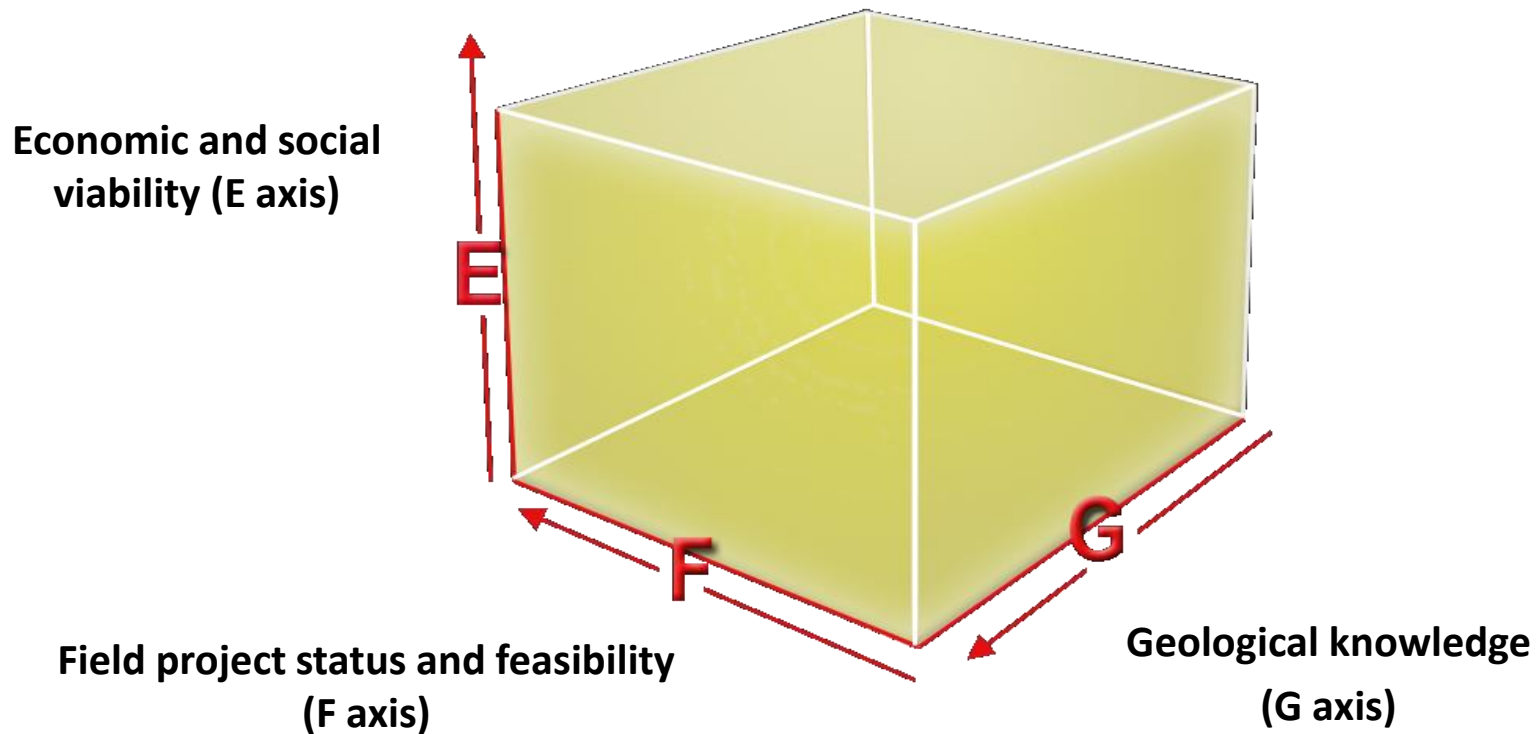


# How UNFC works

*UNFC explained*

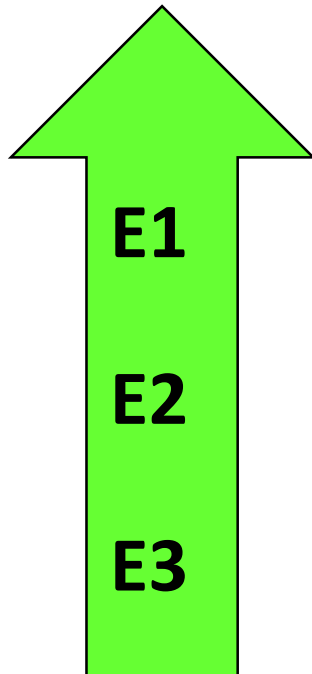
# UNFC – The three criteria



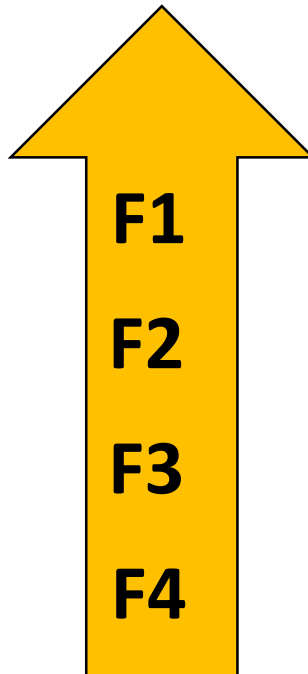
# Criteria and Categories

**Numerical coding