UNFC and Nuclear Fuel Resources

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IAEA

International Atomic Energy Agency

It is a small world

50 mines / centres in 15 countries

Asia – 36 % (37)

- Kazakhstan – 28% (12)
- Uzbekistan – 5%
- China – 2% (7)
- India – 1% (6)

N America – 23% (11)

- Canada – 20% (3)
- United States – 3% (8)

Pacific – 16% (3)

- Australia – 16% (3)

Africa – 13% (9)

- Namibia – 8% (2)
- Niger – 6% (2)
- Malawi (1)
- South Africa – 1% (4)

Europe – 10% (4)

- Russia – 7% (2)
- Ukraine – 2% (1)
- Czech Republic – 1% (1)

S America – 1% (1)

- Brazil – 1% (1)

23 potential 'new comers'

Africa

- Botswana
- Cameron
- Central African Republic
- Gabon
- Mauritania,
- Mali
- Morocco (by product)
- Tanzania
- Tunisia (by product)
- Zambia (also by product)

S. America

- Argentina, Peru
- Colombia, Paraguy, Guyana
- Chile (by product)

Europe

- Finland (by product)
- Greenland , Denmark– (by product)
- Spain
- Slovak Republic, Sweden

Asia

- Mongolia
- Jordan (also by product)

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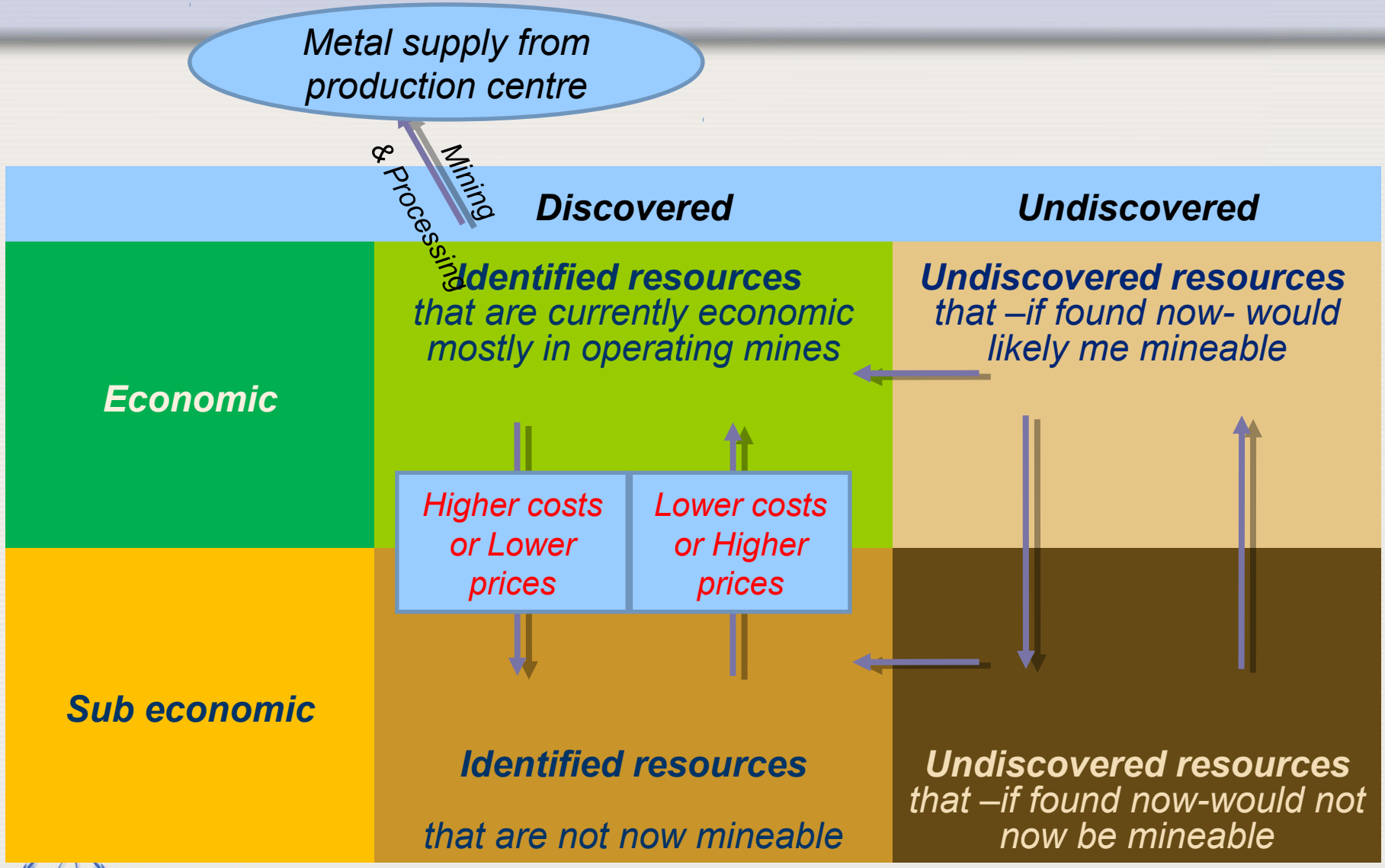
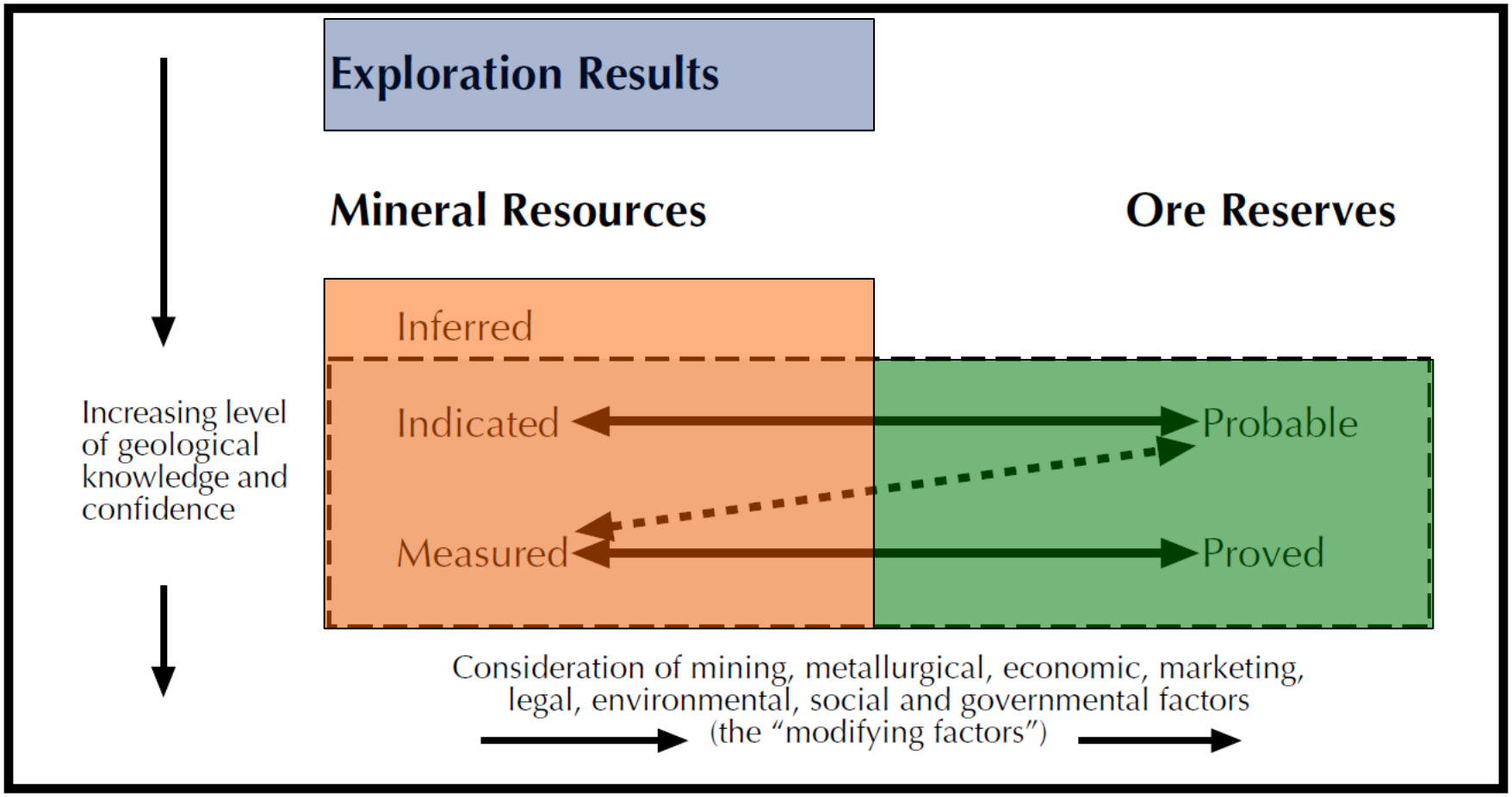
Dynamic Flow of resources



