



COMMITTEE FOR MINERAL RESERVES
INTERNATIONAL REPORTING STANDARDS



The Role of CRIRSCO and its Template

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Committee for Mineral Reserves International Reporting Standards

CRIRSCO

*To promote International Best Practice in the
Reporting of Mineral Exploration Results, Mineral
Resources and Mineral Reserves*

CRIRSCO provides an international forum that enables **countries** to ensure consistency of their **reporting** standards in an international setting and to contribute to the development of best practice international reporting.

CRIRSCO is an international **advisory** body without legal authority and relies on its constituent members to ensure regulatory and disciplinary oversight at a national level.



CRIRSCO's scope includes all **solid minerals**, including base and precious metals, gemstones, bulk commodities, aggregates, industrial minerals and energy minerals such as coal and uranium.

CRIRSCO serves the international minerals industry and its stakeholders, including professional institutions, mining and exploration companies, financial institutions, accountants, regulators and shareholders.

- 1994 CMMI Mineral Definitions Working Group
(Australia, Canada, South Africa, UK and USA)
- March 1997 BreX
- October 1997 Denver Accord
- 1999 CMMI definitions incorporated into UNFC
- 1999-2001 Codes updated
- 2002 CMMI disbanded but CRIRSCO survived as separate entity. (Chile participated – joined CRIRSCO 2003)

- Template initiated Reston VA 2003
- 2006-2010 Russia maps their system to Template then develops Code
- 2006 –discussions recommenced with UNECE re single global code for reporting all solid minerals
- 2007 association with ICMM commenced
- 2007 relationship with IASB commenced
- 2011 Russia (NAEN) joins CRIRSCO

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ACHIEVEMENT OF OBJECTIVE

- Promote uniformity, **excellence** and continuous improvement in national and international **reporting** standards for Mineral Exploration Results, Mineral Resources and Mineral Reserves, through consultation and cooperation.
- **Represent** the international minerals industry on resource and reserve reporting issues, including discussions with other international organisations, attending international meetings and providing written submissions.

- Encourage the continued development of international **reciprocity** of Competent/Qualified Persons through nationally-based Recognised Professional Organisations (“ROPOs”).
- Promote the use of a uniform and coherent **best practice** reporting standard for Mineral Exploration Results, Mineral Resources and Mineral Reserves, including the provision and maintenance of the CRIRSCO International Reporting Template.

- Facilitate the exchange of information and dialogue among CRIRSCO members and other stakeholders through an actively managed **web site** that promotes discussion on current issues.

www.crirSCO.com

WHAT CRIRSCO DOES

- Sets **minimum standards for public reporting** of Exploration Results, Mineral Resources and Mineral Reserves
- Provides a **mandatory system for classification** of tonnage/grade estimates according to geological confidence and technical/economic considerations
- Provides **definitions** for mineral resource and mineral reserve classes that are compatible with international agreements
- Requires Public Reports to be based on work undertaken by a **Competent Person** and describes the qualifications and type of experience required to be a Competent Person
- Provides extensive **guidelines** on the criteria to be considered when preparing reports on Exploration Results, Mineral Resources and Mineral Reserves

CRIRSCO DOES NOT..

- **Monitor** or **regulate** the procedures used by the **Competent Person** to estimate Mineral Resources and Mineral Reserves
- **Monitor** or **regulate** a **company's** classification of Mineral Resources and Mineral Reserves
- Deal with **breaches** of Codes by **Competent Persons**
- Deal with **breaches** Codes by **companies**

National Reporting Organisations (NROs)

Bodies which develop and are responsible for mineral reporting codes, standards and guidelines for a country or a group of countries

- **AUSTRALASIA (JORC)**
- **CANADA (CIM)**
- **CHILE (Comisión Minera)**
- **EUROPE (PERC)**
- **RUSSIA (NAEN)**
- **SOUTH AFRICA (SAMREC)**
- **USA (SME)**

- Produce and be responsible for maintaining a reporting standard that is **compatible** with the Template.
- The standard must be recognised as the **standard** for Public Reporting, or has the wide **support** of professional bodies, in the country/region.
- Agree to conduct international **consultation** with NROs represented on CRIRSCO before making amendments to its National or Regional reporting standard.

- Include credible, **self regulating**, **professional** bodies that provide disciplinary systems and codes of ethics that govern the behaviour of Competent Persons or equivalents as defined in the Template.
- Commit to **engaging** in CRIRSCO activities.

