

**Update
on the application of UNFC-2009 to
Anthropogenic Resources**

Soraya Heuss-Aßbichler
Ludwig Maximilian Universität München

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Motivation

The growing consumption of material resources correlates with the generation of solid waste.

About 20% of the raw materials extracted worldwide ends up as waste – and hence is lost to the economy.

The increasing demand for mineral and energy resources makes the recovery of waste attractive.

Relevance for Circular Economy

Relevance for Circular Economy

Predicting recoverable quantities is relevant for Circular Economy Initiatives (EU Policy)

- to sustain a continuous supply of commodities
- to save primary resource deposits
- to protect the environment

Who cares ?

- **Companies** working in the waste sector and recycling industry
- **Governmental agencies** dealing with resource policies - to develop management plans based on integrating primary (geogenic) and secondary (anthropogenic) raw material supply
- **Financial stakeholders** – to compare and optimize investments for re-use, and recovery (recycling, backfilling, energy recovery) of anthropogenic resources

What is missing ?

- Framework for reliable, coherent and consistent estimates of recoverable quantities from anthropogenic resources.

Standardisation is the key

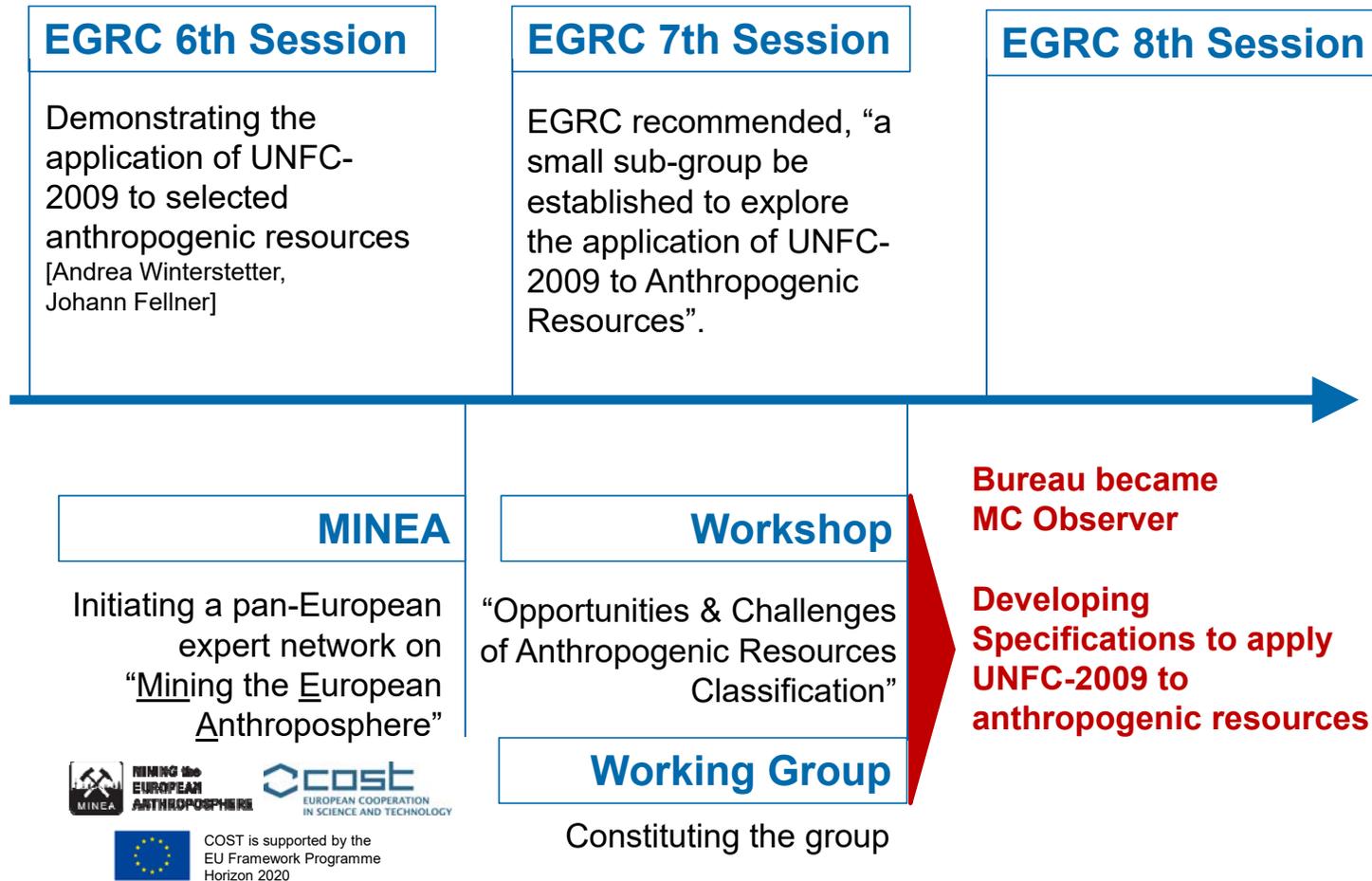
Existing Framework Classification and Specifications

