



COMMITTEE FOR MINERAL RESERVES
INTERNATIONAL REPORTING STANDARDS

Global Nature of the Mining Industry and the Role of International Reporting Standards

Harry Parker, Chairperson CRIRSCO
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The mining industry operates on six continents, and many mining companies are multinational in the scope of their exploration and production activities. Most mining companies have adopted international reporting standards as a means of communicating accurately and efficiently to internal and external stakeholders. The Committee for Mineral Reserves International Reporting Standards (CRIRSCO) has established a reporting template that contains core definitions agreed to and adopted by national reporting organisations located in Australia, Brazil, Canada, Chile, European Union, Kazakhstan, Mongolia, Russia, South Africa and the USA. The national reporting codes and standards are very similar, and many stock exchanges and government agencies accept reports written under the auspices of several reporting codes or standards.

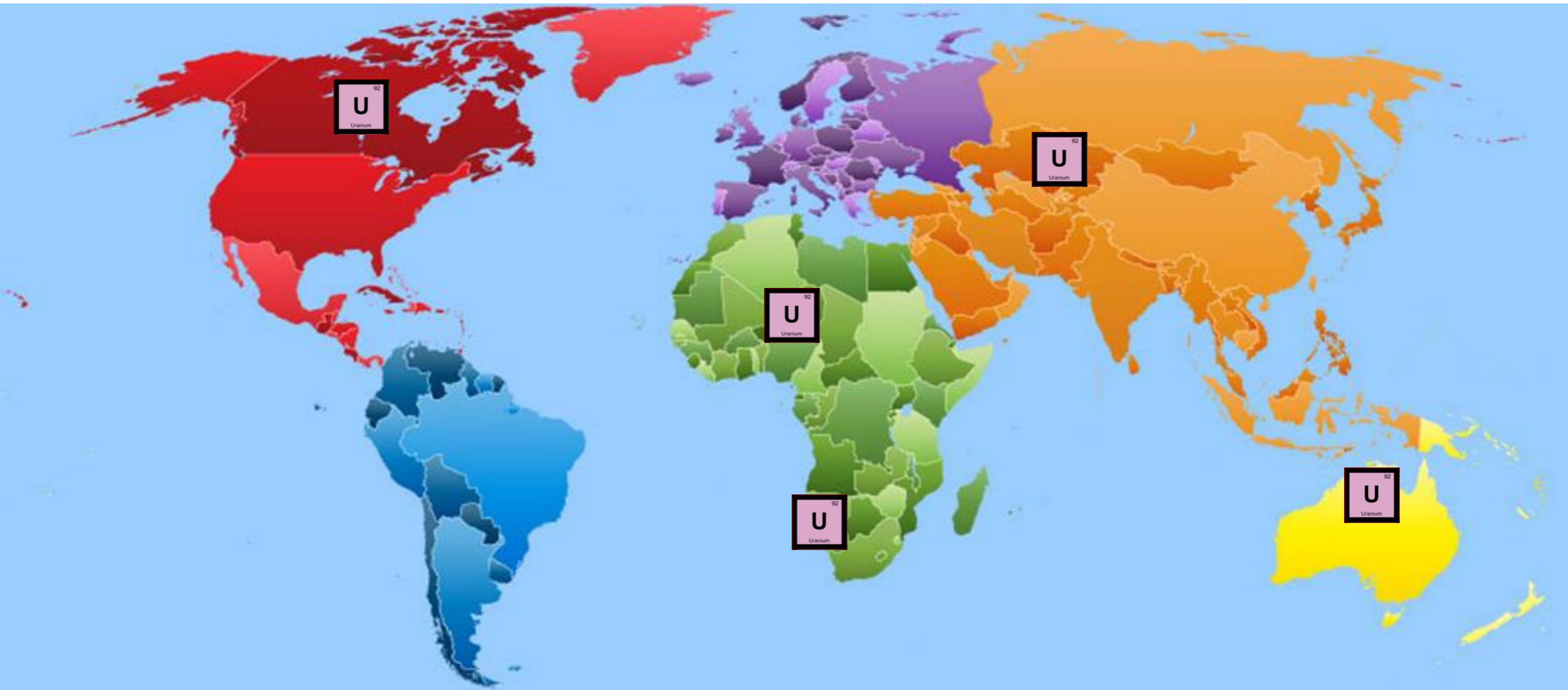
Distribution of Mineral Deposits

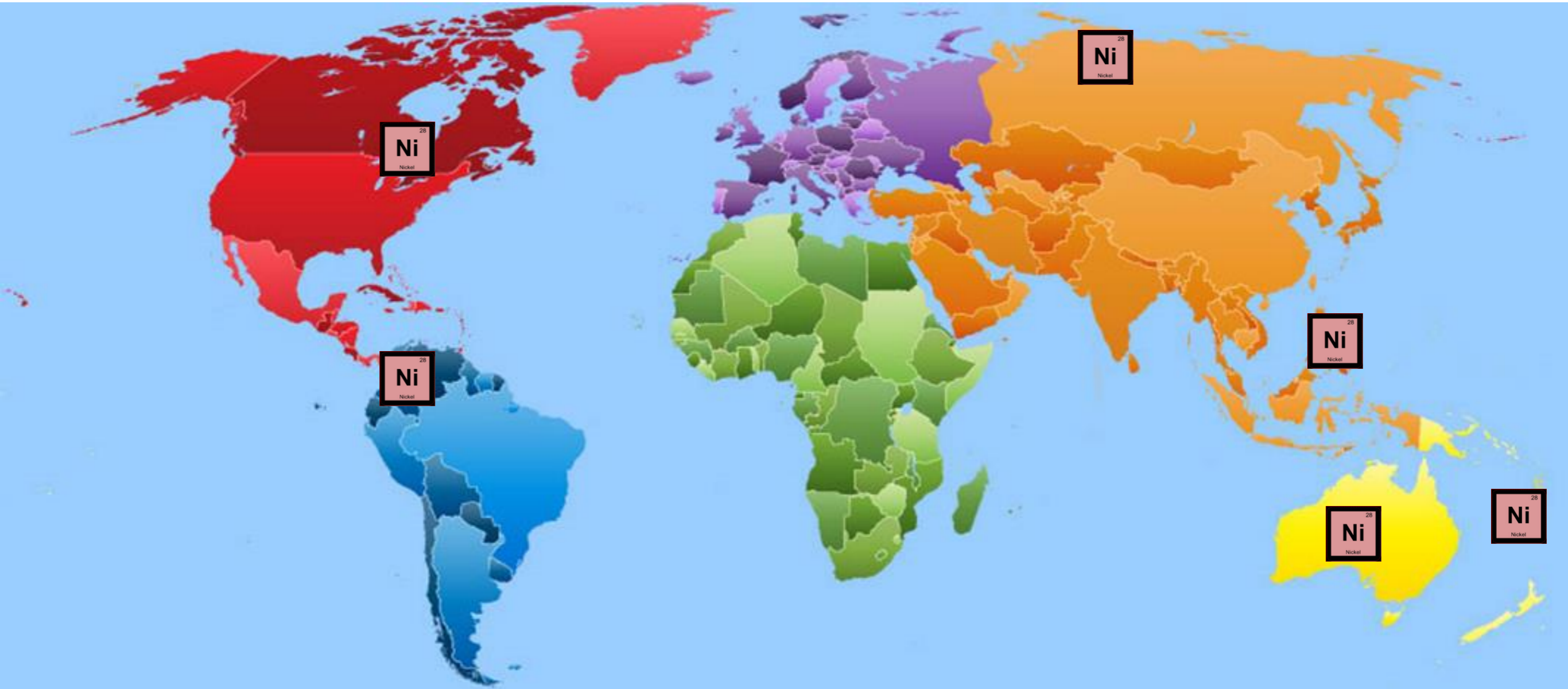
- On succeeding slides the locations of leading producers are shown for selected commodities