system based on the three criteria, sub-divided by categories:**

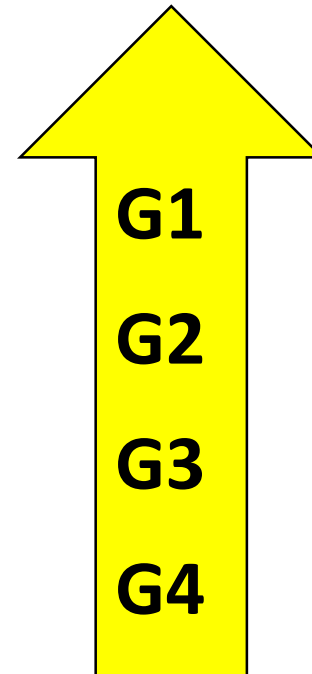
**Economic and  
social viability**



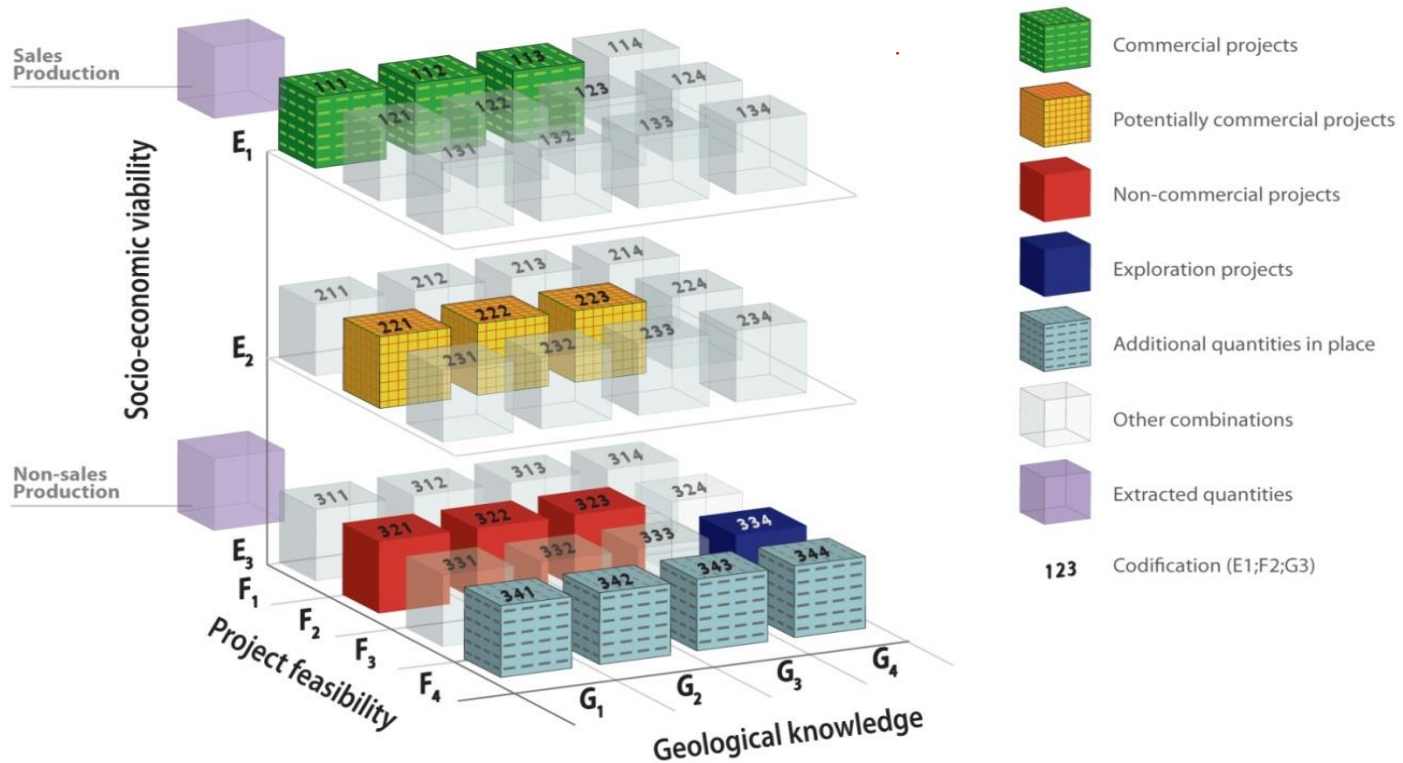
**Field project status  
and feasibility**