INTERNATIONAL COMPARISON

	Australasia	Canada	Chile	Europe	South Africa	USA SME	USA SEC
CODE	JORC	NI 43-101	Com'n Minera	PERC	SAMREC	SME Guide 2007	IG7
Listing Rules	✓			✓	✓		
Securities Law		✓	✓				✓
National	✓		✓		✓		✓
Province/ State		✓					

CODE COMPARISON

	Australasia	Canada	Chile	Europe	Russia	South Africa	USA - SME	USA - SEC
Adoption of CRIRSCO-type Standard	✓	✓	✓	✓	✓	✓	✓	✗
Reporting Standard recognized by National Regulator	✓	✓	✓	✓	✓	✓	✗	✓
Competent Person Requirement	✓	✓	✓	✓	✓	✓	✓	✗
Reporting of Mineral Resources allowed	✓	✓	✓	✓	✓	✓	✓	*
Inferred Resources allowed in economic studies	✓	*	✓	✓	✓	✓	✓	✗
Commodity price process specified by management	✓	✓	✓	✓	✗	✓	✓	✗
ROPO type reciprocal system	✓	✓	✓	✓	✓	✓	✓	✗
Level of study required for Mineral Reserves	Study	PFS	PFS	PFS (expected)	FS	FS (new)	Study	FS (new)

*

Allowed under certain restricted circumstances

NRO REPRESENTATIVES

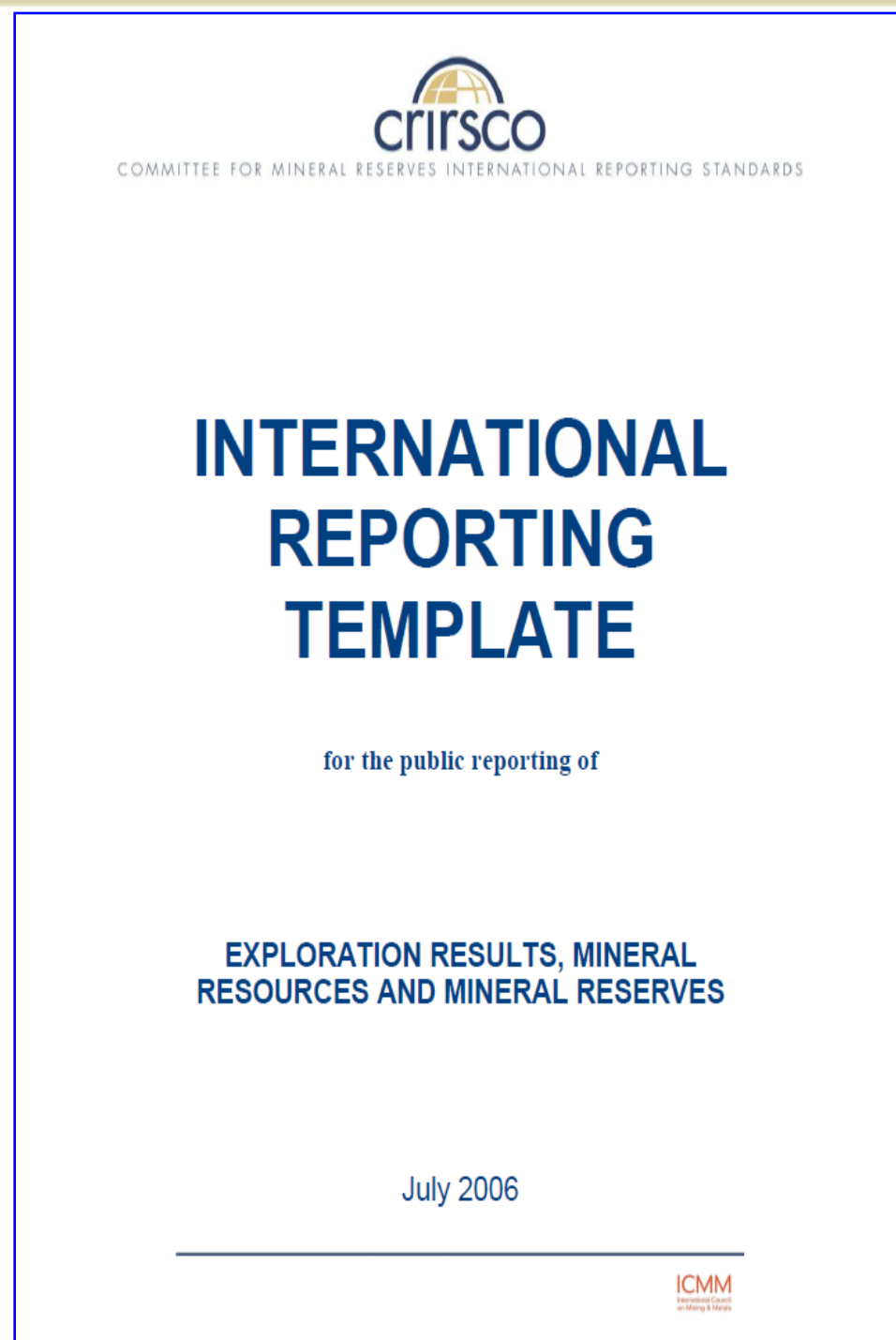
- Two representatives per NRO Member (14)
- Chairperson - D. McCombe (CIM)
- Past Chairperson - R. Dixon (SAMREC)
- Deputy Chairperson – E. Tulcanaza (Comision Minera)
- Secretary – I. Goddard (JORC)

