



MINING the
EUROPEAN
ANTHROPOSPHERE



MinFuture



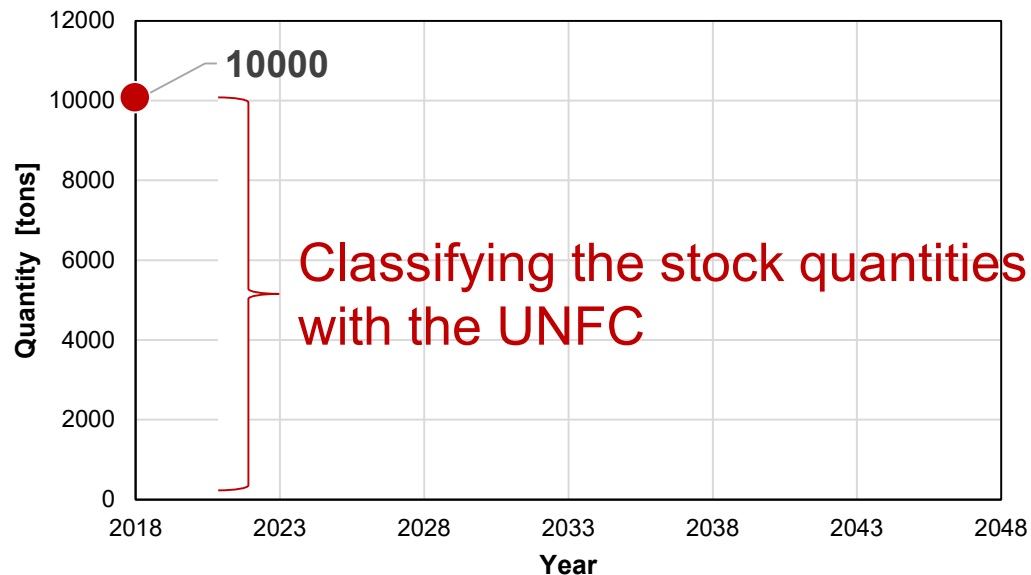
Session 2

Application of the UNFC with respect to copper in buildings (generic case study)