- specify the terminology and principles for estimating and reporting geological (primary) resource potentials
- facilitate long-term planning and capital acquisition for mining operations
- are harmonized and globally accepted

Future Specifications for the Classification of Anthropogenic Resources

- Need to include waste and secondary materials
- Need to establish a common standard for estimation, comparison, aggregation, and reporting of recoverable material stocks & flows in the Anthroposphere
- Need to add a systems perspective for raw material flows

Activities to standardize the classification



Initial Draft Specifications

EGRC-8/2017/INF.7
19 April 2017

Economic Commission for Europe
Committee on Sustainable Energy
Expert Group on Resource Classification
Eighth session

Geneva, 25-28 April 2017
Item 11(e) of the provisional agenda
**Update on the applications of the United Nations
Framework Classification for Fossil Energy and
Mineral Reserves and Resources 2009:
Injection projects**

**Initial Draft Specifications for the application of the United
Nations Framework Classification for Fossil Energy and
Mineral Reserves and Resources 2009 to Anthropogenic
Resources**

**Prepared by the Working Group on “Classification and reporting of
material resources/reserves” of the COST Action CA15115 “Mining the
European Anthroposphere”**

Summary

This document provides the Initial Draft Specifications that enable the application of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009) incorporating Specifications for its Application (as set out in United Nations Economic Commission for Europe (UNECE) Energy Series No. 42 and ECE/ENERGY/94) to Anthropogenic Resources. The intended use of this document is in conjunction with UNFC-2009 incorporating Specifications for its Application and with the aligned commodity-specific specifications (currently under development) for specific types of Anthropogenic Resources.

These Initial Draft Specifications are submitted by the Working Group of “Classification and reporting of material resources/reserves” of COST Action CA15115 “Mining the European Anthroposphere” to the Technical Advisory Group (TAG) of the UNECE Expert Group on Resource Classification for review and for subsequent presentation at the eighth session of the Expert Group, 25-28 April 2017, and for a public review phase in 2017.