Iron Ore












Mining Companies

- Most of the large mining companies operate world-wide



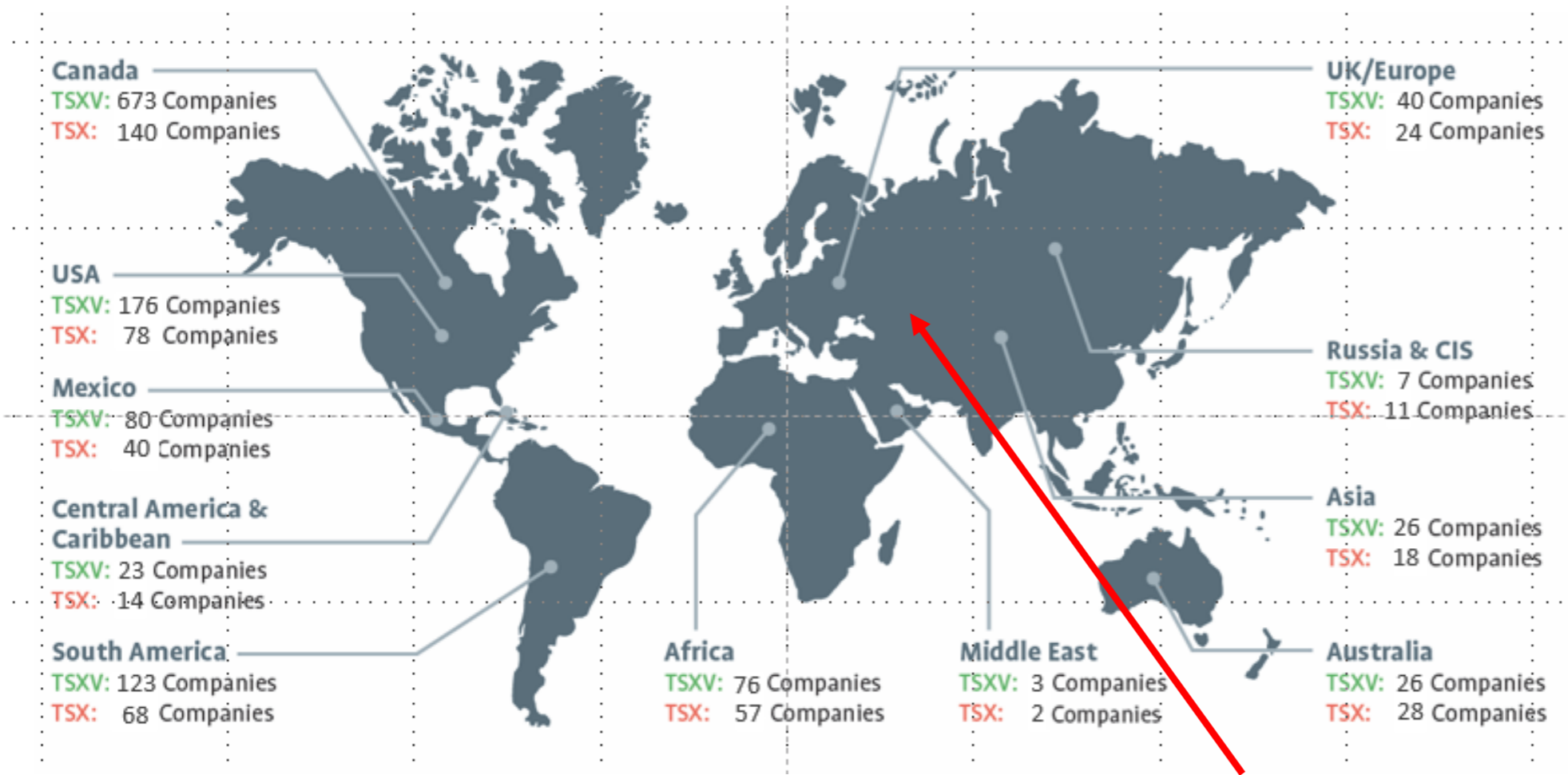
Financial Centres and Examples

- NYSE and LME lead in terms of market capitalization
- TSX/TSXV and ASX lead in terms of new listings and financings
- Hong Kong is a player in Asia for secondary listings:
 - KAZ Minerals
 - Vale
 - Glencore
 - South Gobi Energy Resources



	Canada	United Kingdom	Australia	South Africa	Hong Kong	USA
	TSX+TSXV	LSE+AIM	ASX	JSE	HKEx	NYSE/NYSE Mkt
No. Mining Issuers Listed	1318	167	626	42	59	104
Market Capitalization US B\$	150	215	168	115	79	353
New Mining Listings	29	7	13	2	2	2
Equity Capital Raised US B\$	5.7	3.4	1.3	0.3	1.5	1.8
Number Financings	553	72	321	0	15	4
Source TSX, Full Year 2015						