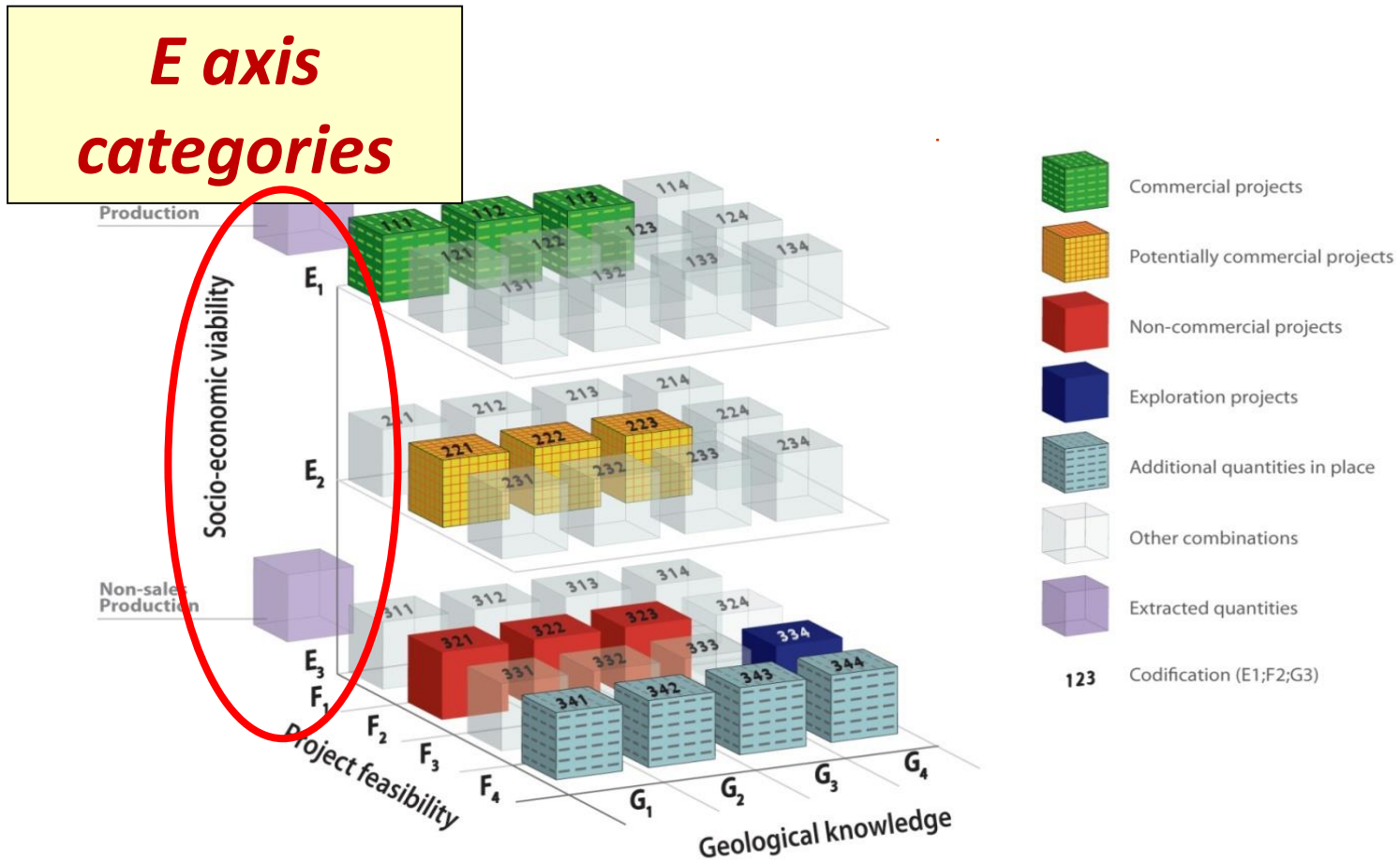
**Geological  
knowledge**



# UNFC – most common classes

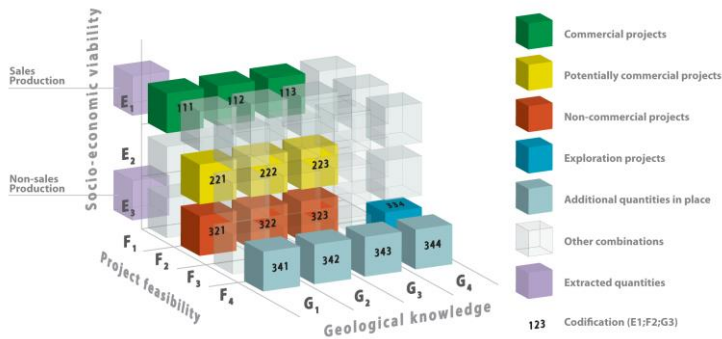


# UNFC – E category definitions



# UNFC – E axis

- **Degree of favourability of Economic, environmental and social conditions in establishing the commercial viability of the project.**
- **Includes consideration of market prices and relevant legal, regulatory, environmental and contractual conditions.**
- **E1, E2 and E3 categories.**
- **E1 is “best”.**
- **Definitions should always be read in conjunction with supporting explanation.**



# E axis category definitions

Category	Definition
