2010 Phoenix Investment Conference

Phoenix, USA

February 5, 2010

Workshop presented by John Kaiser

Kaiser Bottom-Fish

Overview of the Rare Earth Sector

www.KaiserBottomFish.com

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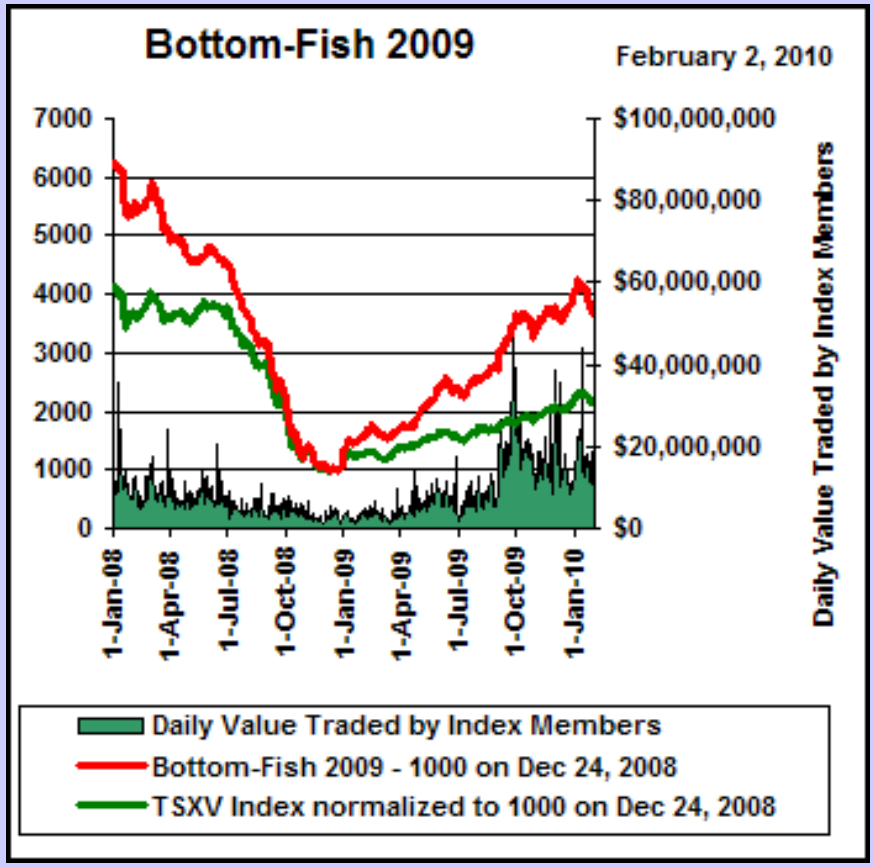

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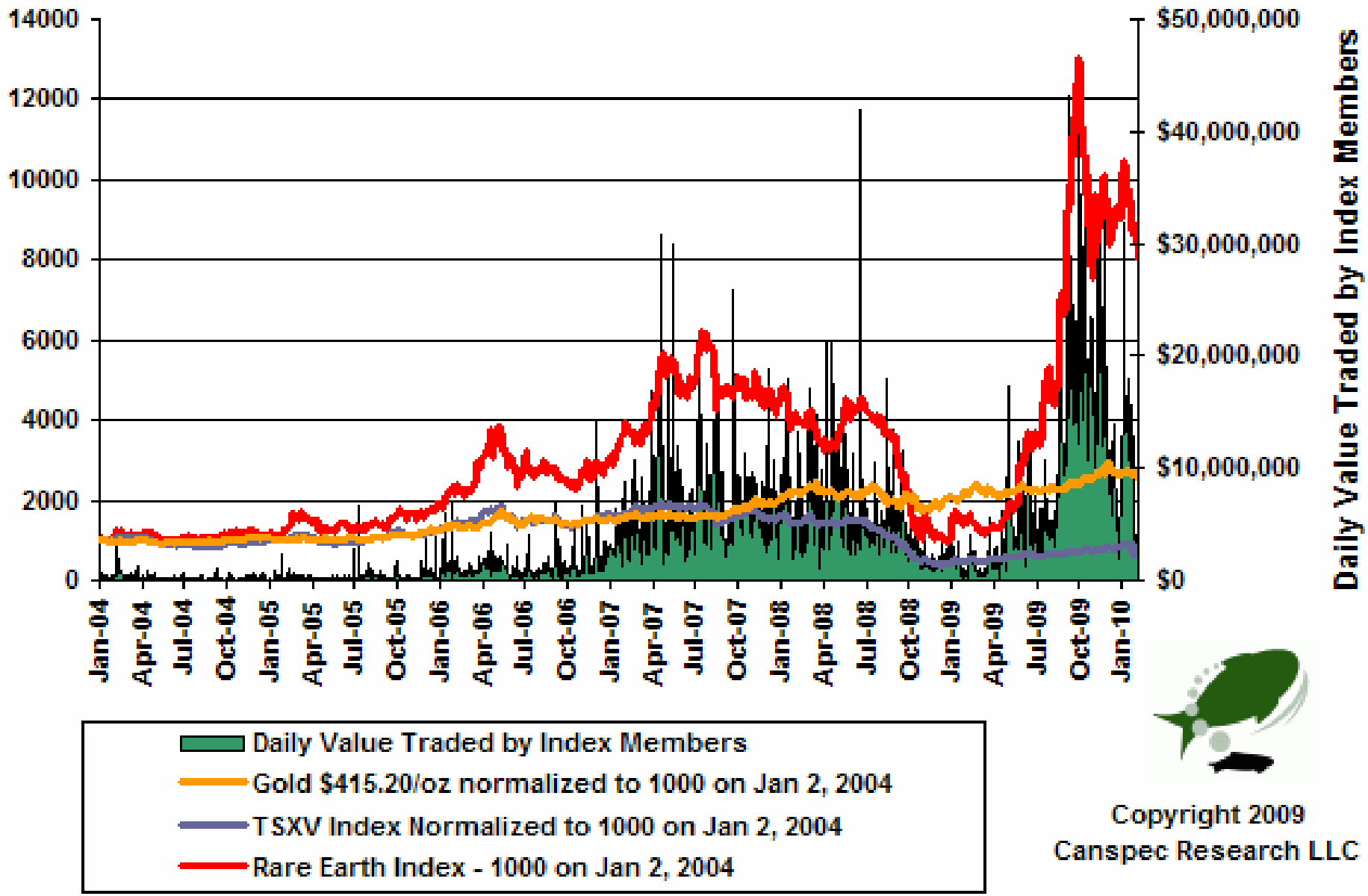
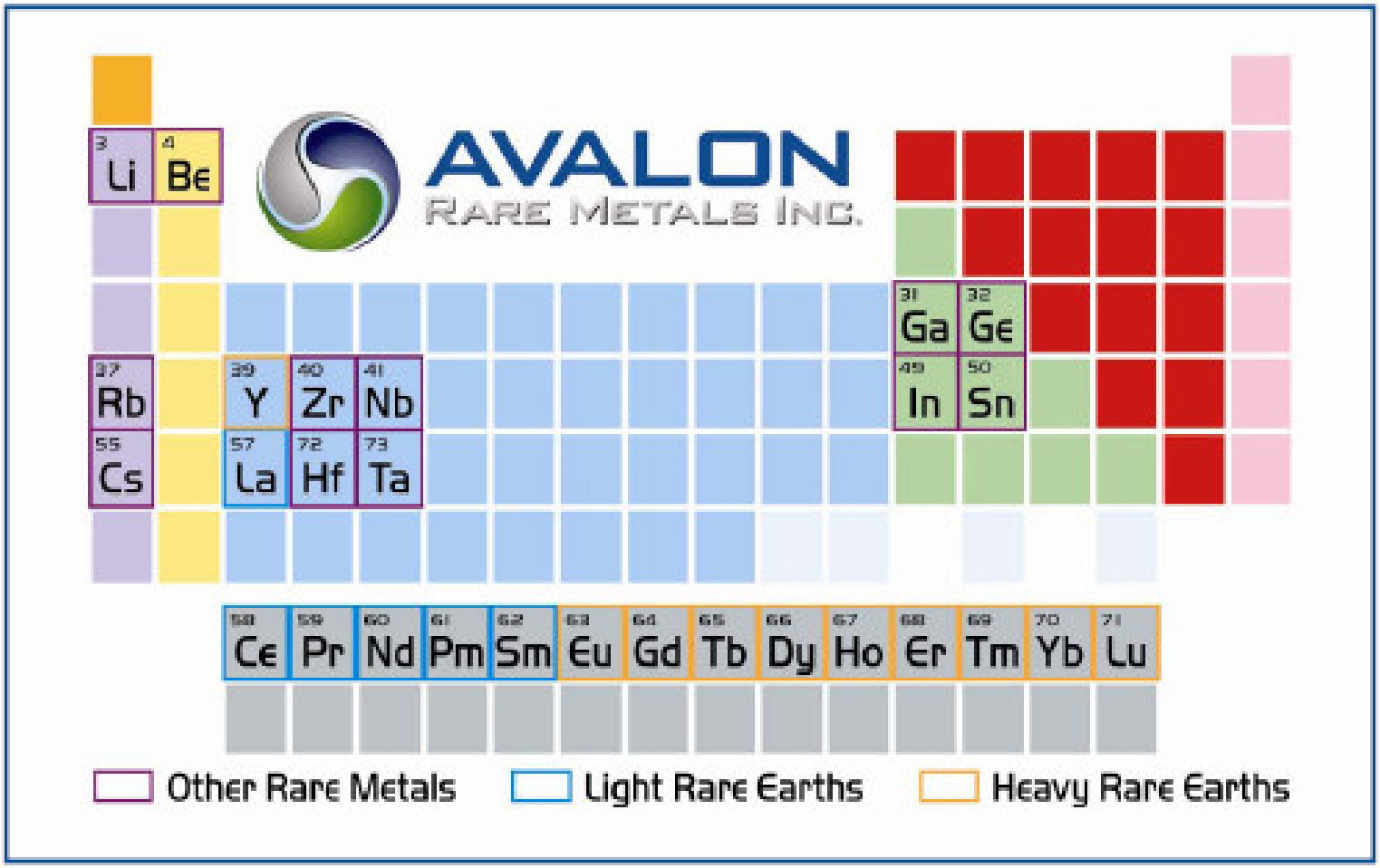
KBFO Rare Earth Index

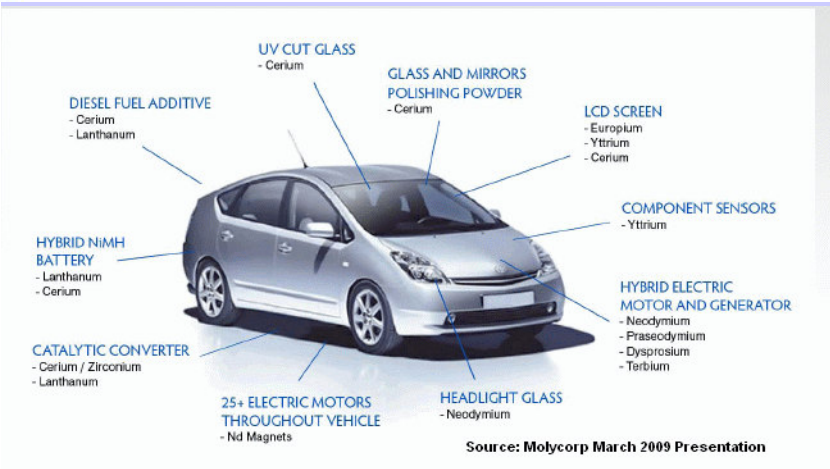
February 4, 2010

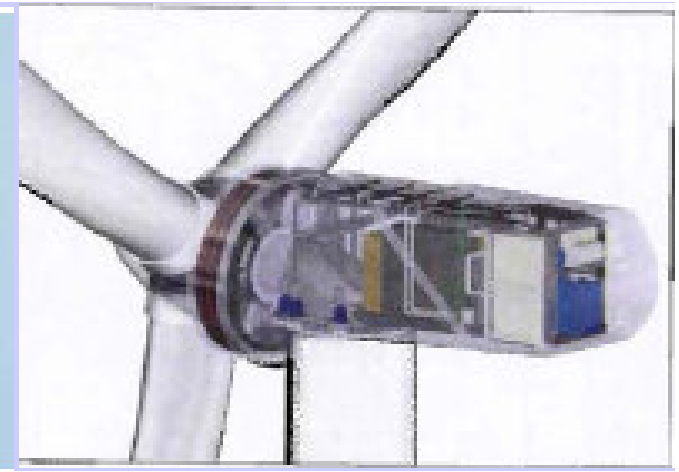


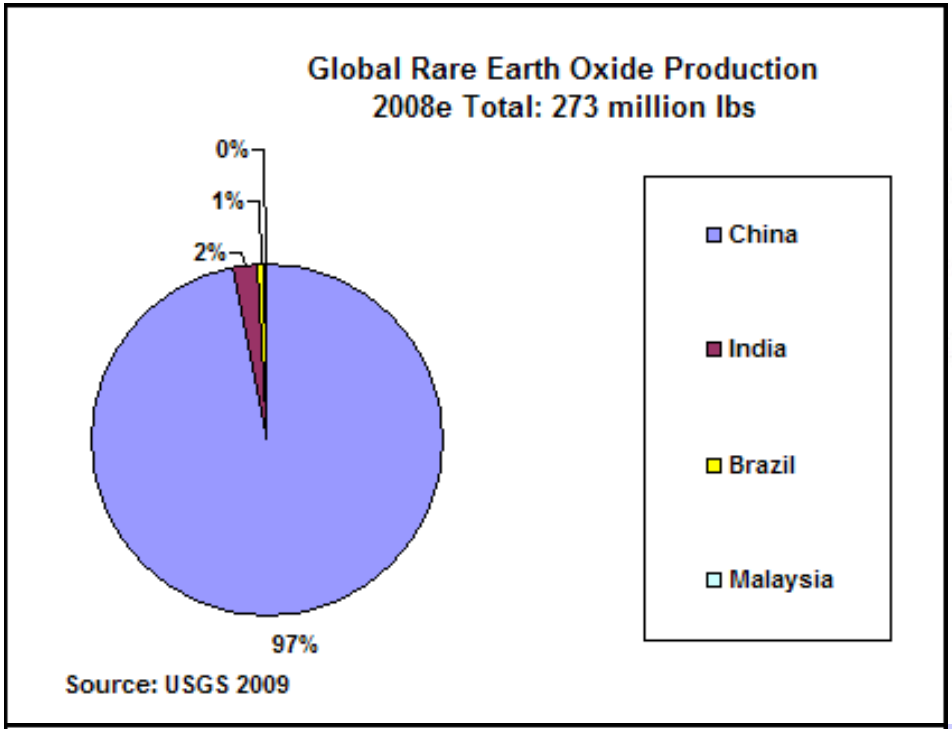


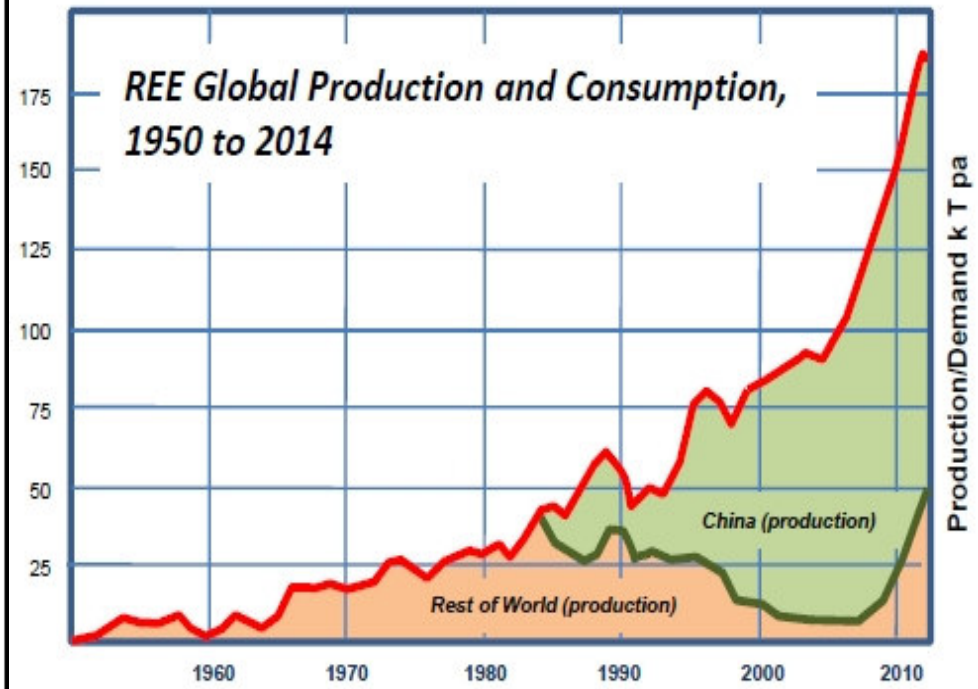
Light REE:
La = Lanthanum
Ce = Cerium
Pr = Praseodymium
Nd = Neodymium
Sm = Samarium