Example Global Reach of TSX and TSXV (2015)



Kazakhstan (5 Projects)
 Black Widow Resources Inc.
 Cameco Corporation
 Kazakh Minerals Inc.
 Orsu Metals Corporation

Source TSX

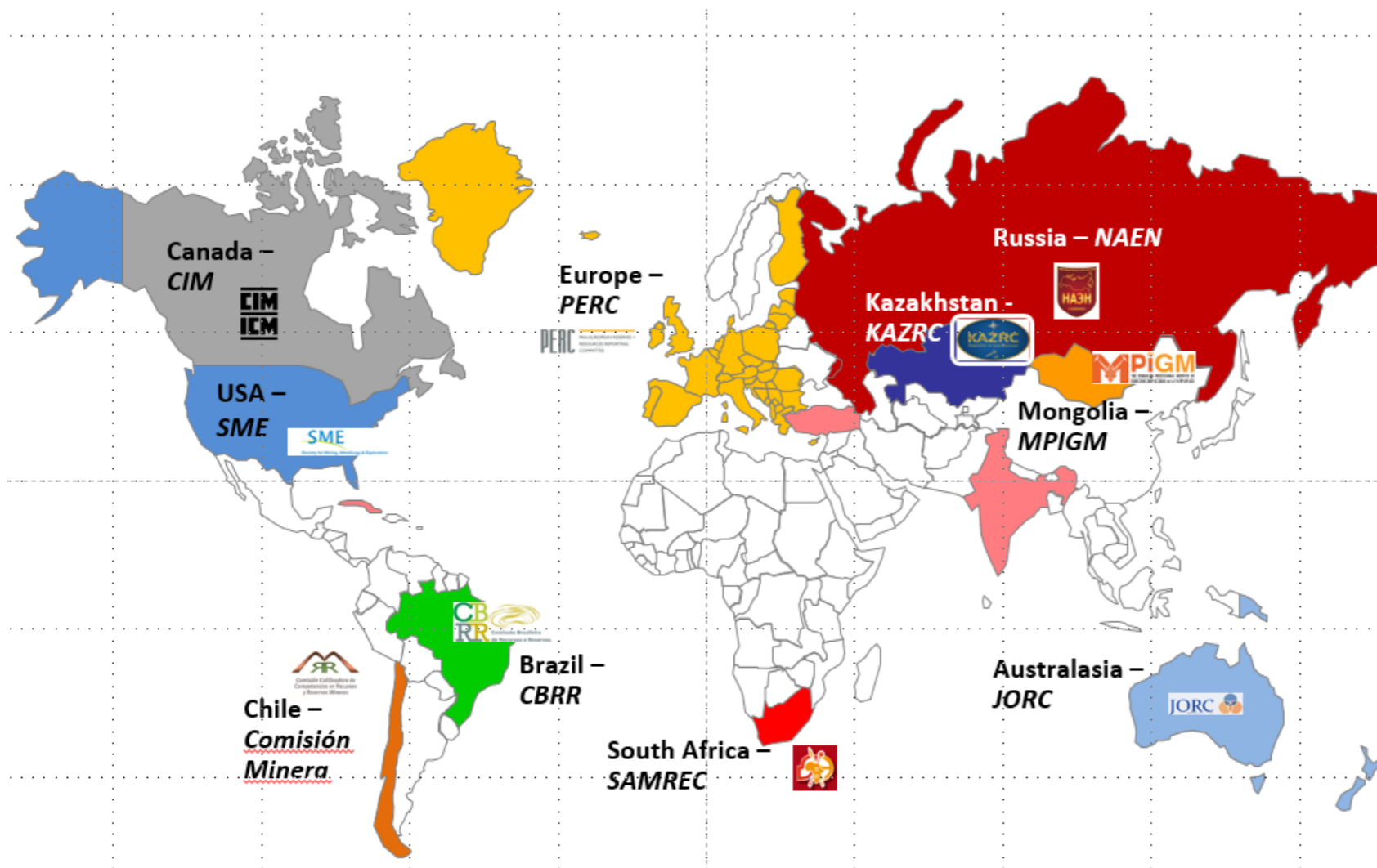
Required Public Disclosure of Mineral Resources and Mineral Reserves

