Resource classification in the context of circular economy: A case study review

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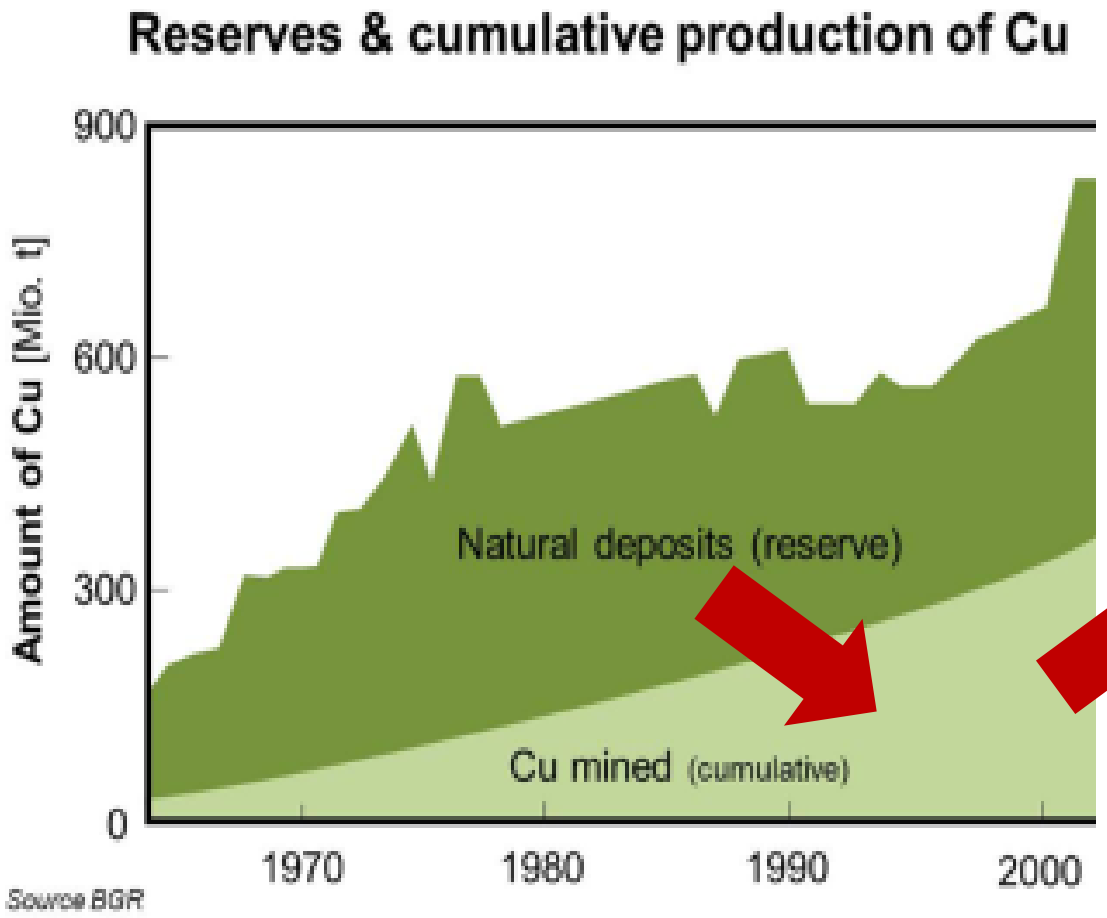
RESOURCE MANAGEMENT WEEK 2021
ENABLING SUSTAINABILITY PRINCIPLES IN RESOURCE MANAGEMENT