CRIRSCO template



“Red Book”

- *Joint IAEA – OECD/NEA Uranium: Resources, Production and Demand*
- *Published since 1965*

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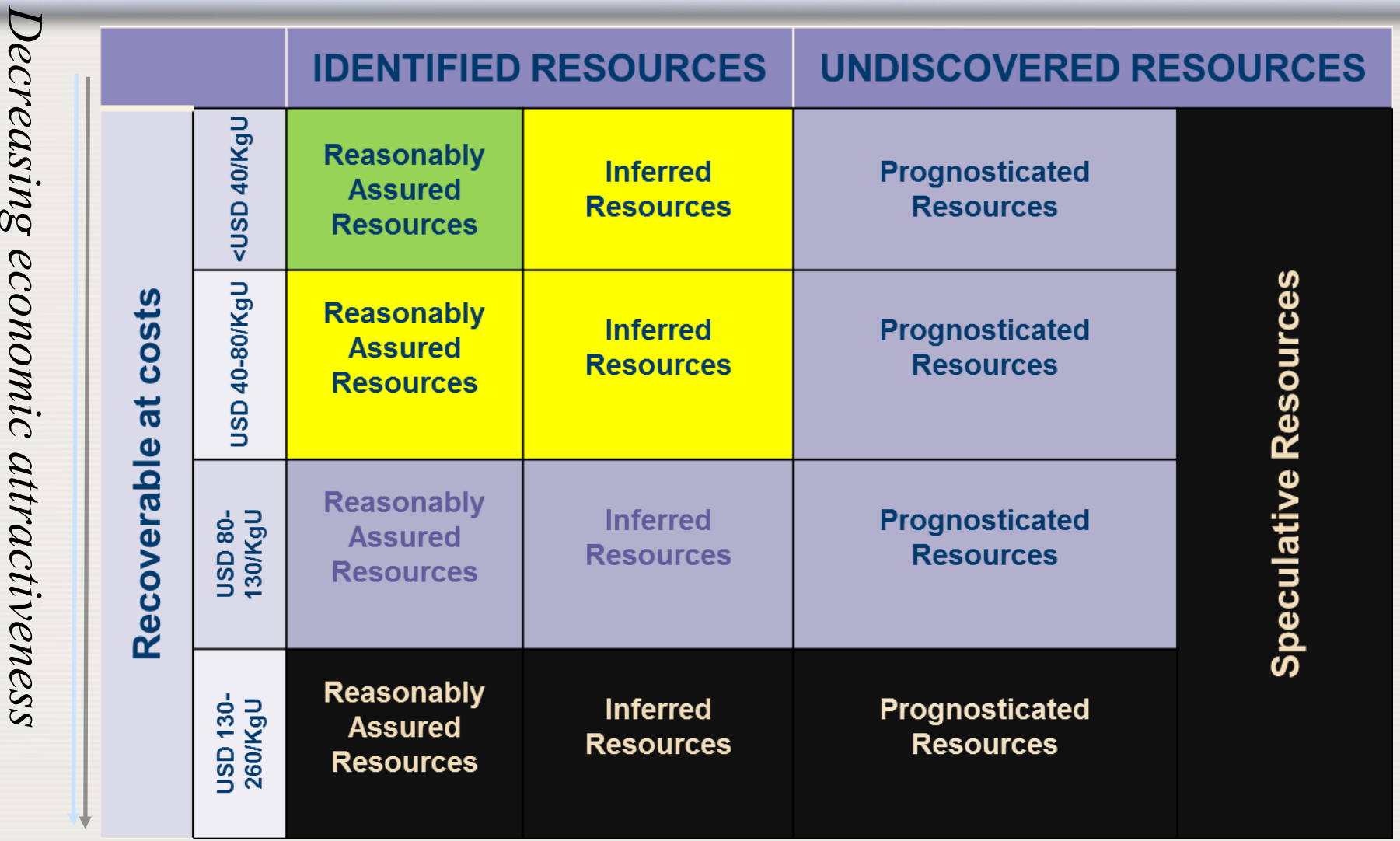
Tracks geographical distribution

