

# How to make the Tailings Management Facilities safe in the Danube region

**ICPDR** IKSD

International Commission  
for the Protection  
of the Danube River

Internationale Kommission  
zum Schutz der Donau

## Application of the UNECE Safety Guidelines and the UBA TMF methodology in the Danube River Basin



**UNECE**



Сърбия // България // Молдова // Україна

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**ICPDR**

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Bundesministerium  
für Umwelt, Naturschutz  
und nukleare Sicherheit

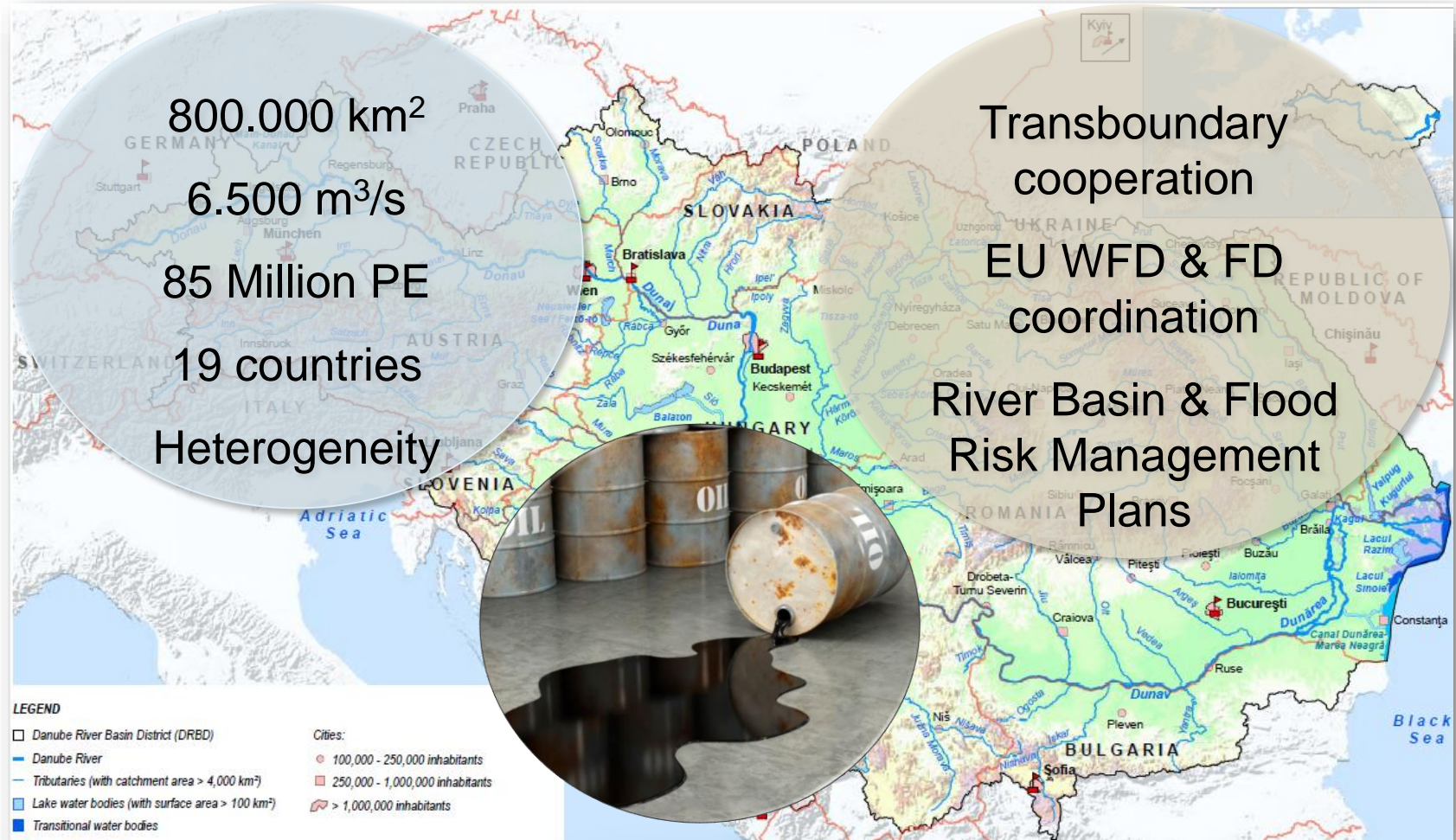
**Umwelt  
Bundesamt**

# Danube River Basin (DRB) & ICPDR



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800.000 km<sup>2</sup>  
6.500 m<sup>3</sup>/s  
85 Million PE  
19 countries  
Heterogeneity

Transboundary  
cooperation  
EU WFD & FD  
coordination  
River Basin & Flood  
Risk Management  
Plans

**LEGEND**

□ Danube River Basin District (DRBD)

— Danube River

— Tributaries (with catchment area > 4,000 km<sup>2</sup>)

■ Lake water bodies (with surface area > 100 km<sup>2</sup>)

■ Transitional water bodies

Cities:

- 100,000 - 250,000 inhabitants
- 250,000 - 1,000,000 inhabitants
- > 1,000,000 inhabitants



# Rationale & motivation

- Dramatic **TMF accidents** in the DRB (Baia Mare, Ajka)
- TMFs associated with **high risk** of accidental pollution
- Previous UBA **projects** on TMF safety:
  - Methodology for regional/basin-wide **prioritization** (hazard analysis)
  - Checklists and measure catalogue for **detailed investigations**
- Need for **update** and **adjustment** to DRB conditions