E1	Extraction and sale has been confirmed to be economically viable.
E2	Extraction and sale is expected to become economically viable in the foreseeable future.
E3	Extraction and sale is not expected to become economically viable in the foreseeable future or evaluation is at too early a stage to determine economic viability.

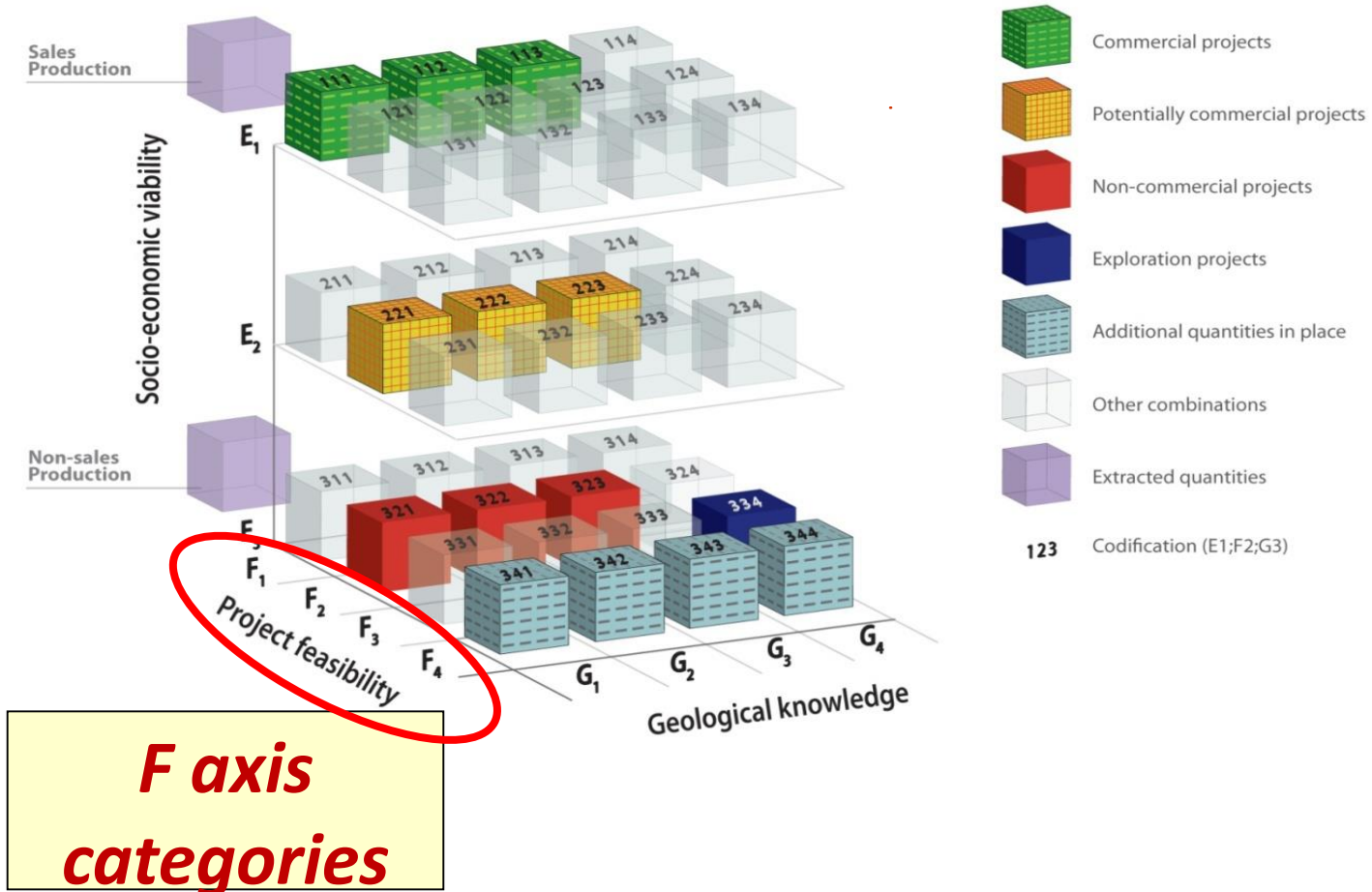
**The phrase “economically viable” encompasses economic (in the narrow sense) plus other relevant “market conditions”, and includes consideration of prices, costs, legal/fiscal framework, environmental, social and all other non-technical factors that could directly impact the viability of a development project.**