Tracks resource progression

Resource category	2009	2011	Change (1 000 tU)[a]	% change
Identified (total)				
<USD 260/kgU	6 306.3	7 096.6	790.3	12.5
<USD 130/kgU	5 404.0	5 327.2	-76.8	-1.4
<USD 80/kgU	3 741.9	3 078.5	-663.4	-17.7
<USD 40/kgU[b]	796.4	680.9	-115.5	-14.5
RAR				
<USD 260/kgU	4 004.5	4 378.7	374.2	9.3
<USD 130/kgU	3 524.9	3 455.5	-69.4	-2.0
<USD 80/kgU	2 516.1	2 014.8	-501.3	-19.9
<USD 40/kgU[b]	569.9	493.9	-76.0	-13.3
Inferred resources				
<USD 260/kgU	2 301.8	2 717.9	416.1	18.1
<USD 130/kgU	1 879.1	1 871.7	-7.4	-0.4
<USD 80/kgU	1 225.8	1 063.7	-162.1	-13.2
<USD 40/kgU[b]	226.6	187.0	-39.6	-17.5

In 1 000 tU

IAEA Classification



IAEA Classification

- Confidence level of the estimates
- Market based cost of producing (or recovering) the resource (ore concentrate – yellow cake).
- **Identified resources**
  - ***Reasonably Assured Resources (RAR)*** *– estimates based on specific sample data and measurements -RECOVERABLE*
  - ***Inferred Resources*** *– estimates based on direct geological evidence in the extensions of well-explored deposits; but specific data inadequate - RECOVERABLE*
- **Undiscovered Resources**
  - ***Prognosticated Resources*** *– estimates based on indirect evidence in well-defined geological trends or areas of mineralisation – IN SITU*
  - ***Speculative Resources*** *– estimates based on indirect evidence and geological explorations – IN SITU*

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Production terminology

- **Production centres -** a production unit consisting of one or more ore processing plants, one or more associated mines and uranium resources that are tributary to these facilities.
  - **Existing** production centres are those that currently exist in operational condition and include those plants which are closed down but which could be readily brought back into operation.
  - **Committed** production centres are those that are either under construction or are firmly committed for construction.
  - **Planned** production centres are those for which feasibility studies are either completed or under way, but for which construction commitments have not yet been made. This class also includes those plants that are closed which would require substantial expenditures to bring them back into operation.
  - **Prospective** production centres are those that could be supported by tributary RAR and Inferred, i.e., “Identified Resources”, but for which construction plans have not yet been made.