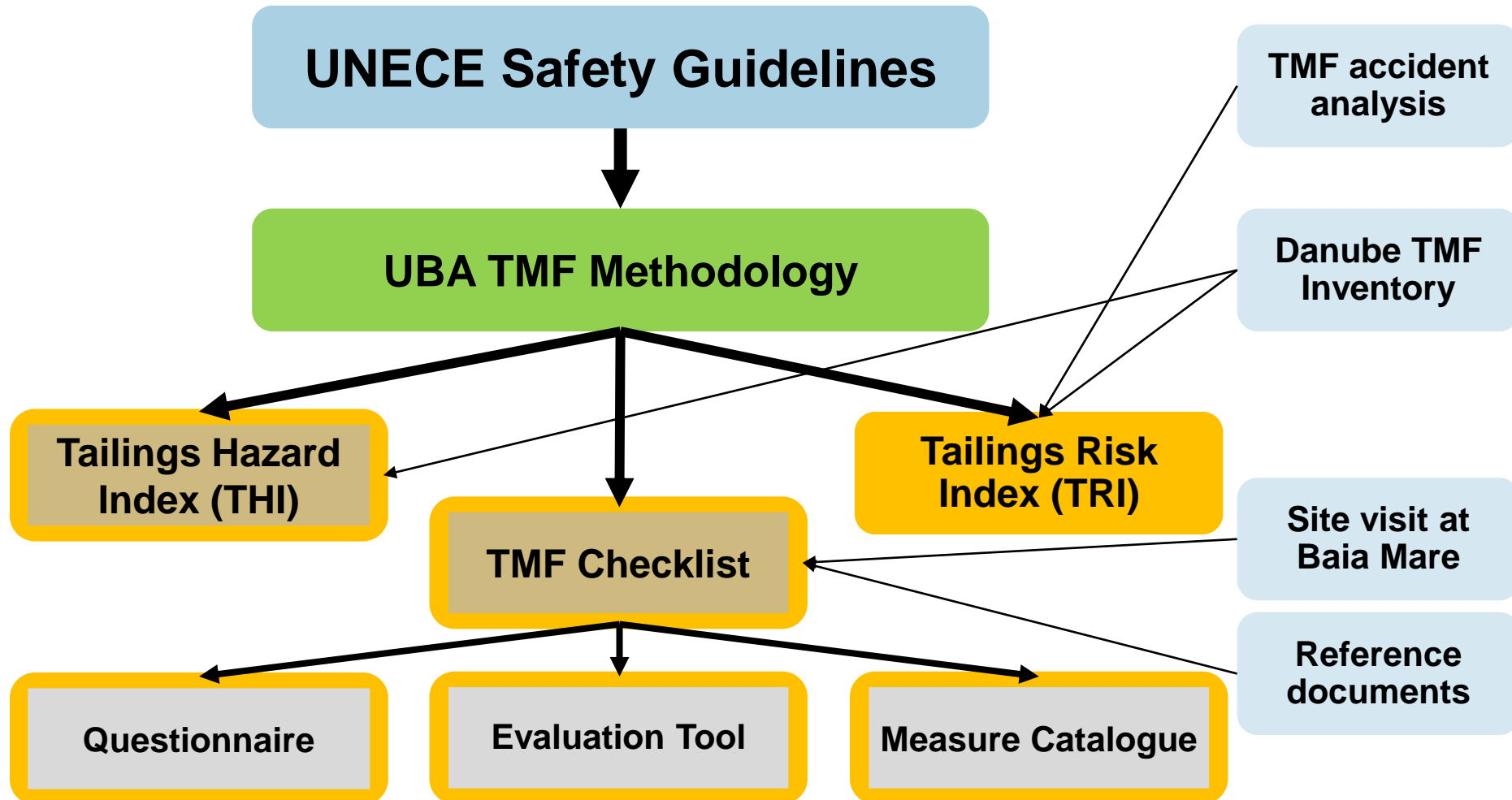


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