



# Overview of application of the UNFC to minerals: the CRIRSCO Template and its relationship with the UNFC

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Drawing on material provided by the Committee for Mineral Reserves International Reporting Standards (CRIRSCO)



# Outline of presentation

- **Overview of CRIRSCO**
- **CRIRSCO Members**
- **Potential Members**
- **International Reporting Template**
- **UNFC 2009**
- **Comparisons**

# What is CRIRSCO?

**International advisory body without legal authority**

**Relies on its constituent members to ensure regulatory and disciplinary oversight at a national level**

**Recognises the truly global nature of the minerals industry and the agreed need for international consensus on reporting standards**

# **CRIRSCO - Principle Objective**

**To promote best practice in the international public reporting of Mineral Exploration Results, Mineral Resources and Mineral Reserves**

# CRIRSCO rationale

- Standards for public reporting by mining companies
- A Mineral Resource must **have “...reasonable prospects for eventual economic extraction.”**  
(Template, cl.19)
  - **No *uneconomic, or unrecoverable* categories**
- Reporting based directly upon geological data
  - **No *undiscovered* categories**

# CRIRSCO

## Members

<b>Australasia:</b>	<b>JORC</b>
<b>Canada:</b>	<b>CIM</b>
<b>Chile:</b>	<b>Comisión Minera de Chile</b>
<b>South Africa:</b>	<b>SAMREC</b>
<b>United States:</b>	<b>SME</b>
<b>Europe and UK:</b>	<b>PERC. IMMM</b>

**Major multinational companies use CRIRSCO Template**

# Securities Exchanges Recognition

<b>Australia:</b>	<b>JORC Code</b>	<b>ASIC</b>
<b>Canada:</b>	<b>CIM Standards</b>	<b>NI-43101 CSA</b>
<b>Chile:</b>	<b>The Code for the certification of Exploration Prospects, Mineral Resources &amp; Ore Reserves</b>	<b>Chilean SX</b>
<b>Europe and UK:</b>	<b>PERC Code, The Reporting Code</b>	<b>ESMA</b>
<b>South Africa:</b>	<b>SAMREC Code</b>	<b>JSE</b>
<b>United States:</b>	<b>SME Guide for Reporting Exploration Information Mineral Resources and Mineral Reserves</b>	

# Potential Members

Argentina

China

Indonesia

Mongolia

Peru

Philippines

Russia

**Current and potential members cover major mining nations**



# **CRIRSCO Template**

## **INTERNATIONAL REPORTING TEMPLATE**

**for the public reporting of**

**EXPLORATION RESULTS, MINERAL  
RESOURCES AND MINERAL  
RESERVES**

**JULY 2006**

# Purpose

- **Advisory only**
- **National Standards/Codes take precedence**
- **Model for development of new codes in constituent countries**

# Public Reports

- **Reports prepared for investors or potential investors**
- **Annual Reports**
- **Quarterly Reports**
- **Information Memoranda**
- **Websites**
- **Public Presentations**
- **Stock Exchange Information Systems**

# Principles

- **Materiality**
- **Transparency**
- **Competency**

# Competent Person

- Member or Fellow of professional body with enforceable code of ethics
- Five (5) years experience **relevant** to type of mineralization and deposit and the activity being undertaken
- Team approach allowed but leader signs off
  - Satisfied in own mind able to face peers and demonstrate competence in the commodity, type of deposit and situation