Contributions

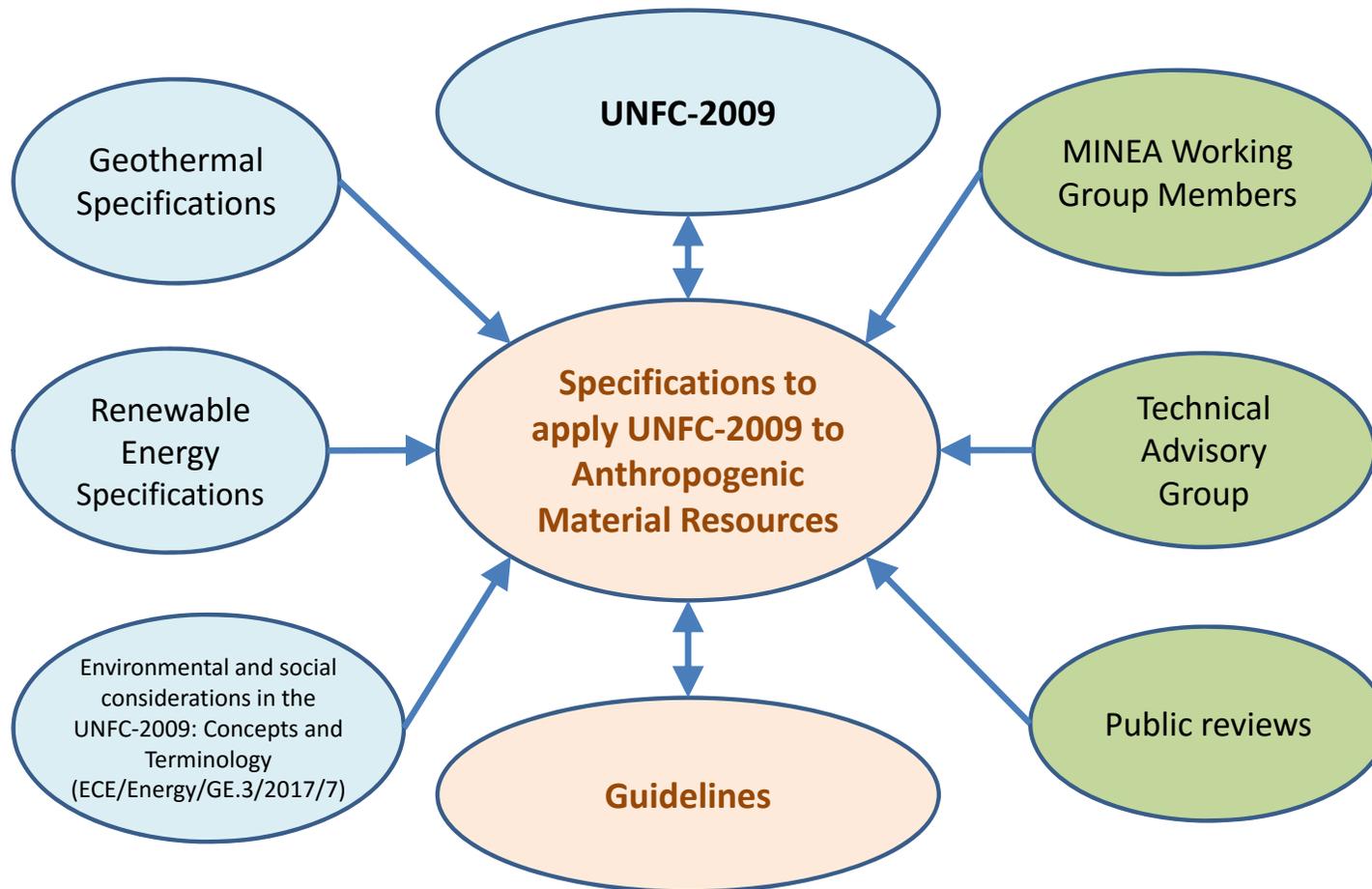


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- Classes, Projects, Project lifetime etc.

III. Definition of categories and supporting explanations

IV. Generic specifications

Anthropogenic Resource Definitions

In alignment with OECD (2015):

Material Resources, Productivity and the Environment.

OECD Publishing, <http://dx.doi.org/10.1787/9789264190504-en>

**Important for the
System of Environmental-Economic Accounting (SEEA)**

Terms: Anthroposphere
Anthropogenic Resources
Anthropogenic Resource Stock

Anthroposphere

The **Anthroposphere** denominates the part of the environment that is made or modified by humans. It includes all domains of human activities, as opposed to those occurring in natural environments without human influences.

In the **Anthroposphere**, human being constitutes a significant source of change in earth system through a significant flow of material and energy. It includes the use and transformation of natural resources, as well as the release of residues.

Anthropogenic Resources

The term **Anthropogenic Resources** designates resource stocks that are found in the anthroposphere
(Types of Resources: mineral / energy / soil / water / biology).

Anthropogenic Resource is an overarching term for physical matter

- without any attribution from an economic, social or environmental perspective,
- without specific aggregate state (solid, liquid, gaseous)
- without any relation to a specific stage in the life cycle

Anthropogenic Resource Stocks are the anthropogenic occurring assets that provide use benefits through the provision of secondary raw materials and energy used in economic activity (or that may provide such benefits one day).

