Screening and assessment of tailing mining projects in compliance with UNFC

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How to Identify Potentials and Barriers of Raw Materials Recovery from Tailings

Similarities with Mining Projects

- **Geological exploration** of mineral raw materials
  - Reconnaissance, prospection, general & detailed exploration
  - with each phase the technical effort increases

- **Techno-economic** approach
  - Parallel to geological exploration if it makes economic sense

What is known
- Location / minerals to be expected
- Historical data / new information

Major differences to mining projects
- Environmental, social and legal aspects

→ Need for a comprehensive understanding of the potentials and barriers for the development of a raw material project

Research Question

→ Systematic screening approach comparable to reconnaissance exploration
Quick and efficient UNFC-compliant approach

Systematic Screening

5 Steps

1) compilation of basic information
2) precondition factors assessment
3) local E&S* potential assessment
4) local stakeholder assessment
5) UNFC-compliant categorisation

selected TSF for screening

inventory for future study

proceed with very preliminary study

*R&S: environmental & social

Tailings Storage Facility (TSF) Bollrich

Rammelsberg closed in 1988 after more than 1000 years of mining
- Geological evidence
  \(\text{BaSO}_4, \text{Cu, Pb, Zn, Ag, Au, In}\)

- Variations expected in
  - mineral quantity,
  - quality,
  - distribution

- Infrastructure
  Public roads and railway

**Step 1**
Compilation of Basic Information
Step 2
Precondition Factors Assessment

- Presence of
  - buildings,
  - transportation
  - utilities infrastructure
Step 3

Local Environmental and Social Potential Assessment

Environment of TSF Bollrich

- Protected landscape areas
- Nature conversation areas
- Rivers
- Industrial & commercial areas
- Sports areas
- **Risk assessment** → Oker Failure of the TSF dam

- **Human activity** around the TSF → Human Footprint Index 60 - 80%

- **City Goslar Administration** → recreation area

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**Step 3**

Local Environmental and Social Potential Assessment
Step 4
Local Stakeholder Assessment

17 stakeholder groups

- **Citizens** of Goslar & Oker (50,000 inhabitants)
- **Authorities:**
  City administrations / State Office for Mining
- **Companies** (Oker Chemie, German Railway DB)
- **Farmers, foresters, & air sports** community
- **NGOs** (3)
- **Rammelsberg mine** → UNESCO cultural heritage
- **No information** could be retrieved on the TSF’s owner among others
Prospective Project: E3F3G4

- assumed presence of CRMs, BaSO₄ & economically highly important metals
- assumed sufficiently large TSF volume
- favorable regulatory & infrastructure conditions

Driving factors

- Reduction of the environmental risk potentials
- Benefits of environmental rehabilitation
- Potential to reduce land use-related social tension

**Conclusion**

**Systematic Screening Approach**

- **Case study**
  - Importance of sustainability aspects / legal aspects / interests of stakeholders (local population)

- **Systematic approach**
  - Identification of the potentials and barriers for the development of a recovery project

- **UNFC-compliant approach**
  - Inclusion of environmental and/or social aspects in addition to economic viability

- **Need for**
  - Differentiation of economic, environmental, social & legal aspects on the E-axis
  - Guidance for rating data quality and uncertainty ranges
Thank you!

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