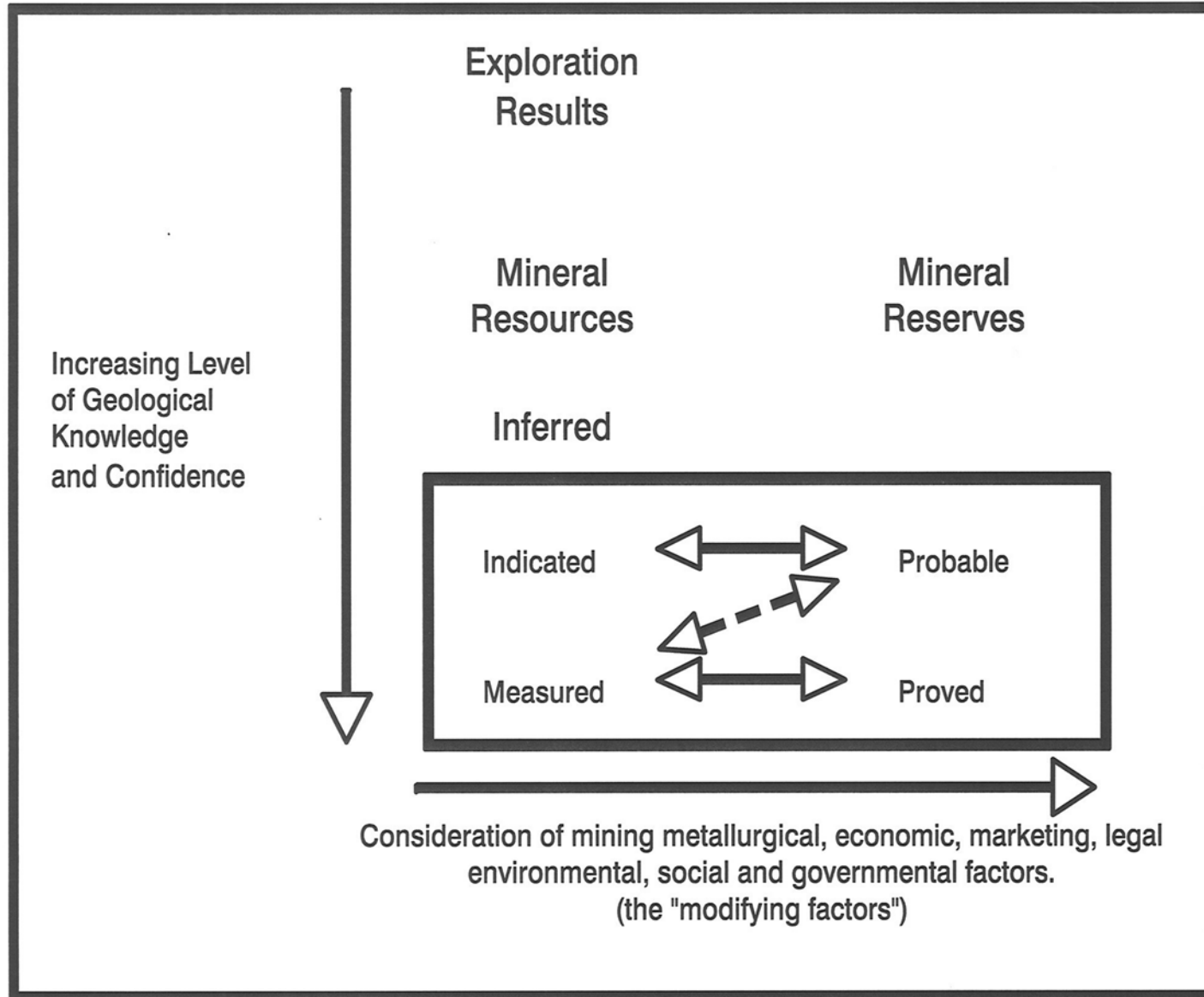
# Disciplinary Procedure

- **Responsibility of National Reporting Organization (NRO)**
- **International agreements through Recognised Overseas Professional Organizations (ROPO)**

# Recognised Overseas Professional Organizations

<b>Australasian Institute of Mining and Metallurgy</b>	<b>AusIMM</b>
<b>Australian Institute of Geoscientists</b>	<b>AIG</b>
<b>Canadian Council of Professional Geoscientists</b>	<b>CCPG</b>
<b>European Federation of Geologists</b>	<b>EFG</b>
<b>The Geological Society</b>	<b>GS</b>
<b>Institute of Geologists of Ireland</b>	<b>IGI</b>
<b>Institute of Materials Minerals and Mining</b>	<b>IMMM</b>
<b>Mining and Metallurgical Society of America</b>	<b>MMSA</b>
<b>Society for Mining Metallurgy and Exploration</b>	<b>SME</b>

# Fundamental Definitions





# Modifying Factors

- Mining
- Metallurgical
- Economic
- Marketing
- Legal
- Environmental
- Social
- Governmental

# Exploration Results

- **Exploration Results include data and information generated by exploration programmes that may be of use to investors but is not part of a formal declaration of Mineral Resources or Reserves**
  - **Tonnage and grade not to be reported**

# Mineral Resource

- Concentration or occurrence of material of **economic** interest in or on the Earth's crust in such form quality and quantity that there are **reasonable** prospects for **eventual economic** extraction
  - Not an inventory of all mineralization
  - Further work can convert Resources to Reserves