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International resources reporting (5)

	IDENTIFIED RESOURCES			UNDISCOVERED RESOURCES		
NEA/IAEA	Reasonably Assured		Inferred	Prognosticated		Speculative
Australia	Demonstrated		Inferred	Undiscovered		
	Measured	Indicated				
Canada (NRCan)	Measured	Indicated	Inferred	Prognosticated		Speculative
United States (DOE)	Reasonably Assured		Estimated Additional			Speculative
Russian Federation, Kazakhstan, Ukraine, Uzbekistan	A+B	C1	C2	P1	P2	P3
UNFC*	G1	G2	G3	G4		

* *UNFC correlation with NEA/IAEA and national classification systems is still under consideration*

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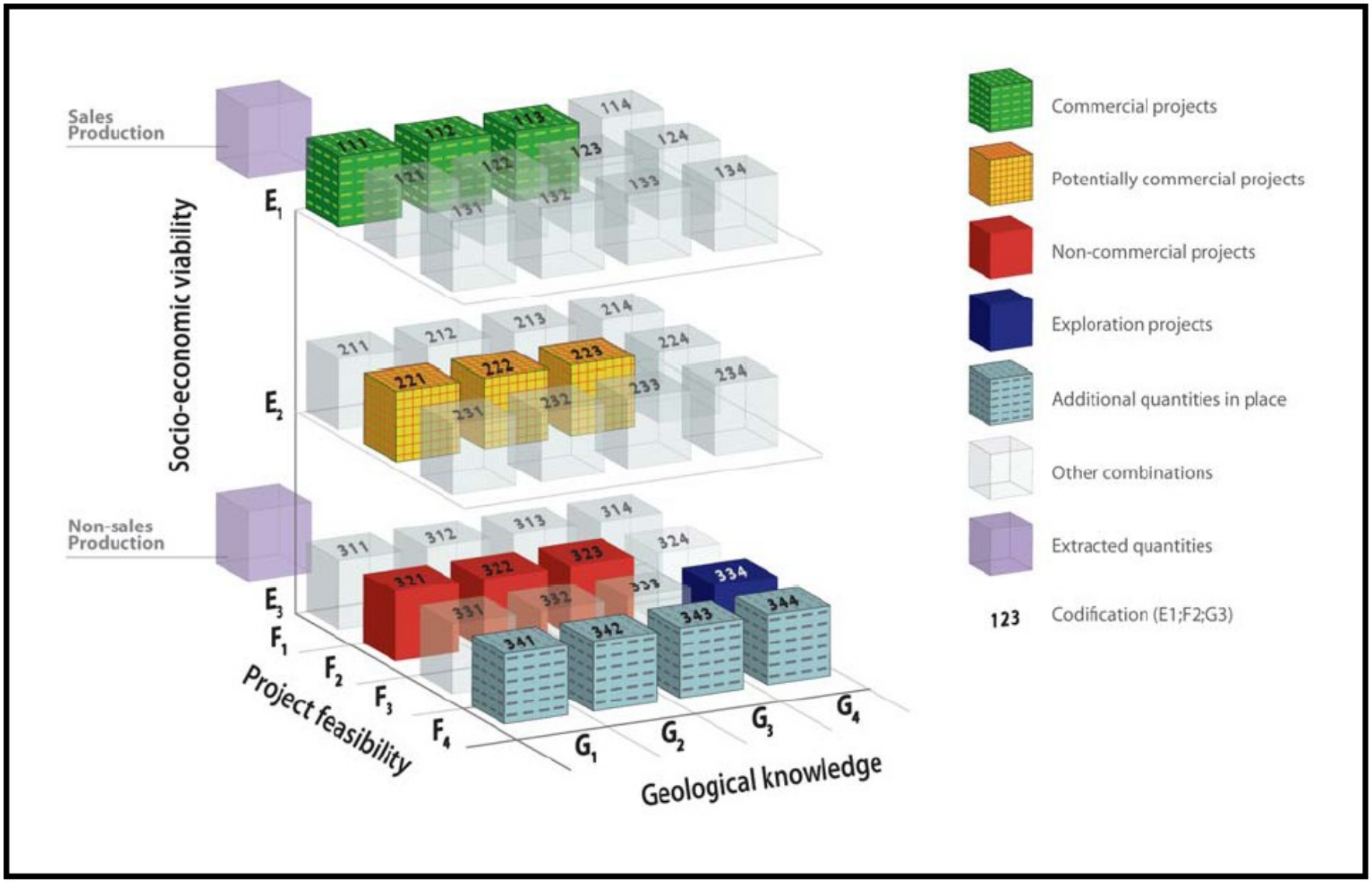
UNFC 2009 3 dimensional system