POTENTIAL NEW MEMBERS

- Strong interest world wide
- MOUs signed with Mongolia and Turkey
- Ukraine following the Russian path
- Advanced discussions with Philippines, Indonesia, Argentina, Ecuador, Peru, China, Colombia

- Mapping project (2006-2007)
- Informal feedback on Asset Definition and
- Measurement (2008-2009)
- Response to Discussion Paper (2010)
- Agenda setting (2011)
- Continue to work with IASB to implement CRIRSCO Template as a standard embedded in IFRSs for public disclosure of Mineral Resources and Mineral Reserves

CRIRSCO Template has been developed to assist with the dissemination and promotion of effective, well-trying, good practice for public reporting of Exploration Results, Mineral Resources and Mineral Reserves already widely adopted through national reporting codes and standards.



TEMPLATE CONSIDERATIONS

- **Advisory** only - national codes take precedence.
- Intended to assist countries to produce a **new** code consistent with international best practice.
- Provides a consolidated version of national codes that reflects their compatible international components and may thus be used in **comparisons** with other international reporting systems.
- ‘**Template**’ is used to indicate that this document is a **model** for code development and does **not** constitute a ‘**code**’ which implies that it has legal or other regulatory force.

Transparency

Materiality

Competence

The reader of a Public Report must be provided with **sufficient** information, the presentation of which is **clear** and **unambiguous**, so as to **understand** the report and **not** be misled.

A Public Report must contain **all** the **relevant** information which **investors** and their professional advisers would reasonably require, and reasonably expect to find, for the purpose of making a reasoned and balanced **judgement** regarding the Exploration Results, Mineral Resources or Mineral Reserves being reported.

A Public Report must be based on work that is the **responsibility** of suitably **qualified** and **experienced** persons who are subject to an **enforceable professional code of ethics** and rules of conduct.