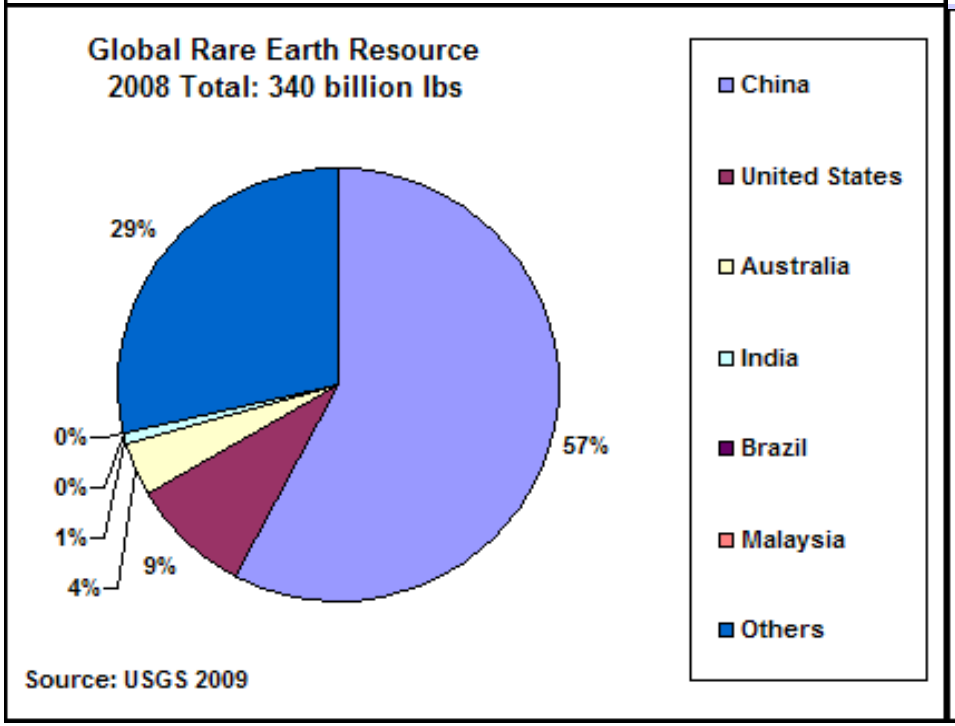
Heavy REE:
Eu = Europium
Gd = Gadolinium
Tb = Terbium
Dy = Dysprosium
Ho = Holmium
Er = Erbium
Tm = Thulium
Yb = Ytterbium
Lu = Lutetium
Y = Yttrium

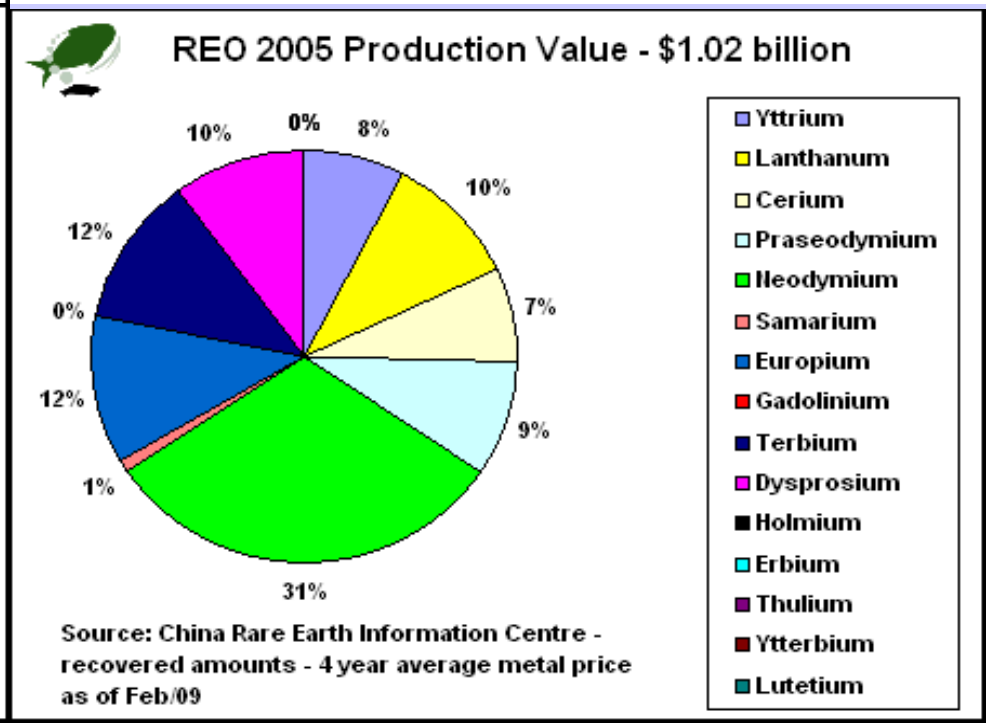





Global Rare Earth Oxide Production
2008e Total: 273 million lbs
0%
1%
2%
97%
China
India
Brazil
Malaysia
Source: USGS 2009

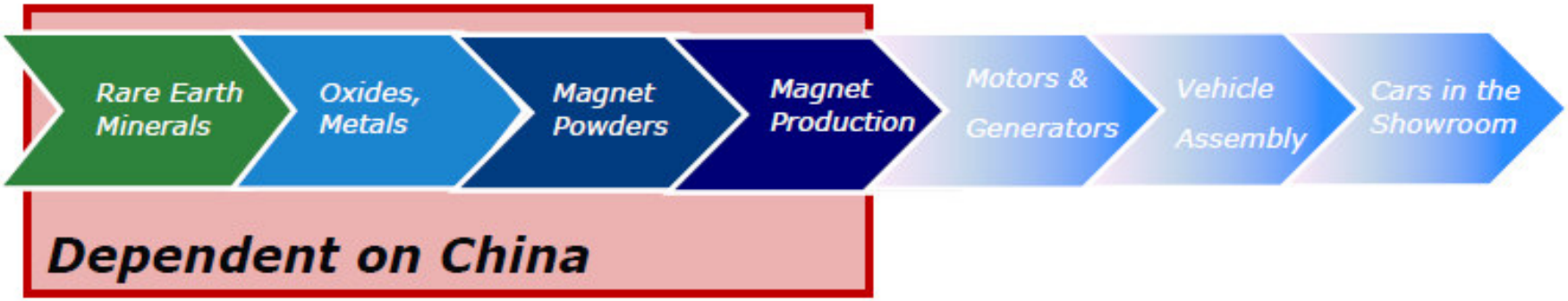

REE Global Production and Consumption, 1950 to 2014
175
150
125
100
75
50
25
1960
1970
1980
1990
2000
2010
China (production)
Rest of World (production)
Production/Demand k T pa


Global Rare Earth Resource
2008 Total: 340 billion lbs
29%
57%
9%
4%
1%
0%
0%
China
United States
Australia
India
Brazil
Malaysia
Others
Source: USGS 2009


REO 2005 Production Value - $1.02 billion
10%
0%
8%
10%
7%
9%
31%
1%
12%
0%
12%
Yttrium
Lanthanum
Cerium
Praseodymium
Neodymium
Samarium
Europium
Gadolinium
Terbium
Dysprosium
Holmium
Erbium
Thulium
Ytterbium
Lutetium
Source: China Rare Earth Information Centre - recovered amounts - 4 year average metal price as of Feb/09

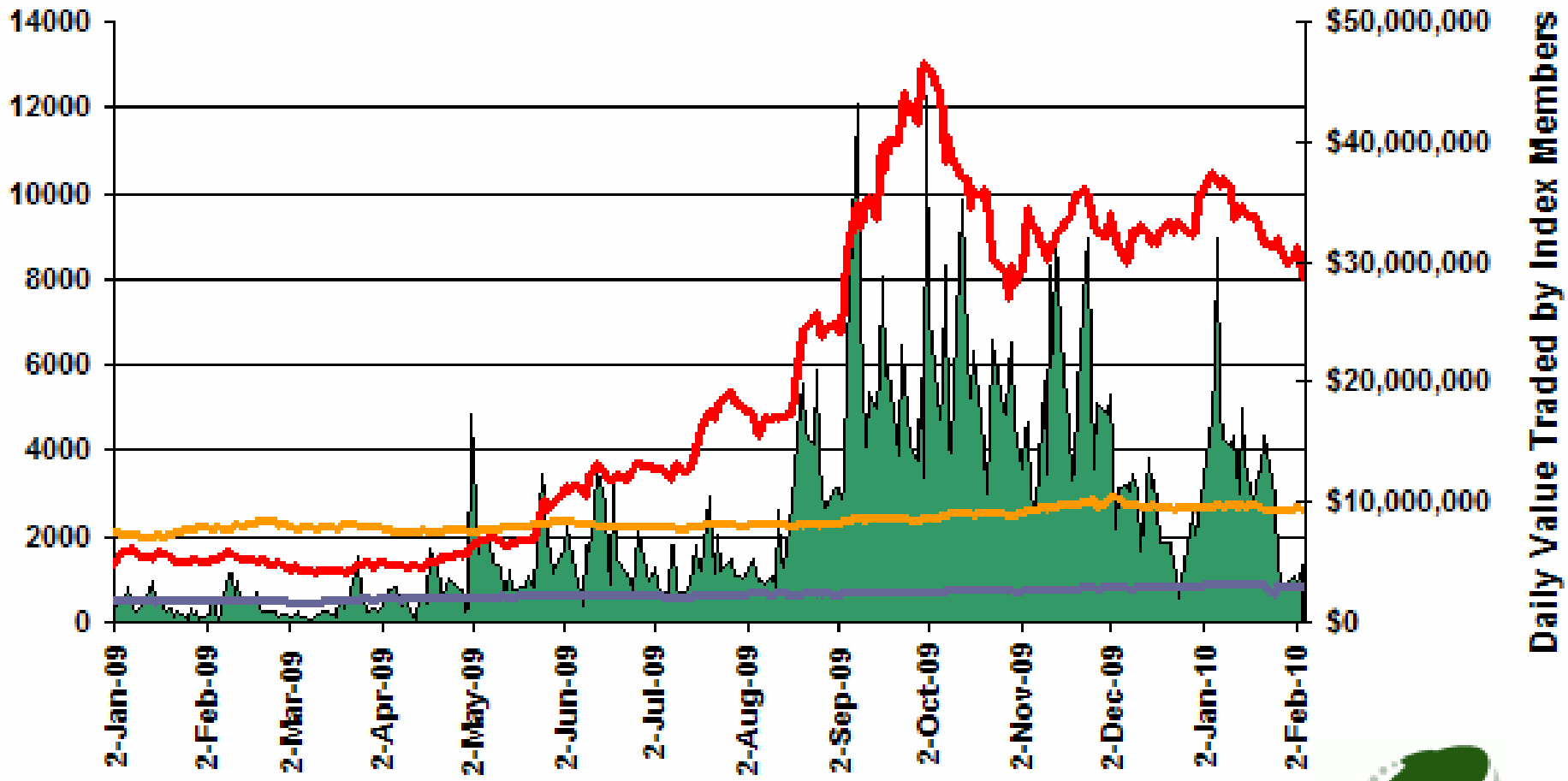
Source: Molycorp March 2009 Presentation

Hybrid Vehicle Supply Chain



KBFO Rare Earth Index

February 4, 2010



- Daily Value Traded by Index Members
- Gold $415.20/oz normalized to 1000 on Jan 2, 2004
- TSXV Index Normalized to 1000 on Jan 2, 2004
- Rare Earth Index - 1000 on Jan 2, 2004

KBFO Rare Earth Resource Center

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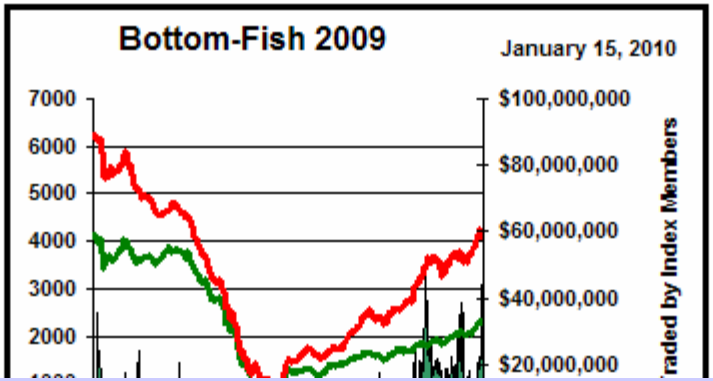
Kaiser Bottom-Fish Online is a newsletter and online information portal run by John Kaiser, a mining analyst with over 25 years experience. KBFO offers traditional newsletter style recommendations and commentaries, as well as a comprehensive database of precious and base metals mining and exploration company profiles along with research tools that include metal based project resource tables, proprietary sectoral indices and management tracking. To learn more, visit the **Newcomer Orientation** page. If you never had the 1 month KBFO trial or had a full membership you are eligible for a one month full membership trial for $100 which gives you access to all resources as well as the **Bottom-Fish 2009** and **Bottom-Fish 2010** editions.



Indices

Noteworthy

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WORLD OUTLOOK
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Recent Audio/Video featuring John Kaiser

General Release Schedule

Key Rare Earth Related Links

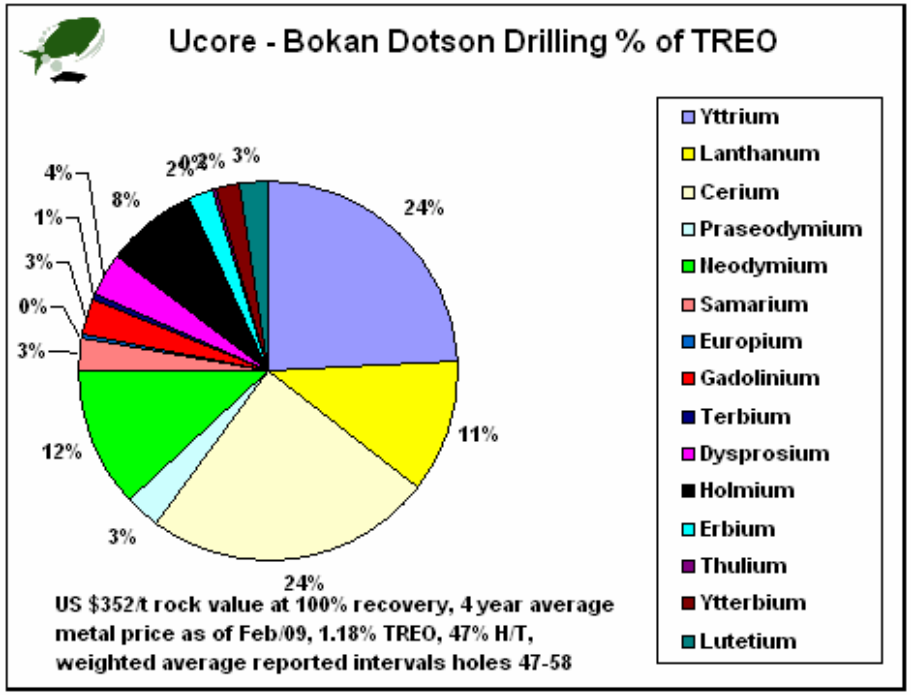
Key KBFO Rare Earth Related Online Resources