- Applications for exploration and mining licences
- Initial public offerings
- Annual reports

There Is a Need for a Common Set of Standards

- Accurate and efficient reporting
- Reports that emphasize materiality and transparency
- Reports prepared and signed by Competent (sometimes called Qualified) Persons
 - University degree in geoscience, mining engineering or metallurgy
 - Member of a self-regulating professional society with the power to discipline/expel a member
 - Minimum five years' experience in style of mineralization or deposit type

CRIRSCO Is Formed by Representatives of National Reporting Organizations (NROs)



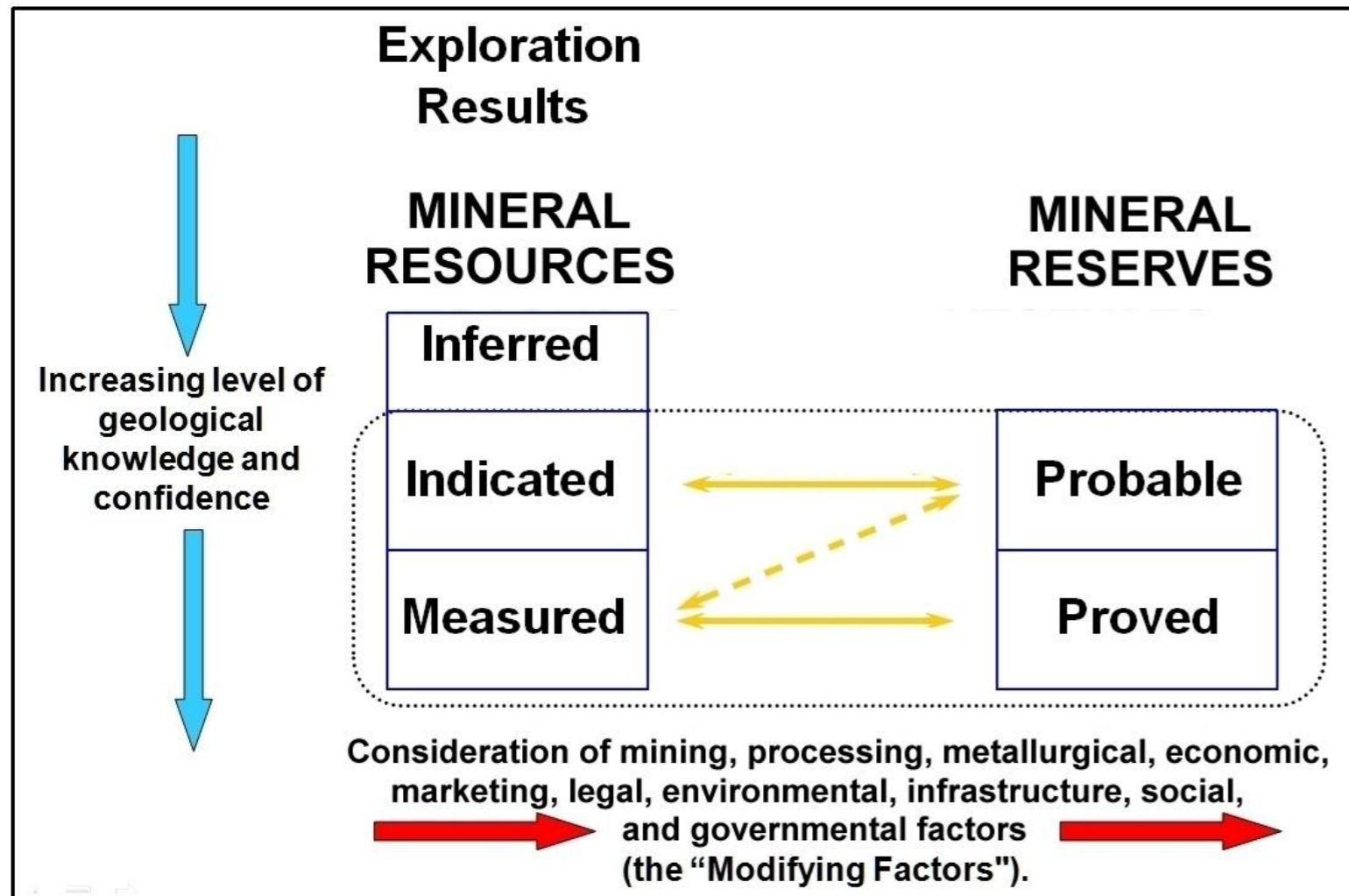
- Australia, Brazil, Canada, Chile, European Union, Kazakhstan, Mongolia, Russia, South Africa, USA
- CRIRSCO is sponsored by the International Council for Mining and Metals; other support comes from mining companies and professional societies