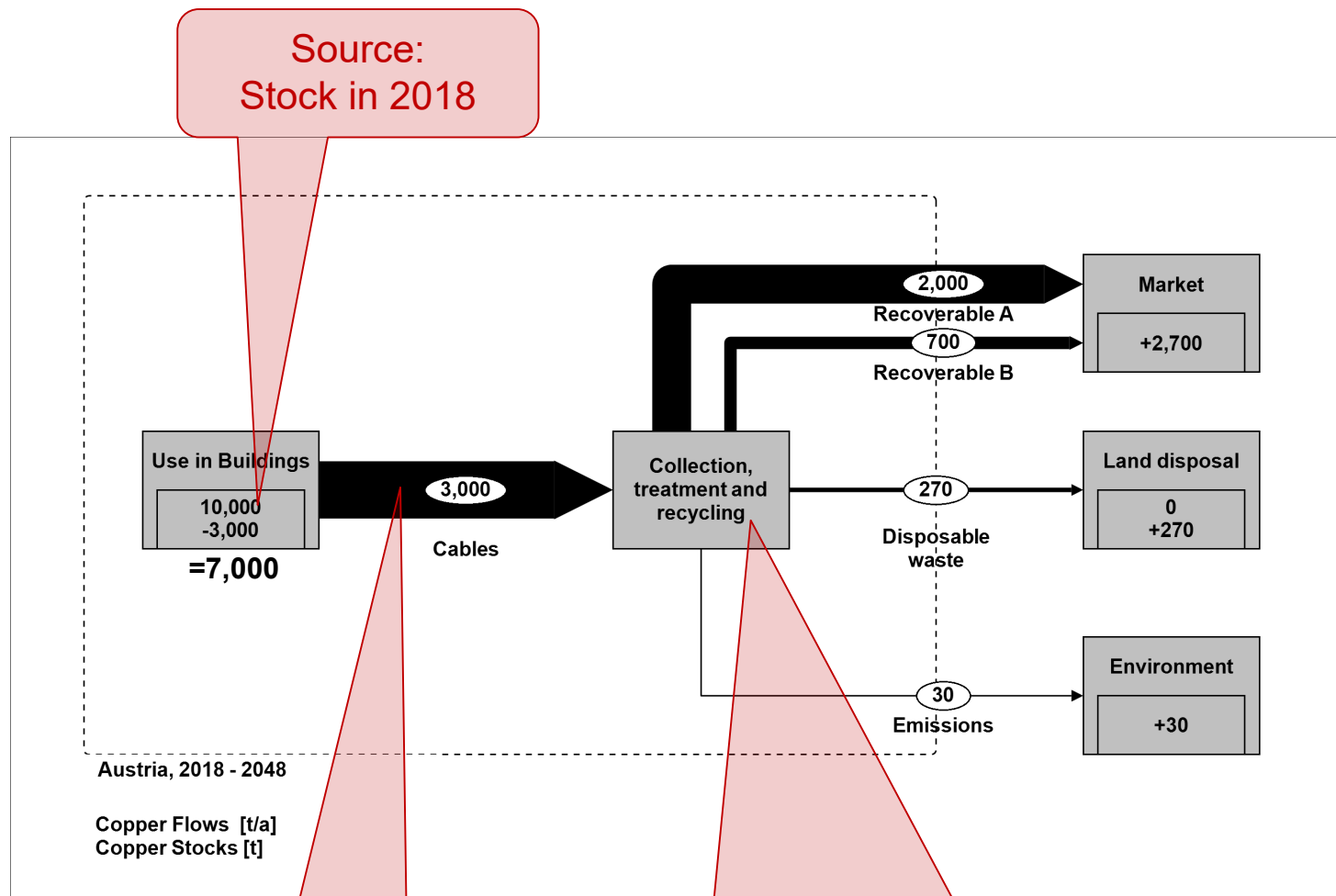
Starting point

Target material: Copper
Source: Cable in buildings
Region: Austria
Start: 2018
Production period: 30 years

Copper stock in buildings



Cu production system 2018-2048



Waste generation
(Forecast)

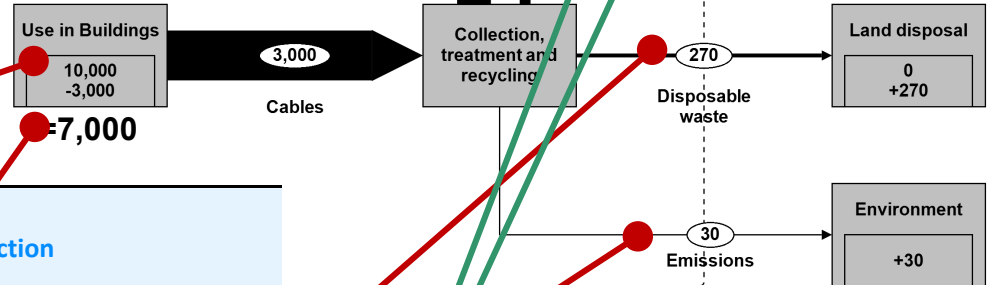
Transfer coefficients depend on future contingencies
(e.g. copper price, technical recoverability)

Classification

Cu Production System

UNFC Classes

Total Quantities Initially in Place	Produced	Sales Production			
	Class	Categories			Austria, 2010 - 2040
		E	F	G ^a	
	Future production by commercial projects	Commercial Projects ^b	1	1	1, 2, 3
	Potential future production by contingent projects	Potentially Commercial Projects ^c	2 ^d	2	1, 2, 3
		Non-Commercial Projects ^e	3	2	1, 2, 3
	Non-Sales Production ^f		3	2	1, 2, 3
	Potential future production	Exploration Projects	3	3	4
	Additional quantities in place associated with known and potential resource sources ^g		3	4	1,2,3,4



