

# crirSCO

COMMITTEE FOR MINERAL RESERVES  
INTERNATIONAL REPORTING STANDARDS

Edmundo Tulcanaza  
London,  
October - November 2011

CHILE

# CRIRSCO STANDARD DEFINITIONS

- In a global economy, **uncertainties in the mineral deposits** may inhibit or vanish the public confidence in the mineral industries
- **Financial institutions, stock exchange houses, and capital markets** also require transparency as well as responsible public information regarding listed assets.
- Governments, on the other hand, require to know **how their mineral resources are managed** as an input for public financial decisions.

- The mineral industries have been conscious of these requirements from time ago. As a result, the need for international and aligned standards has been established.
- This has been the purposes of national organizations in Australia, Canada, Chile, South Africa, some European countries through the PanEuropean Reserves Committee, and USA through the SME to prepare national codes relative to how to inform and report mineral prospects, resources, and reserves.

- Because of the technical and ethical alignment of these international codes and standards, these national organizations have grouped under **CRIRSCO** as an organization dedicated to promote a complete and reliable information on mineral assets at an international level.
- **CRIRSCO** has a strategic partnership with the ICMC and the recognition of the UNECE, IASB, the SPE, the IAEA and most of the stock exchanges houses, and financial institutions.

- A Reciprocity Overseas Professional Organization principle (ROPO) has been established within CRIRSCO's national representative organizations (NRO).
- Such as the name implies, two NRO within CRIRSCO may grant to each other mutually rights to their Competent Persons to inform and report on exploration results, mineral resources or mineral reserves in their specific jurisdictions for public reporting.

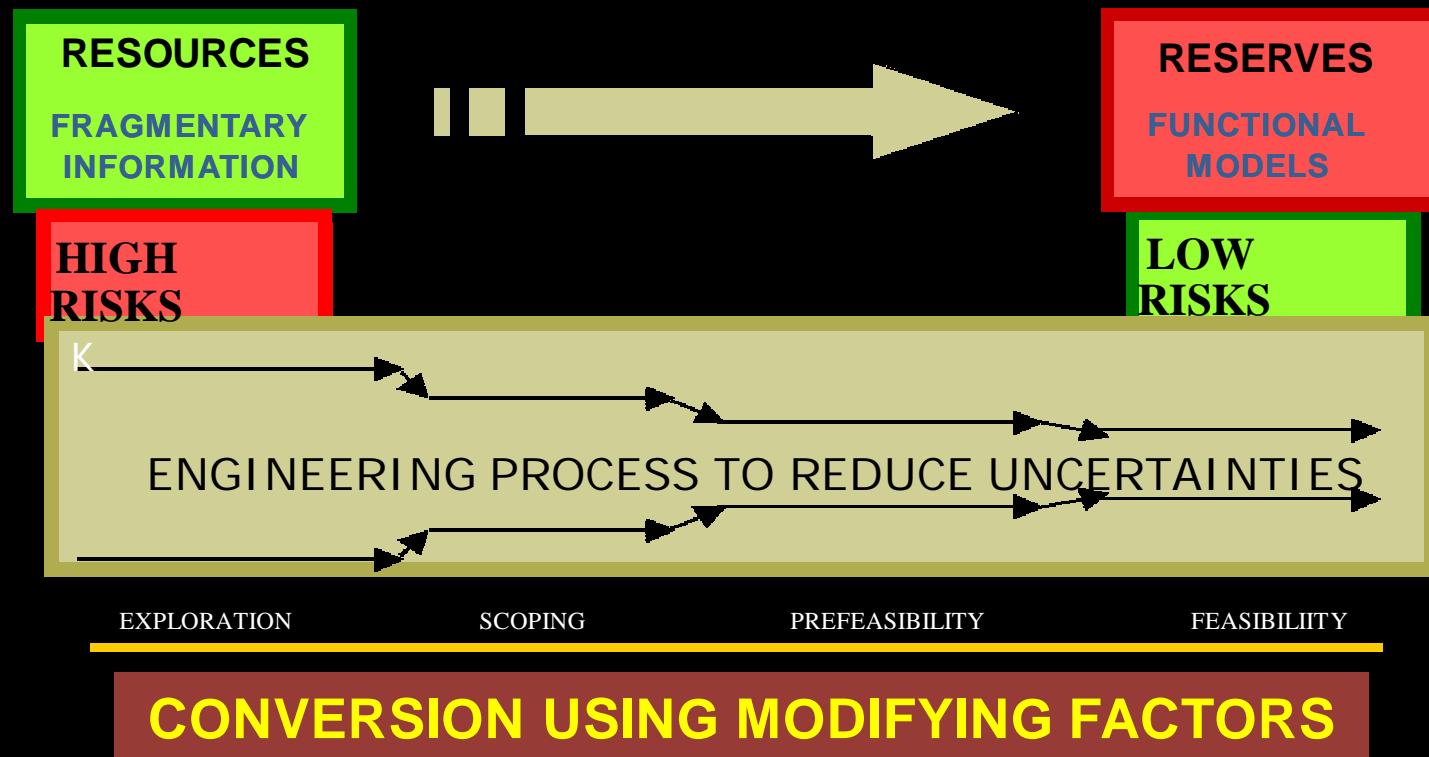
- Public Reports comprise reports prepared for the purpose of informing investors or potential investors and their advisers on Exploration Results, Mineral Resources or Mineral Reserves.
- Public Reports include, but are not limited to, annual and quarterly company reports, press releases, information memoranda, technical papers, website postings and public presentations.