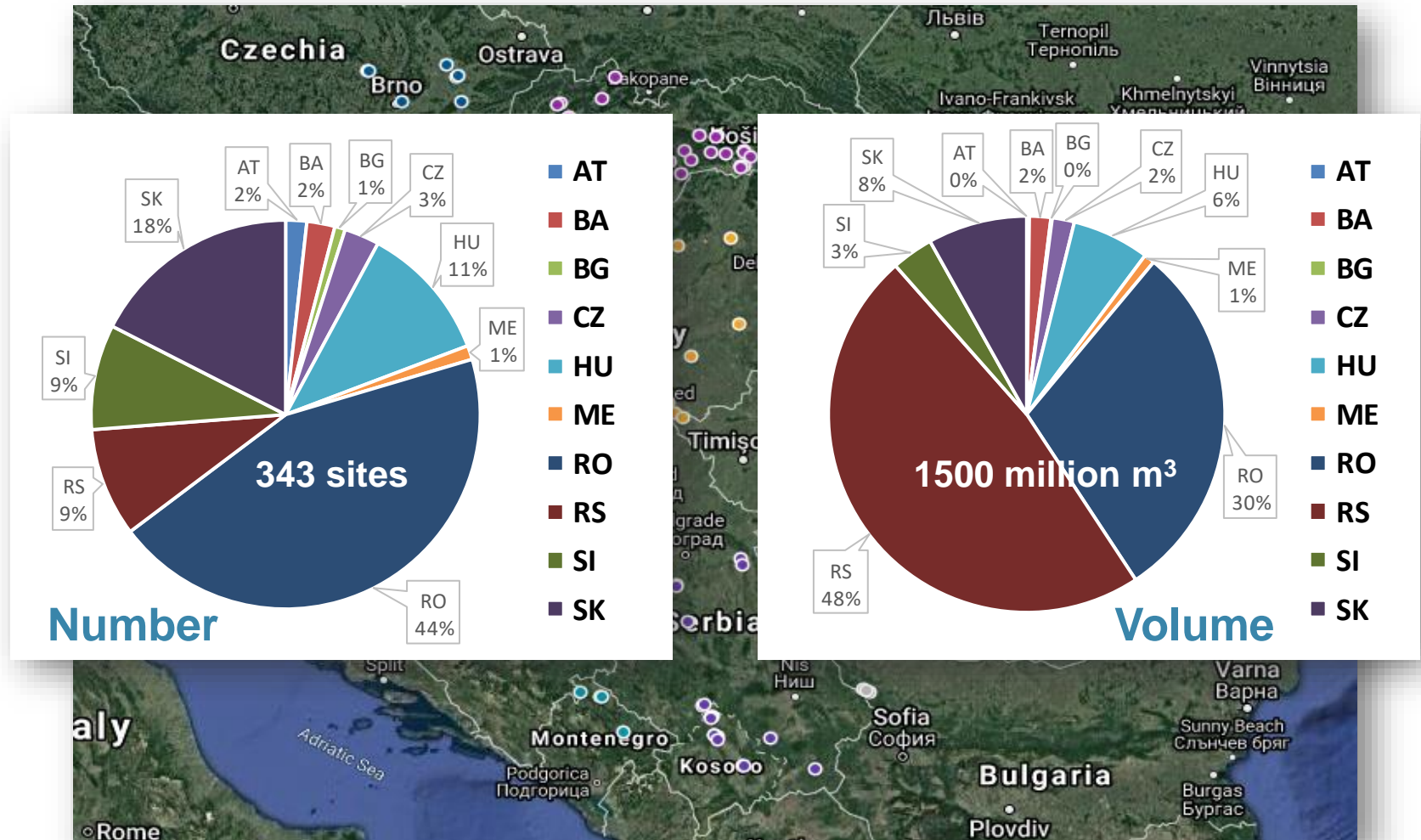
# Objectives