UNFC Criteria

- Socio-economic viability
- Field project status and Feasibility
- Confidence in the estimates

Socio-economic viability (E-Axis)

Categories

Cat.	Definition	Supporting Explanation
E1	Production and sale <u>has been confirmed</u> to be economically, socially and environmentally viable.	Production and sale is economically, socially and environmentally viable on the basis of current market conditions and realistic assumptions of future conditions. All necessary conditions have been confirmed or there are reasonable expectations that all necessary conditions will be met within a reasonable timeframe and there are no impediments to the delivery of the product to a market. Viability is not affected by short-term adverse market conditions provided that longer-term forecasts remain positive.
E2	Production and sale <u>expected to become</u> economically, socially and environmentally viable in the foreseeable future.	Production and sale has not yet been confirmed to be economically, socially, and environmentally viable but, on the basis of realistic assumptions of future conditions, there are reasonable prospects for economic, social and environmental viability in the foreseeable future.
E3	Production and sale <u>expected to become</u> economically, socially and environmentally <u>viable in the foreseeable future or evaluation is at too early a stage</u> to determine economic, social and environmental viability.	On the basis of realistic assumptions of future market conditions, it is currently considered that there are not reasonable prospects for economic, social or environmental viability in the foreseeable future; or, this cannot yet be determined due to insufficient information. Also included are quantities that are forecast to be produced, but which will not be available for sale.

Socio-economic viability (E-Axis)

Contingencies

Issue / potential contingency	Level of engagement	Probability of occurrence	Category	
			Quantity A	Quantity B
Legal	Relevant licences without barriers expected	Very likely	E1	E1
Market access	Local buyers	99%	E1	E1
Social	No objections expected	90%	E1	E1
Economic	Quantity A: The quantities screened economic Quantity B: Expected to become economically when technology improves	95%	E1	E2
Political	No worries expected	99%	E1	E1
Environmental impact	THG Emission, compared to primary production A: 3 times lower B: 3 times higher	70%	E1	E3
Total = lowest ranking issue			E1	E3

