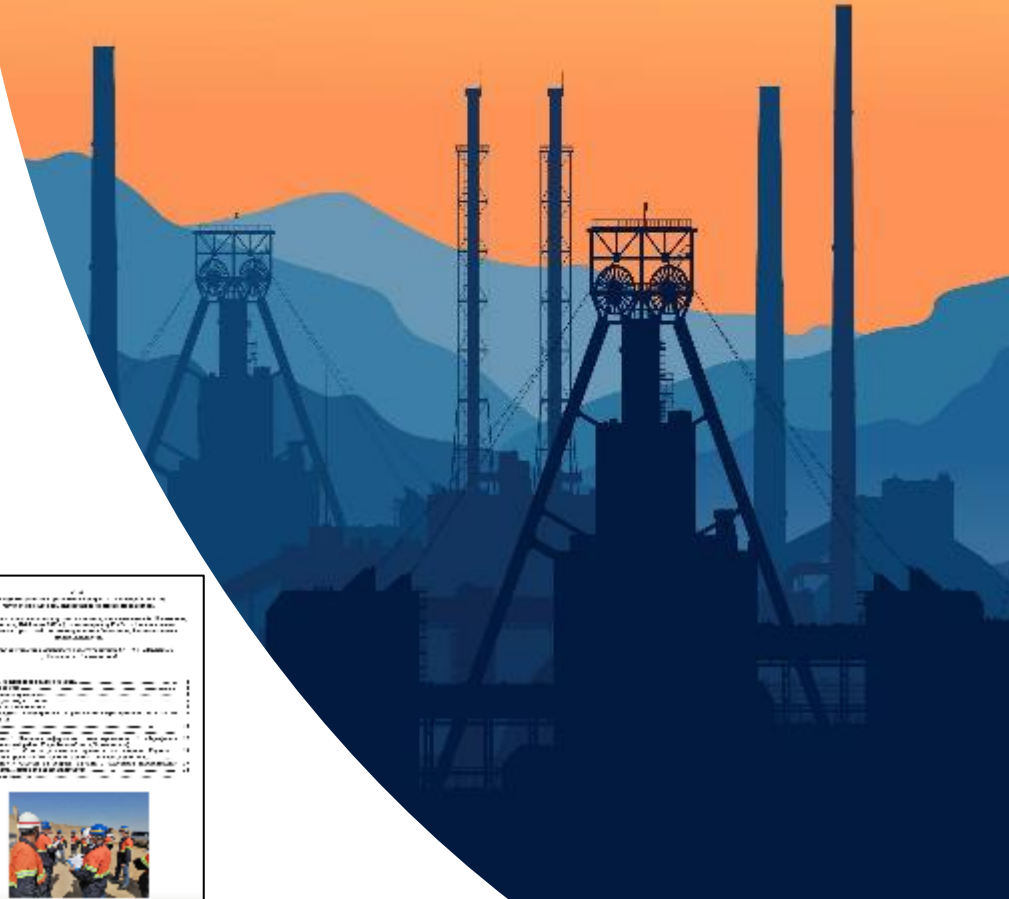


## On-site training in Tajikistan (2021)

- 23 April – technical/preparatory meeting
- 2-4 June – on-site training in Penjikent and online evaluation workshop
- On-site training report was prepared based on safety evaluation of «Zarafshon» TMF
- E.g: short-term recommended measure: *“Develop an action and monitoring plan for TMF closure”*



Reports contain the results of TMF Methodology application and recommendations for operators and competent authorities to improve TMF safety



# Strengthened Tailings Governance in Central Asia

*Establishment of and support to the Interinstitutional Working Groups on Tailings Safety and the Prevention of Accidental Water Pollution (IIWG)*

Kazakhstan



2<sup>nd</sup> IIWG meeting, held on 15 March 2023 in Astana

1<sup>st</sup> IIWG meeting held on 11 February 2022, led by MES in cooperation with Ministry of Ecology and Natural Resources

IIWG formally established through a decree of the Ministry of Emergency Situations (MES) in **January 2022**

Tajikistan



2<sup>nd</sup> IIWG meeting, held on 4 April 2023 in Dushanbe

IIWG formally established under the government on 31 October 2022

IIWG Inaugural Meeting in 2 Dec 2021

Uzbekistan



Inception meeting on IIWG establishment and its draft ToRs held on 27 April 2023 (online)

Development of Terms of Reference in first half of 2023



# Subregional workshop on strengthening mine tailings safety in Central Asia

*(Dushanbe, Tajikistan, 25-26 May 2023)*

- **70 participants** (online&in-person) from 5 Central Asian countries, incl. from authorities, operators, academia, NGOs & regional/IOs
- **High-level session** with the Vice-Minister of Emergency Situations of Kazakhstan, the Vice-Minister of Natural Resources of Kazakhstan, the Deputy Minister of Energy and Water Resources of Tajikistan and the Deputy Minister of Emergency Situations of Uzbekistan

