

A DESK-BASED SCREENING APPROACH COMPLIANT WITH THE UNFC TO IDENTIFY THE RAW MATERIALS RECOVERY POTENTIAL FROM BASE METAL TAILINGS

Soraya HEUSS-ASSBICHLER¹, Rudolf SUPPES²

BACKGROUND

- transparent information on anthropogenic raw materials sources such as base metal tailings is key for their recovery
- there is no procedure to quickly identify the potentials of & barriers to raw materials recovery from these sources
- hence, a fact-based discussion with all stakeholders is impeded

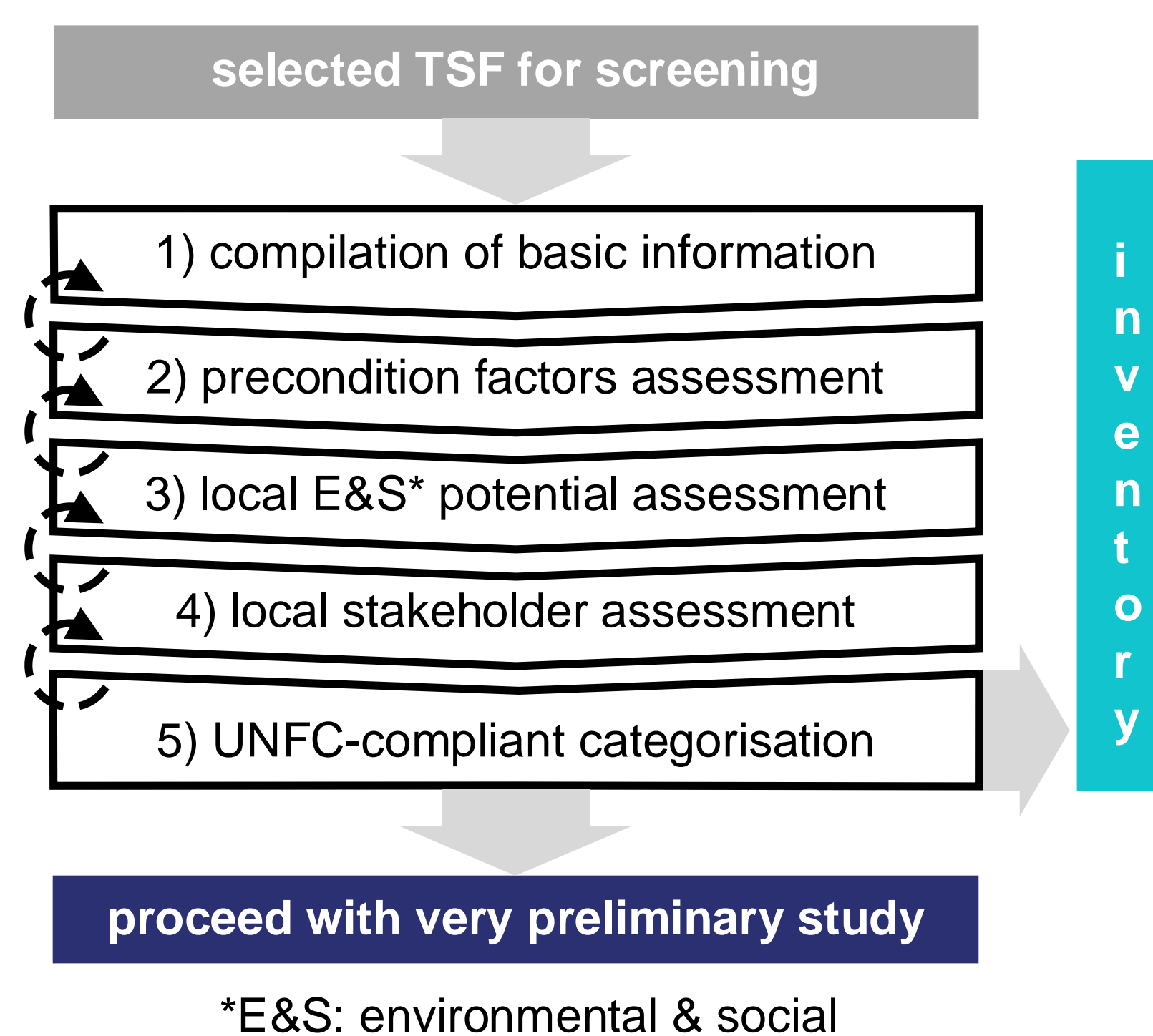


Figure 2. Five steps to identify the potentials & barriers of a raw materials deposit Adapted after reference [1].

RESULTS

the following information is obtained:

1. sufficient basic information is available on, e.g., location, environment, potentially contained raw materials, TSF condition & potential safety risks
2. defined preconditions regarding economic, environmental &/or social aspects justify an interest in the TSF
3. there are local environmental & social benefits which can be generated by removing the TSF
4. 18 diverse & socially active stakeholder groups directly affected by the TSF or its removal were identified
5. the collected knowledge is consolidated for a UNFC-compliant categorisation, based on which it is recommended to proceed with on-site investigation

CONCLUSIONS

identified potentials:

- quantity is sufficiently large for a viable recovery
- CRMs & economically highly important metals are present
- environmental & social risks at status quo are high
- high land use-related social tension at status quo
- favorable investment & infrastructure conditions are present

identified barriers:

- little geological & geotechnical knowledge about the TSF
- identified stakeholders might potentially reject the project

*UNFC: United Nations Framework Classification for Resources

OBJECTIVES

- develop & test a systematic screening approach for a quick & cost-efficient pre-selection of potentially viable base metal tailings deposits
- application of the approach to the case study base metals tailings storage facility (TSF) Bollrich (Germany) located in an ecologically & socially sensitive area (cf., figure 1)
- the TSF was part of the Rammelsberg mining operation during which mainly Au, Ag, Pb, Cu, & Zn were produced

METHODS

- systematic assessment & classification approach in 5 steps compliant with the UNFC* (cf., figure 2) to justify if costly on-site exploration should be carried out
- desk-based data collection from publicly accessible internet sources, satellite images, scientific databases & thematic geoscientific maps.



Figure 1. Simplified schematic illustration of the environment around the TSF Bollrich: the light grey shaded areas mark the TSF Bollrich (right area) & the associated disused processing plant (left area), the green shaded areas mark protected landscape areas, the red shaded areas mark nature conservation areas, the yellow shaded areas mark industrial & commercial areas, & the purple shaded areas mark sports areas close to the TSF. The blue lines represent rivers. Adapted from reference [1].

REFERENCES

- [1] R. Suppes and S. Heuss-Aßbichler, "How to Identify Potentials and Barriers of Raw Materials Recovery from Tailings? Part I: A UNFC-Compliant Screening Approach for Site Selection", *Resources*, **10** 26 (2021).

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¹Prof. Dr. Soraya HEUSS-ASSBICHLER
Professor for Mineralogy at the Department of Earth and Environmental Sciences
Ludwig-Maximilians-Universität München
Luisenstraße 37
80333 Munich
Germany

phone: +49 89 2180 6713
e-mail: heuss@lmu.de
<https://www.geowissenschaften.uni-muenchen.de>



²Rudolf SUPPES, M. Sc.
Head of Business Unit Sustainable Raw Materials and Energy Supply
Gesellschaft für Consulting, Business und Management mbH – CBM GmbH
Hornstraße 3
52064 Aachen
Germany

mobile: +49 157 78878823
e-mail: supes@cbm-ac.de
<https://www.cbm-ac.de>