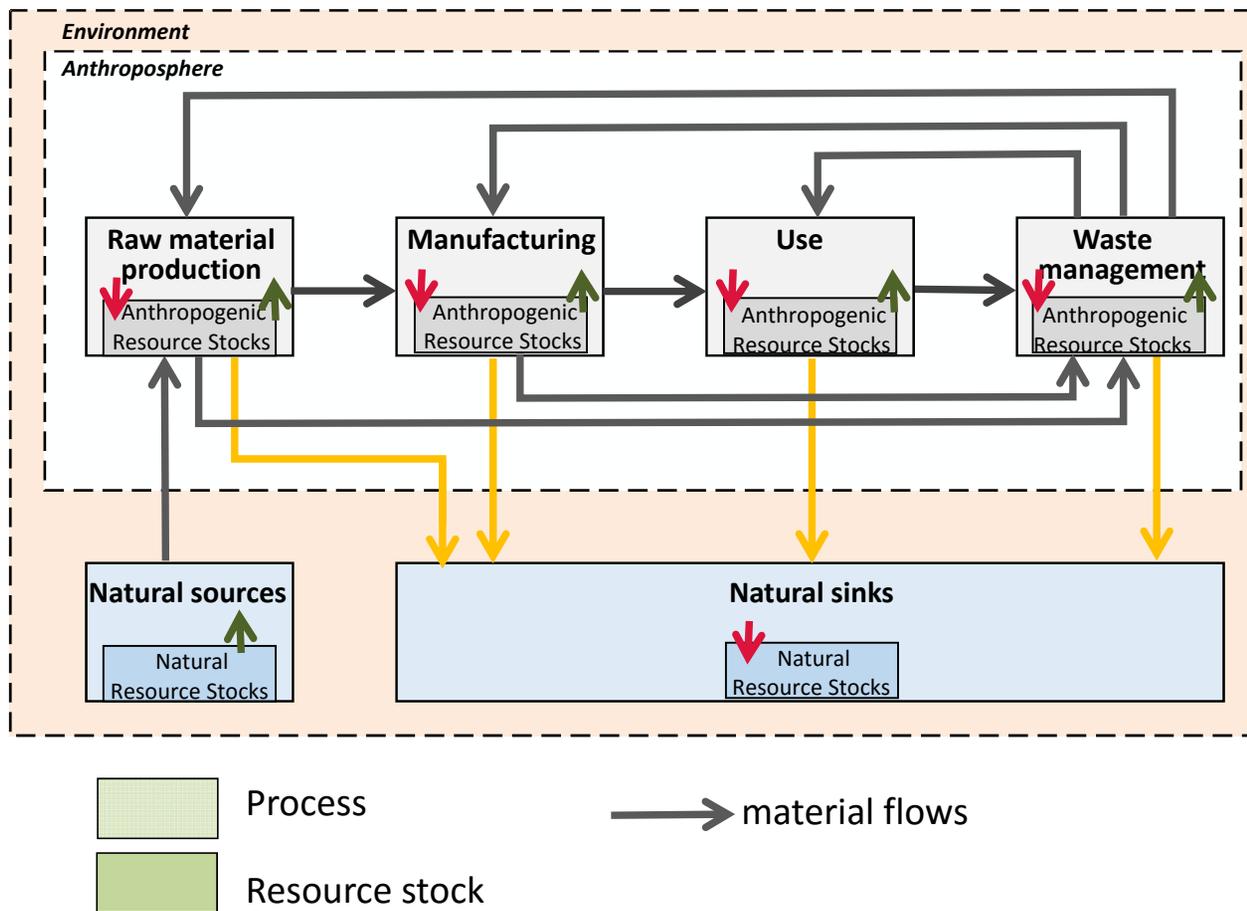
Anthropogenic Resource Definitions

Terms: Anthroposphere
Anthropogenic Resources
Anthropogenic Resource Stock

Anthropogenic Materials
Secondary Raw Material

Anthropogenic Material System
Anthropogenic Material Flow
Anthropogenic Material Source

System perspective



The figure has been developed based on various diagrams about the life cycle of materials such as Graedel (2010), Lederer, Laner et al. (2014) and discussions among the authors of the Initial Draft Specifications.

How to define a project ?

Challenge:

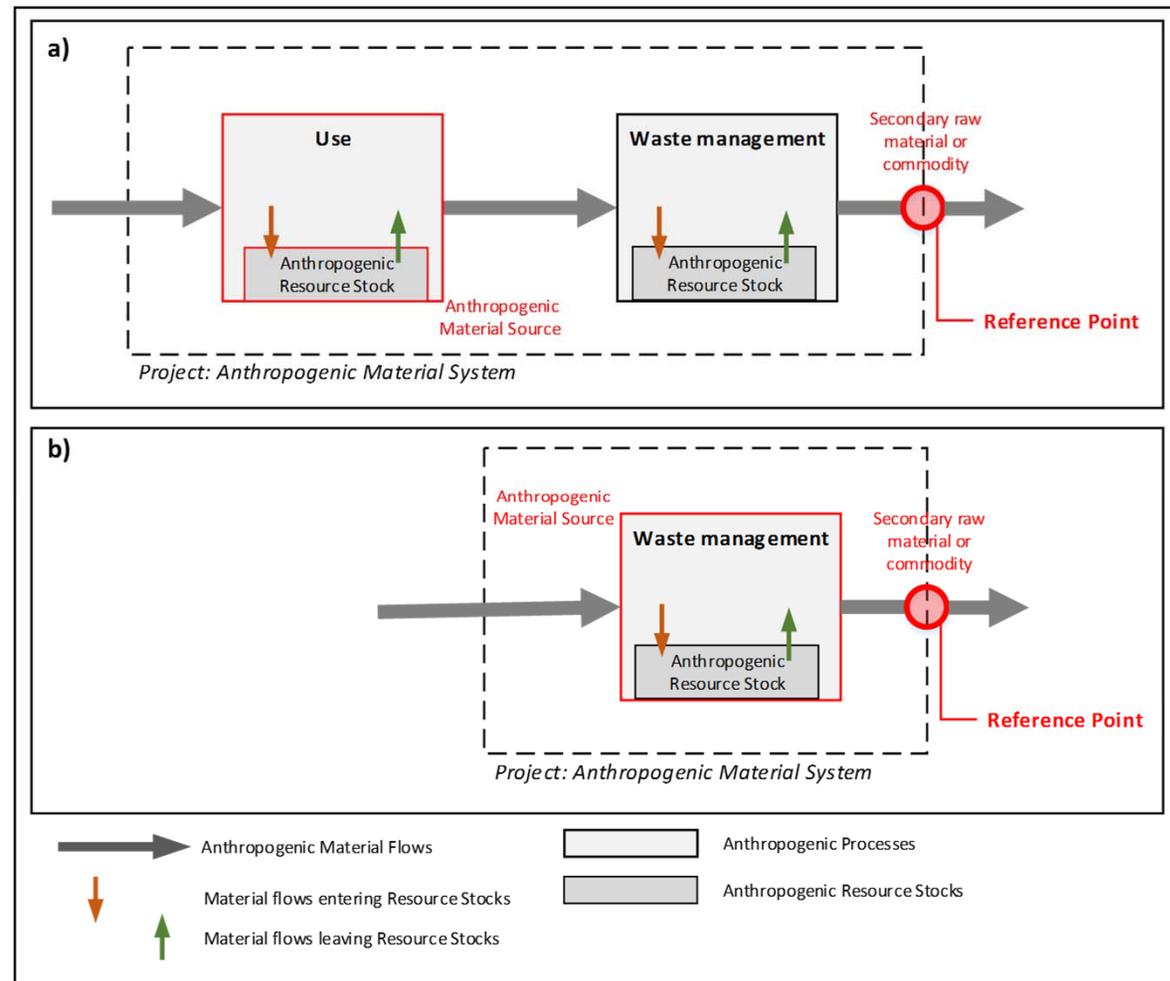
- Heterogeneity of the valuable elements in materials.
- Material flow → amount and composition of the materials may change with time
- Various factors have to be considered:
Quality, technology, legal, ecological and social aspects.

→ Definition of the project

Project perspective

Anthropogenic Process including Anthropogenic Resource stock

Anthropogenic Process only



Deliverables

- Specifications and guidelines for application to anthropogenic resources projects.
- Case studies for application to anthropogenic resources projects.

Proposal for next steps

Now	EGRC Comments and discussion
28/04/2017	Brief Working Group Meeting (Room N° E3025, 8am)
07-10/2017	Reviewing the <i>Initial Draft Specifications</i> <ul style="list-style-type: none">- Public Review- WG internal review
16-17/11/2017	WG Meeting <ul style="list-style-type: none">- Resolution Meeting for the <i>Draft Specifications</i>- Starting the development of Guidelines (→ case study approach)
12/2017	Submitting the <i>Draft Specifications</i> to the TAG
12/2017-01/2018	TAG Review
03/2018	Submitting the <i>Final Draft Specifications</i> to the TAG
23-24/04/2018	Workshop @ UNECE Resource Classification Week 2018

Timeline

- April 2018 **Draft specifications** for application of UNFC-2009 to anthropogenic resources:.
- April 2019 **Final specifications** for application of UNFC-2009 to anthropogenic resources:.
- April 2018 to ongoing. **Guidelines and case studies**

Thanks!

Contact details:

Soraya Heuss-Aßbichler

Professor for mineralogy and petrology

Department of Earth and Environmental Sciences

Ludwig-Maximilians Universität München, Germany

heuss@lmu.de

Further information:

www.minea-network.eu