- Strengthening the **technical and management capacity** of TMF operators & authority inspectors to improve TMF safety
- Respecting a common set of **minimum standards** and safety requirements in the DRB to reduce accident risk
- Providing **tools and strategies** for the Danube countries:
  - a) Updating and completing the **TMF inventory** of the DRB
  - b) Amending an existing **hazard assessment** method and integrating land use planning aspects into it for **risk assessment**
  - c) Further enhancing and completing a previously developed detailed **checklist method**
  - d) Providing **recommendations** for the Danube countries on managing TMFs and ensuring sustainability of the results

# Methodology



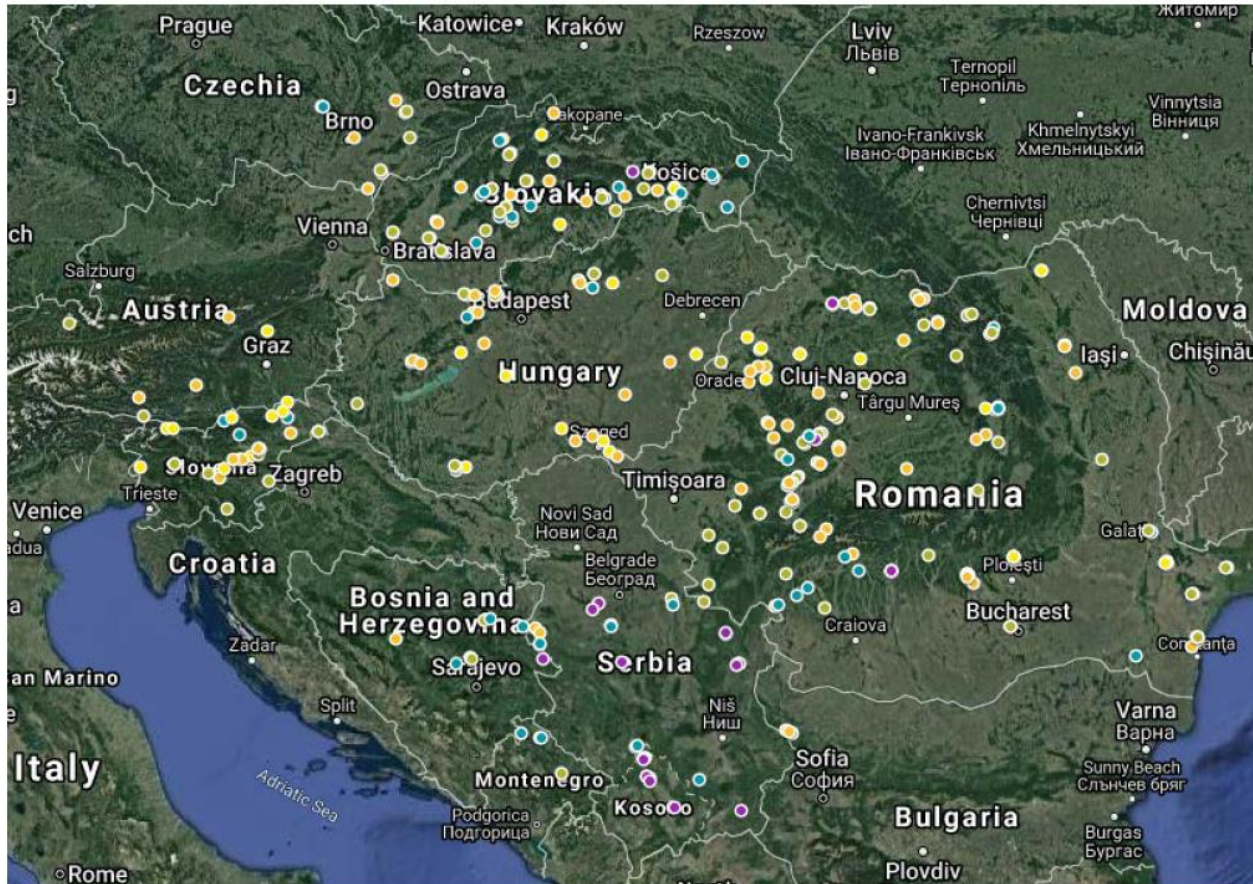
# TMF inventory for the DRB



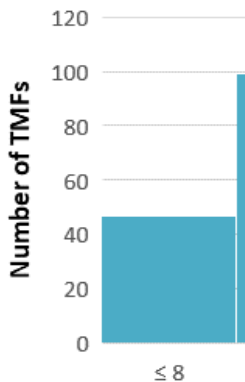


# Improving the Tailings Hazard Index

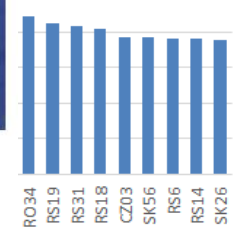
- Simple of high
- Certain
- Prioriti target
- Link to



azard  
s and  
ning)  
effects)



Color scheme: lilac – very high hazard (THI>14), blue – high hazard (12<THI≤14), green – medium hazard (10<THI≤12), orange – low hazard (8<THI≤10), yellow – very low hazard (THI≤8), © Google