Simplified Classification

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

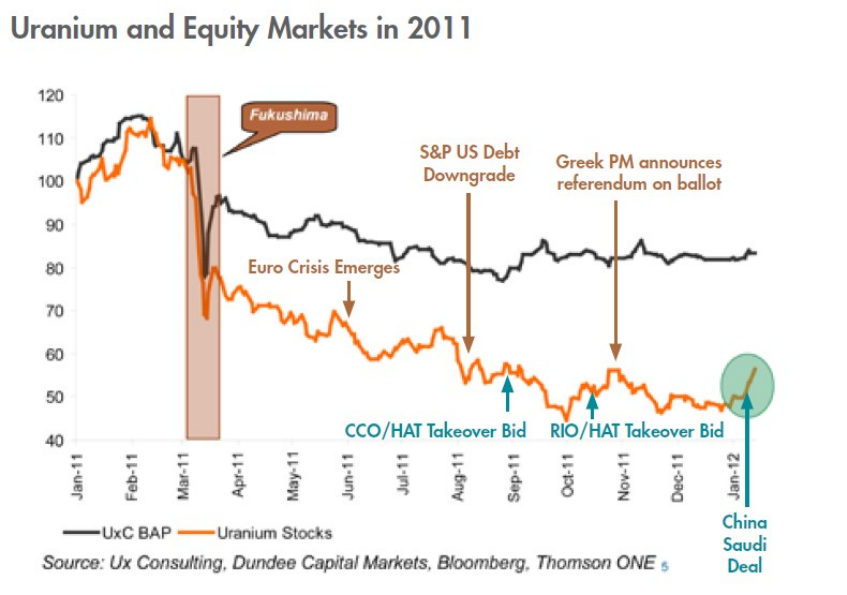
Detailed Classification

Total Commodity initially in place	Extracted	Sales Production / Non-Sales Production				
		Class	Sub-class	Categories		
				E	F	G
	Future recovery by commercial development projects or mining operations	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
	Potential future recovery by contingent development projects or mining operations	Potentially Commercial Projects	Development Pending	2	2.1	1,2,3
			Development on hold	2	2.2	1,2,3
		Non-Commercial Projects	Development Unclarified	3.2	2.3	1,2,3
			Development not Viable	3.3	2.3	1,2,3
	Additional quantities in place associated with known deposits			3.3	4	1,2,3
	Potential future recovery by successful exploration activities	Exploration Projects		3.2	3	4
	Additional quantities in place associated with potential deposits			3.3	4	4

