UNECE

Circular economy & secondary resource management

How UNFC can act as enabler

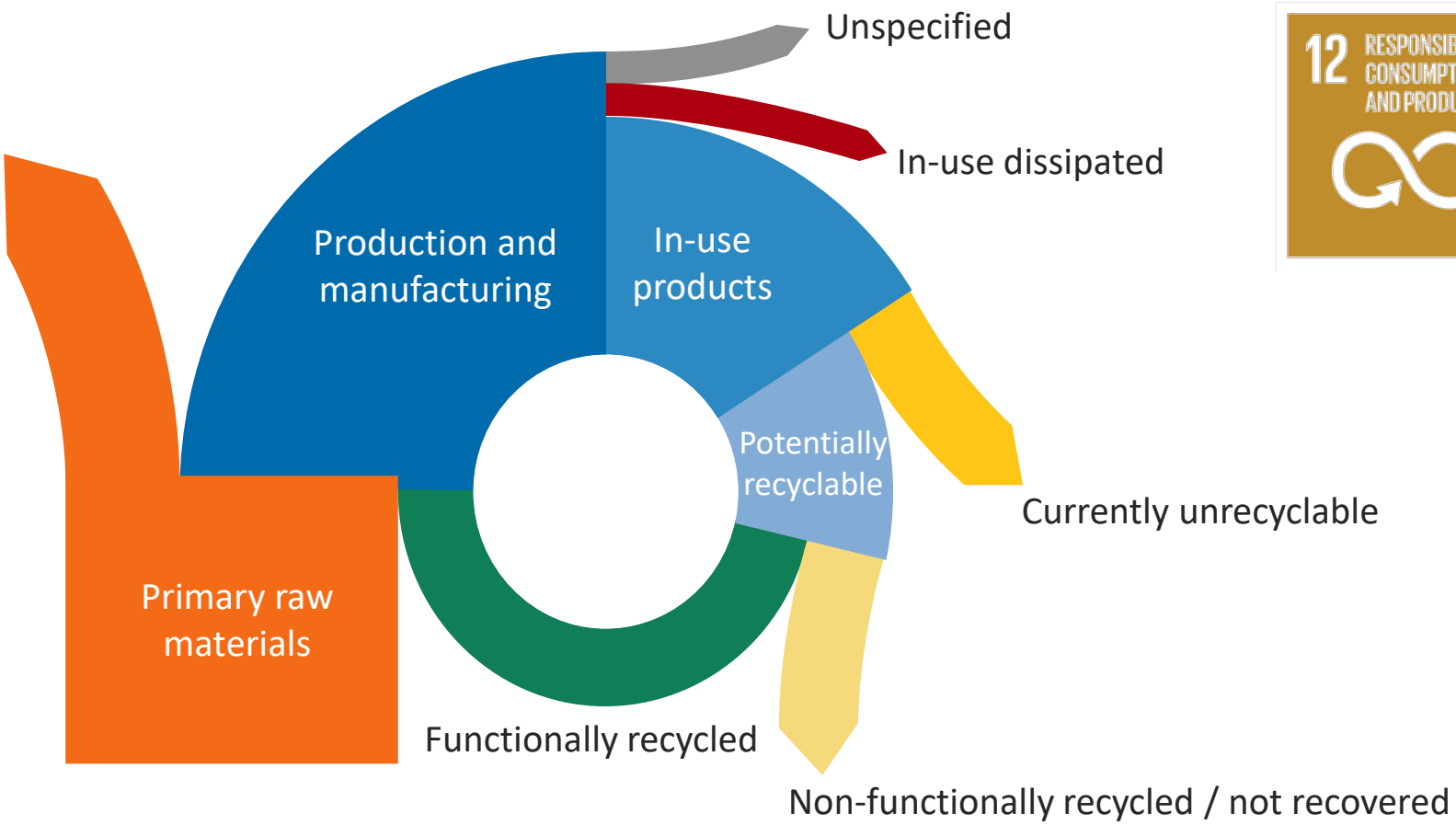
Twitter Facebook YouTube UNECE

Circular Economy

for sustainable material supply

UNECE

How to bring secondary raw materials into the market?



Adopted from Ciacci, L., Reck, B.K., Nassar, N.T. and Graedel, T.E. (2015). Lost by Design. Environ Sci Technol. 49(16): p. 9443-51.