# Example of Definition and supporting Explanation

Category	Definition <sup>b</sup>	Supporting Explanation <sup>c</sup>
E1	Extraction and sale has been confirmed to be economically viable. <sup>d</sup>	Extraction and sale is economic on the basis of current market conditions and realistic assumptions of future market conditions. All necessary approvals/contracts have been confirmed or there are reasonable expectations that all such approvals/contracts will be obtained within a reasonable timeframe. Economic viability is not affected by short-term adverse market conditions provided that longer-term forecasts remain positive.

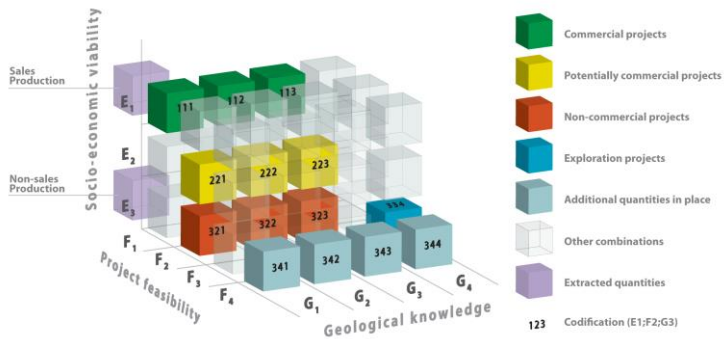


# UNFC – F category definitions



## UNFC – F axis

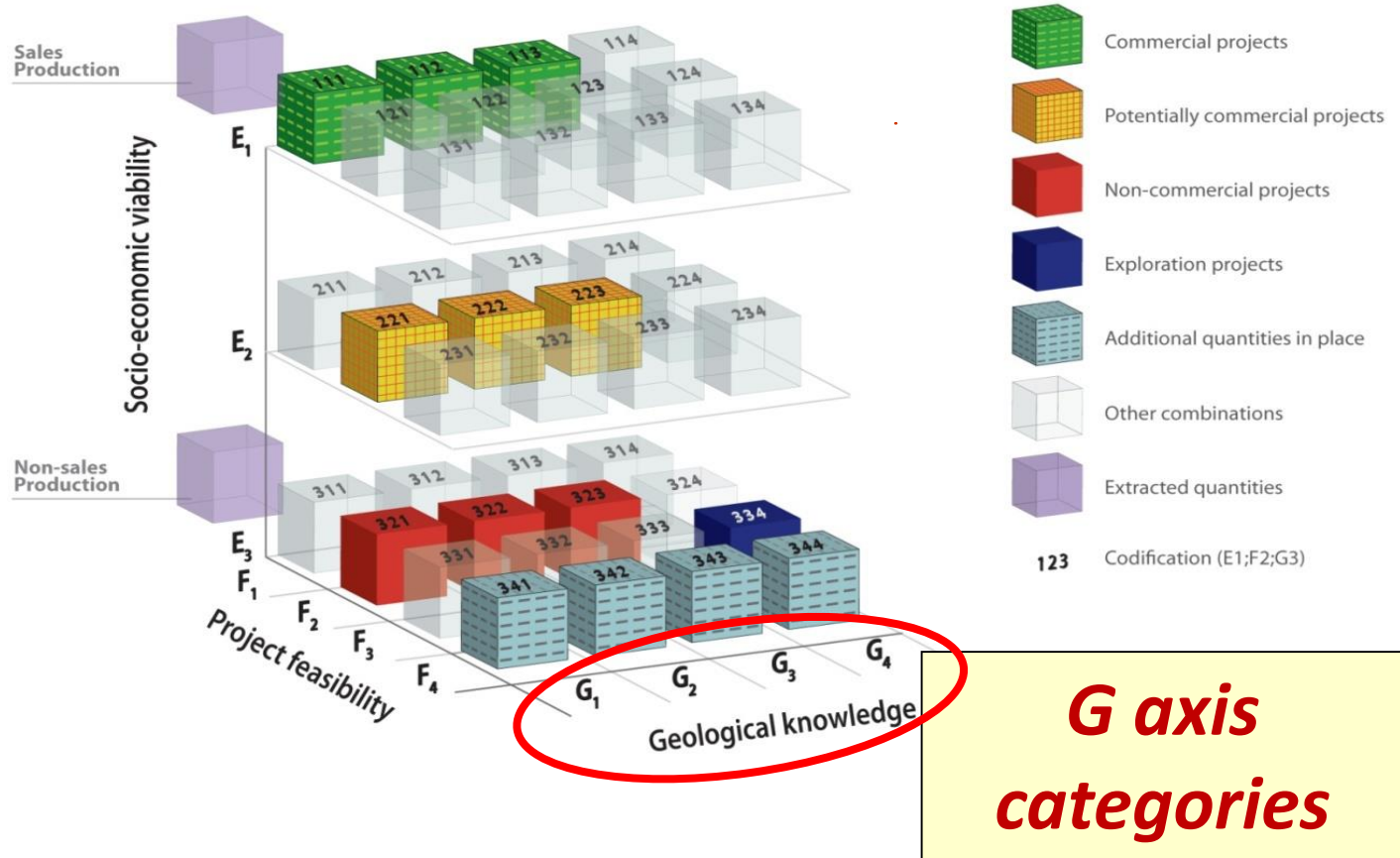
- **Maturity of studies and commitments necessary to implement mining plans or development projects**
- **These extend from early exploration efforts before a deposit or accumulation has been confirmed to exist through to a project that is extracting and selling a commodity**
- **F1, F2, F3 and F4 categories**
- **F1 is “best”**