- Standards and codes prepared by these national organizations for information and reporting are based on three fundamental principles: transparency, materiality, and competence.
- **Transparency**, this is to inform with a clear and fair description of the mineral assets. In other words, descriptions without ambiguity, without double interpretations.
- **Materiality**, this is to inform with a concrete and concise information. In other words, descriptions based on essential and fundamental facts.

- Competence, this is to inform with knowledge, expertise, and judgment. Reports must be prepared by mining professionals, technically competent and qualified, and ethically reliable. These professionals, accountable before their pairs and before regulators and Justice, are called Competent or Qualified Persons.
- Based on these principles each national organization in the countries identified before has prepared Guidelines and Codes on what issues to inform, and how to inform. Nevertheless, these Guidelines are not recipes. They respond to the Competent Persons criteria.

- Competent Persons have the privileged right to inform but they are also responsible, accountable, and liable for the public information provided.
- Because of these principles Competent Personas are recognized by governments, stock exchanges houses, international entities, and regulators.
- Information reported by Competent Personas may include the whole value chain of a mine venture: from exploration to project feasibility; from a technical audit to the sale of a mine property.

# CONVERSION OF MINERAL RESOURCES TO MINERAL RESERVES



- Modifying Factors are used to convert Mineral Resources to Mineral Reserves and include mining, processing, metallurgical, economic, marketing, legal, environmental, social and governmental considerations.
- Through time and data acquisition, Modifying Factors are more precise and accurate in such a way that original uncertainties progressively diminish converting mineral resources into mineral reserves.

- **Inferred Mineral Resource** is that part of a Mineral Resource for which quantity and grade or quality are estimated 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.