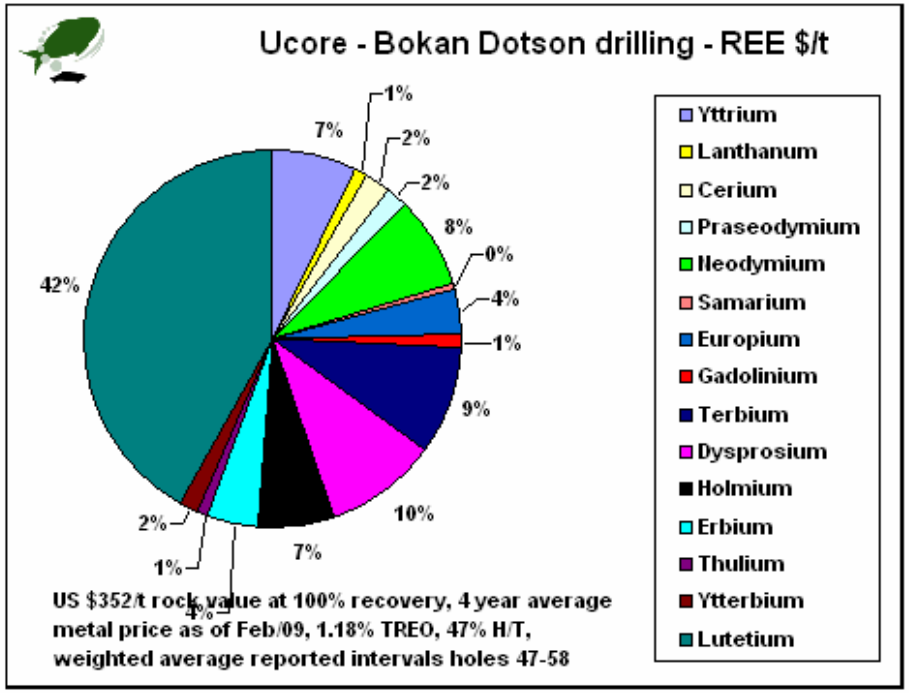
Online Resources	If you are interested in full access to KBFO Online we suggest the $100 Trial Membership which provides complete access to all KBFO Members Only material for one full month. Apply for Trial now.
Rare Earth Index	This page contains details of the Rare Earth Index membership composition, individual charts for each index member which show how that company is performing relative to the index, 40 day bar charts which show on a daily basis the extent the index member is out or under performing the overall index, stock charts and snapshots for each index member, and Index Member Opinion Comments.
Rare Earth Project Stats	This report has a collection of REE distribution and value pie charts we have created for various projects around the world as well as those owned by Rare Earth Index Members.
Early Stage Rare Earth Projects	This KBFO Theme Report features all projects which have rare earth elements as their primary target and which are not yet at the discovery delineation stage.
KBFO Rare Earth related Comments	A separate listing of all comments published on KBFO which have been tagged as rare earth related (same as below). Note that all comments are restricted for 3 months to KBFO Members only.
Jack Lifton's Corner	Jack Lifton is a retired chemist whose interest in so-called "strategic", "specialty" or "minor metals" and the supply issues surrounding the commercialization of new technologies such as the electric car has turned him into a major commentator on security of supply at conferences and for journalists as well as a writer of commentaries published by various online media. Jack Lifton's Corner contains **The Organic Chart of Rare Metal Opportunities for Investors** which sums up his most recent thoughts on security of supply issues.

External Rare Earth Related Online Resources

Online Resources	Comment
Jack Lifton's InstaBlog	Jack Lifton's blog is a must read for anybody interested in security of supply and critical metal topics.

KBFO Rare Earth Project Stats

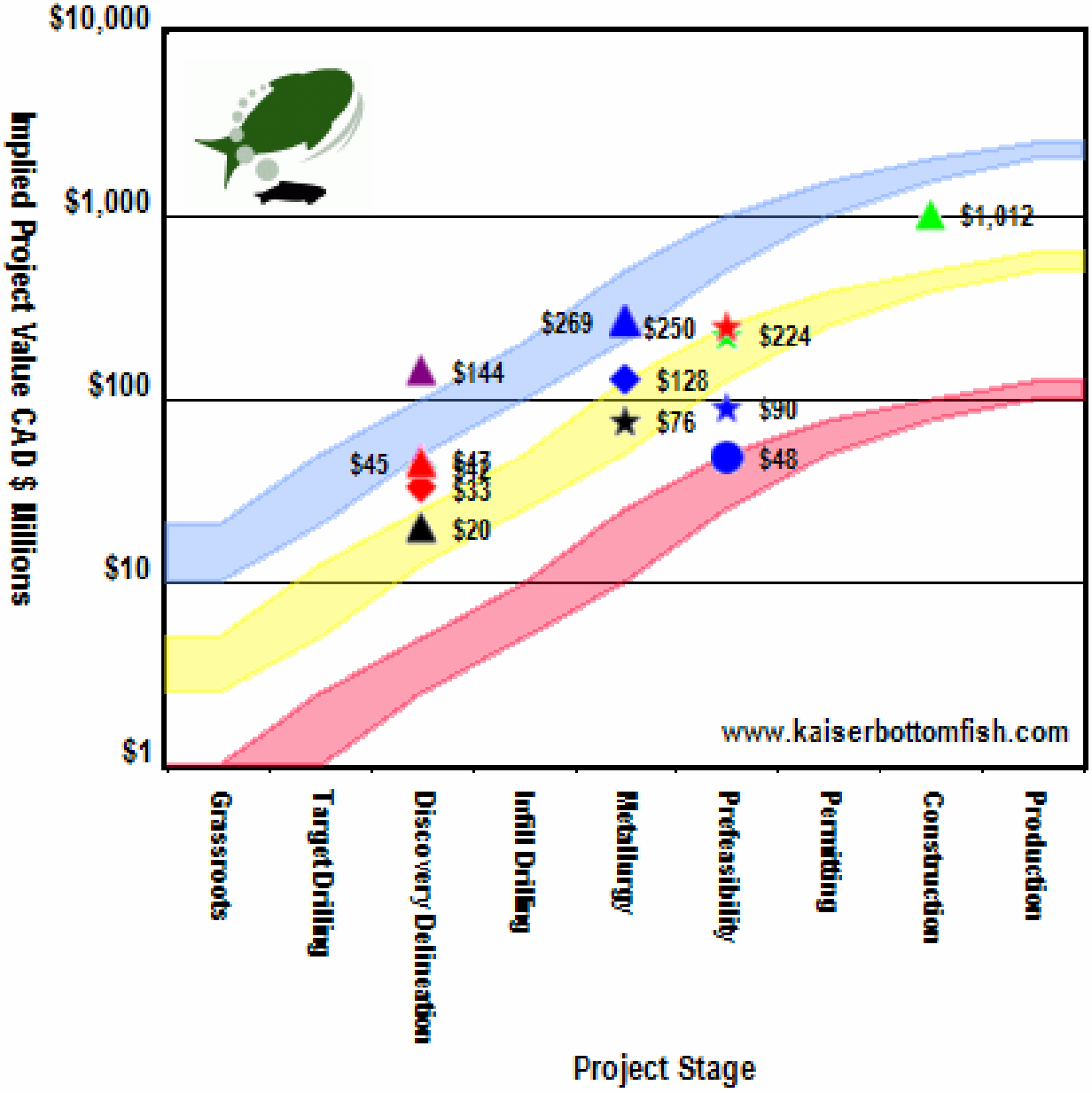




Here is the distribution established through a 2009 drill program which tested the Dotson Shear in the third dimension for the first time.

Rare Earth Index Project Valuations

Tuesday, February 02, 2010



Dream Target Channels

- $100 million Dream Target
- $500 million Dream Target
- $2 billion Dream Target

Key Company Projects

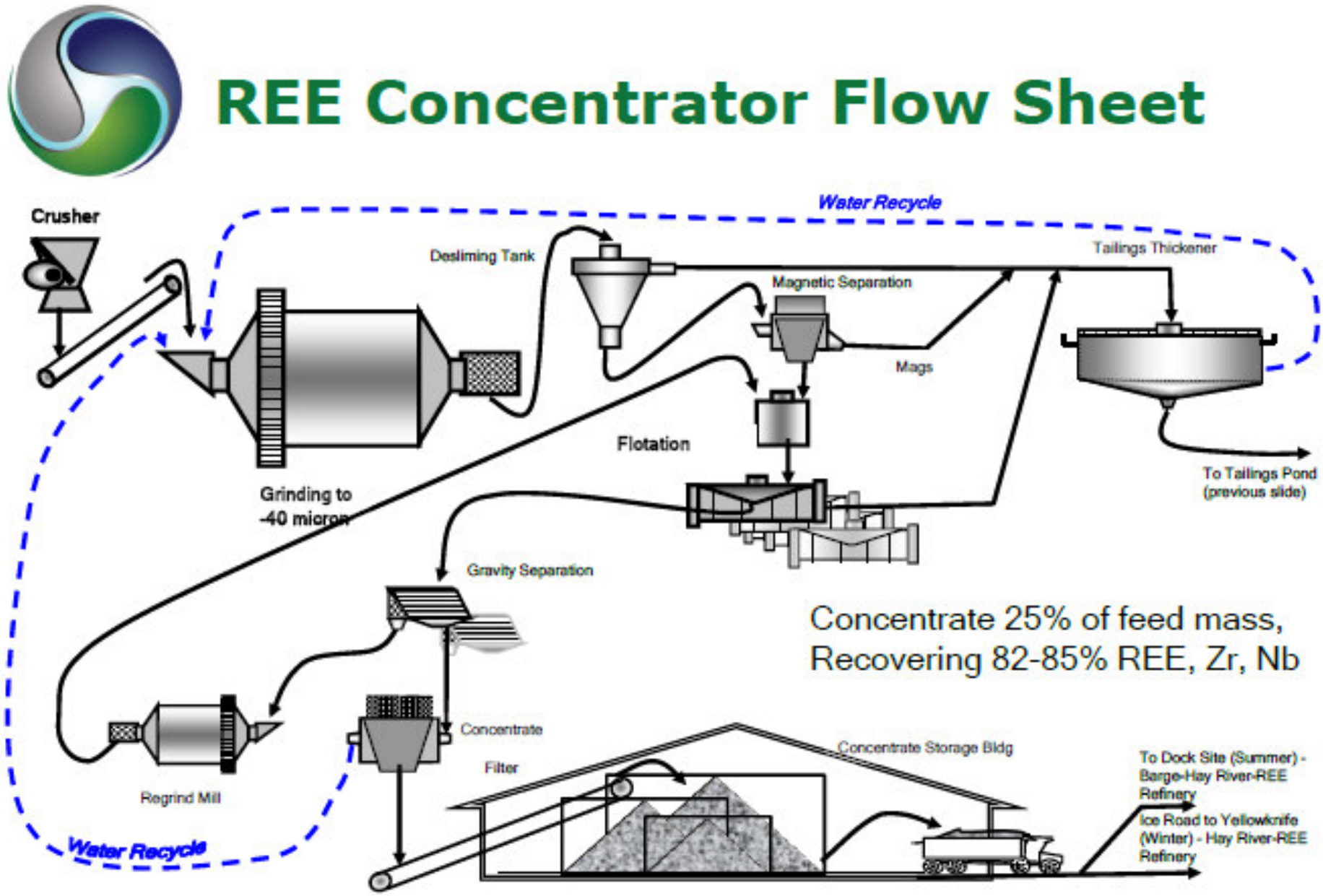
- Alkane - Dubbo
- Arafura - Nolans Bore
- Avalon - Nechalacho
- Great Western - Hoidas Lake
- Greenland Mnrls - Kvanefjeld
- Hudson - Sarfartoq Carbonatite
- Lynas - Mt Weld
- Matamec - Zeus-Kipawa
- Quest Uranium - Strange Lake
- Rare Earth Metals - Clay-Howells
- Rare Element - Bear Lodge
- Tasman Metals - Norra Karr
- Ucore - Bokan - Dotson Ridge
- Stans Energy - Kutessay II

$50 billion TREO in the ground, $2 billion market cap

How do we get to a mine?

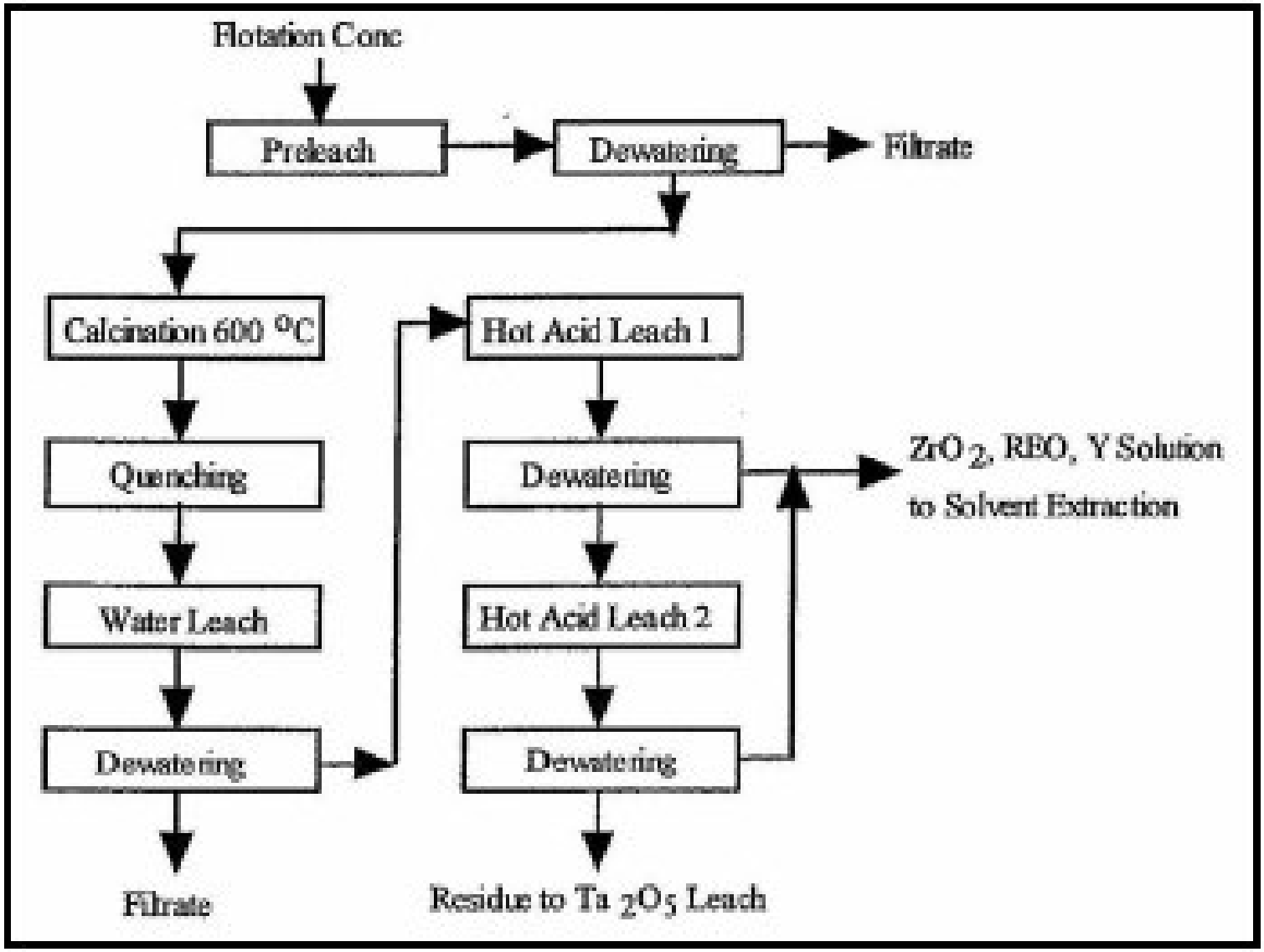
Stage	Exploration Cycle Stage	Objective	Time Required
1	Grassroots	Conceptual, land acquisition	1 year
2	Target Generation & Drilling	Filtering for drill targets	1-2 years
3	Discovery Delineation	Defining the limits of a discovery - tonnage & grade	1-2 years
4	Infill Drilling	Producing a mineral resource estimate & scoping study	1-2 years
5	Bulk Sample & Metallurgy	Evaluating recoveries and optimal processing method	1 year
6	Prefeasibility	Produce a mineable reserve, establish a mining plan and associated costs	1-2 years
7	Permitting, Marketing & Feasibility	Securing approval, negotiating offtake, making a production decision	1-3 years
8	Construction	Building the mine	1-3 years
9	Production	Mining cash flow	10-20 years