## F axis category definitions

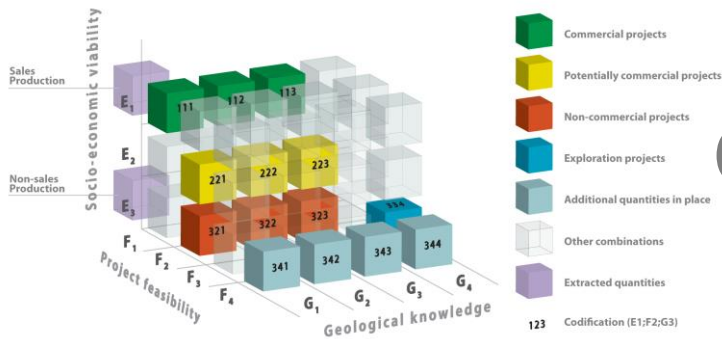
Category	Definition
F1	Feasibility of extraction by a defined development project or mining operation has been confirmed.
F2	Feasibility of extraction by a defined development project or mining operation is subject to further evaluation.
F3	Feasibility of extraction by a defined development project or mining operation cannot be evaluated due to limited technical data.
F4	No development project or mining operation has been identified.

# UNFC – G category definitions



# UNFC – G axis

- **Level of confidence in the geological knowledge and potential recoverability of the quantities. For non-extractive activities, confidence in assessed quantities.**
- **Generally defined as discrete increments for solids, but often defined as scenarios for fluids (G1, G1+G2, G1+G2+G3)**
- **G1, G2, G3 and G4 categories**
- **G1 is “best”**



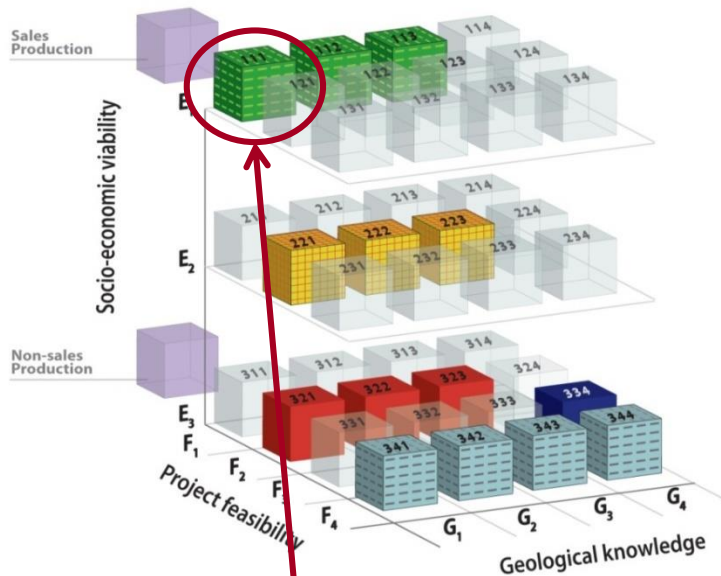
# G axis category definitions

Category	Definition
G1	Quantities associated with a known deposit that can be estimated with a high level of confidence.
G2	Quantities associated with a known deposit that can be estimated with a moderate level of confidence.
G3	Quantities associated with a known deposit that can be estimated with a low level of confidence.
G4	Estimated quantities associated with a potential deposit, based primarily on indirect evidence.