11 definitions

Competent Person

Public Reports

Modifying Factors

Exploration Results

Mineral Resource

Inferred Mineral Resource

Indicated Mineral Resource

Measured Mineral Resource

Mineral Reserves

Probable Mineral Reserves

Proved Mineral Reserves

Annual Meetings 2010 and 2011

CRIRSCO Standard Definitions

- Pre-Feasibility Study
- Feasibility Study

COMPETENT PERSON

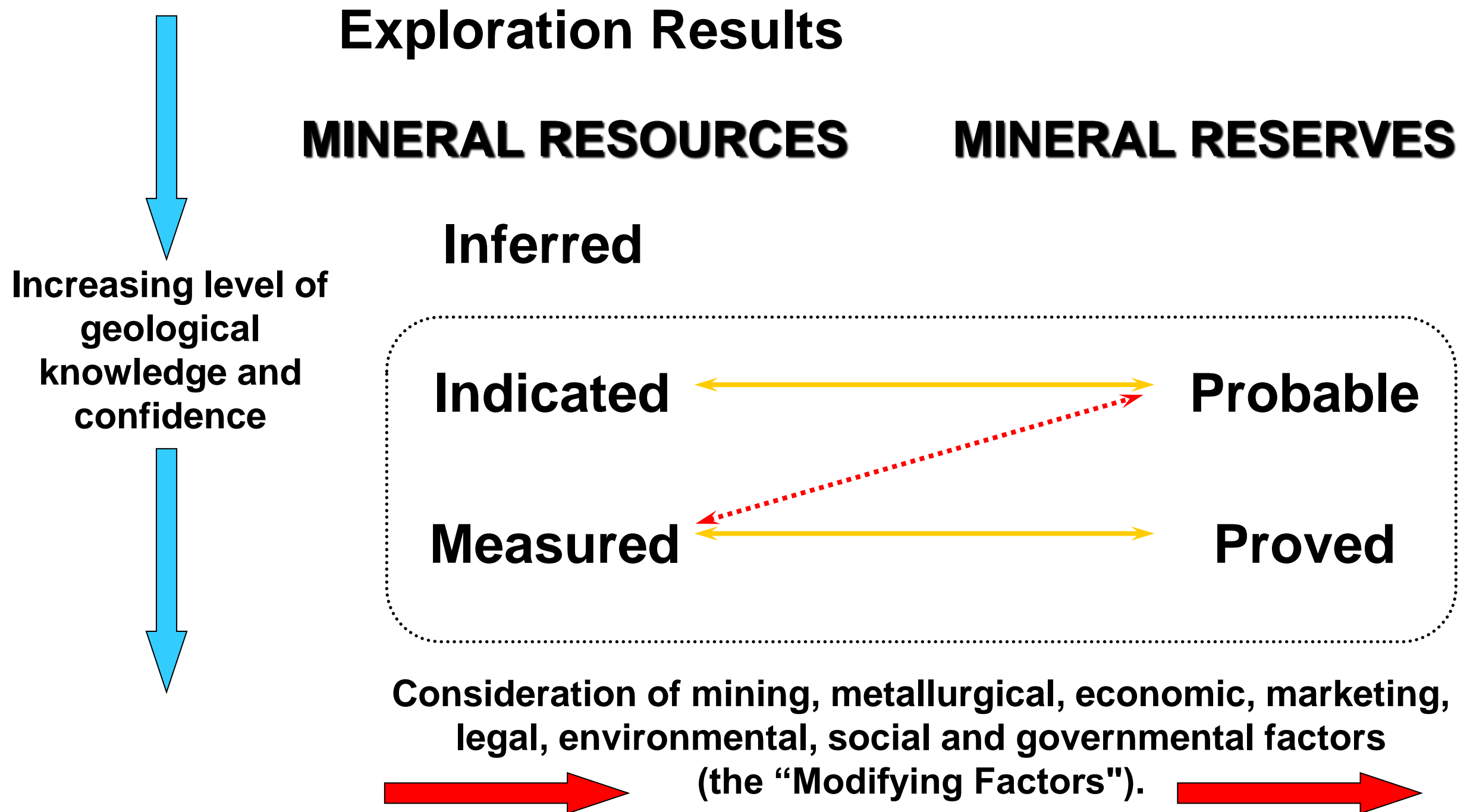
- **Member or Fellow** of professional body with enforceable code of ethics/rules of conduct
- Minimum **five** (5) years experience **relevant** to style of mineralization and type of deposit and the activity being undertaken
- Team approach allowed but **leader signs** off.
- Satisfied in own mind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

- **Complaints** made in respect of the professional work of a Competent Person dealt with by the **professional organisation** to which the Competent Person belongs.
- **ROPO** System (Recognised Professional Organisation)

Any report on Exploration Results, Mineral Resources or Mineral Reserves prepared **for the purpose of informing investors** or potential investors and their advisors, or to satisfy **regulatory** requirements.

- Responsibility of the **company** acting through its Board of Directors.
- Must be based on, and **fairly reflect** the information and supporting documentation prepared by a **Competent Person** or Persons.
- Must disclose the **name(s)** of the Competent Person(s), their **qualifications**, professional and corporate **affiliations** and relevant **experience**.
- Must be issued with the **written** consent of the Competent Person(s) as to the **form and context** in which it appears.

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



Exploration Results include data and information generated by exploration programmes which might be of **use to investors** but which **may not be part** of a formal declaration of Mineral Resources or Mineral Reserves.

- Must make clear that it is inappropriate to use such information to derive estimates of **tonnage and grade**.
- Must contain **sufficient** information to allow a considered and balanced judgement of the **significance** of the results
- Must not be presented so as to unreasonably **imply** that **potentially economic** mineralisation has been discovered.

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

Must be based on **geological evidence**, including **sampling**.

Not an inventory of all mineralization!

INFERRED RESOURCE

- That part of a Mineral Resource for which quantity and grade can be estimated at a **low** level of confidence on the basis of **limited** geological evidence and sampling
- Geological evidence is sufficient to **imply** but not verify geological and grade **continuity**.
- An Inferred Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and may **not** be converted to a Mineral Reserve.

INDICATED RESOURCE

- That part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a **reasonable** level of confidence.
- Sampling locations are such that Geological and/or grade continuity can **not** be **confirmed** but are spaced closely enough for continuity to be **assumed**.
- An Indicated Resource has a higher level of confidence than an Inferred Resource, but less than a Measured Resource and may only be converted to a **Probable** Reserve.