Processing Stage 1 – bulk concentrate



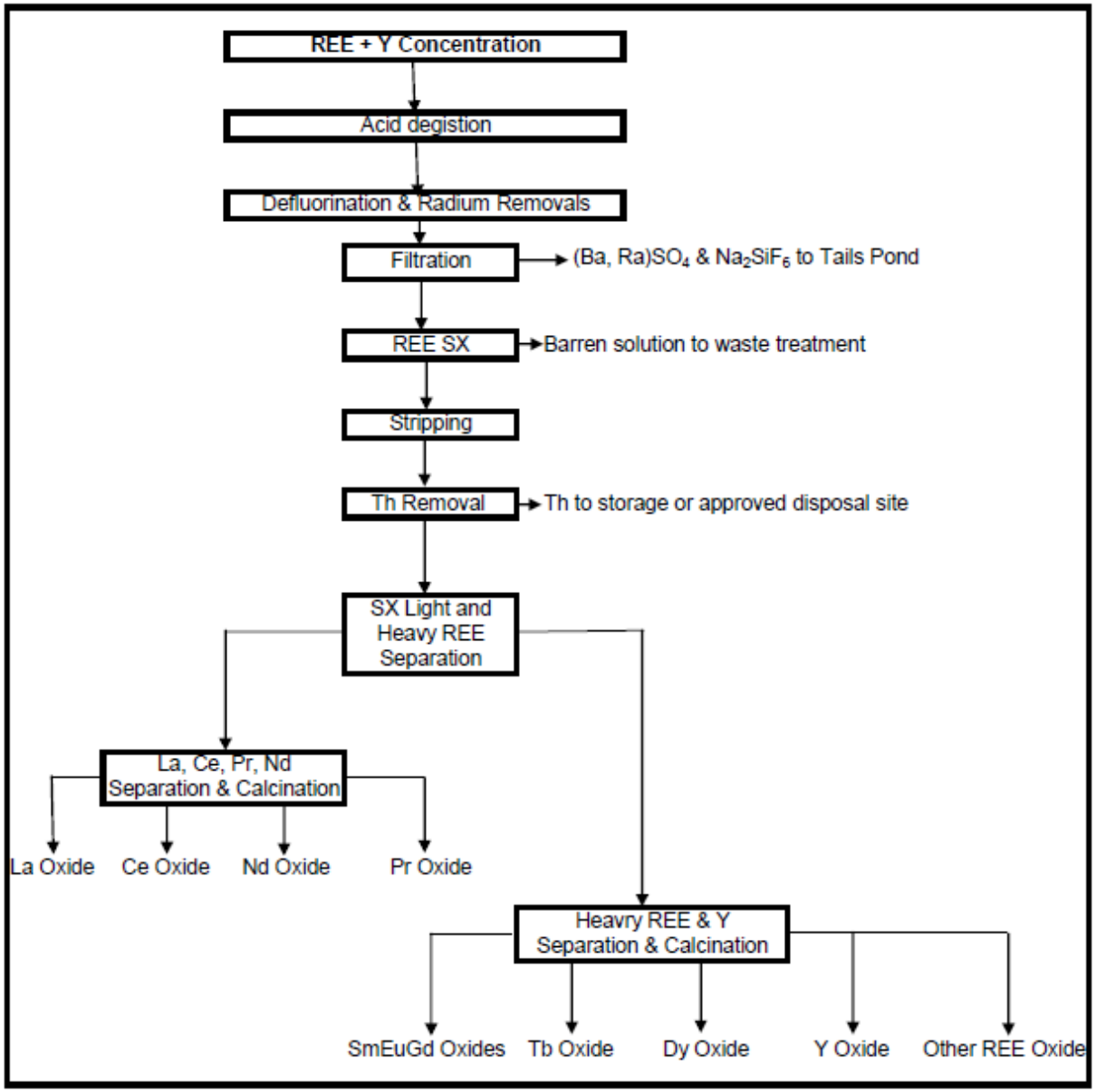
Processing Stage 2 – REO concentrate

Figure 16.3 Generalized Leaching Flowsheet for Bulk Concentrate



Processing Stage 3 – REO separation

Figure 16.4 Conceptual Flowsheet for Y+REE Concentrate Processing



Project Resource Estimate - Thor Lake - Basal Zone

Aug 17, 2009	NI 43-101	Bruce Hudgins, PGeo, Hudgtec Consulting Ltd, Dartmouth, NS	Cutoff: 1.6% TREO

Resource Category	Tonnage	Total Rock Value	Metal	Grade	Recovery	Contained Metal	% of GMV
Indicated Resources	4,400,189	$331/t	Rare Earth Metals	1.97%	100.0%	191,101,683 lb	100%
Inferred Mineral Resources	44,257,886	$295/t	Rare Earth Metals	1.94%	100.0%	1,892,863,731 lb	100%
All Categories Spot	**48,658,075**	**$298/t**	**Rare Earth Metals**	**1.94%**		**2,083,965,414 lb**	**100%**
All Categories LTA	**48,658,075**	**$298/t**	**Rare Earth Metals**	**1.94%**		**2,083,965,414 lb**	**100%**

Spot Gross Metal Value	Market Cap as % of Net GMV	Spot Prices Used
$14,516,954,567	2.2%	Rare Earth Metals $6.90/lb

LTA Gross Metal Value	Market Cap as % of Net GMV	LTA Prices Used
$14,516,954,567	2.2%	3 Year Average: Rare Earth Metals $0.00/lb

Project Resource Estimate - Thor Lake - Upper Zone

Aug 17, 2009	NI 43-101	Bruce Hudgins, PGeo, Hudgtec Consulting Ltd, Dartmouth, NS	Cutoff: 1.6% TREO

Resource Category	Tonnage	Total Rock Value	Metal	Grade	Recovery	Contained Metal	% of GMV
Inferred Mineral Resources	19,896,817	$213/t	Rare Earth Metals	2.01%	100.0%	881,671,124 lb	100%
All Categories Spot	**19,896,817**	**$213/t**	**Rare Earth Metals**	**2.01%**		**881,671,124 lb**	**100%**
All Categories LTA	**19,896,817**	**$213/t**	**Rare Earth Metals**	**2.01%**		**881,671,124 lb**	**100%**

Spot Gross Metal Value	Market Cap as % of Net GMV	Spot Prices Used
$4,240,838,105	7.5%	Rare Earth Metals $4.81/lb

LTA Gross Metal Value	Market Cap as % of Net GMV	LTA Prices Used
$4,240,838,105	7.5%	3 Year Average: Rare Earth Metals $0.00/lb

Understanding an REO Resource Estimate

Table 20.1 Lake Zone Mineral Resource Summary

Zone	Resource Class	Cut-Off TREO (%)	Tonnes (x1000)	TREO (%)	HREO (%)	H/T (%)
Basal	Indicated	1.60	2,186	2.14	0.43	20.0
Upper	Indicated	1.60	1,873	1.96	0.19	9.7
Total	Indicated	1.60	4,059	2.06	0.32	15.5

Zone	Resource Class	Cut-Off TREO (%)	Tonnes (x1000)	TREO (%)	HREO (%)	H/T (%)
Basal	Inferred	1.60	28,447	1.99	0.44	22.1
Upper	Inferred	1.60	32,707	2.10	0.17	8.2
Total	Inferred	1.60	61,154	2.05	0.30	14.5

Table 17.8 Summary of Lake Zone Indicated Mineral Resource

Upper Zone – Indicated Mineral Resource																									
Cut-Off TREO (%)	Tonnes (x1000)	TREO (%)	HREO (%)	H/T (%)	Y_2O_3 (ppm)	La_2O_3 (ppm)	Ce_2O_3 (ppm)	Pr_2O_3 (ppm)	Nd_2O_3 (ppm)	Sm_2O_3 (ppm)	Eu_2O_3 (ppm)	Gd_2O_3 (ppm)	Tb_2O_3 (ppm)	Dy_2O_3 (ppm)	Ho_2O_3 (ppm)	Er_2O_3 (ppm)	Tm_2O_3 (ppm)	Yb_2O_3 (ppm)	Lu_2O_3 (ppm)	Ta_2O_5 (ppm)	Nb_2O_5 (ppm)	ZrO_2 (ppm)	Ga_2O_3 (ppm)	HfO_2 (ppm)	Th (ppm)
1.80	1,873	1.96	0.19	9.7%	843	3610	8552	986	3834	685	73	511	54	218	34	81	11	72	11	328	5114	33169	174	683	167
1.80	1,161	2.12	0.20	9.3%	865	3936	9368	1068	4136	738	78	542	55	222	33	81	11	76	11	357	5582	35411	174	749	176
2.00	723	2.26	0.20	9.1%	888	4191	10050	1134	4364	783	82	571	58	229	34	81	11	77	12	370	5858	37165	170	795	185
2.20	313	2.46	0.21	8.7%	908	4585	11156	1233	4685	849	90	612	62	243	35	84	12	80	12	406	6628	40623	161	884	196
Basal Zone – Indicated Mineral Resource																									
Cut-Off TREO (%)	Tonnes (x1000)	TREO (%)	HREO (%)	H/T (%)	Y_2O_3 (ppm)	La_2O_3 (ppm)	Ce_2O_3 (ppm)	Pr_2O_3 (ppm)	Nd_2O_3 (ppm)	Sm_2O_3 (ppm)	Eu_2O_3 (ppm)	Gd_2O_3 (ppm)	Tb_2O_3 (ppm)	Dy_2O_3 (ppm)	Ho_2O_3 (ppm)	Er_2O_3 (ppm)	Tm_2O_3 (ppm)	Yb_2O_3 (ppm)	Lu_2O_3 (ppm)	Ta_2O_5 (ppm)	Nb_2O_5 (ppm)	ZrO_2 (ppm)	Ga_2O_3 (ppm)	HfO_2 (ppm)	Th (ppm)
1.80	2,186	2.14	0.43	20.0%	2274	3374	8073	970	3937	780	95	717	104	533	93	220	31	182	25	520	5892	39610	134	829	198
1.80	1,573	2.31	0.47	20.4%	2508	3599	8696	1042	4248	849	104	783	114	587	102	244	35	203	28	563	6257	41743	128	888	202
2.00	1,054	2.52	0.53	20.9%	2825	3875	9436	1125	4587	922	113	852	128	662	116	277	40	231	32	626	6816	44644	123	972	219
2.20	731	2.71	0.57	21.1%	3068	4135	10156	1205	4917	987	121	910	139	723	127	305	44	253	35	676	7287	46710	119	1041	239
Total Lake Zone – Indicated Mineral Resource																									
Cut-Off TREO (%)	Tonnes (x1000)	TREO (%)	HREO (%)	H/T (%)	Y_2O_3 (ppm)	La_2O_3 (ppm)	Ce_2O_3 (ppm)	Pr_2O_3 (ppm)	Nd_2O_3 (ppm)	Sm_2O_3 (ppm)	Eu_2O_3 (ppm)	Gd_2O_3 (ppm)	Tb_2O_3 (ppm)	Dy_2O_3 (ppm)	Ho_2O_3 (ppm)	Er_2O_3 (ppm)	Tm_2O_3 (ppm)	Yb_2O_3 (ppm)	Lu_2O_3 (ppm)	Ta_2O_5 (ppm)	Nb_2O_5 (ppm)	ZrO_2 (ppm)	Ga_2O_3 (ppm)	HfO_2 (ppm)	Th (ppm)
1.80	4,059	2.06	0.32	15.5%	1614	3483	8294	977	3890	736	85	622	81	388	65	156	22	131	19	431	5533	36638	153	762	184
1.80	2,734	2.23	0.35	15.9%	1810	3742	8981	1053	4201	802	93	681	89	432	73	175	25	149	21	475	5970	39053	148	829	191
2.00	1,778	2.41	0.40	16.4%	2037	4003	9686	1128	4496	865	101	737	99	486	83	198	28	168	24	522	6426	41601	142	900	205
2.20	1,045	2.64	0.46	17.6%	2420	4270	10456	1213	4847	946	112	820	116	579	99	239	34	201	28	595	7089	44884	132	994	226

Calculating Oxide Grades

Element	Oxide	Converter
Y	Y2O3	1.27
La	La2O3	1.173
Ce	Ce2O3	1.171
Pr	Pr2O3	1.17
Nd	Nd2O3	1.166
Sm	Sm2O3	1.16
Eu	Eu2O3	1.158
Gd	Gd2O3	1.153
Tb	Tb2O3	1.151
Dy	Dy2O3	1.148
Ho	Ho2O3	1.146
Er	Er2O3	1.143
Tm	Tm2O3	1.142
Yb	Yb2O3	1.139
Lu	Lu2O3	1.137

To convert a ppm number into decimal percentage form divide by 1,000,000

To convert metal grade into oxide grade, multiply by oxide converter – oxide prices refer to the entire oxide, not the weight of the contained rare earth

$$1 + \frac{(\text{\# of Oxygen atoms x atomic weight of O (15.99)})}{(\text{\# of REE atoms x atomic weight of REE})}$$

Rare Earth Prices - $/kg oxide

- February 3, 2009 news release by Avalon Rare Metals (SEDAR)
- 4 year average used by Wardrop Engineering in 43-101 report
- Metal-Pages.com

Element	Oxide	4-Yr Ave. US$/kg	Note
Yttrium	Y_2O_3	$8.74	1
Lanthanum	La_2O_3	$3.57	
Cerium	Ce_2O_3	$2.43	
Praesodymium	Pr_2O_3	$19.45	
Neodymium	Nd_2O_3	$20.19	
Samarium	Sm_2O_3	$3.33	
Europium	Eu_2O_3	$321.52	
Gadolinium	Gd_2O_3	$10.29	1
Terbium	Tb_2O_3	$507.42	
Dysprosium	Dy_2O_3	$76.33	
Holmium	Ho_2O_3	$25.50	2
Erbium	Er_2O_3	$55.00	2
Thulium	Tm_2O_3	$90.00	2
Ytterbium	Yb_2O_3	$25.00	2
Lutetium	Lu_2O_3	$500.00	2

1. For Gd_2O_3, only 3 years of data was available from Metal-Pages and consequently, the 3 year average was used.
2. For Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3 and Lu_2O_3, no data was available from Metal-Pages and the prices were sourced directly from commercial sources within REE markets.

Recent Rare Earth Prices - $/kg oxide

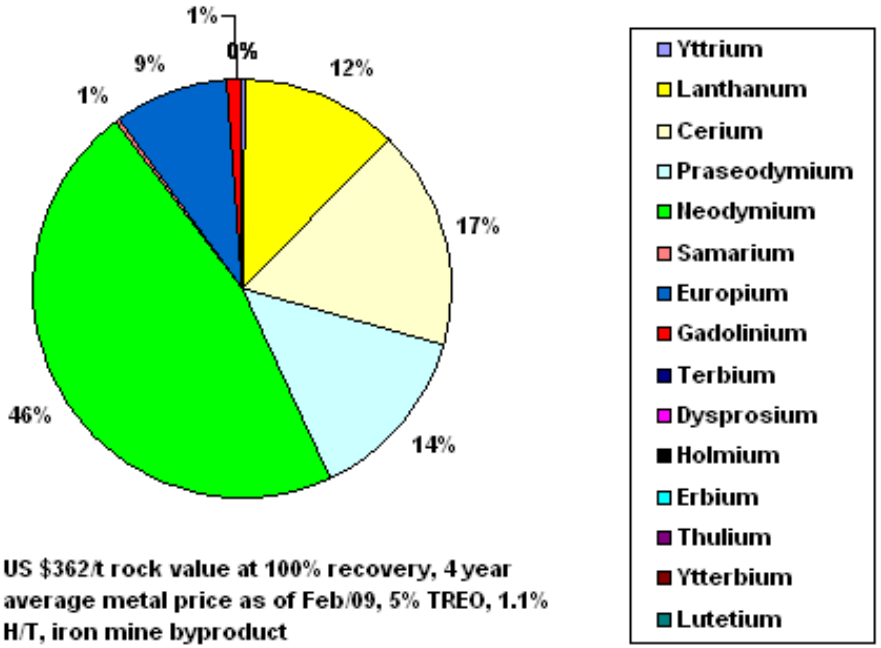
Source: Metal-Pages.com, September 10, 2009
Prices are indicative and basis FOB China

Metal Oxide	Principal Uses	Price US$/kg
Lanthanum Oxide 99% min	Re-chargeable Batteries	5.40 - 5.90
Cerium Oxide 99% min	Catalyst, glass, polishing	3.50 - 4.00
Praseodymium Oxide 99% min	Magnets, glass colourant	13.50 - 14.50
Neodymium Oxide 99% min	Magnets, lasers, glass	14.00 - 14.50
Samarium Oxide 99% min	Magnets, lighting, lasers	4.25 - 4.75
Heavy Rare Earths		
Europium Oxide 99% min	TV colour phosphors: red	475.00 - 495.00
Terbium Oxide 99% min	Phosphors: green, magnets	340.00 - 360.00
Dysprosium Oxide 99% min	Magnets, lasers	107.00 - 112.00
Gadolinium Oxide 99%min	Magnets, superconductors	6.00 - 6.50
Yttrium Oxide 99.999% min	Phosphors, ceramics, lasers	10.00 - 10.50