# Classes

- **The category definitions are the building blocks of the system:**
  - **Select the correct category for each of the three criteria**
- **These are combined (E, F, G) in the form of classes**
- **Class 111 means that the reported quantities have satisfied the definitions for:**
  - **E1, F1 and G1**
- **There are no constraints on combinations, but not all will be meaningful**

# UNFC – How it works



**UNFC Class: 111**



Category	Definition
E1	Extraction and sale has been confirmed to be economically viable.

Category	Definition
F1	Feasibility of extraction by a defined development project or mining operation has been confirmed.

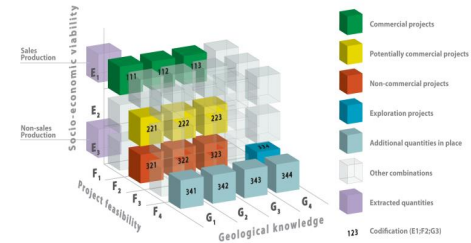
Category	Definition
G1	Quantities associated with a known deposit that can be estimated with a high level of confidence.



# Structure of the UNFC system

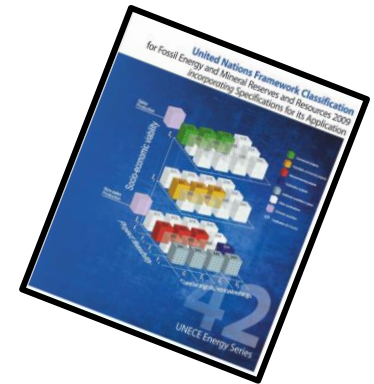
**Definitions**

Classification Framework



**Specifications**

Application Rules



**Guidelines**

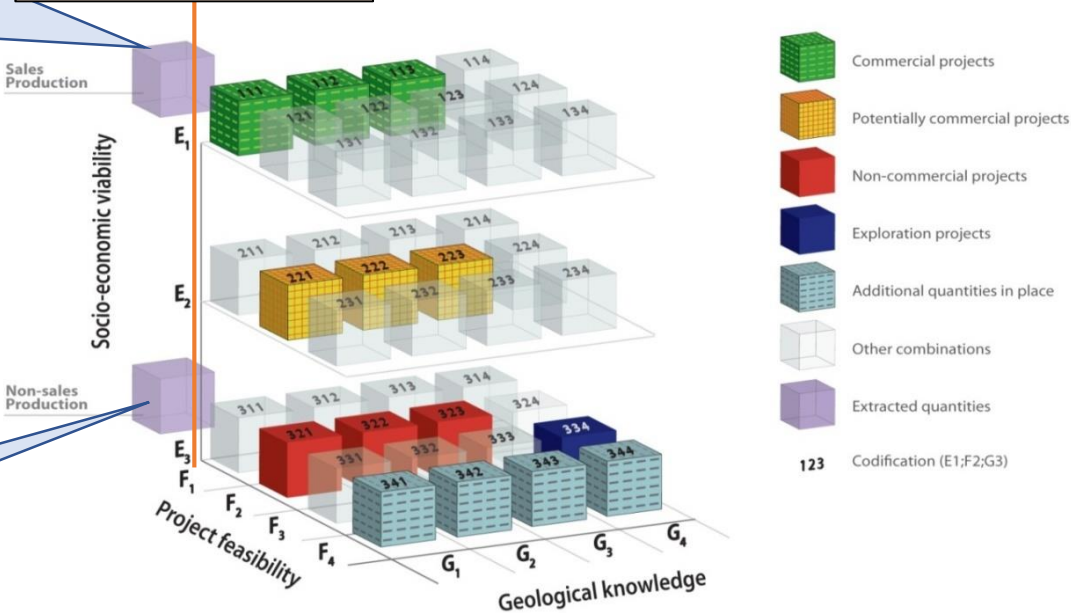
Non-Mandatory Guidance



# Sales production and non-sales production

**Sales production**  
 Coherence between quantities entering the general statistics and quantities classified (in the UNFC cube) wrt quantity, quality and price