Developing Recovery Projects in a Circular Economy

UNECE

The UNFC value chain

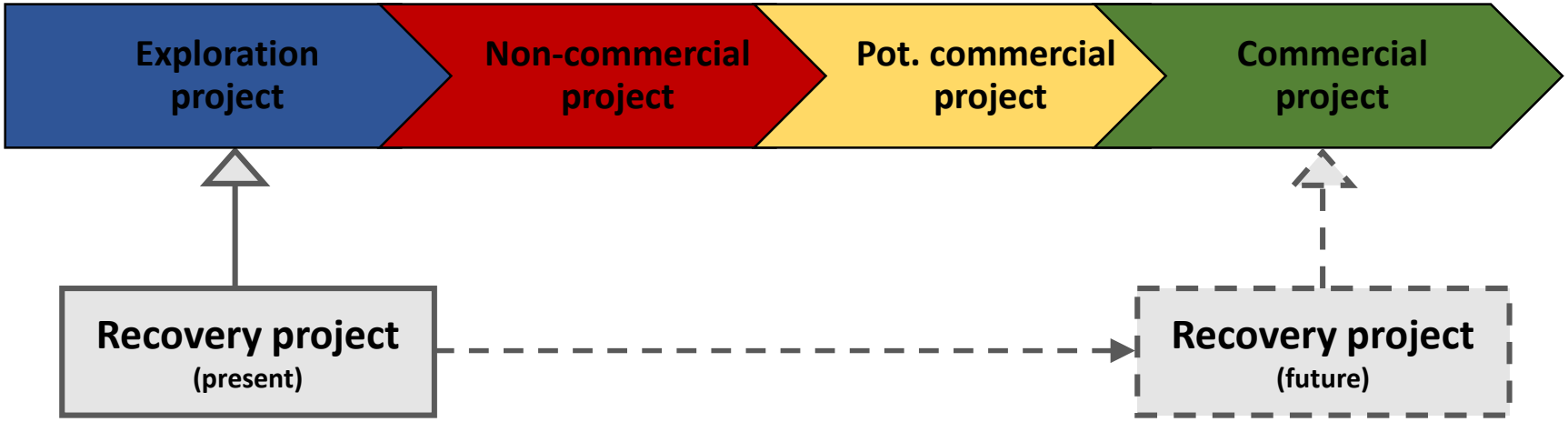
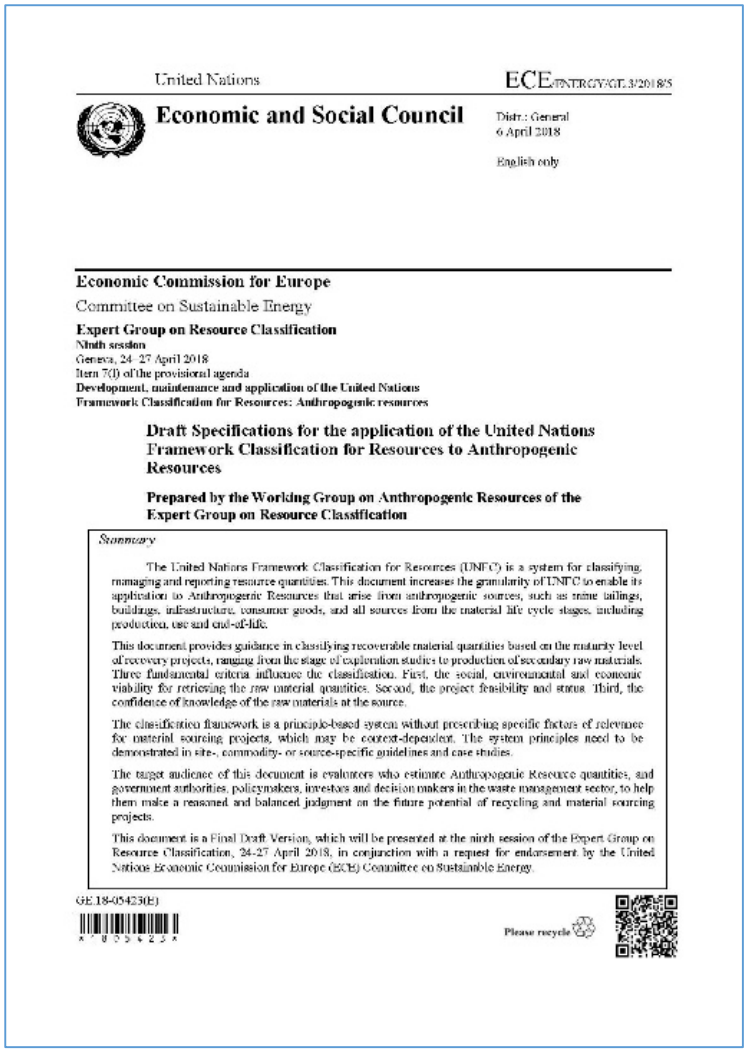


Figure adopted from Kral, U., A. Winterstetter (2018). "Availability assessment of anthropogenic resources: from prospection to production", 19 August 2018, Science to support circular economy, Vienna.