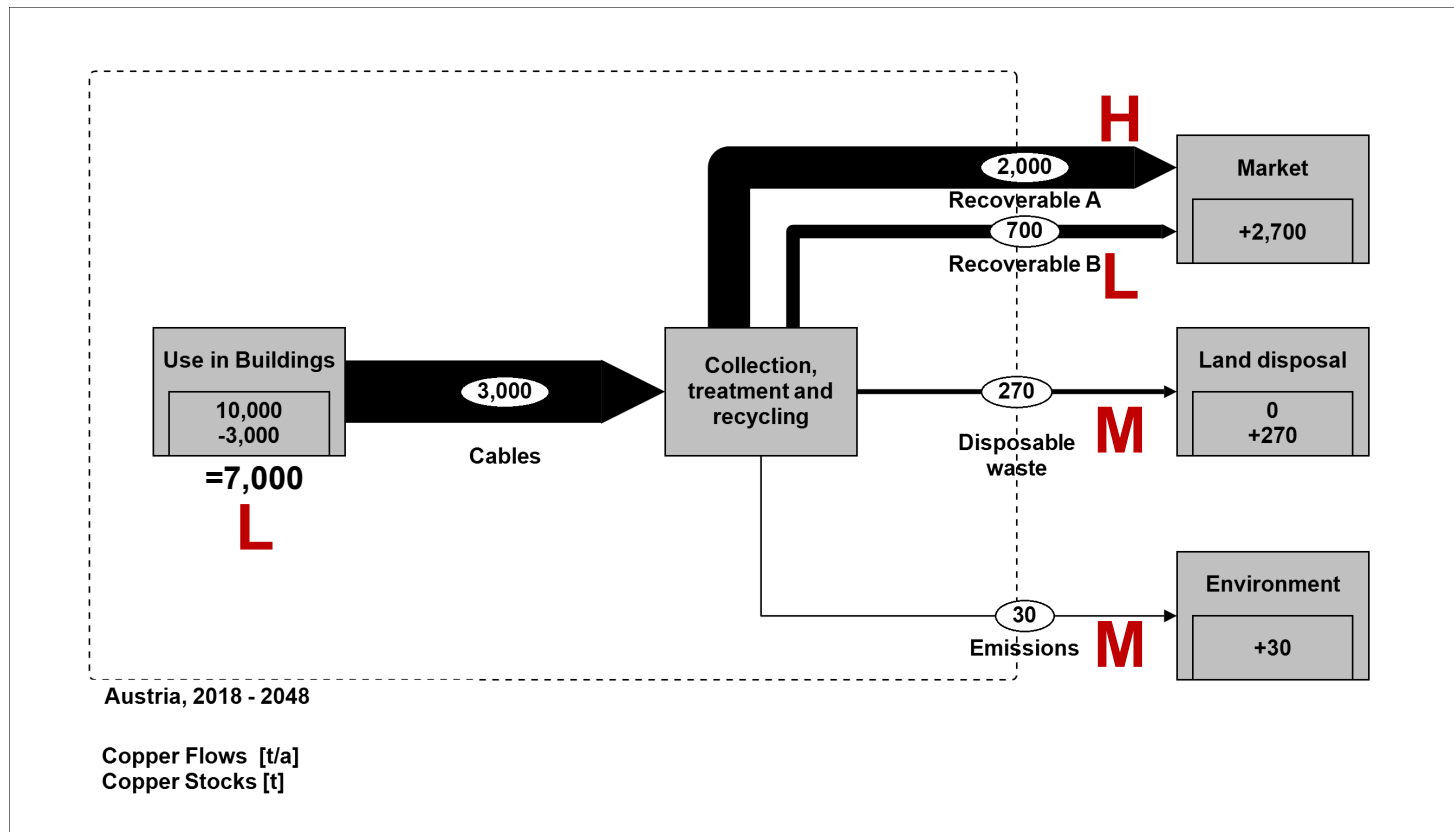
Field project status and Feasibility (F-Axis)

Cat.	Definition	Supporting Explanation	Quantitiy A & B
F1	Feasibility of production by a defined project <u>has been confirmed</u> .	Production is currently taking place; or, implementation of the project is underway; or, <u>sufficiently detailed studies have been completed to demonstrate the feasibility of production</u> by implementing a defined Project.	X
F2	<u>Feasibility of production by a defined project is subject to further evaluation</u> .	Preliminary studies demonstrate the existence of quantities that the feasibility of production by a defined (at least in broad terms) project can be evaluated. Further data acquisition and/or studies may be required to confirm the feasibility of production.	
F3	<u>Feasibility of production by a defined development project cannot be evaluated due to limited technical data</u> .	Very preliminary studies which may be based on a defined project (at least in conceptual terms), indicate the need for further data acquisition in order to confirm the existence of quantities that the feasibility of production can be evaluated.	
F4	<u>No development project has been identified</u> .	Quantities that will not be produced by any currently defined Project.	