KBFO Spreadsheet Used to Generate REO Content & Value Distribution Pie Charts

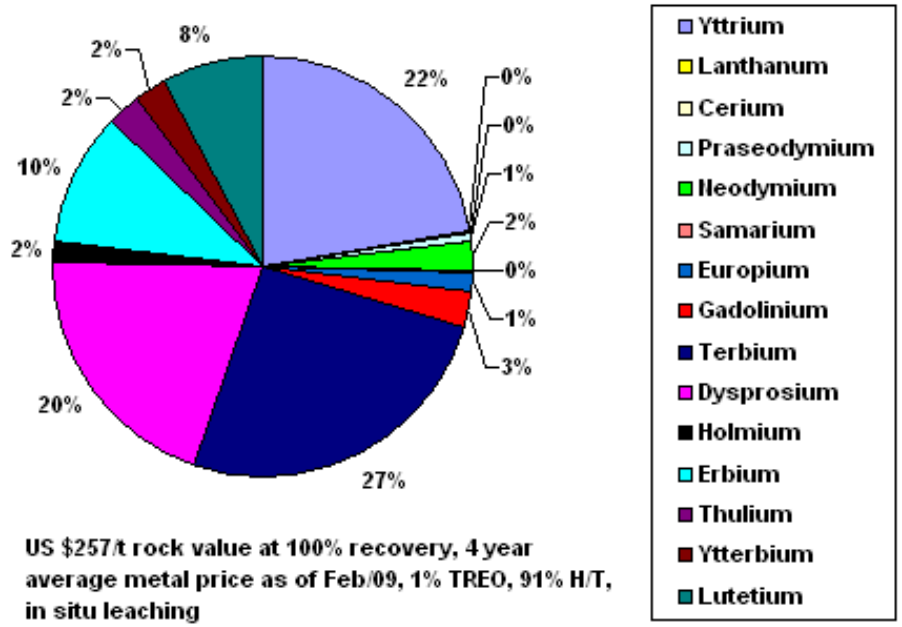
Rare Earth Analysis			4 year average		Avalon - Thor Lake Basal Zone Ind 1.6% cutoff			
Element	Oxide	Converter	Price $/kg	Name	Grade	REO Breakdown	Contained kg	Rock Value
Y	Y2O3	1.27	$8.74	Yttrium	0.2274%	10.6%	2.274	$19.87
La	La2O3	1.173	$3.57	Lanthanum	0.3374%	15.8%	3.374	$12.05
Ce	Ce2O3	1.171	$2.43	Cerium	0.8083%	37.7%	8.083	$19.64
Pr	Pr2O3	1.17	$19.45	Praseodymium	0.0970%	4.5%	0.97	$18.87
Nd	Nd2O3	1.166	$20.19	Neodymium	0.3937%	18.4%	3.937	$79.49
Sm	Sm2O3	1.16	$3.33	Samarium	0.0780%	3.6%	0.78	$2.60
Eu	Eu2O3	1.158	$321.52	Europium	0.0095%	0.4%	0.095	$30.54
Gd	Gd2O3	1.153	$10.20	Gadolinium	0.0717%	3.3%	0.717	$7.31
Tb	Tb2O3	1.151	$507.42	Terbium	0.0104%	0.5%	0.104	$52.77
Dy	Dy2O3	1.148	$76.33	Dysprosium	0.0533%	2.5%	0.533	$40.68
Ho	Ho2O3	1.146	$25.50	Holmium	0.0093%	0.4%	0.093	$2.37
Er	Er2O3	1.143	$55.00	Erbium	0.0220%	1.0%	0.22	$12.10
Tm	Tm2O3	1.142	$90.00	Thulium	0.0031%	0.1%	0.031	$2.79
Yb	Yb2O3	1.139	$25.00	Ytterbium	0.0182%	0.8%	0.182	$4.55
Lu	Lu2O3	1.137	$500.00	Lutetium	0.0025%	0.1%	0.025	$12.50
						100.0%	21.418	
LREE								
HREE					TREO		HREE/TREO	Total $/t
					2.14%		19.96%	$318.14
							Tot $/lb:	$6.74

Baiyun Obo - Inner Mongolia REE $/t



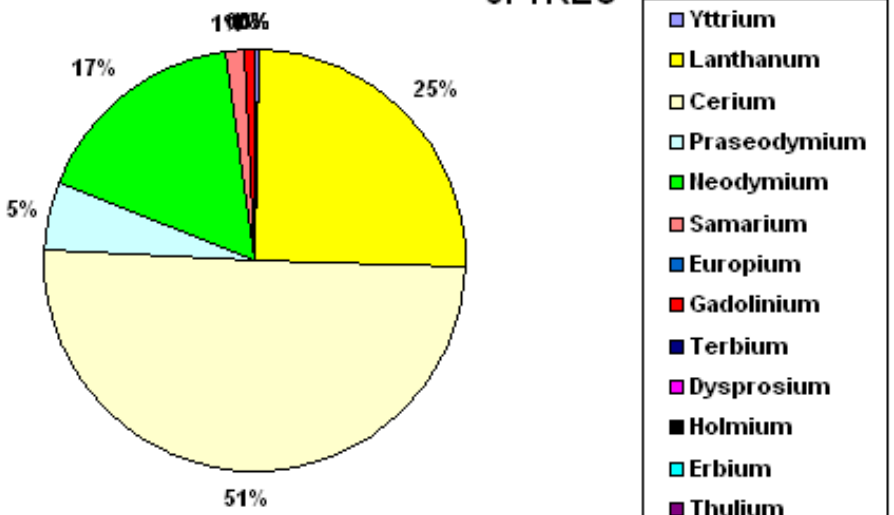
US $362/t rock value at 100% recovery, 4 year average metal price as of Feb/09, 5% TREO, 1.1% H/T, iron mine byproduct

Longnan - Ion Adsorption Clay REE $/t



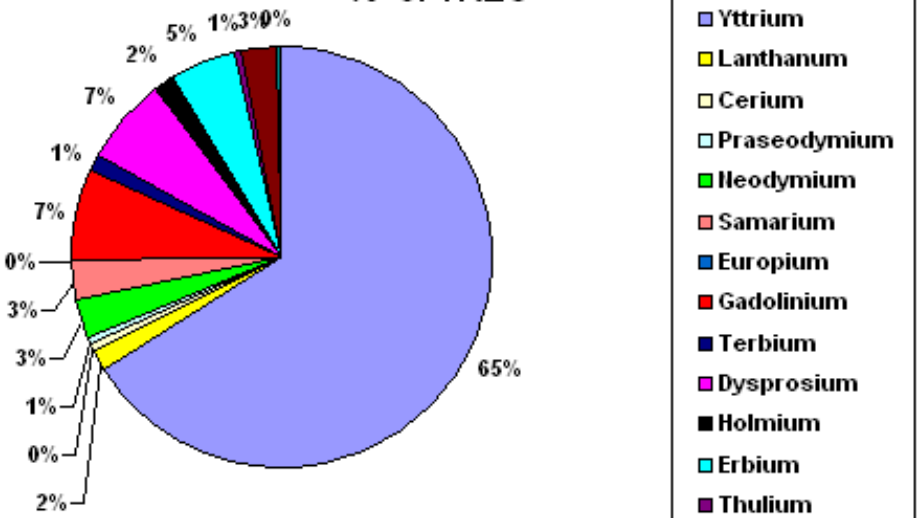
US $257/t rock value at 100% recovery, 4 year average metal price as of Feb/09, 1% TREO, 91% H/T, in situ leaching

Baiyun Obo - Inner Mongolia Distribution % of TREO



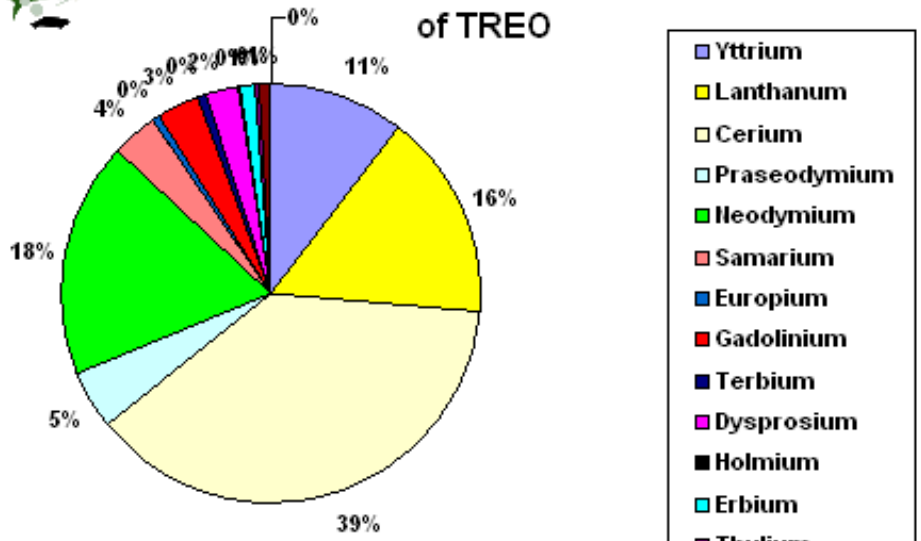
US $362/t rock value at 100% recovery, 4 year average metal price as of Feb/09, 5% TREO, 1.1% H/T, iron mine byproduct

Longnan - Ion Adsorption Clay Distribution % of TREO



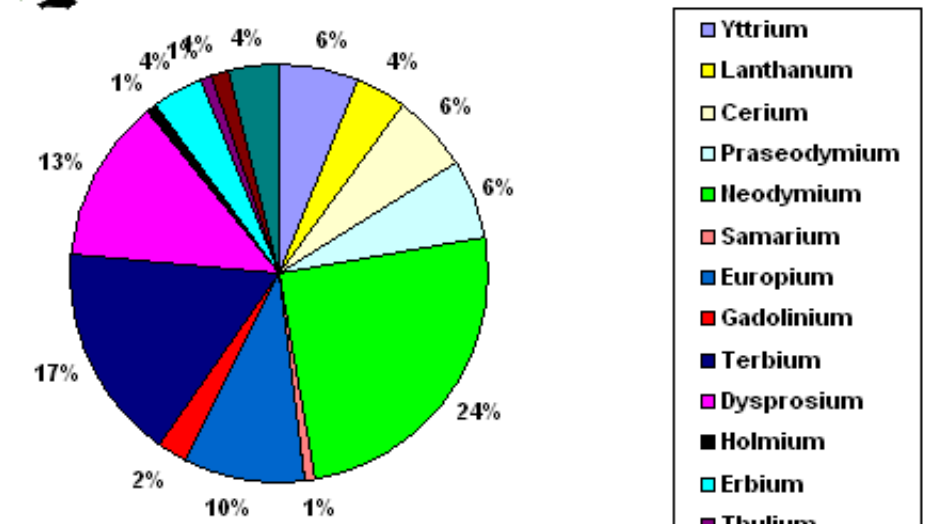
US $257/t rock value at 100% recovery, 4 year average metal price as of Feb/09, 1% TREO, 91% H/T, in situ leaching

Avalon Thor Lake - Basal Zone Distribution % of TREO



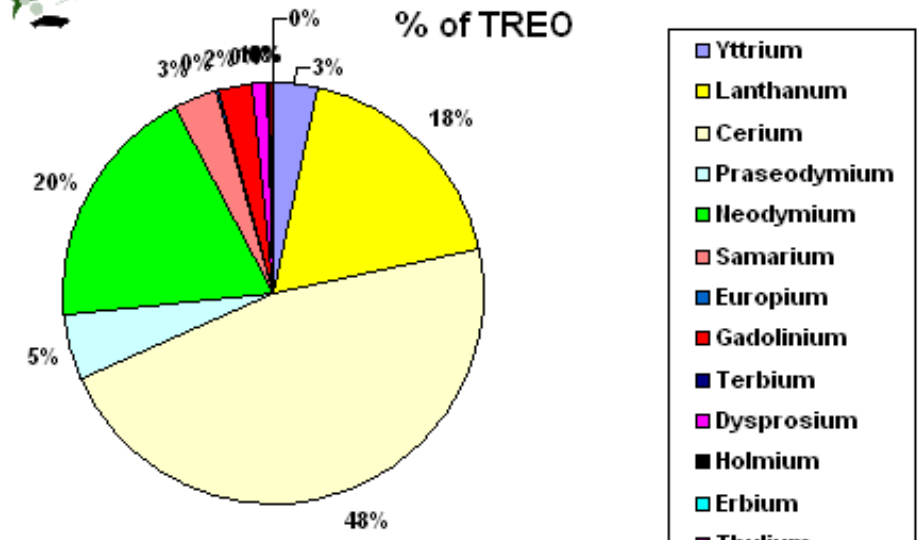
US $318/t rock value at 100% recovery, 4 year average metal price as of Feb/09, 2.14% TREO, 20% H/T, 1.6% cut-off, 43-101 ind Sept/09

Avalon Thor Lake - Basal Zone REE $/t



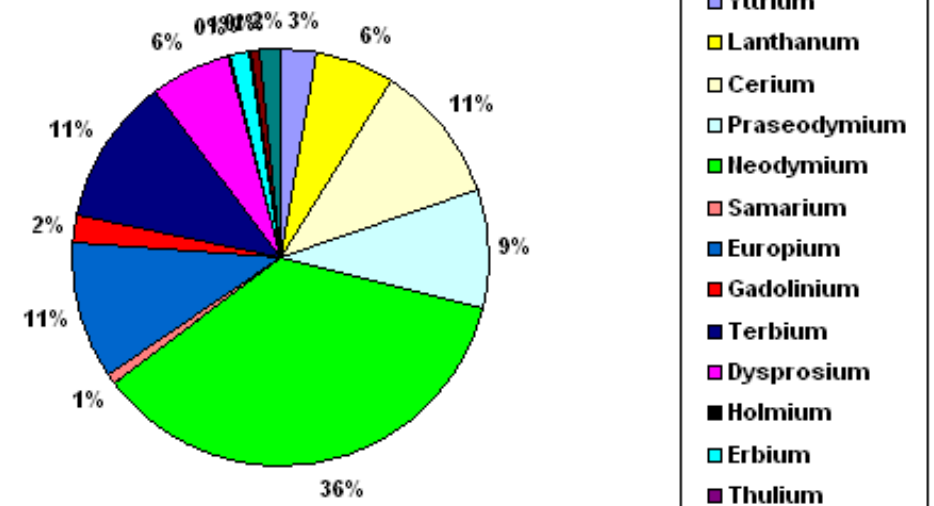
US $318/t rock value at 100% recovery, 4 year average metal price as of Feb/09, 2.14% TREO, 20% H/T, 1.6% cut-off, 43-101 ind Sept/09

Avalon Thor Lake - Upper Zone Distribution % of TREO



US $226/t rock value at 100% recovery, 4 year average metal price as of Feb/09, 1.96% TREO, 9.7% H/T, 1.6% cut-off, ind 43-101 resource Sept/09

Avalon Thor Lake - Upper Zone REE $/t



US $226/t rock value at 100% recovery, 4 year average metal price as of Feb/09, 1.96% TREO, 9.7% H/T, 1.6% cut-off, ind 43-101 resource Sept/09

REE's at Bokan: Supplement to the February 26 09 and June 15 09 Press Releases:

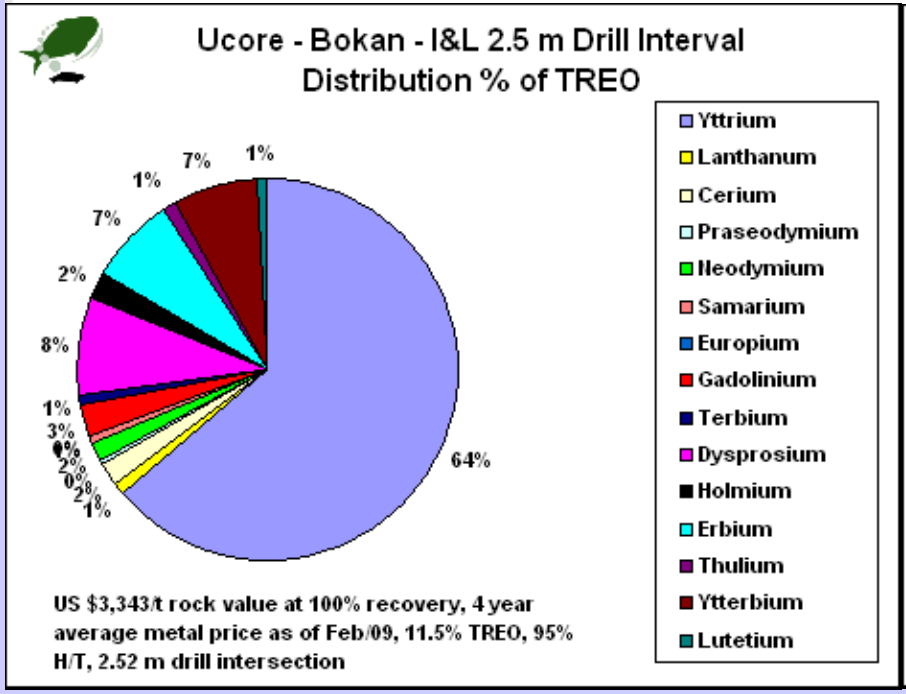
Individual Rare Earth Oxide Concentrations in Hole LM08-32