UNFC Specifications For Secondary Resource Management

UNECE



United Nations ECE/ENERGY/GEN.3/2018/5

Economic and Social Council

Distr.: General
6 April 2018

English only

Economic Commission for Europe

Committee on Sustainable Energy

Expert Group on Resource Classification
Ninth session
Geneva, 24–27 April 2018
Item 7(l) of the provisional agenda
Development, maintenance and application of the United Nations Framework Classification for Resources: Anthropogenic resources

Draft Specifications for the application of the United Nations Framework Classification for Resources to Anthropogenic Resources

Prepared by the Working Group on Anthropogenic Resources of the Expert Group on Resource Classification

Summary

The United Nations Framework Classification for Resources (UNFC) is a system for classifying, managing and reporting resource quantities. This document increases the granularity of UNFC to enable its application to Anthropogenic Resources that arise from anthropogenic sources, such as mine tailings, buildings, infrastructure, consumer goods, and all sources from the material life cycle stages, including production, use and end-of-life.

This document provides guidance in classifying recoverable material quantities based on the maturity level of recovery projects, ranging from the stage of exploration studies to production of secondary raw materials. Three fundamental criteria influence the classification. First, the social, environmental and economic viability for retrieving the raw material quantities. Second, the project feasibility and status. Third, the confidence of knowledge of the raw materials at the source.

The classification framework is a principle-based system without prescribing specific factors of relevance for material sourcing projects, which may be context-dependent. The system principles need to be demonstrated in site-, commodity- or source-specific guidelines and case studies.

The target audience of this document is evaluators who estimate Anthropogenic Resource quantities, and government authorities, policymakers, investors and decision makers in the waste management sector, to help them make a reasoned and balanced judgment on the future potential of recycling and material sourcing projects.

This document is a Final Draft Version, which will be presented at the ninth session of the Expert Group on Resource Classification, 24–27 April 2018, in conjunction with a request for endorsement by the United Nations Economic Commission for Europe (ECE) Committee on Sustainable Energy.

GE.18-05423(E)

Please recycle

Purpose

Communicating recoverable quantities based on the maturity of the recovery project.

Timeline

2016/04 to 2018/04	EGRC developed Specifications for applying UNFC to Anthropogenic Resources
2018/09	Request for endorsement by the UNECE Committee on Sustainable Energy

EGRC Anthropogenic Resources Working Group

UNECE

PETRONAVIT A.S	Sigurd Heiberg
LMU Ludwig-Maximilians-Universität München	**S. Heuss-Aßbichler**
Aleff Group	Julian Hilton
MBFSZ	Zoltán Horváth
TU Wien Technische Universität Wien	**Ulrich Kral**
TU Wien Technische Universität Wien	David Laner
Umwelt Bundesamt	Felix Müller
Empa Materials Science and Technology	Sandra Müller
Loughborough University	Mohamed Osmani
Geological Survey of Norway NGU	Mark Simoni
UCL	Julia Stegemann
MBFSZ	Katalin Szabó
Empa Materials Science and Technology	Patrick Wäger
vito	Andrea Winterstetter
JRC European Commission	Dominik Wittmer

UNFC Applications

Examples

UNECE

Material recovery from different sources

Landfills

https://en.wikipedia.org/wiki/Landfill

Winterstetter, A. (2016) **Mines of Tomorrow. Evaluating and Classifying Anthropogenic Resources: A New Methodology.** PhD Thesis, Technische Universität Wien.

Winterstetter, A., E. Wille, P. Nagels and J. Fellner (2018) **Decision making guidelines for mining historic landfill sites in Flanders.** Waste Manag 77: 225-237.

Waste incineration residues

https://www.wien.gv.at/

Huber, F. and J. Fellner (2018) **Integration of life cycle assessment with monetary valuation for resource classification: The case of municipal solid waste incineration fly ash**. Resources, Conservation and Recycling 139: 17-26.

Mueller, S., et. al. (2018) **Managing material recovery projects from exploration to production: Lessons learned from metal recovery operations in the waste and resource sector of the Canton of Zurich**. Working paper under preparation.

EoL - Vehicle electronics

Wäger, P., Haarmann, A., A. Løvik, Mueller, S., Restrepo, E., Widmer, R. (2018) **Scarce / critical metals recovery from electrical and electronic devices in passenger vehicles.** UNECE Resource Management Week, 23-27 April 2018, Geneva.

UNFC as Enabler

UNECE

- Developing recovery projects in public-private partnerships;
- Identifying, communicating and overcoming barriers for secondary raw materials on the pathway to market access;
- Supporting national resource management and policy formulation (?)

→ **We are looking for producers and countries to develop and implement reporting standards & reporting codes!**

Thank you!

Patrick Wäger, Ulrich Kral, Soraya Heuss-Aßbichler
EGRC Anthropogenic Resource Working Group
UNECE
26 I 09 I 2018, Geneva

UNECE

Twitter Facebook YouTube UNECE