Anthropogenic Resources

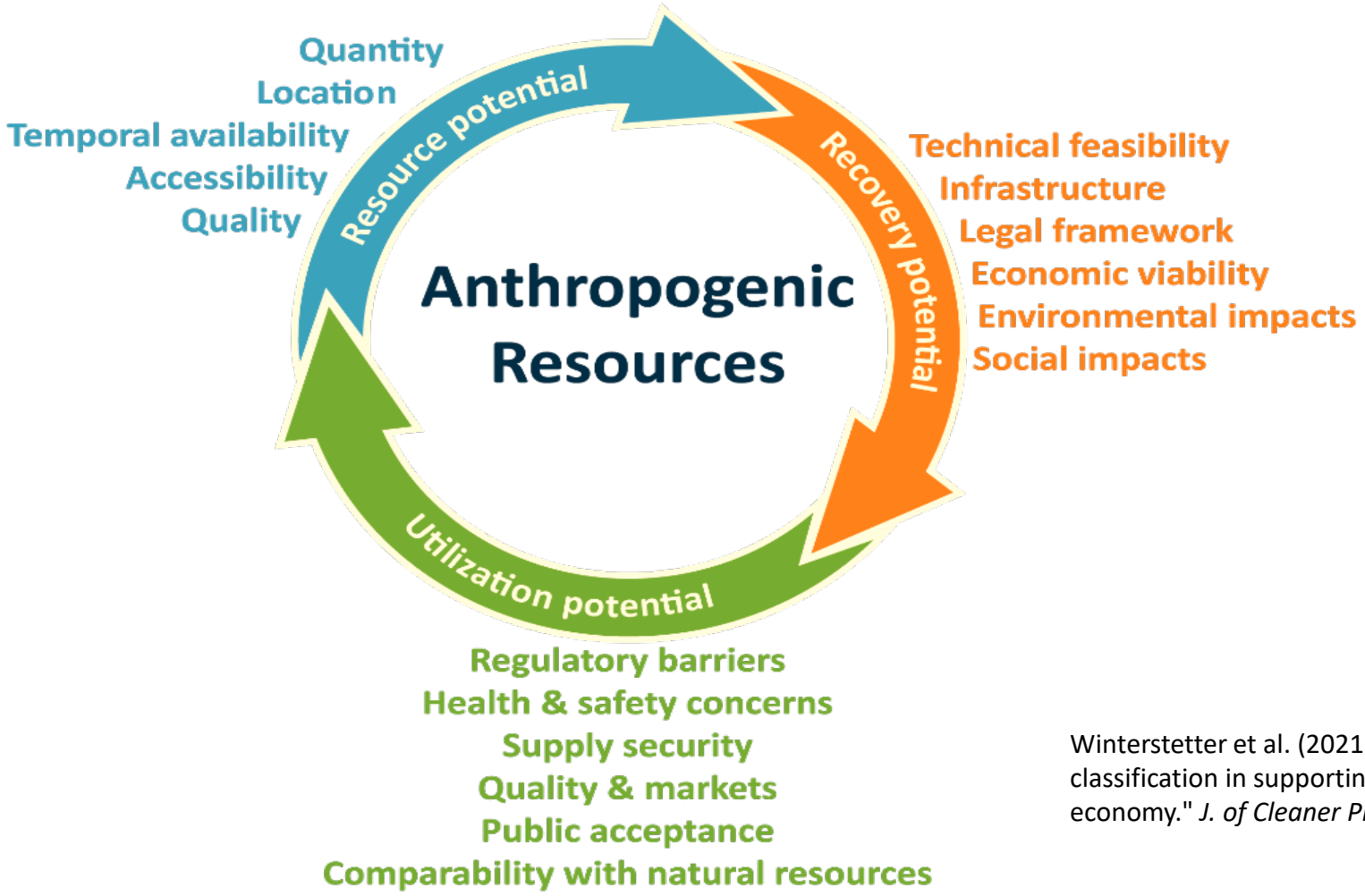
Background



Anthropogenic resources: The reserves of the future?

Anthropogenic Resources in a Circular Economy

Challenges in reserve estimation



Winterstetter et al. (2021) "The role of anthropogenic resource classification in supporting the transition to a circular economy." *J. of Cleaner Production*

Resource Classification for a Circular Economy

Approach

Review of 14 case studies that classify anthropogenic resources

- ❑ How and for what purpose was the classification of anthropogenic resources done in the case studies?
- ❑ How can RC support the transition to a Circular Economy in the future?

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Review

The role of anthropogenic resource classification in supporting the transition to a circular economy

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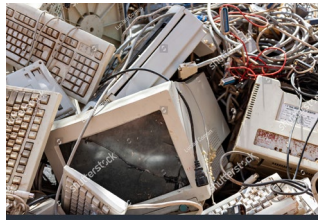
Scope of Reviewed Case Studies

Results



WEEE (3)

Metals (3)

Built infrastructure (1)

Waste incineration residues (4)

Old landfills (3)

- Resource recovery from material stocks and waste flows addressed
- 10 of them target multiple resources for recovery
- 50 % use UNFC, 50 % McKelvey
- 13 forward-looking, 1 retrospective
- 4 classify at project level, 8 at (supra)national level and 2 at city level

Source images: Shutterstock

Motivation of Resource Classification in Case Studies

Results

- Establish **inventories** of available and accessible anthropogenic resources at regional and national level
- Compare **different scenarios** for resource recovery projects (e.g. different technologies, different CE options)
- Determine **key parameters** for the success of a recovery project (e.g. legislation, prices)
- Internalize **environmental externalities** via concepts of monetization
- **Optimize waste management operations** for enhanced resource recovery at project and system level

Resource Classification for a Circular Economy transition?

Discussion

Knowledge management	R&D	Policy support	(Pre-) feasibility studies
Increase knowledge about available anthropogenic resources.	Support research to develop innovative technologies, processes and methods to enhance the recovery of anthropogenic resources.	Support decision makers with design of new policies and legislation.	Investigate the economic viability of anthropogenic resource recovery projects, including social and environmental externalities.

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Resource Classification for a Circular Economy transition?

Discussion II

Marketing	Integrated resource management	Value chain communication	Decision support
Improve the marketability of recovered anthropogenic resources.	Comparison of anthropogenic and natural resources.	Optimize waste management operations, processes and product design for enhanced resource recovery and recyclability.	Support decision making with respect to different CE options.

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Standardized Operationalized Classification Needed

Conclusions

- Key CE stakeholders would benefit from a standardized operationalized anthropogenic resource classification
- To harmonize data collection on resource potential, recovery potential and the utilization potential of anthropogenic resources
- Considering individual resource recovery activities as part of a wider system
- Including guidance on the detailed assessment
- Tailored for different types of anthropogenic resources.

Thank you!

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