How to evaluate landfill mining? On the challenges of assessing feasibility and performance

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Preconditions for assessment of Landfill Mining

- Complex projects with several objectives, outputs & values
- Early phase of development with few real-life applications
- Ex ante assessments of planned or hypothetical projects
- Deficit in knowledge and records of accomplishment
Methodological issues of recent LFM assessments

**SELECTION OF LANDFILLS**
- Low-grade MSW
- Low alternative costs

→ Importance of site-specifics
→ Implications of results?

**EMPLOYED PROCESSING SCHEMES**
- Simple to advanced schemes
- Often only one processing line

→ Criteria for selection?
→ Treated as “Black boxes”

**ASSUMPTIONS OF MARKETABILITY**
- Exhumed resources salable
- Full substitution

→ No discussion on marketability
→ High impact on results

**SPECIFICNESS AND QUALITY OF DATA**

- Data from adjacent fields, estimates & small-scale tests

→ Lack of discussions about applicability and implications of used data

- Input parameters as single, estimated values

→ Stochastic variations & **epistemological uncertainties** not included
Implications on the validity and usefulness of the results

- Recent assessments target deterministic results on potential & feasibility
  - Net outcome for a few scenarios
  - The understanding of criticality is often limited to main processes

- Ignoring scenario and data uncertainties provide simplified results, but are they valid and useful?
  - High implicit uncertainties
  - Miss out potentials for improvement
  - Difficult to identify critical factors
Recommendations for the assessment of landfill mining

• From deterministic to explorative approaches...
  – Full recognition of uncertainties on scenario and data levels
  – Systematic and advanced sensitivity analysis methods

• From guessing to knowing...
  – Unlock the “black boxes” of the LFM value chain
  – Small-scale tests → Pilot trials → Full-scale projects

• From narrow scopes to the broader picture...
  – Consistency and transparency of modelling principles
  – Many positive and negative values
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