# Mineral Reserve

- The **economically mineable** part of Measured and/or Indicated Mineral Resource
  - Includes dilution and losses
  - Appropriate assessments have been carried out and modifying factors have been considered
  - Demonstrated at time of reporting that extraction is reasonably justified
- Proven and Probable

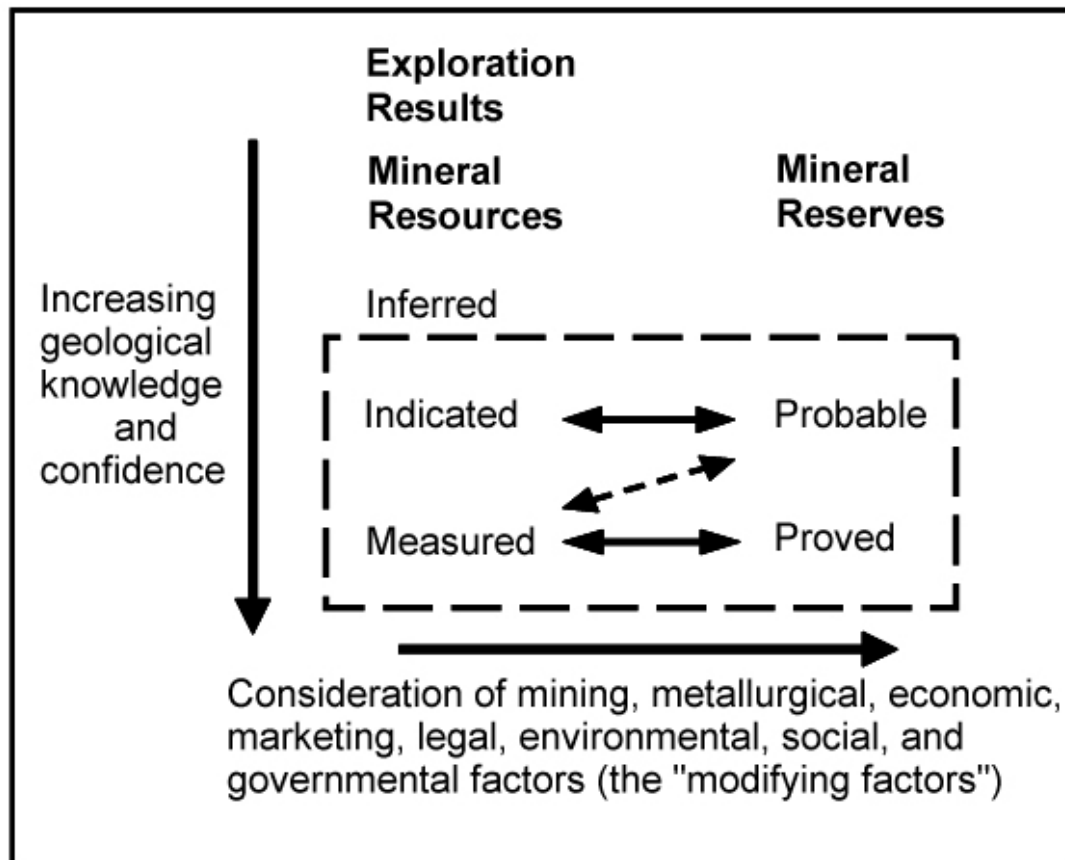
# Mineral Resources/Reserves

- Must be clearly stated Mineral Resources are **inclusive or exclusive** of Mineral Reserves
- Two should never be added together in company reports
- If inclusive, relevant details of unmodified resources should be reported