**Sales Reference point**



**Non-Sales production**  
 Environmental issue  
 Flare and fuel, Mine waste  
 Anthropogenic resources

# UNFC – 2D representation

<b>Total commodity initially in place</b>	<b>Extracted</b>	<b>Sales Production</b>			
		<b>Non-sales Production</b>			
		<b><u>Class</u></b>	<i>Minimum Categories</i>		
			<b>E</b>	<b>F</b>	<b>G</b>
	<b>Future recovery by commercial development projects or mining operations</b>	<b>Commercial Projects</b>	<b>1</b>	<b>1</b>	<b>1, 2, 3</b>
	<b>Potential future recovery by contingent development projects or mining operations</b>	<b>Potentially Commercial Projects</b>	<b>2</b>	<b>2</b>	<b>1, 2, 3</b>
		<b>Non-Commercial Projects</b>	<b>3</b>	<b>2</b>	<b>1, 2, 3</b>
	Additional quantities in place associated with known deposits		<b>3</b>	<b>4</b>	<b>1, 2, 3</b>
	<b>Potential future recovery by successful exploration activities</b>	<b>Exploration Projects</b>	<b>3</b>	<b>3</b>	<b>4</b>
	Additional quantities in place associated with potential deposits		<b>3</b>	<b>4</b>	<b>4</b>

*Each class is uniquely defined by its code*

# UNFC sub-categories

- **The system allows further granularity through sub-categories**
- **These are optional**
- **They facilitate mapping with the project maturity sub-classes of PRMS and the CRIRSCO Template**
- **These sub-classes also align with some mining companies' reporting practices and with the NEA/IAEA classification of production centres**

# E axis sub-categories

Category	Sub-Category	Sub-Category Definition
<b>E1</b>	Extraction and sale has been confirmed to be economically viable	Extraction and sale is economic on the basis of current market conditions and realistic assumptions of future market conditions.
		Extraction and sale is not economic on the basis of current market conditions and realistic assumptions of future market conditions, but is made viable through government subsidies and/or other considerations.
<b>E2</b>	No sub-categories defined	
<b>E3</b>	Extraction and sale is not expected to become economically viable in the foreseeable future or evaluation is at too early stage to determine economic viability	Quantities that are forecast to be extracted, but which will not be available for sale.
		Economic viability of extraction cannot yet be determined due to insufficient information (e.g. during the exploration phase).
		On the basis of realistic assumptions of future market conditions, it is currently considered that there are not reasonable prospects for economic extraction and sale in the foreseeable future.

# F axis sub-category definitions

<b>Category</b>	<b>Definition</b>
F1	Feasibility of extraction by a defined development project or mining operation has been confirmed.

<b>Sub-Category</b>	<b>Definition</b>
F1.1	Extraction is currently taking place.
F1.2	Capital funds have been committed and implementation of the development project or mining operation is underway.
F1.3	Sufficiently detailed studies have been completed to demonstrate the feasibility of extraction by implementing a defined development project or mining operation.

# UNFC using all sub-categories

UNFC Classes defined by categories and sub-categories						
Total commodity initially in place	Extracted	Sales Production				
		Non-sales Production				
	Class	Sub-class	Minimum Categories			
			E	F	G	
Known Deposit	Commercial Projects	On Production	1	1.1	1, 2, 3	
		Approved for Development	1	1.2	1, 2, 3	
		Justified for Development	1	1.3	1, 2, 3	
	Potentially Commercial Projects	Development Pending	2	2.1	1, 2, 3	
		Development On Hold	2	2.2	1, 2, 3	
	Non-Commercial Projects	Development Unclassified	3.2	2.2	1, 2, 3	
		Development Not Viable	3.3	2.3	1, 2, 3	
	Additional quantities in place			3.3	4	1, 2, 3
	Potential Deposit	Exploration Projects	[No sub-classes defined]	3.2	3	4
Additional quantities in place			3.3	4	4	

# In summary ...

- **UNFC is a generic, principles-based system**
  - Applicable to Resources; minerals, fluids, injection projects, renewable energy, anthropogenic resources.
  - Uses a numerical coding system.
- **Based on three fundamental criteria**
  - Economic and social viability
  - Field project status and feasibility
  - Geological knowledge (uncertainty)
- **Each criterion is sub-divided into 3 or 4 defined categories**
  - Optional use of sub-categories for more granularity
- **Classes are defined by a combination of a single category or sub-category for each of the three criteria**
  - Numerical category or sub-category for E, for F and for G
  - Always quoted in same sequence: E – F – G
  - Axis letters can be dropped: e.g. Class 111



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