# Key needs and recommendations for follow-up

1. Kazakhstan suggested establishing a joint working group (at a technical level) on the monitoring and control of the transboundary TMFs in Central Asia.
2. Tajikistan suggested setting up a coordination council (at the political level) between Central Asian countries to explore the potential risks related to TMFs and the prevention of accidental water pollution.
3. Uzbekistan pointed out the need to develop joint contingency plans, notably in river basins, in Central Asia and several Central Asian countries recommended to develop a joint Contingency Plan for the Syr Darya River Basin.
4. IWAC proposed launching a pilot project on assessing the impacts of climate change on TMFs in Central Asia to study the impacts and adaptation measures.
5. CESDRR highlighted the need to establish a sustainable early warning and alert system at the national and regional levels, e.g. to detect seismic movements, to help countries to prepare for hazardous climate-related events.
6. Participants stressed the vital role of the IIWGs as multi-stakeholder platforms for the exchange and coordination on mine tailings safety and recommended the establishment of such groups in other Central Asian countries.



# Linkages with NbS for TMFs

| UNECE Industrial Accidents Convention  | Integration of Nature-based Solutions  |
|--|--|
| <b>Risk Mitigation and Reduction</b>   |  |
| Focuses on preventing and mitigating industrial/tailings accidents and accidental pollution  | Reduce the risk of industrial accidents related to tailing management  |
| <b>Hazard Management and Water Quality Control (incl. across borders)</b>  |  |
| Addresses water management and safety concerns related to mine tailings operations that could lead to transboundary industrial accidents | Control surface water, soil contamination and sea spray from liquid tailings that can migrate into water channels    |
| <b>Environmental Protection and Remediation; Disaster Resilience</b>   |  |
| Aims to minimize the risks for the population and the environment of all affected Parties  | Restore the ecosystem and minimize environmental damage by NbS methods such as reforestation and wetland restoration |
| <b>Knowledge Exchange &amp; International Collaboration</b>  |  |
| Facilitates international collaboration to tackle mine tailing safety issues & their transboundary impacts                               | Share knowledge and best practices regarding the integration of NbS  |

# Limitations of NbS for TMFs

*NbS can serve as a valuable tool to mitigate risks, protect people & the environment, enhance disaster resilience and engage communities for TMFs. However, associated challenges and limitations exist.*

## Considerations for TMFs

- Site-specific adaptability of NbS approaches
- Long-term monitoring and adaptive management for continued success
- Integration Challenges: cooperation among stakeholders and regulatory bodies for successful NbS integration at TMFs

## Possible Challenges

- Potential Land Use Conflicts: Implementing NbS may compete with other land uses in mining areas, during actions for installation of additional infrastructure
- Lack of technical expertise for NbS implementation
- Financial constraints for investing in NbS
- Resistance to change and lack of awareness
- Transport and disposal / processing of contaminated plants and/or filter systems

# 2030 Road Map for action to strengthen mine tailings safety within and beyond the UNECE region



## Contains 5 key objectives:

A. **Understanding** TMF-related risks within and across national borders

B. **Addressing** TMF risks through policy and governance

C. **Prevention and preparedness for accidental water pollution from TMFs** to ensure water quality

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

E. **Exchange of information** and knowledge and capacity-building

## → For each objective:

- Objective summary
- Proposed approach to achieve objective
- **Actions for Parties and MS within the ECE region and beyond**
- Actions by ECE-secretariat
- Joint or complementary actions by ECE secretariat and other international organizations

→ Road Map available in [ENG](#), [FRE](#) and [RUS](#).

# 2030 Road Map for Action on Tailings Safety in the UNECE Region and Beyond

## 2023–2024

- Promote understanding of the risks associated with tailings
- Review and update existing measures and legislation
- Use existing and create new working groups and national coordination mechanisms
- Report tailings as a hazardous activity (10th reporting cycle)



## NEXT Steps

- **Prepare an overview:** tailings facilities in the UNECE region, possible existing threats, risks and hot spots
- **Improve shared understanding and risk management across countries**
- **Facilitate multi-stakeholder dialogue on existing benefits and challenges in the UNECE region and beyond**

2025–2026

# Upcoming events:



On-site training  
at a TMF in  
Uzbekistan  
(end-2023/  
early-2024)



IIWG Meetings in  
Kazakhstan,  
Tajikistan and  
Uzbekistan (2024)



JEG workshop on  
the prevention of  
accidental water  
pollution from  
TMFs (Bratislava,  
Slovakia, 23-24  
April 2024)\*



13<sup>th</sup> Meeting of the  
Conference of the  
Parties to the  
Convention, incl.  
round-table on  
tailings (Nov/Dec  
2024)

\* [Follow-up to 2022 JEG seminar](#) on emerging risks in accidental water pollution: focus on Natech risks

# Mine tailings safety



# **Thank you for your attention!**

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**UNECE**