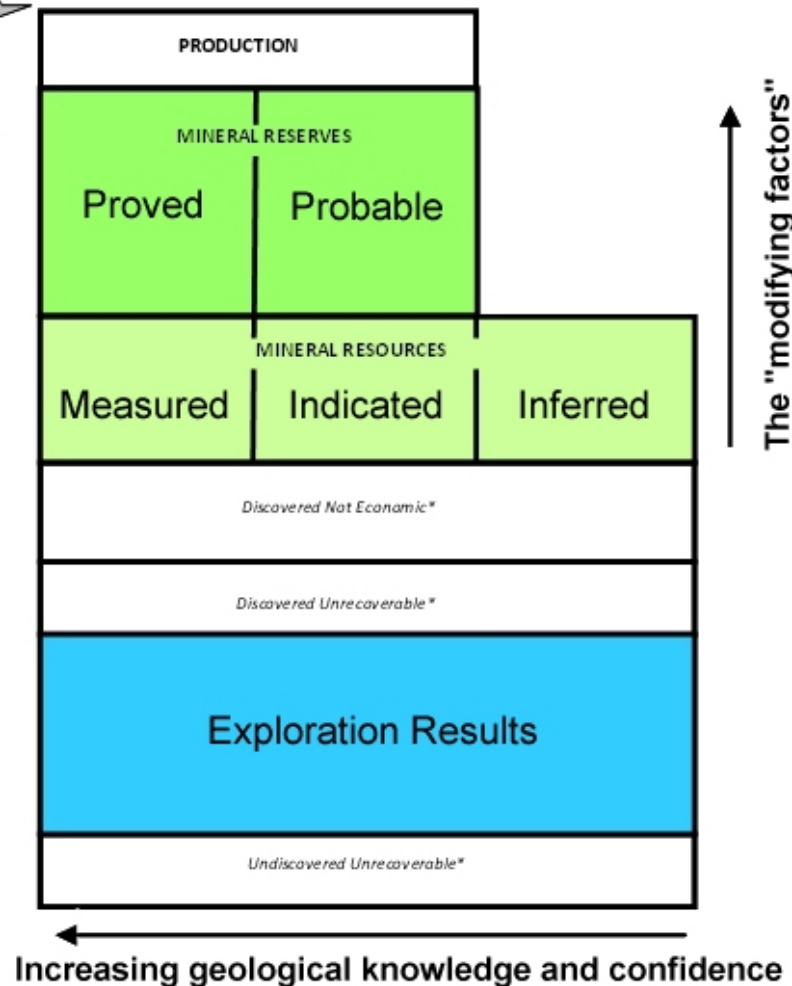
# CRIRSCO Template

## CRIRSCO classification

Re-oriented to align with Petroleum and UNFC



(a)



(b)

# UNFC as universal template

- Industry, financial, national and international resource reporting systems are being/should be mapped to UNFC-2009
  - To clarify the similarities and differences between systems in use around the world
- **Countries that have mandated the CRIRSCO Template will not adopt the UNFC**
  - Other countries may choose to use the UNFC