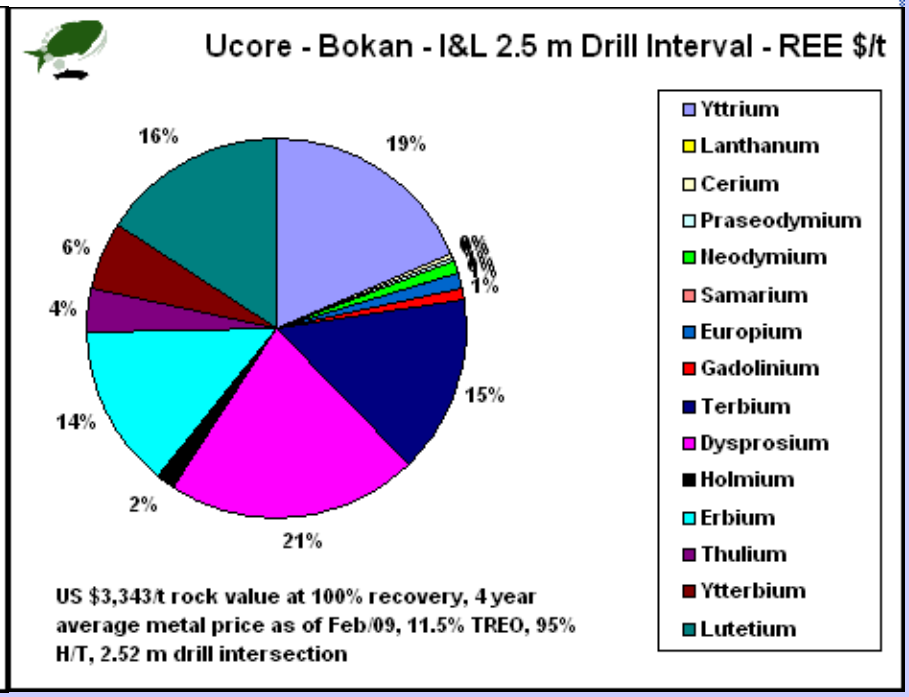
From 106.22 to 112.47 m (apparent width 6.25 meters):

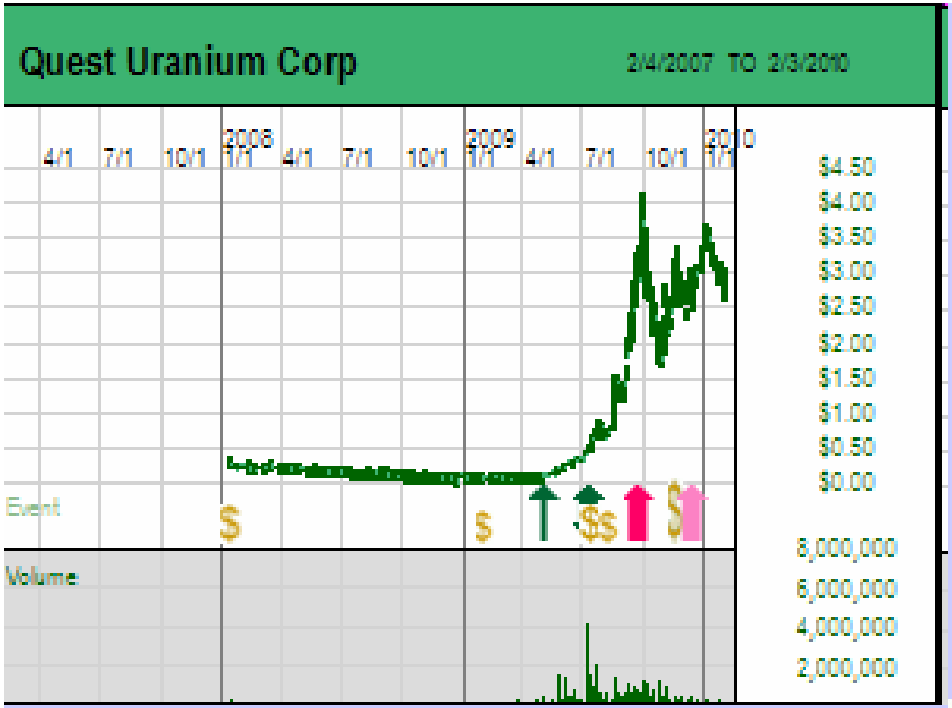
	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Y	LREO	HREO	ΣREO
ppm	534	1184	149	849	297	62	1262	425	3903	1027	3491	549	3322	445	29824	3013	44312	47325
Percent	0.053	0.118	0.015	0.085	0.030	0.006	0.126	0.042	0.390	0.103	0.349	0.055	0.332	0.045	2.982	9.412	0.30	4.73
Kg/tonne	0.534	1.184	0.149	0.849	0.297	0.062	1.262	0.425	3.903	1.027	3.491	0.549	3.322	0.445	29.825	3.01	44.31	47.33
lb/ton	1.068	2.367	0.298	1.699	0.594	0.123	2.524	0.850	7.806	2.054	6.983	1.099	6.645	0.890	59.649	6.03	88.62	94.6

(apparent width 2.52 m)

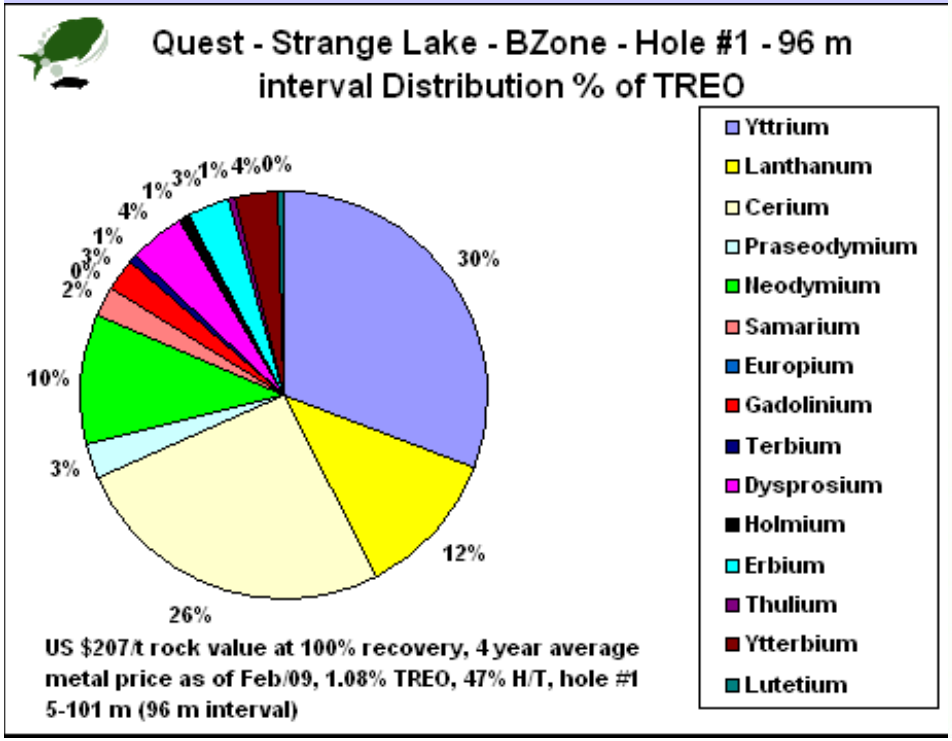
	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Y	LREO	HREO	ΣREO
ppm	1091	2401	298	1843	675	146	3057	1038	9564	2520	8566	1348	8142	1091	73133	6309	108604	114913
Percent	0.109	0.240	0.030	0.184	0.068	0.015	0.306	0.104	0.956	0.252	0.857	0.135	0.814	0.109	7.313	0.63	10.86	11.49
Kg/tonne	1.1	2.4	0.3	1.8	0.7	0.1	3.1	1.0	9.6	2.5	8.6	1.3	8.1	1.1	73.1	6.31	108.60	114.91
lb/ton	2.4	5.3	0.7	4.1	1.5	0.3	6.7	2.3	21.0	5.5	18.8	3.0	17.9	2.4	160.9	13.88	238.93	252.81

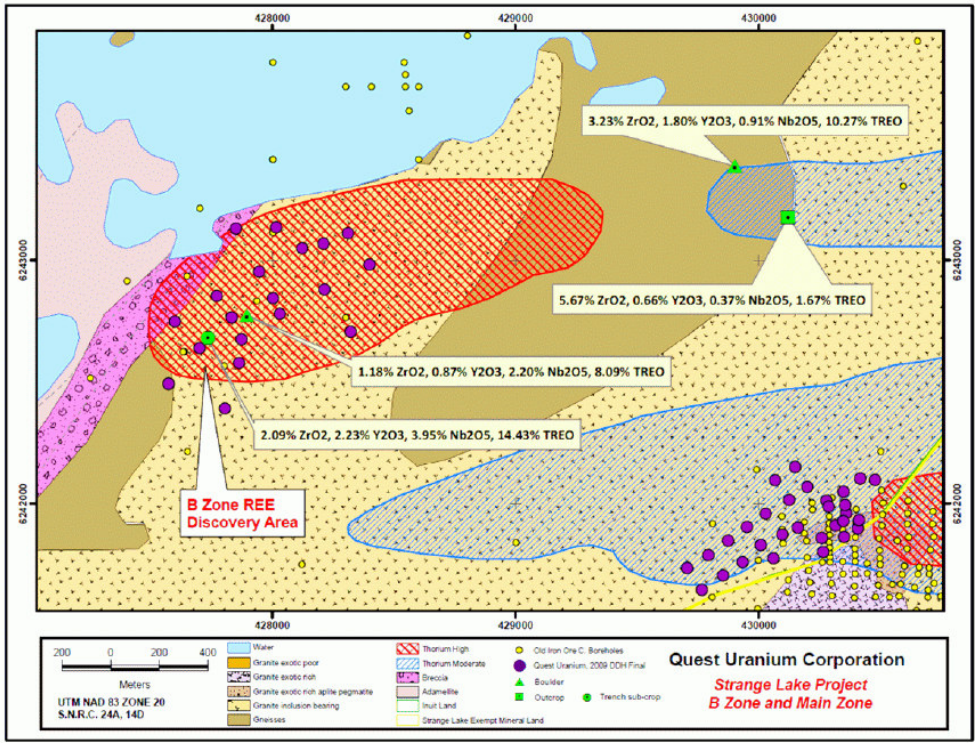






- Strange Lake rare earth system has a world class tonnage footprint in the order of 50-100 million tonnes
- Contains both heavy and light rare earths
- Open pit mineable, with high grade pegmatite horizons running $200-$400 per tonne rock value
- Owned 100% by Quest and located in a mining friendly jurisdiction
- Implied project value: $153 million

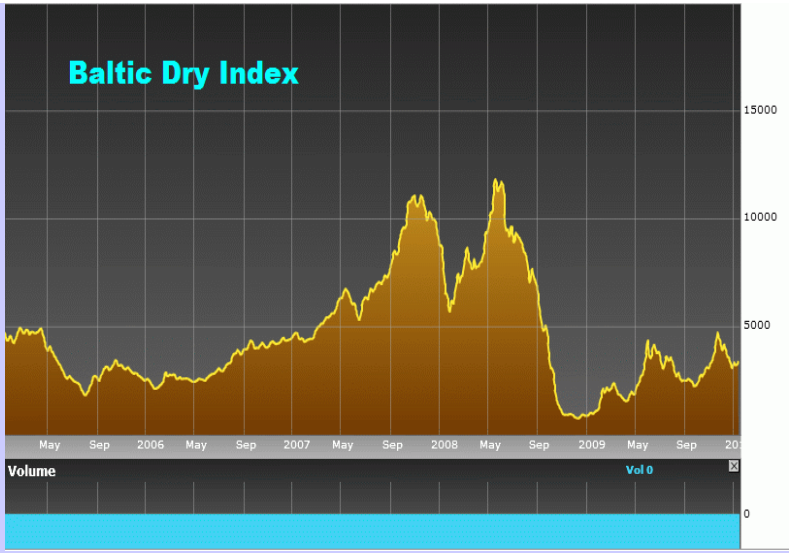




The Chinese Anomaly

- Hybrid of central command economy with outsourced production
- Cheap Labor – urbanization of 1 billion rural Chinese unleashed by the end of orthodox communism
- No Health & Safety for Workers
- No environmental emission controls
- No Unions to secure medical or pension benefits
- US Dollar Peg: the devil's bargain of maintaining an undervalued yuan by bankrolling the US trade deficit through the accumulation of US treasury debt
- Piracy and Counterfeiting
- FDI: foreign direct investment and technology transfer

Made in China and Packed with Pride in America



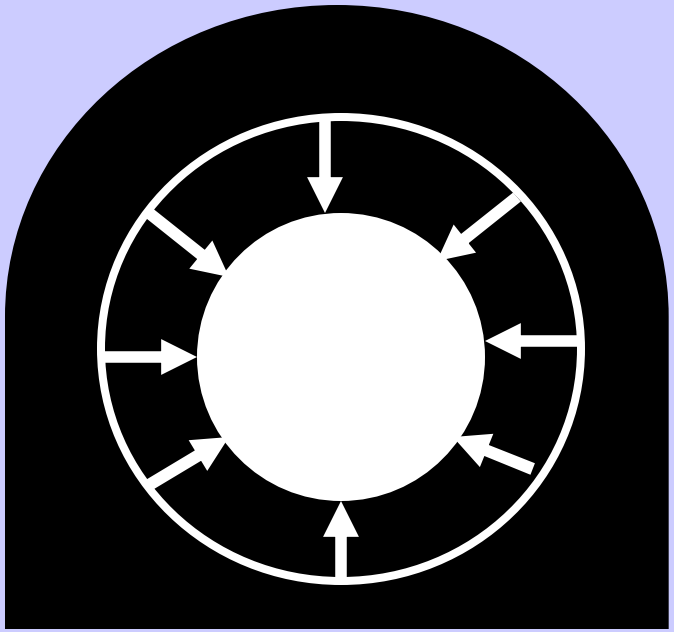
Capitalism's Mandate: mobilize capital to the place with the lowest cost structure

A Matter of Perspective

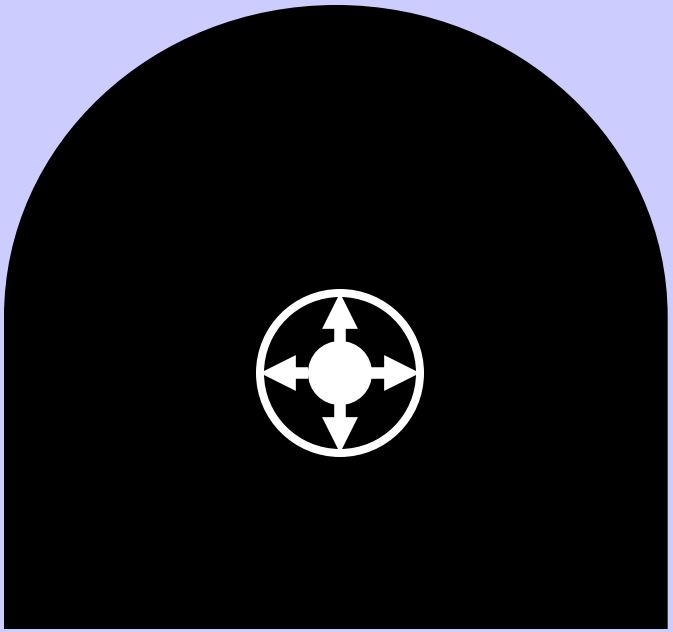
(or why Copenhagen failed and the Kyoto Protocol is dead)

Is your standard of living shrinking or growing?