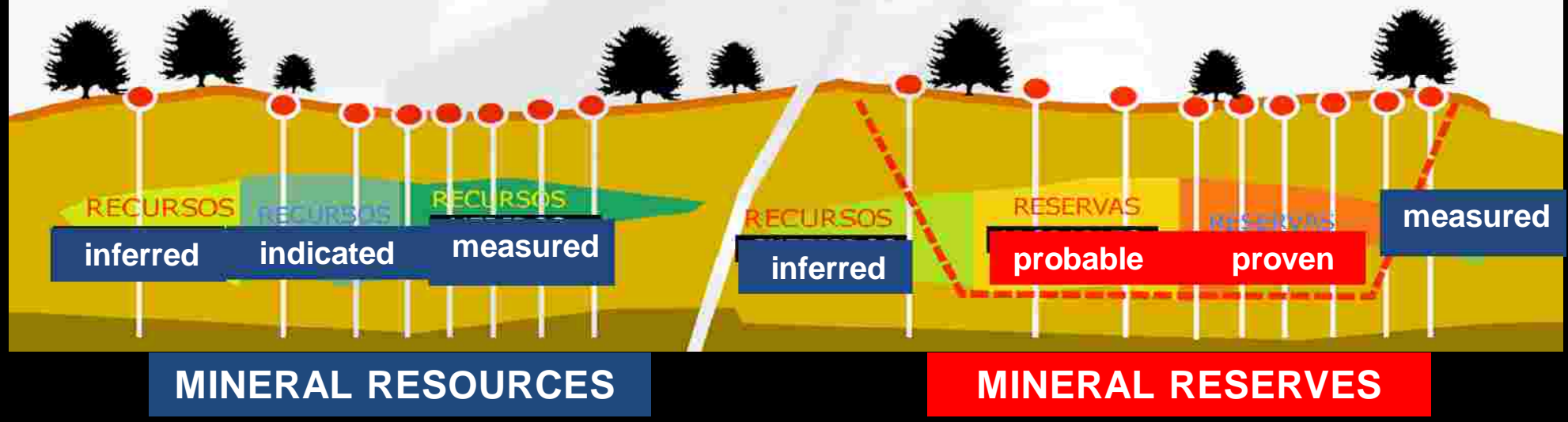
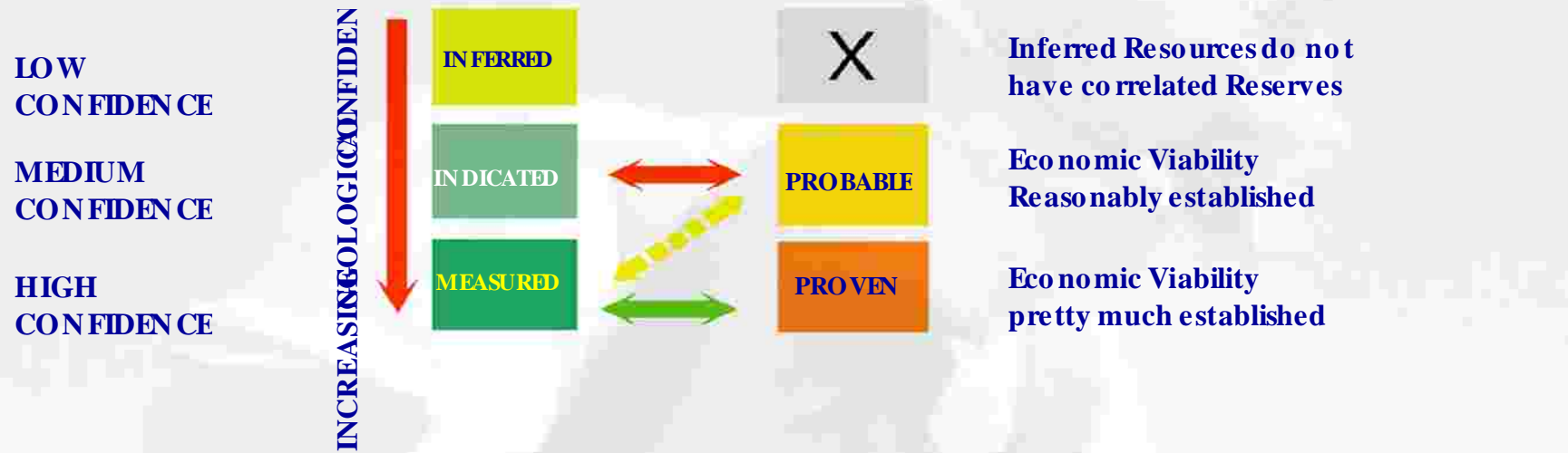
- **Indicated Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with **sufficient confidence** to allow the application of Modifying Factors in **sufficient detail** to support mine planning and evaluation of the economic viability of the deposit.
- An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

- A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.
- A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved or Probable Mineral Reserve.

- A Probable Mineral Reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proved Mineral Reserve.
- A Proved Mineral Reserve is the economically mineable part of a Measured Mineral Resource. A Proved Mineral Reserve implies a high degree of confidence in the Modifying Factors.