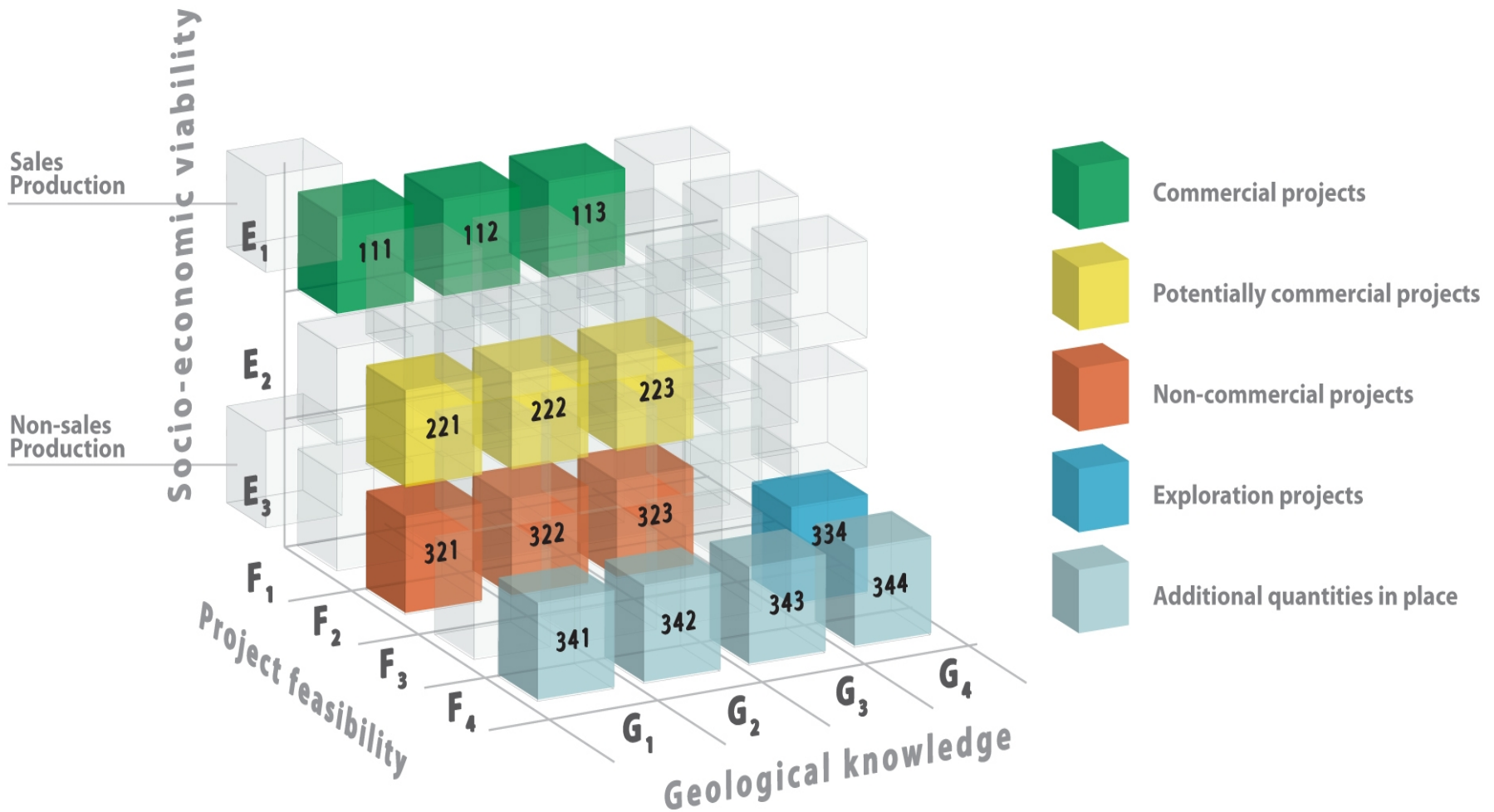
# UNFC-2009: a 3D system

## Three axes:

- **E = Economic and social viability**
  - Including consideration of market prices, and legal, regulatory, environmental and contractual conditions
- **F = field project status and Feasibility**
  - Maturity of studies and commitments necessary to implement mining plans, field project status and feasibility and geological knowledge
- **G = level of confidence in Geological knowledge**
  - Including potential recoverability of the quantities
- **E, F and G combined with numerical coding**