Alignment with other systems

	UNFC-2009		CRIRSCO (minerals)	SPE-PRMS (petroleum)	
Known Deposit	Commercial Projects	On Production	Mineral Reserves	Reserves	On Production
		Approved for Development			Approved for Development
		Justified for Development			Justified for Development
	Potentially Commercial Projects	Development Pending	Mineral Resources	Contingent Resources	Development Pending
		Development On Hold			Development
	Non-Commercial Projects	Development Unclarified	Not Defined		Unclarified or on hold
		Development Not Viable			Development Not Viable
	Additional quantities in place		Not Defined	Unrecoverable	
Potential Deposit	Exploration Projects		Exploration Results	Prospective Resources	Prospect
					Lead
					Play
	Additional quantities in place		Not Defined	Unrecoverable	

Spot price Vs Long-term price



UxC Broker Average Price (BAP)

- *Currently uranium is traded for $120/Kg U to $160/Kg U($45.00 to $60.00/lb)*
- *10 -15 % of the sales is on Spot prices*
- *85 – 90% sales is on long-term contract of 10 years or more*
- *For a project to be comitted 85-90% term sales will have to be in place.*
- *Spot prices are important indicators on which the uranium stocks are valued.*

Attempting allignment (1)

UNFC Class	UNFC Sub-Class	CRIRSCO	IAEA-NEA	Status	E	F	G
Commercial Projects	On Production	Mineral Reserves	Identified Resources <$ 130/Kg* <$50/lb U3O8	Existing	1	1.1	1,2,3
	Approved for Development			Committed	1	1.2	1,2,3
	Justified for Development			Planned	1	1.3	1,2,3
Potentially commercial projects	Development Pending	Mineral Resources	Identified Resources <$ 130/Kg* <$50/lb U3O8	Prospective	2	2.1	1,2,3
	Development on Hold	Discovered not economic*			2	2.2	1,2,3
Non-commercial projects	Development Unclarified		Identified Resources >$130/KgU* >$ 50/lbU		3.2	2.3	1,2,3
	Development not Viable				3.3	4	1,2,3
Exploration Projects		Exploration Data	Prognosticated		3	3	4.1
			Speculative Resources		3	3	4.2,4.3

Attempting alignment (2)

UNFC Class	Sub-class	E	F	G	Status	Description
Commercial Projects	On Production	1	1.1	1,2,3	Existing	Extraction taking place
	Approved for development	1	1.2	1,2,3	Committed	Funds committed and implementation under way
	Justified for development	1	1.3	1,2,3	Planned	Detailed feasibility studies completed
Potentially commercial projects	Development Pending	2	2.1	1,2,3	Prospective	Project activities ongoing to justify development in foreseeable future
	Development on hold	2	2.2	1,2,3		Project activities on hold; may be subject to significant delay
Non-commercial projects	Development Unclarified	3.2	2.2	1,2,3		Economic viability cannot be determined due to insufficient information
	Development not Viable	3.3	2.3	1,2,3		No reasonable prospects for economic extraction in foreseeable future
Exploration projects		3.2	3	4.1	Prognostic.	Based primarily on indirect data in well defined trends
		3.2	3	4.2	Speculative	Based primarily on indirect data

U resources in UNFC sub-classes

IAEA	Existing	Committed	Planned	Prospective				
UNFC	On Production	Approved for Development	Justified for Development	Development Pending	Development on Hold	Development Unclarified	Development not Viable	Exploration Projects
Code	1/1.1/1,2,3	1/1.2/1,2,3	1/1.3/1,2,3	2/2.1/1,2,3	2/2.2/1,2,3	3.2/2.2/1,2,3	3.3/2.3/1,2,3	3.2/3/4
Argentina			?	?				
Australia	238993		66500	???				
Botswana				82195				
Brazil	10700	76100						800000
Canada	151200	81000	76900	???				850000
Czech Rep	1463							
Finland		8700						
Greenland				134654				
Jordan				12720		59360		65000
Kazakhstan	581803	24616						800000
Malawi	12321			17086				
Mexico				3758		8000000		13000
Mongolia			40852					1411000
Namibia	151000		300900					
Niger	111000	279000						649000
Peru				23546		4057		39700
Poland								20000
Portugal						7000		1500
Russia	115370	31119	282750					963800
Slovakia				10049				
South Africa	256200							1223200
Spain				14000				
Sweden						13490		
Tanzania				66260				
Turkey				9129				
Ukraine	71684		89885	48120				397500
Zambia				19452				