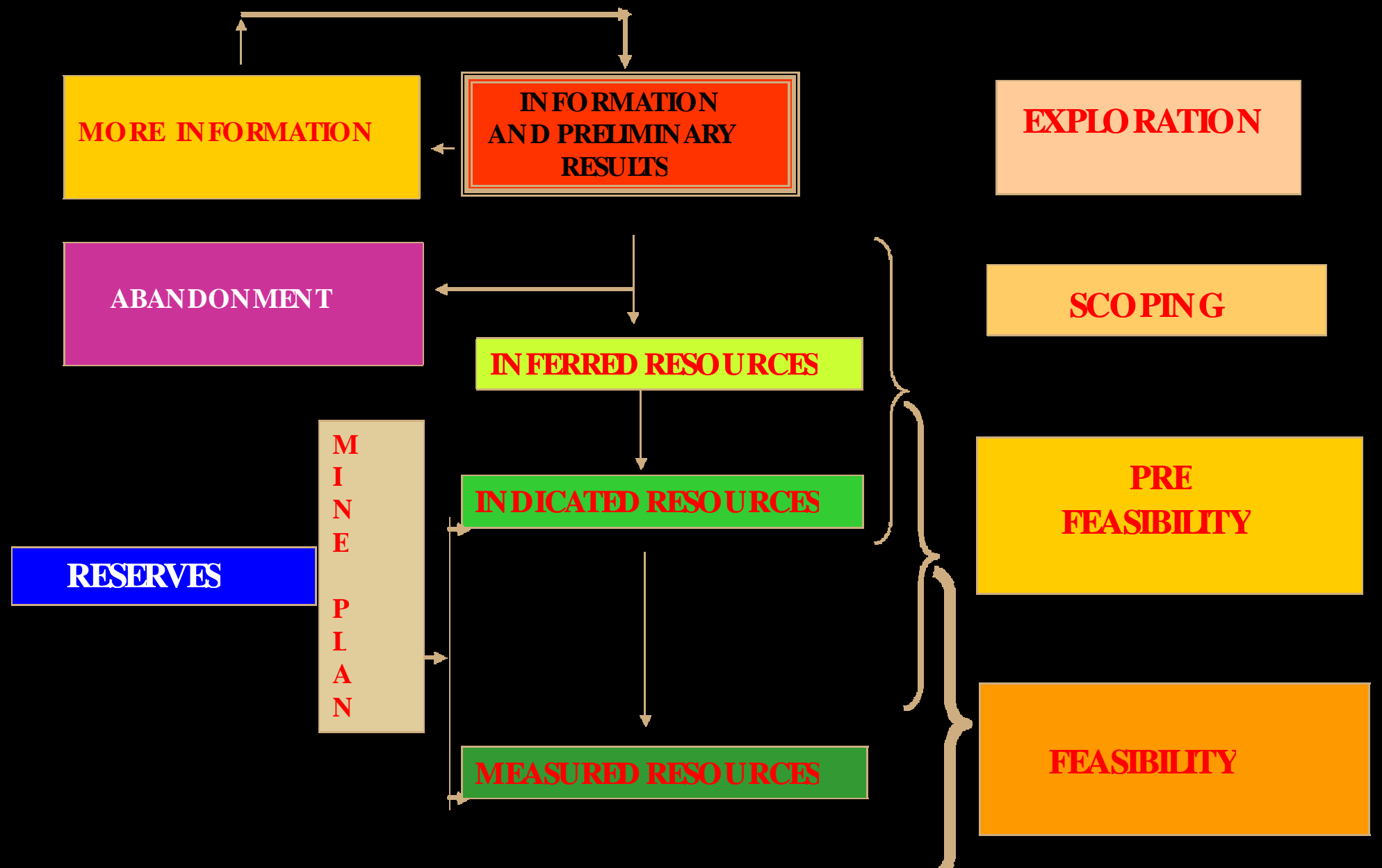
**GEOLOGICAL DELINEATION**

**ECONOMIC VIABILITY**



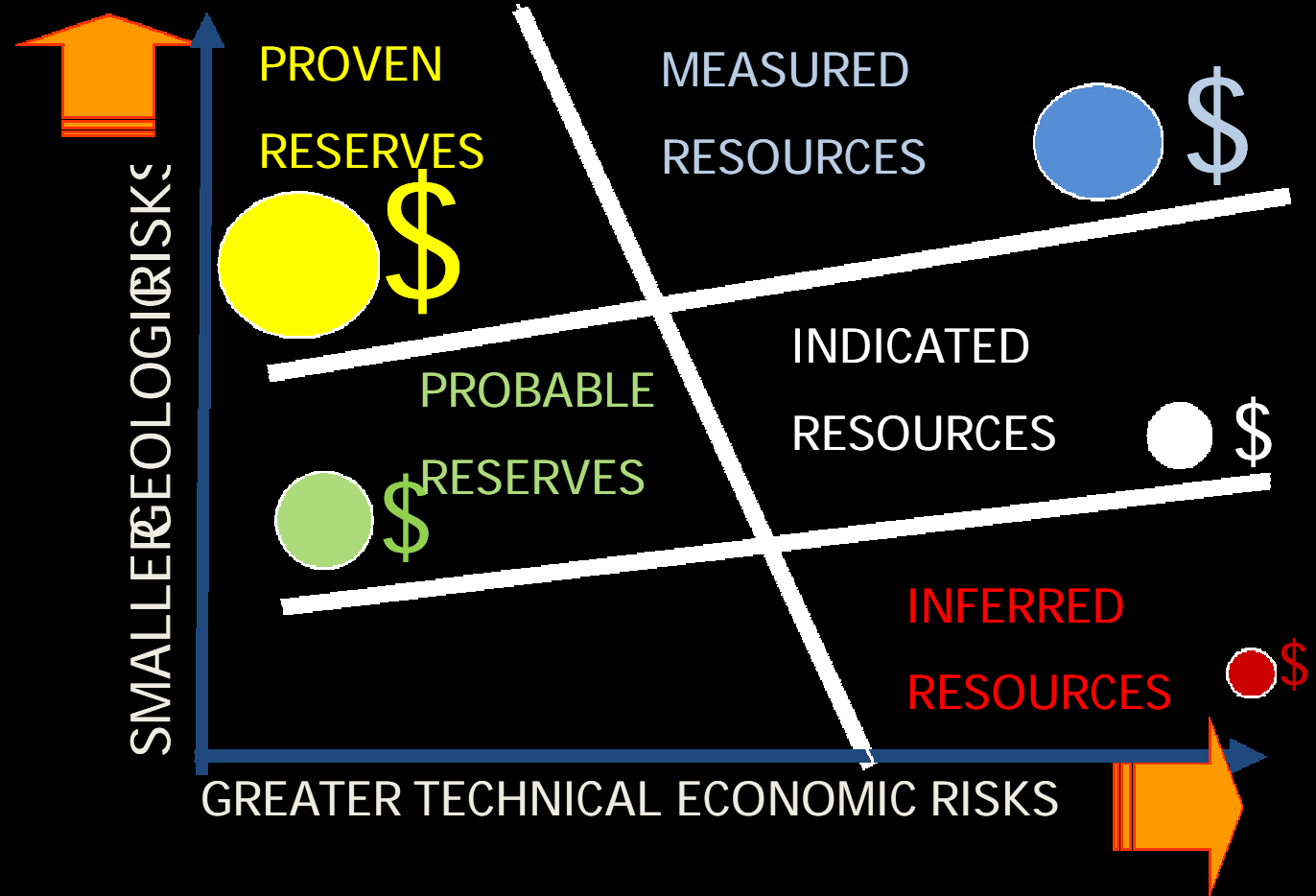
- A Pre-Feasibility Study is a comprehensive study of a range of scenarios for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method (underground mining or pit configuration), and a method of mineral processing are determined.
- It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resource may be converted to a Mineral Reserve. A Pre-feasibility Study is at a lower confidence level than a Feasibility Study.