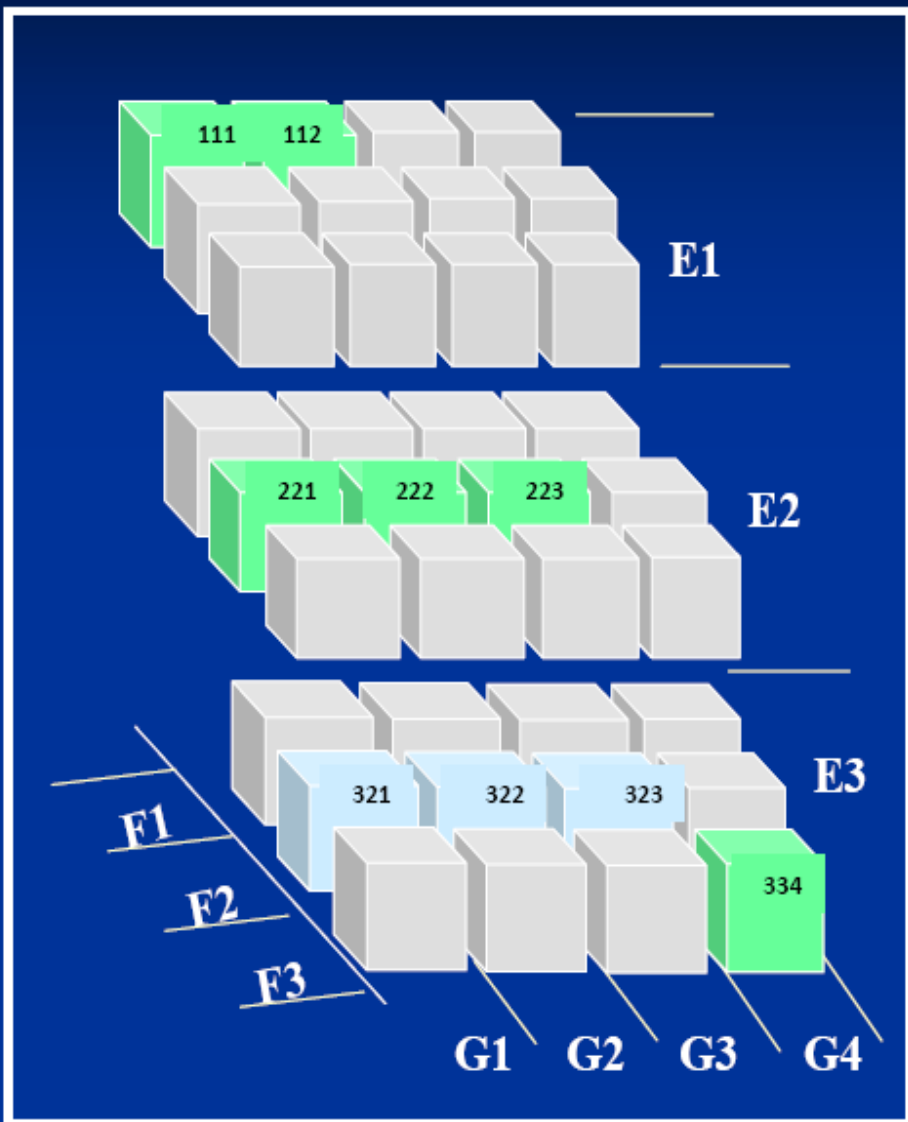
# UNFC-2009



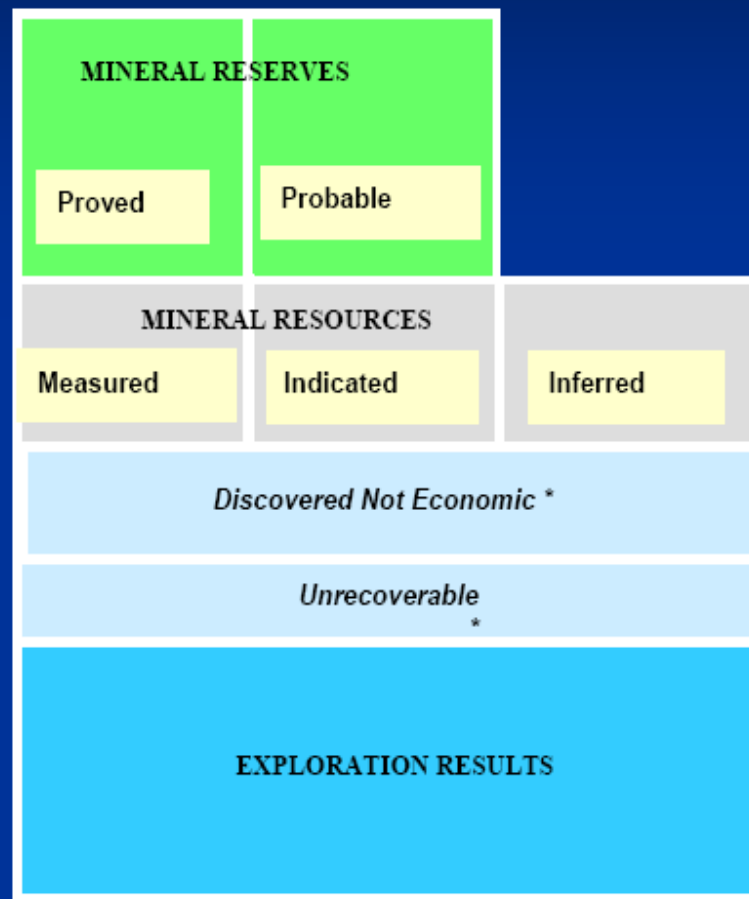
Not meant to use all boxes

# UNFC – CRIRSCO

## UNFC



## Template

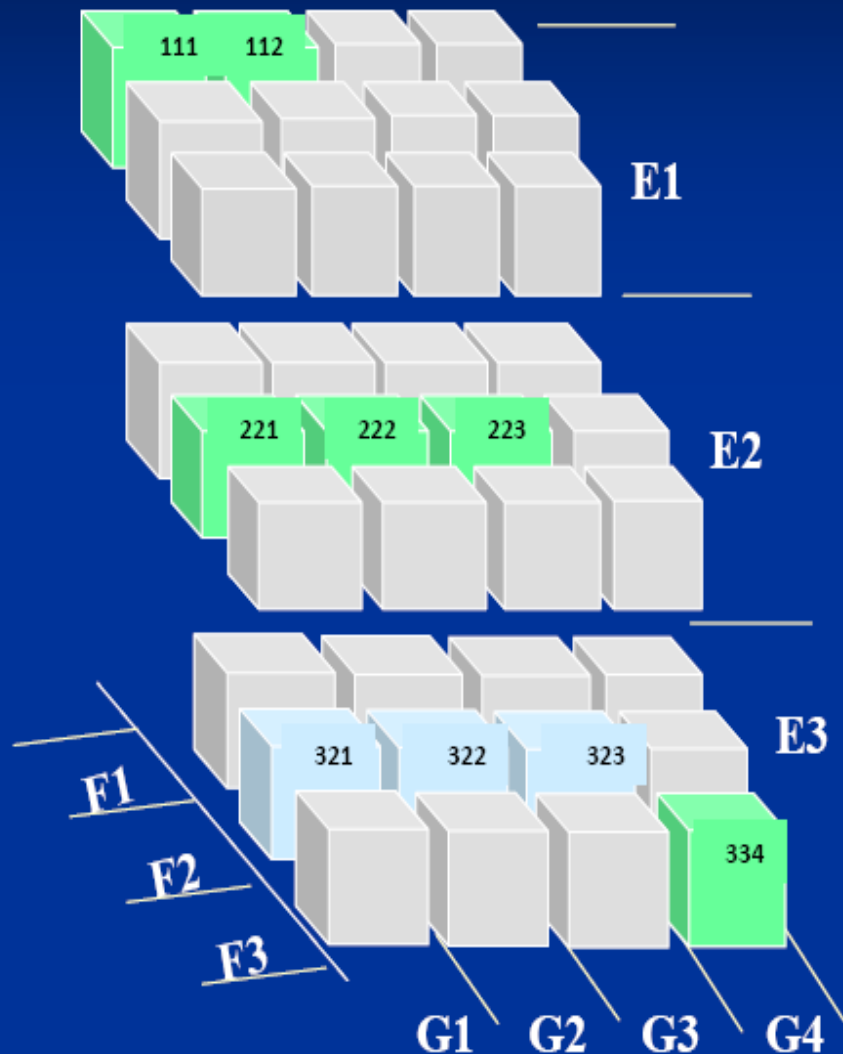


← Increasing level of geoscientific knowledge and confidence

\*Not part of the Template but may be used for internal project management

# UNFC-2009 – CRIRSCO Template

## UNFC



**111 = Proved Reserves**  
**112 = Probable Reserves**

**221 = Measured Resources**  
**222 = Indicated Resources**  
**223 = Inferred Resources**

**334 = Exploration Results**  
**(Notional mapping)**

# CRIRSCO – UNFC-2009 ( 2D view)

Total commodity initially in place	Production	Sales Production			
		Non-sales Production			
		Class	Categories		
			E	F	G
	Future recovery by commercial development projects of mining operations	Mineral Reserves	1	1	1,2
	Potential future recovery by contingent development projects or mining operations	Mineral Resources	2	2	1,2,3
		Discovered Not Economic	3	2	1,2,3
	Discovered Unrecoverable		3	4	1,2,3
	Potential future recovery by successful exploration activities	Exploration Results	3	3	4
	Undiscovered Unrecoverable		3	4	4

# Sub-class level mapping: CRIRSCO – UNFC-2009

UNFC Classes defined by categories and sub-categories

Total commodity initially in place	Extracted	Sales Production				
		Non-sales Production				
	Class	Sub-class	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 <sup>10</sup>	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] <sup>11</sup>	3.2	3	4	
	Additional quantities in place		3.3	4	4	

CRIRSCO/JORC RESERVES

CRIRSCO/JORC RESOURCES

NOT ECONOMIC AND NOT PART OF CRIRSCO/JORC TEMPLATE

# CRIRSCO's summary of UNFC 2009

- **Generic system - solid minerals and fossil energy**
  - Framework classification not a reporting standard
  - Allows for non economic mineralization
  - No competency requirement
  - Does not have Securities Exchange recognition
- **Important tool for harmonized generic terminology at a level suitable for global communication**
- **UNFC will not replace CRIRSCO Template**



**Questions?**