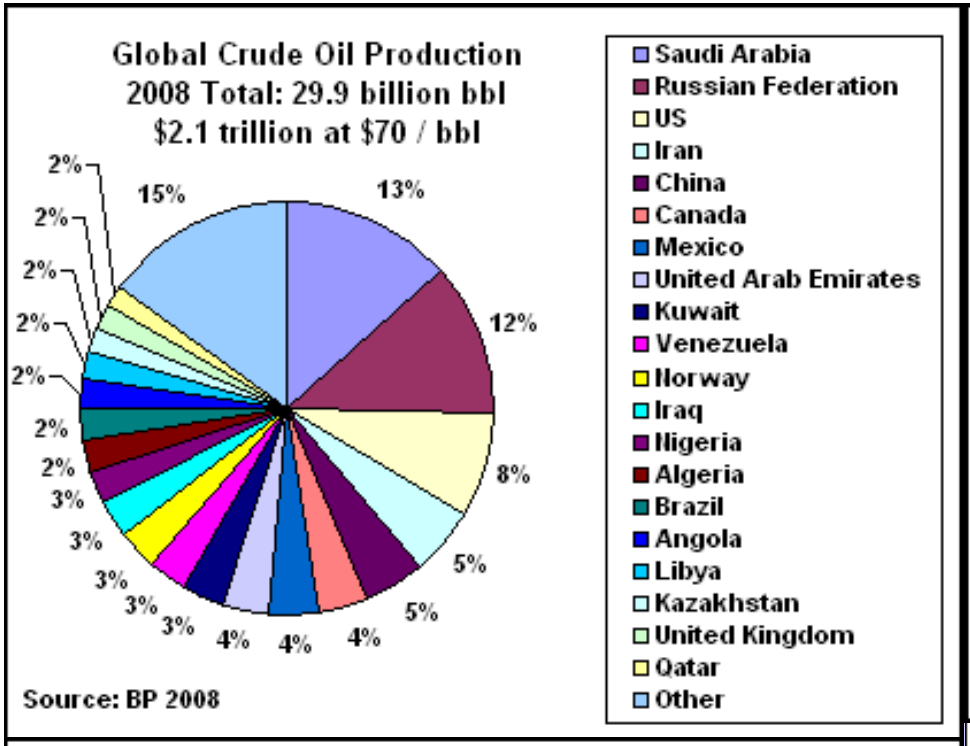
Is your footprint growing or shrinking?

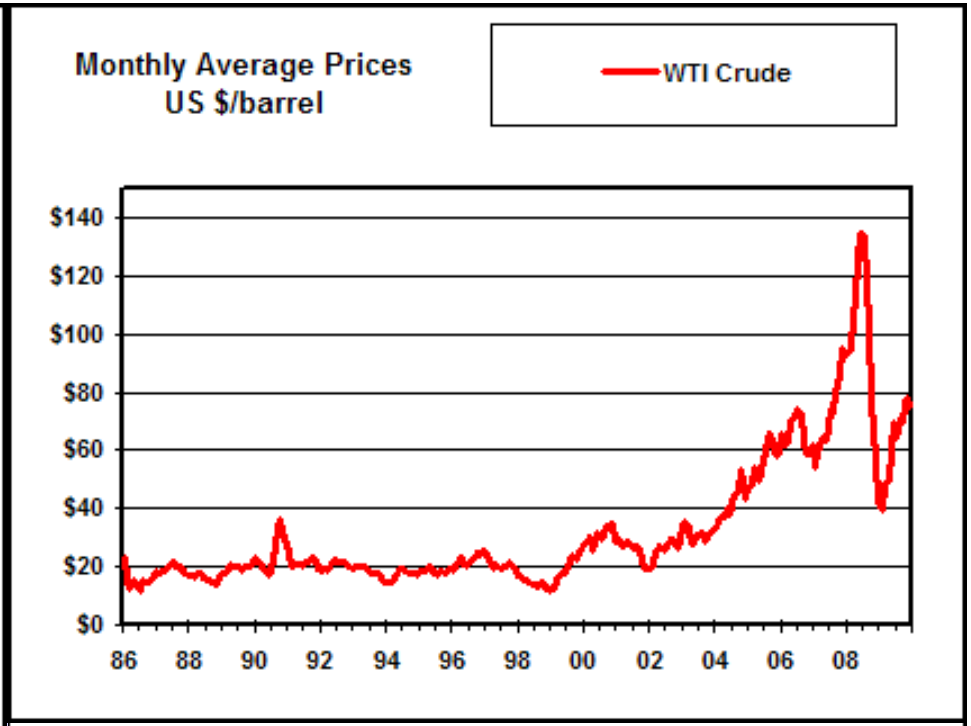


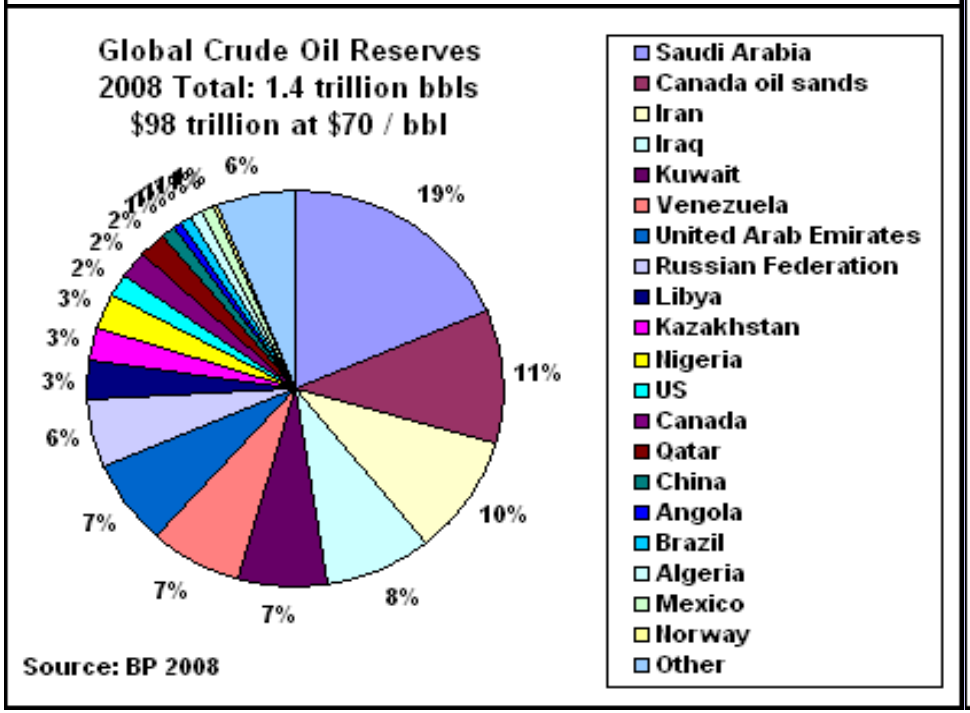
1 Billion OECD

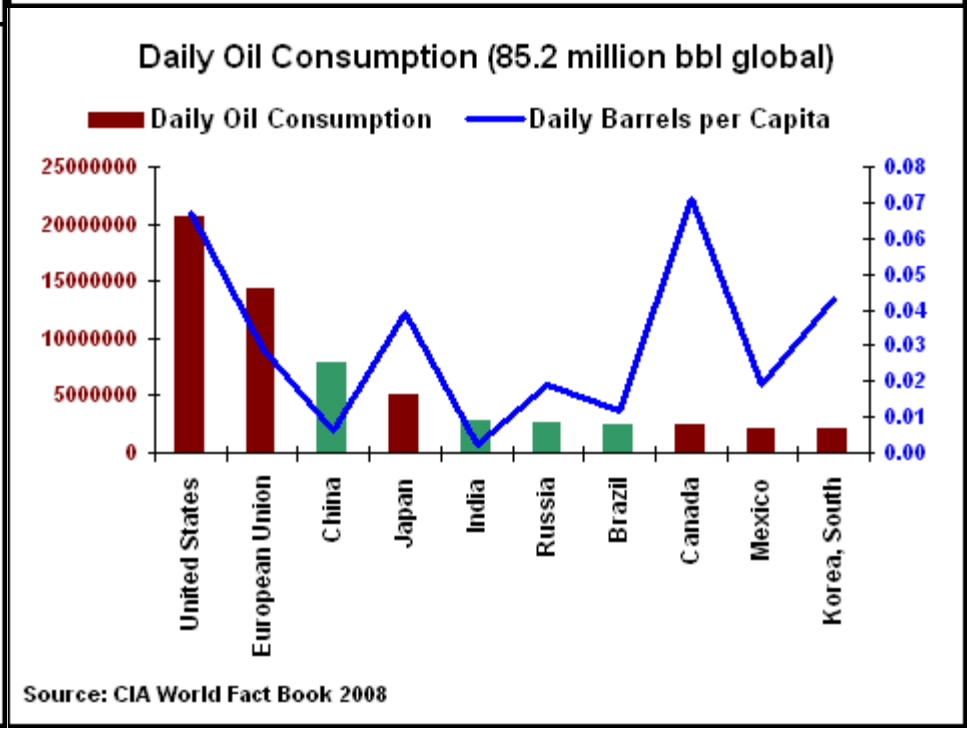


3 Billion BRIC


Global Crude Oil Production
2008 Total: 29.9 billion bbl
$2.1 trillion at $70 / bbl
13%
12%
8%
5%
5%
4%
4%
4%
3%
3%
3%
3%
3%
2%
2%
2%
2%
2%
2%
2%
15%
Source: BP 2008
Saudi Arabia
Russian Federation
US
Iran
China
Canada
Mexico
United Arab Emirates
Kuwait
Venezuela
Norway
Iraq
Nigeria
Algeria
Brazil
Angola
Libya
Kazakhstan
United Kingdom
Qatar
Other

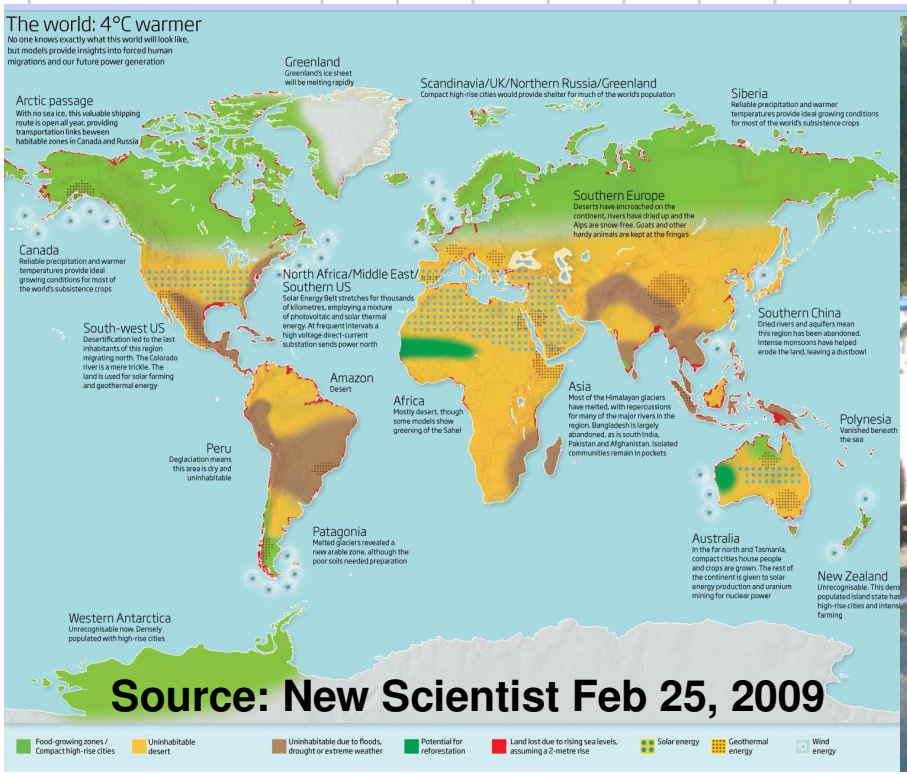

Monthly Average Prices
US $/barrel
WTI Crude
$140
$120
$100
$80
$60
$40
$20
$0
86
88
90
92
94
96
98
00
02
04
06
08


Global Crude Oil Reserves
2008 Total: 1.4 trillion bbls
$98 trillion at $70 / bbl
19%
11%
10%
8%
7%
7%
7%
6%
3%
3%
3%
2%
2%
2%
6%
Source: BP 2008
Saudi Arabia
Canada oil sands
Iran
Iraq
Kuwait
Venezuela
United Arab Emirates
Russian Federation
Libya
Kazakhstan
Nigeria
US
Canada
Qatar
China
Angola
Brazil
Algeria
Mexico
Norway
Other


Daily Oil Consumption (85.2 million bbl global)
Daily Oil Consumption
Daily Barrels per Capita
25000000
20000000
15000000
10000000
5000000
0
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
United States
European Union
China
Japan
India
Russia
Brazil
Canada
Mexico
Korea, South
Source: CIA World Fact Book 2008

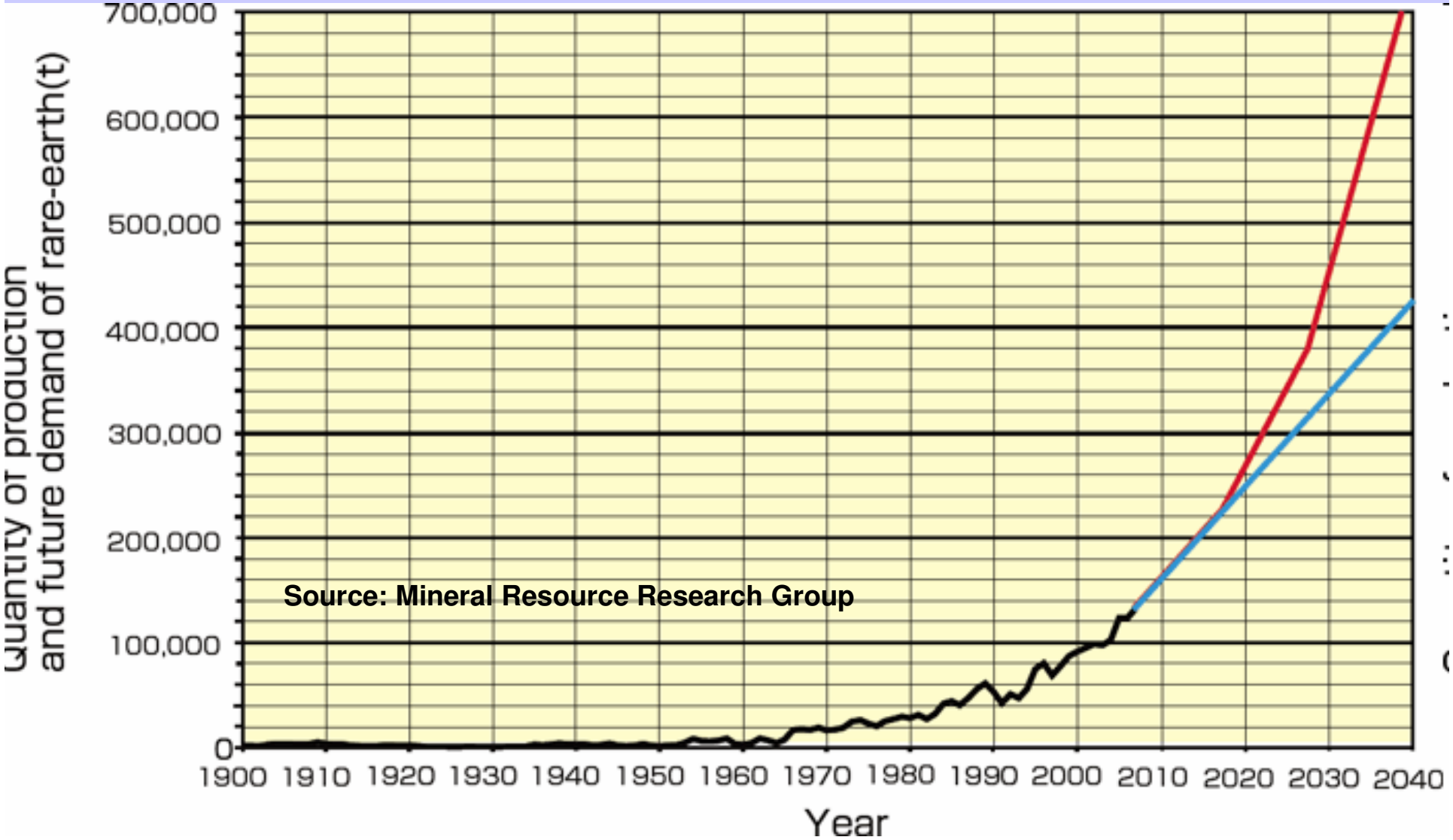
Transforming the Energy Foundation of the World