MEASURED RESOURCE

- That part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a **high** level of confidence.
- Geological and grade **continuity** can be **confirmed**.
- Measured Resource has the highest level of confidence and may be converted to a **Probable** or **Proved** Reserve.

MODIFYING FACTORS

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

- 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 applied
- Demonstrated at time of reporting extraction is **reasonably justified**

PROBABLE RESERVE

- The economically mineable part of an **Indicated** and, in some cases, a **Measured** Resource.
- It includes **dilution** and **losses**.
- The confidence in the **Modifying Factors** applying to a Probable Mineral Reserve is **lower** than that applying to a Proved Mineral Reserve.
- At least a **Pre-Feasibility Study** has been done to demonstrate the reasonable justification for extraction at the time of reporting.

PROVED RESERVE

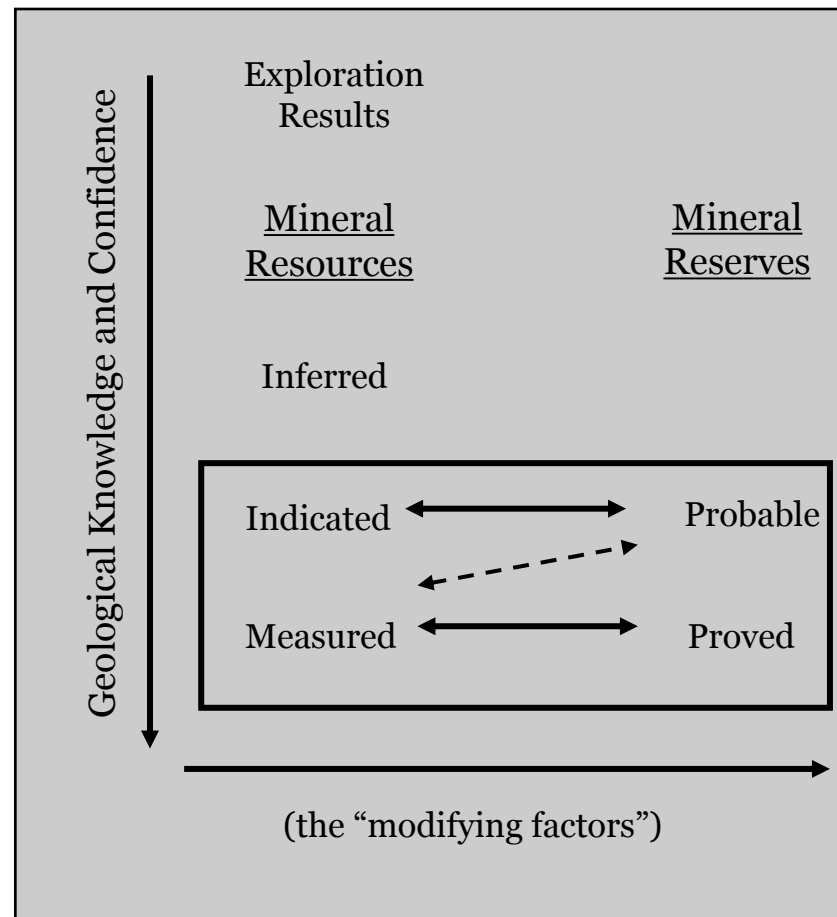
- The economically mineable part of a **Measured Resource**.
- Includes **dilution** and **losses**.
- **High** degree of confidence in the Modifying Factors.
- At least a **Pre-Feasibility Study** has been done to demonstrate the reasonable justification for extraction at the time of reporting.

- Mineral **Reserve** estimates must **not** be **added** to Mineral **Resource** estimates to report a single combined figure.
- A statement must be included in the report which clearly indicates whether the Mineral Resources are **inclusive** of, or **additional** to, the Mineral Reserves.