- A **Feasibility Study** is a comprehensive technical and economic study of the selected development option for a mineral project that includes **appropriately detailed assessments of realistically assumed Modifying Factors** together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable).
- The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a Pre-Feasibility Study.



RELATIVE IN-SITU VALUE ESTIMATES AS A  
FUNCTION OF THE GEOLOGICAL AND TECHNICAL RISKS

**GEOLOGICAL  
AND  
TECHNICAL-ECONOMIC  
RISKS  
INFLUENCE  
MINERAL  
RESOURCES  
AND  
RESERVES  
CATEGORIZATION**



**CHILE**

**DEFINICIONES Y GUIAS**

**Código para la Certificación de Prospectos de Exploración, Recursos, y Reservas Mineras.**

*~ Ley 20.235 ~*

**SOUTH AFRICA**

**South african code for Reporting of mineral resources And mineral reserves.**

*~ The SAMREC Code ~*

**AUSTRALIA**

**Australasian Code for Mineral Resources and Ore Reserves Reporting of Exploration Results.**

*~ The JORC Code ~*

**EUROPEAN CODE**

**Code for Reporting of Mineral Exploration Results, Mineral Resources and Mineral Reserves.**

*~ The PERC Code ~*

**CANADA**

**CIM DEFINITION STANDARDS**

**On Mineral Resources and Mineral Reserves Prepared by the CIM Standing Committee on Reserve Definitions.**

*~ National Instrument 43-101 ~*

**USA**

**A Guide for Reporting Exploration Information, Mineral Resources, and Mineral Reserves**

*The SME ~*

## The International Reporting Template

A guideline for countries developing their own reporting standards and a benchmark for comparison with other international reporting systems including the UNFC and the Society of Petroleum Engineers (SPE) Guidelines.

### Alignment with the UN Framework Classification (UNFC)

CRIRSCO is committed with the UN ECE to lead efforts to produce definitions based on the CRIRSCO Template that are compatible with the needs of the users of the UNFC. Work continues to draft a simpler, “umbrella” reporting standard including CRIRSCO Template and the Petroleum Resource Management System (PRMS)

## International Financial Reporting Standards for the Extractive Industries

Since 2005, CRIRSCO has been advising the IASB which is considering the issue of a new Accounting Standard for the Extractive Industries as part of its IFRS. The IASB has recently indicated its preference to use existing, widely accepted reporting systems; primarily the CRIRSCO Template and the PRMS, rather than attempting to develop its own resource and reserve definitions and standards.

From discussions with the UN ECE and IASB, a continuous contact has been maintained between CRIRSCO and the SPE Reserve Committee to produce convergence between their resources and reserves definitions and categorizations.

**Thanks !**

**[www.comisionminera.cl](http://www.comisionminera.cl)**