In USA, SEC
Requires IG7,
Under Update

INTERNATIONAL REPORTING TEMPLATE

for the public reporting of

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



Agreed by all NROs

Also Included:

- Public Report
- Competent Person
- Exploration Target
- Scoping Study
- Pre-feasibility Study
- Feasibility Study

Example Resource Statement

From Twin Metals Minnesota Project, Ely Minnesota USA 2015 Technical Report

Deposit	Category	Tons (Mst)	CuEq (%)	Cu (%)	Ni (%)	Pt (ppm)	Pd (ppm)	Au (ppm)	Ag (ppm)
Maturi	Measured	308	1.02	0.63	0.20	0.146	0.339	0.083	2.26
	Indicated	822	0.96	0.58	0.19	0.155	0.350	0.083	2.10
	Inferred	531	0.81	0.49	0.16	0.138	0.314	0.070	1.81
Maturi Southwest	Indicated	103	0.77	0.48	0.17	0.080	0.185	0.048	1.58
	Inferred	32	0.70	0.43	0.15	0.065	0.157	0.041	1.43
Subtotal Maturi and Maturi Southwest	Measured	308	1.02	0.63	0.20	0.146	0.339	0.083	2.26
	Indicated	924	0.94	0.57	0.18	0.147	0.332	0.079	2.04
	Measured + Indicated	1,233	0.96	0.58	0.19	0.147	0.334	0.080	2.10
	Inferred	563	0.81	0.49	0.16	0.134	0.305	0.068	1.79
Birch Lake	Indicated	100	1.02	0.52	0.16	0.235	0.515	0.115	—
	Inferred	239	0.88	0.46	0.15	0.180	0.370	0.087	—
Spruce Road	Inferred	480	0.66	0.43	0.16	—	—	—	—

In most jurisdictions Measured and Indicated can be added, but Inferred must remain stated separately

Notes to Accompany Mineral Resource Table:

- The Mineral Resource estimates have different effective dates as follows: Maturi: 4 February 2014; Maturi Southwest: 15 June 2013; Birch Lake: 15 September 2012; Spruce Road: 15 September 2012.
- The Qualified Person for the estimates is Dr. Harry Parker, RM SME, AMEC Consulting Geologist and Geostatistician, who is a Professional Geologist licensed in Minnesota.
- Mineral Resources are reported inclusive of Mineral Reserves and on a 100% basis. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- Mineral Resources were estimated assuming underground bulk mining methods and are reported at an approximate cutoff grade of 0.3% Cu.

Partial Notes Shown Here

Dates

Named Qualified Person

Ownership Position

Envisioned Mining Method and Cut-off Criteria

Acceptance of National Reporting Codes and Standards by Capital Markets

- Australia: JORC, NI43-101/CIM, PERC, SAMREC
- Canada: NI43-101/CIM, Chilean Code, IG7, JORC, PERC, SAMREC, NAEN
- Chile: Chilean Code
- European Stock Exchanges: All CRIRSCO codes
- Hong Kong: JORC, NI43-101/CIM, PERC
- Johannesburg: SAMREC
- New York: IG7
- Singapore: NI43-101, JORC, PERC

Exceptions are granted on special application to listing authorities, particularly for secondary listings

- Common reporting standards were first agreed to in the Denver Accord of 1997.
- CRIRSCO was established in 2002, but really became active with ICMM sponsorship since 2007
- CRIRSCO is an all volunteer organization, and we would like to thank the Kazakhs for bringing our delegation of 5 persons to Astana
- We welcome the KAZRC as CRIRSCO's 10th member

Thank You

Duluth Metals, 2015, Twin Metals Minnesota Project – Ely Minnesota USA, 2015 technical report on prefeasibility study, 558 pp.

TSX, 2016, A capital opportunity: a global market for mining companies, PowerPoint presentation, 50 slides.