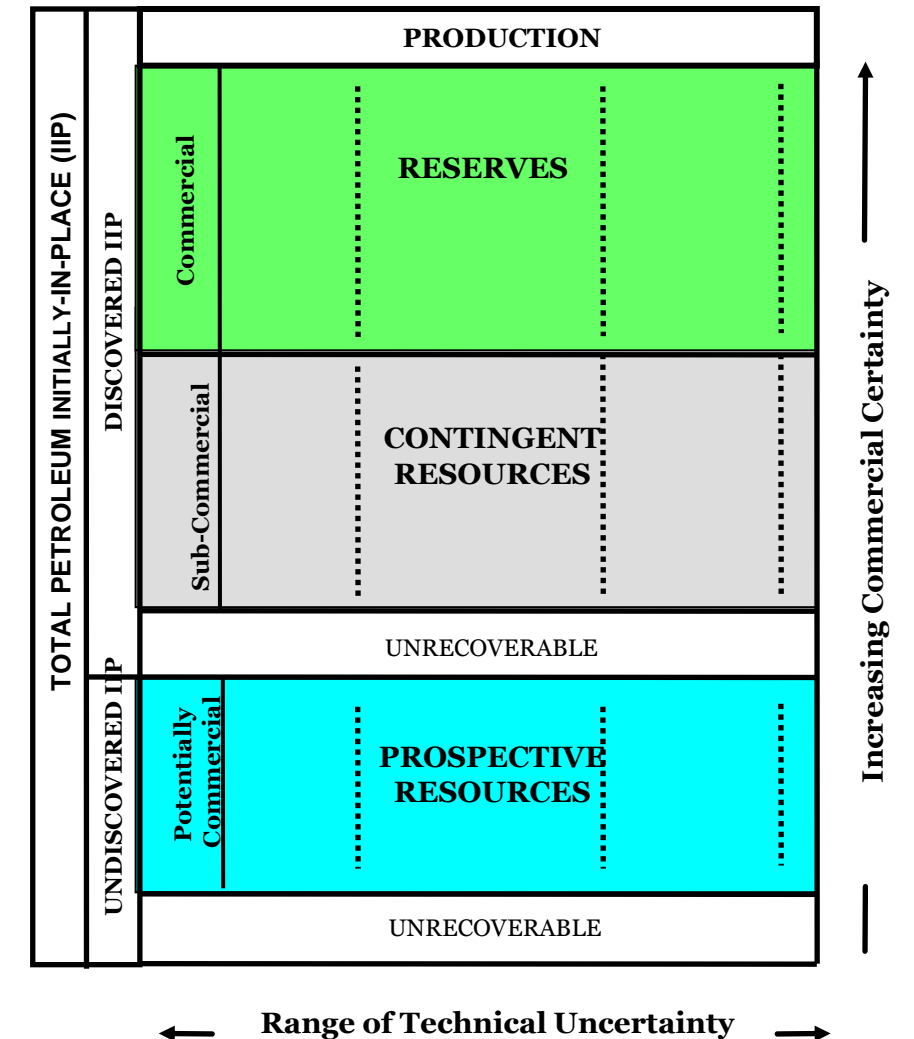
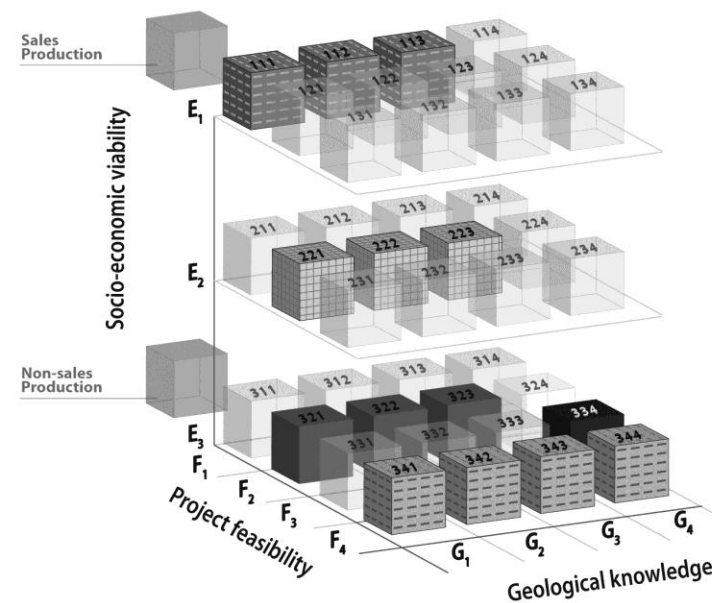
- Mineralised Fill, Pillars, Low Grade Mineralisation, Stockpiles, Dumps and Tailings
- Coal Exploration Results, Resources and Reserves
- Diamond and Other Gemstone Exploration Results, Mineral Resources and Mineral Reserves
- Industrial Minerals Exploration Results, Mineral Resources and Mineral Reserves

- **TABLE 1 - CHECK LIST OF ASSESSMENT AND REPORTING CRITERIA**
- **APPENDIX 1 GENERIC TERMS AND EQUIVALENTS**
- **APPENDIX 2 - RECOMMENDED RULES OF CONDUCT and GUIDELINES**