Uranium resources of Peru*

No	Deposit	Operator	Deposit Type	Resources (tU)	Average Grade (%U)	UNFC Class	UNFC Sub Class	E	F	G
1	Colibri 2-3	Macusani Yellowcake	Volcanic	7916	0.019	Potentially commercial project	Development Pending	2	2.1	2+3
2	Corachapi	Macusani Yellowcake	Volcanic	2656	0.017	Potentially commercial project	Development Pending	2	2.1	1+2+3
3	Isivilla	Vena	Volcanic	3049	0.033	Potentially commercial project	Development Pending	2	2.1	1+2+3
4	Nuevo Corani	Vena	Volcanic	1594	0.017	Potentially commercial project	Development Pending	2	2.1	1+2+3
5	Tantamaco	Vena	Volcanic	8331	0.0186	Potentially commercial project	Development Pending	2	2.1	1+2+3
6	Turmalina	-	Volcanic	500	0.3	Non-commercial project	Development un-clarified	3.2	2.2	2+3
7	Tuturumani	Vena	Volcanic	467	0.0085	Non-commercial project	Development un-clarified	3.2	2.2	2+3
8	Calvario Real	Vena	Volcanic	300	0.0233	Non-commercial project	Development un-clarified	3.2	2.2	3
9	Macusani District	Fission Energy	Volcanic	1790	0.1	Non-commercial project	Development un-clarified	3.2	2.2	2+3
10	Vilacabamba	-	Volcanic	500	3	Non-commercial project	Development un-clarified	3.2	2.2	3
11	Colquijirca	-	Volcanic	500	0.2	Non-commercial project	Development un-clarified	3.2	2.2	3
12	Bayovar	Vale/IPEN 2012	Phosphate	16000	0.006	Exploration project	[Prognosticated]	3.2	3	4.1
13	Various Locations	IPEN	Other (Cu-Pb-Zn-Ag-W-Ni)	5600	-	Exploration project	[Prognosticated]	3.2	3	4.1
14	Corongo	IPEN 2012	Granite - related	-	-	Exploration Project	[Speculative]	3.2	3	4.2+4.3
15	San Ramón	IPEN 2012	Granite - related	-	-	Exploration Project	[Speculative]	3.2	3	4.2+4.3
16	Coasa	IPEN 2012	Granite - related	-	-	Exploration Project	[Speculative]	3.2	3	4.2+4.3

Tanzanian example*

No	Deposit	Operator	Deposit Type	Resources (tU)	Average Grade (%U)	UNFC Class	UNFC Sub Class	E	F	G
1	Manyoni district (6 deposits)	Uranex NL	Surficail – (lacurtrine-playa)	11125	0.022	Potentially commercial project	Development Pending	2	2.1	1+2+3
2	Nyota	Uranium One	Sandstone (tabular)	55135	0.025	Potentially commercial project	Development Pending	2	2.1	1+2+3
3	Likuyu North	Uranex NL	Sandstone (tabular)			Exploration project		3.2	3	4
4	Likuyu South	Uranex NL	Sandstone (tabular)			Exploration project		3.2	3	4
5	Mteramwahi South	Uranex NL	Sandstone (tabular)			Exploration Project		3.2	3	4
6	Mteramwahi North	Uranex NL	Sandstone (tabular)			Exploration Project		3.2	3	4
7	Matemanga	Uranex NL	Sandstone (tabular)			Exploration Project		3.2	3	4
8	Bahi	Uranex NL	Surficail - (lacurtrine -playa)			Exploration project		3.2	3	4
9	Itigi	Uranex NL	Surficail - (lacurtrine -playa)			Exploration project		3.2	3	4

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Thank you

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