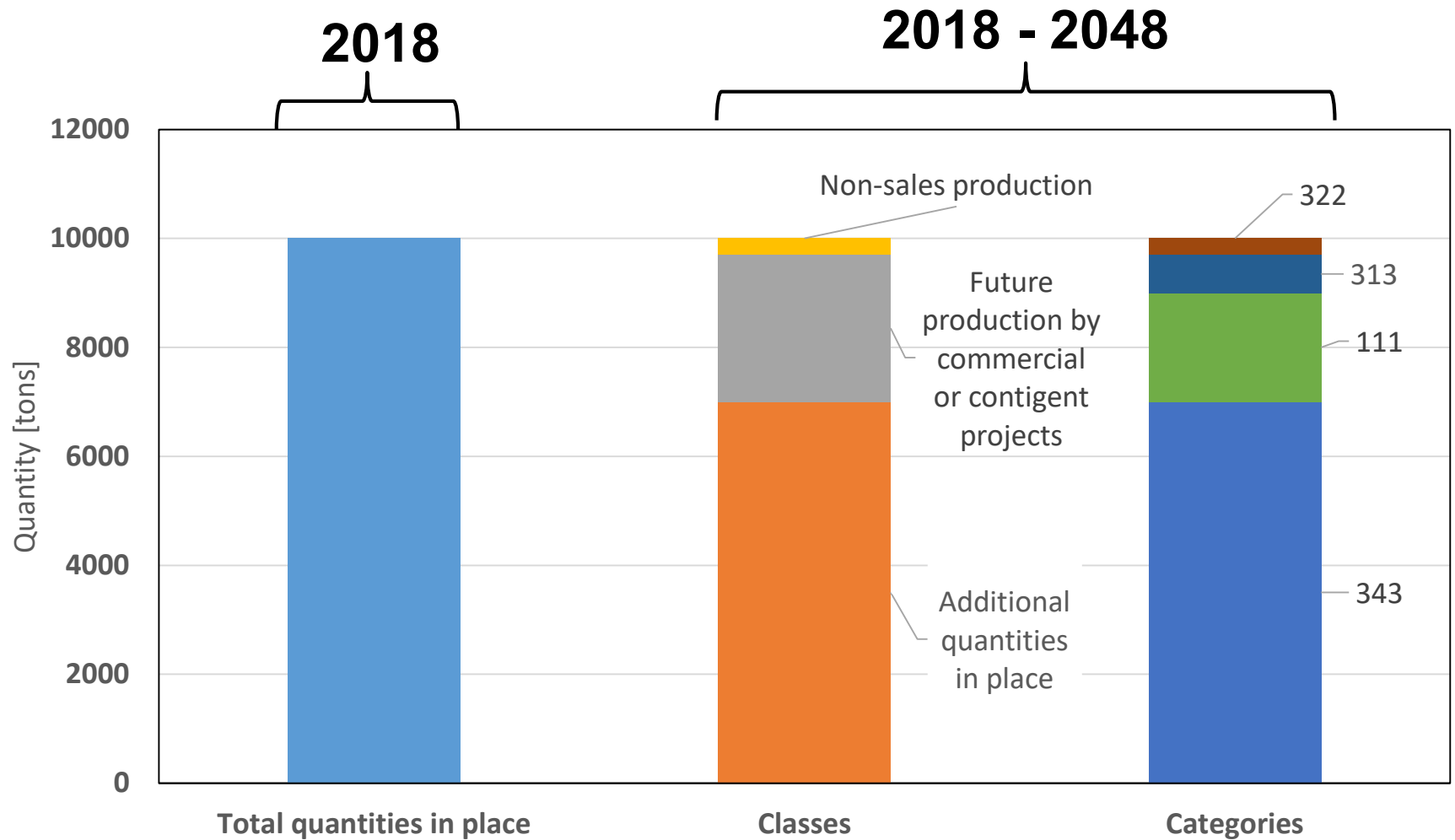
Confidence in the estimates (G-Axis)

Category	Confidence
G1	High
G2	Medium
G3	Low

Driven by all contingencies
(e.g. copper price, technology readiness)



Intermediate results



The UNFC value chain

**Cu production system
2018-2048**



Year of classification: 2018		
Flow	Quantity [t]	Categories
Recoverable A	2,000	111
Recoverable B	700	313
Non-Sales Production	300	322
Additional quantities in place	7,000	343
Total quantities in place	10,000	

Questions for discussion

- Is the current version (methodology and terminology) of the UNFC appropriate to classify anthropogenic resources on national level?
- If not, what are the barriers?
- How to overcome the barriers?