

# **Application of UNFC – 2009 to Anthropogenic Resources**

## **Preliminary case study for Mining Waste**

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Expert Group on Resource Classification, Workshop,  
25. April 2017, Geneva Switzerland

# Activities to Standardize the Classification

## EGRC 6th Session

Demonstrating the application of UNFC-2009 to selected anthropogenic resources  
[Andrea Winterstetter, Johann Fellner]

## EGRC 7th Session

EGRC recommended, “a small sub-group be established to explore the application of UNFC-2009 to Anthropogenic Resources”.

## EGRC 8th Session

## MINEA

Initiating a pan-European expert network on “Mining the European Anthroposphere”



MINING the  
EUROPEAN  
ANTHROPOSPHERE



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COST is supported by the  
EU Framework Programme  
Horizon 2020

## Workshop

“Opportunities & Challenges  
of Anthropogenic Resources  
Classification”

## Working Group

Constituting the group

**Developing  
Specifications to apply  
UNFC-2009 to  
anthropogenic resources**

**Developing preliminary  
case study**

# Preliminary case study

## Mining waste – in NE part of Hungary

Site I	Recsk I. mining site near-surface sulfidation type epithermal mineralization Cu-porphyry and skarn deposit	10 mining waste facilities
Site II	Recsk II. mining site near-surface sulfidation type epithermal mineralization Cu-porphyry and skarn deposit	7 mining waste facilities
Site III	Gyöngyösoroszi Pb-Zn mine	23 mining waste facilities

## Used documents

- register of mining waste facilities
- archive surveys of heaps and tailings ponds
- mining waste management plans
- surveys prepared for environmental purpose, documents of remediation
- documents of scientific research

## E - axis

Category	Definition	I	II	III
E1	<i>Extraction and sale has been confirmed to be economically</i>			
E2	<i>Extraction and sale is expected to become economically viable in the foreseeable future</i>			
E3	<i>Extraction and sale is not expected to become economically viable in the foreseeable future or evaluation is at <b>too early a stage to determine economic viability</b></i>	X	X	X

## F - axis

Category	Definition	I	II	III
F1	<i>Feasibility of extraction by a defined development project or mining operation has been confirmed.</i>			
F2	<i>Feasibility of extraction by a defined development project or mining operation is subject to further evaluation.</i>			
F3	<i>Feasibility of extraction by a defined development project or mining operation cannot be evaluated due to <b>limited technical data</b>.</i>	X		
F4	<i><b>No development project or mining operation has been identified.</b></i>		X	X

*Category F4 can be used to classify the currently non-extractable quantities at the geographical location of the defined Project due to multiple constraints, for example, current usage purpose, ownership rights, site/area*

## G - axis

Category	Definition	I	II	III
G1	<i>Quantities associated with a known deposit that can be estimated with a high level of confidence</i>			
G2	<i>Quantities associated with a known deposit that can be estimated with a moderate level of confidence.</i>			
G3	<i>Quantities associated with a known deposit that can be estimated with a <b>low level of confidence.</b></i>	X	X	X
G4	<i>Estimated quantities associated with a potential deposit, based primarily on indirect evidence.</i>			

*Category G4 “Estimated quantities associated with a potential Anthropogenic Resource Stock, based primarily on indirect evidence” (e.g. top-down studies to explore the quantities in a region).*

# Results

Case studies      Classification applying UNFC-2009

	E	F	G
Site I. (Recsk-I.)	3	3	3
Site II. (Recsk-II.)	3	4	3
Site III. (Gyöngyösoroszi)	3	4	3



# Conclusion

## What is necessary to reach higher classes?

- Comprehensive Mining Waste Management Plan
- Feasibility Study
- **G** improved geological knowledge focusing on structure and content of mine waste and tailings
- **F** economic extraction due to superior technology with high efficiency and sensitivity for environmental challenges
- **E** consideration of social environmental efforts, e.g. rehabilitation of mines and reclamation of mine repositories allowing future land use, may improve the economic viability

# Thanks!

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