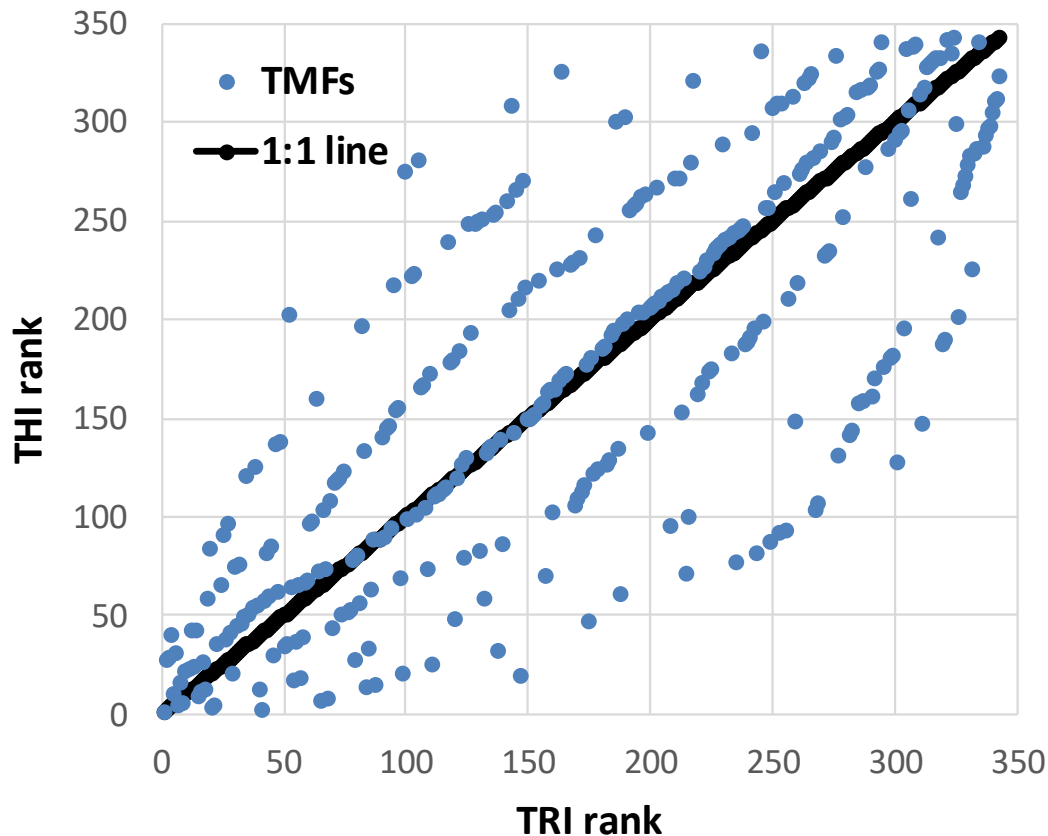
# Developing the Tailings Risk Index

- Assessing **accident risk** to society and environment within a risk zone by combining **hazard and exposure** into risk
- Risk zone: **10 km** downstream (historical accidents)
- Simplified **impact receptors**: population and water bodies
- Awareness raising on accident risk and designing **contingency plans** and **preparedness measures**
- Link to **land use planning** (new sites, capacity enlargement)





# THI vs TRI



- Significantly **different ranks** based on THI and TRI
- Top 10% ranks (1-35): **half** of the two lists with differing TMFs
- Similar rank only for **10 TMFs**

# Testing and amending the TMF Checklist (Baia Mare)

- Harmonized, comprehensive checklist method for **detailed investigations** on safety (entire **TMF-lifecycle**, automatized safety evaluation and potential measures)
- Updating **questions and measures** (EU legislation, BREF document, reports), **user-friendly** evaluation tool
- **Training tool** for authority inspectors, education material, practical tool supporting **self-assessment** for TMF operators



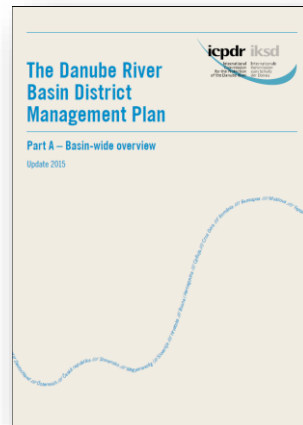
# Sustainability of the project outcomes



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- An ICPDR **position paper** on the TMF issue
- Maintaining the TMF inventory as a **living database**
- Supporting further **demonstration projects** and trainings
- Inputs to the 3<sup>rd</sup> Danube River Basin **Management Plan**
- Reliable **concept** and sound **technical basis** for national activities





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# Thank you for your attention!

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For more information on the **Danube TMF project**:

[LINK](#)

For more information on the **ICPDR**:

<http://www.icpdr.org>



YouTube