- 1997 agreement between CRIRSCO and UNECE re common definitions
- 2005 CRIRSCO and SPE re-engage with UNECE
- 2007 mapping CRIRSCO Template, PRMS, UNFC
- 2009 mapping completed
- 2011 Template/PRMS officially recognised as commodity-specific codes of the UNFC-2009

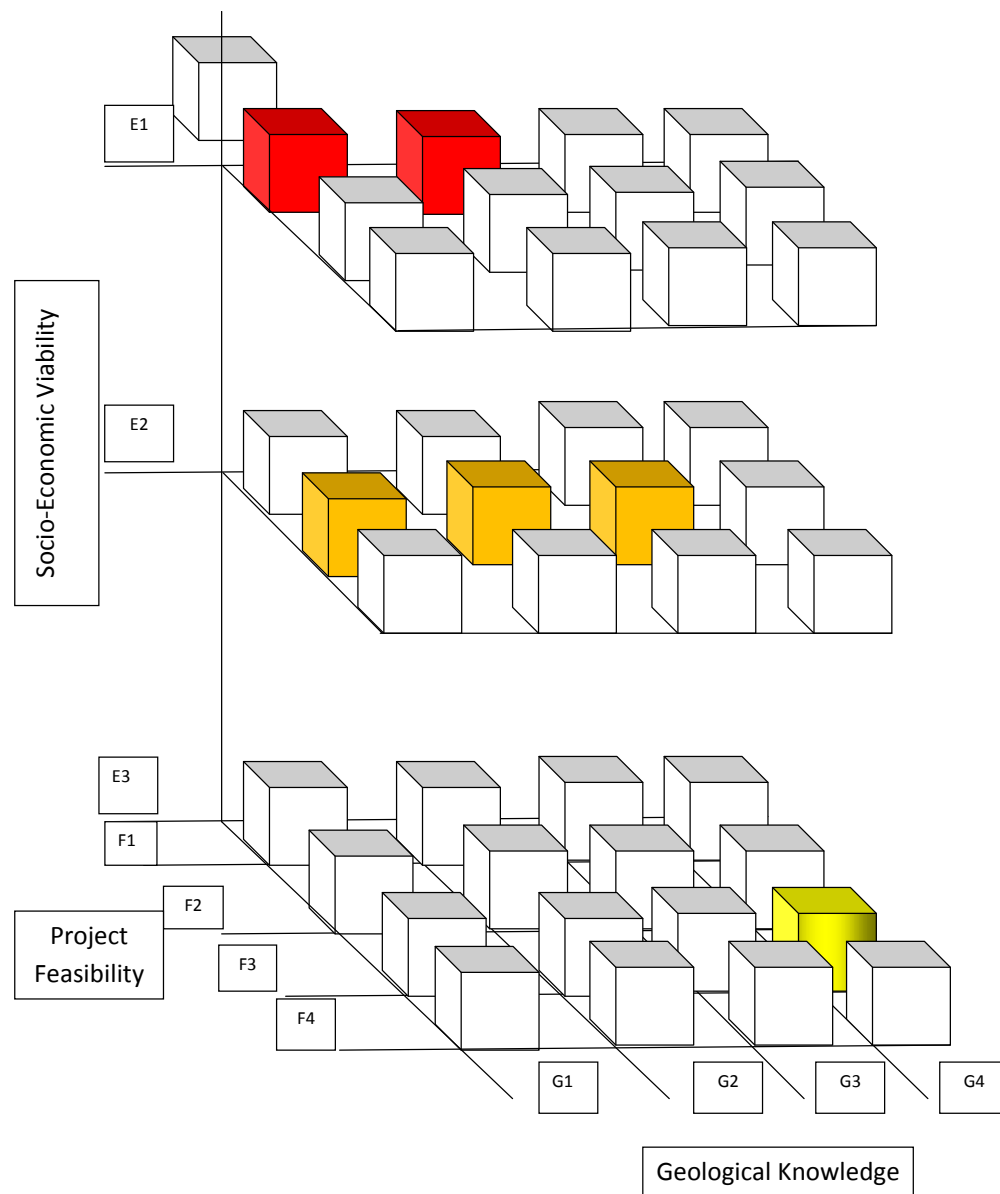


Separate but
Cross-referenced



UNFC (2009) – CRIRSCO TEMPLATE

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

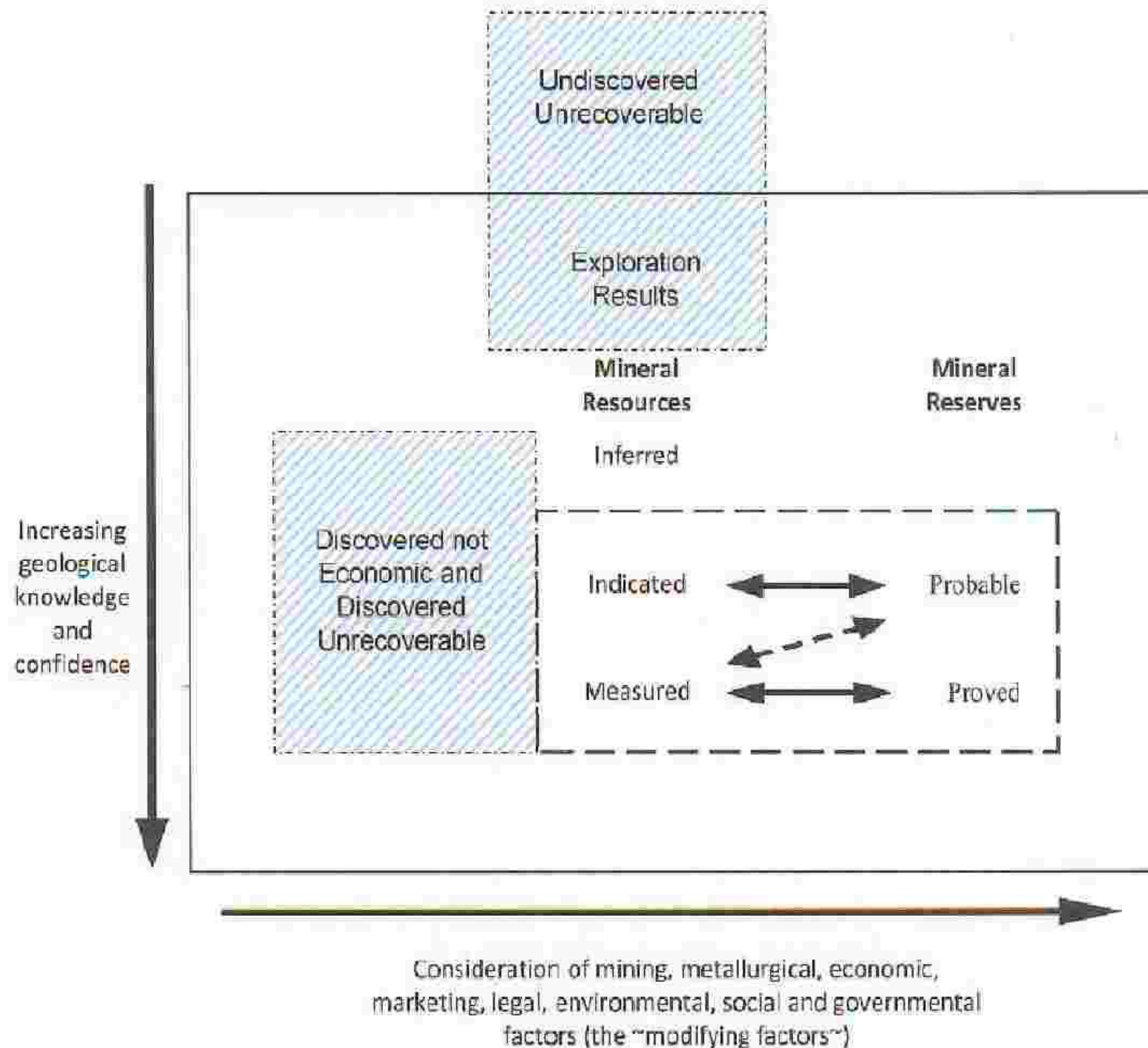


111 = Proved Reserves
112 = Probable Reserves

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

334 = Exploration Results

MINERALISATION BEYOND INFERRED



- CRIRSCO standards require Reporting **based directly upon geological data**
- There is thus no provision for any categories of **“undiscovered”** resources
- UNFC **may not** be used in Public Reporting by quoted companies
- May be used for **internal** planning purposes

- Provides a method for governments and NGOs to **incorporate market data** (which use the CRIRSCO classification) into **databases** and broader statistical summaries
- Provides a mechanism for companies to use a **standardised internal** classification beyond the publicly reported CRIRSCO categories

- Increasing number of Members
- Standard definitions
- Upgraded Template
- Ongoing strong relationships with ICMM, UNECE and IASB

ACKNOWLEDGEMENT

The contributions of fellow Members of CRIRSCO to this presentation and the financial support of ICMM to attend the IGC Congress are gratefully acknowledged.



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