Power Cost Structure	Coal			Natural Gas			Oil/Gasoline			Hydro			Nuclear			BioFuels			Renewables (Solar/Wind)		
	High	Mod	Low	High	Mod	Low	High	Mod	Low	High	Mod	Low	High	Mod	Low	High	Mod	Low	High	Mod	Low
Capital Cost																					
Operating Cost																					
Fuel Cost																					
Emission Cost																					
Opportunity Cost																					
Fuel Supply Risk																					

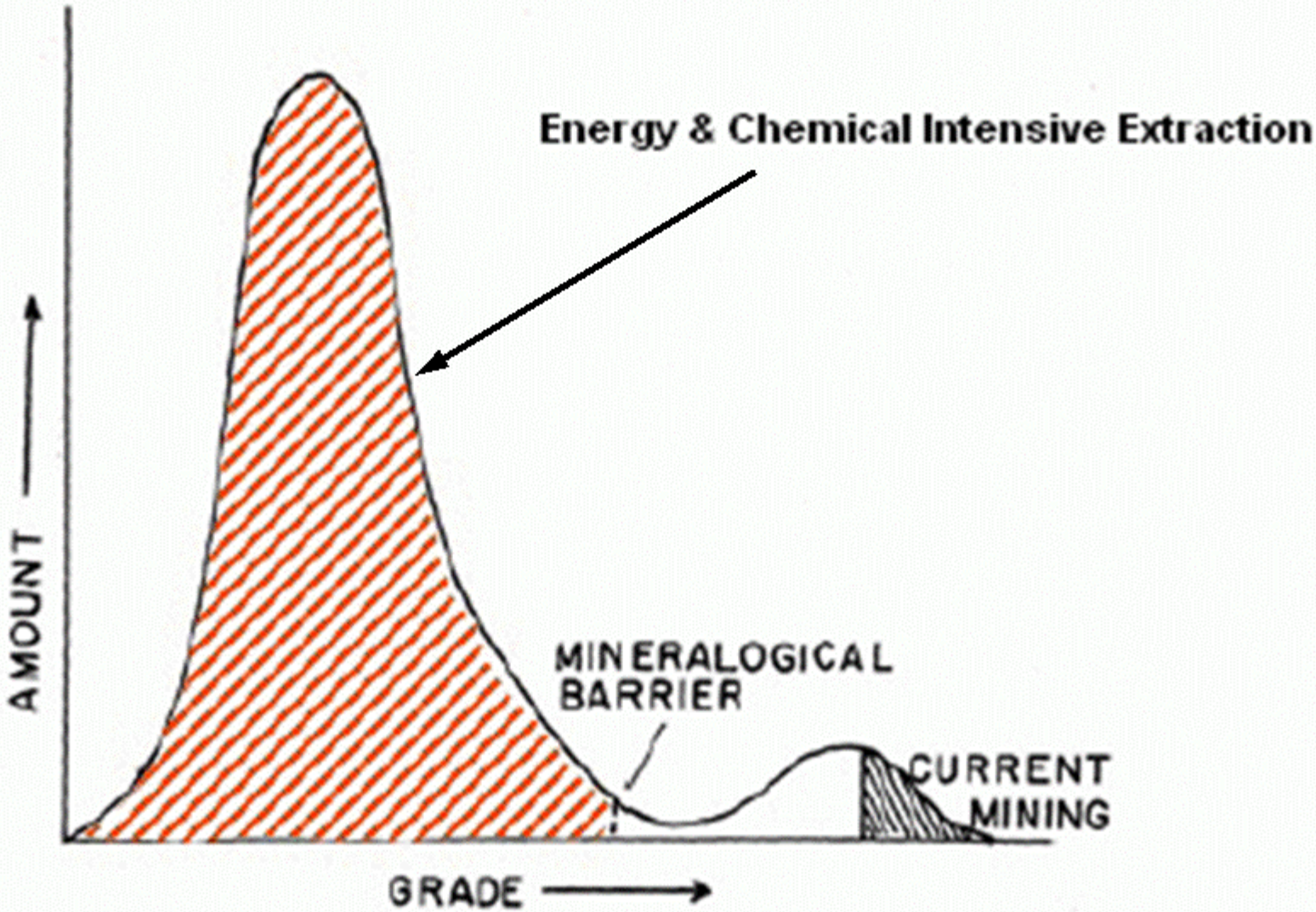


Source: New Scientist Feb 25, 2009

It's not the demand growth in the next 5 years that is the critical issue today, but the demand growth 5 years and beyond.



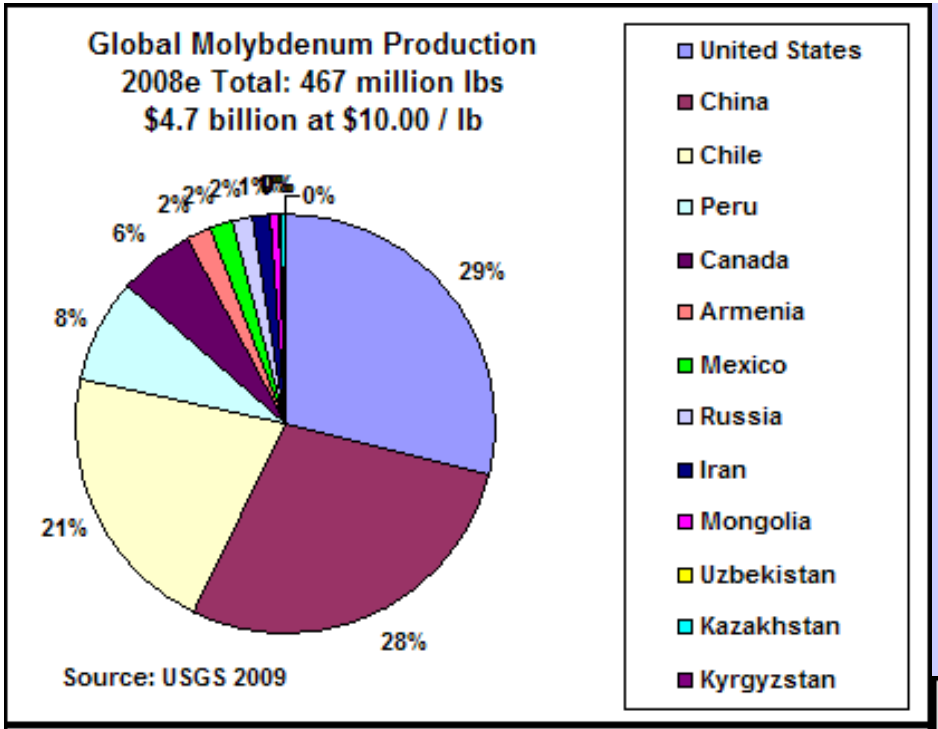
Crustal Abundance Grade Distribution Profile

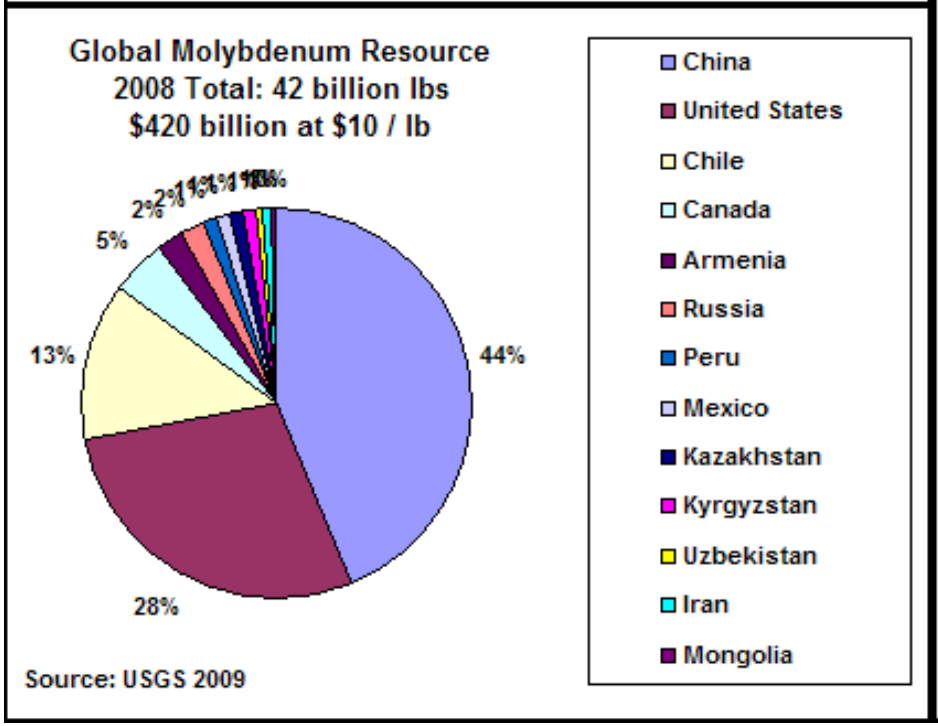


Source: Dierderen after Skinner (Oildrum)

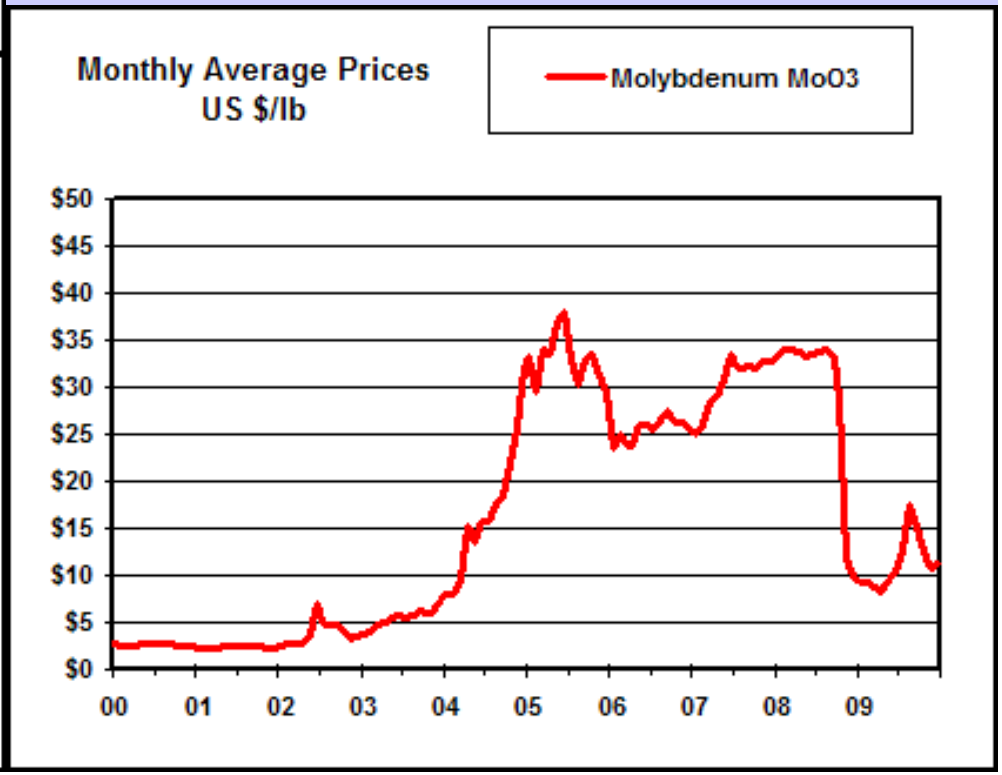
Is China subsidizing the cost structure of mining its rare earth deposits and downstream processing by tolerating inefficient processing methods, inadequate emission controls, and weak health and safety standards?

Can we expect prices to double or triple if this "subsidy" is removed?





- In 2003 China decides to clean up inefficient and polluting small scale mines
- 2004 price surge viewed as temporary by mining industry, which decides to mine higher moly grade portions of copper mines
- Moly is an incremental but critical input for steel (<3%) infrastructure
- Value of global demand goes from $2 billion to $10-$15 billion



What is a Wild Demand Dynamic?

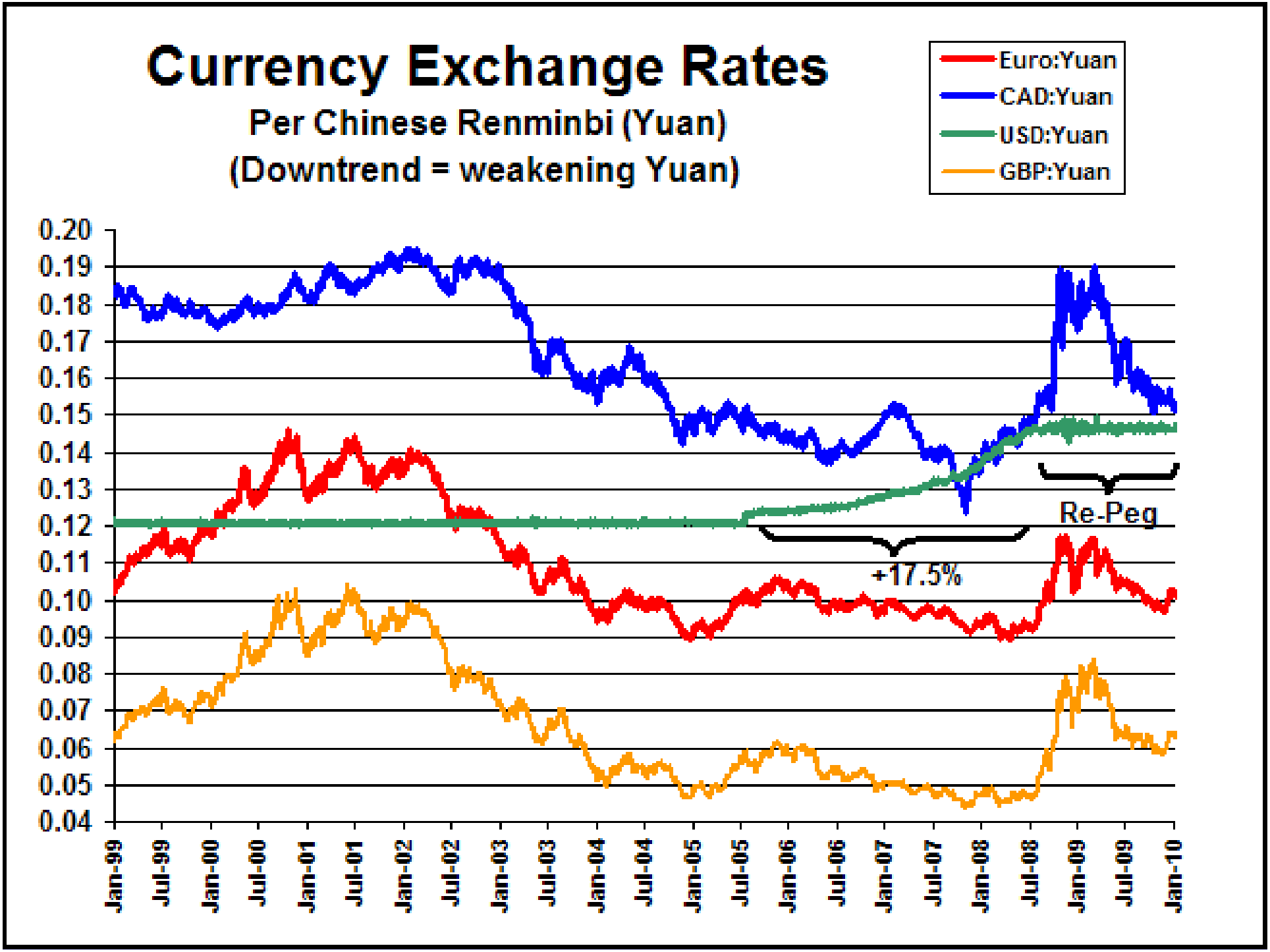
- Elements with complex properties, such as the rare earth metals, have open ended technology development potential
- The R&D push for ever greater miniaturization and efficiency enhancement drives the discovery of new or expanded functionality that increases the utility per volume unit of critical inputs
- This allows the price of the input to increase, which in turn boosts the economics of supplying those input
- Better economics results in greater supply of an otherwise scarce raw material
- The resulting security of supply encourages the commercialization of new applications, which boosts total demand that absorbs new supply coming on stream
- Rare earth metals typically occur as clusters skewed toward “light” or “heavy” elements, some of which are scarcer than others and thus have fewer commercialized applications
- A surge in availability of these scarcer rare earth elements as a by-product encourages demand development for them

Would a rare earth price shock reduce demand?

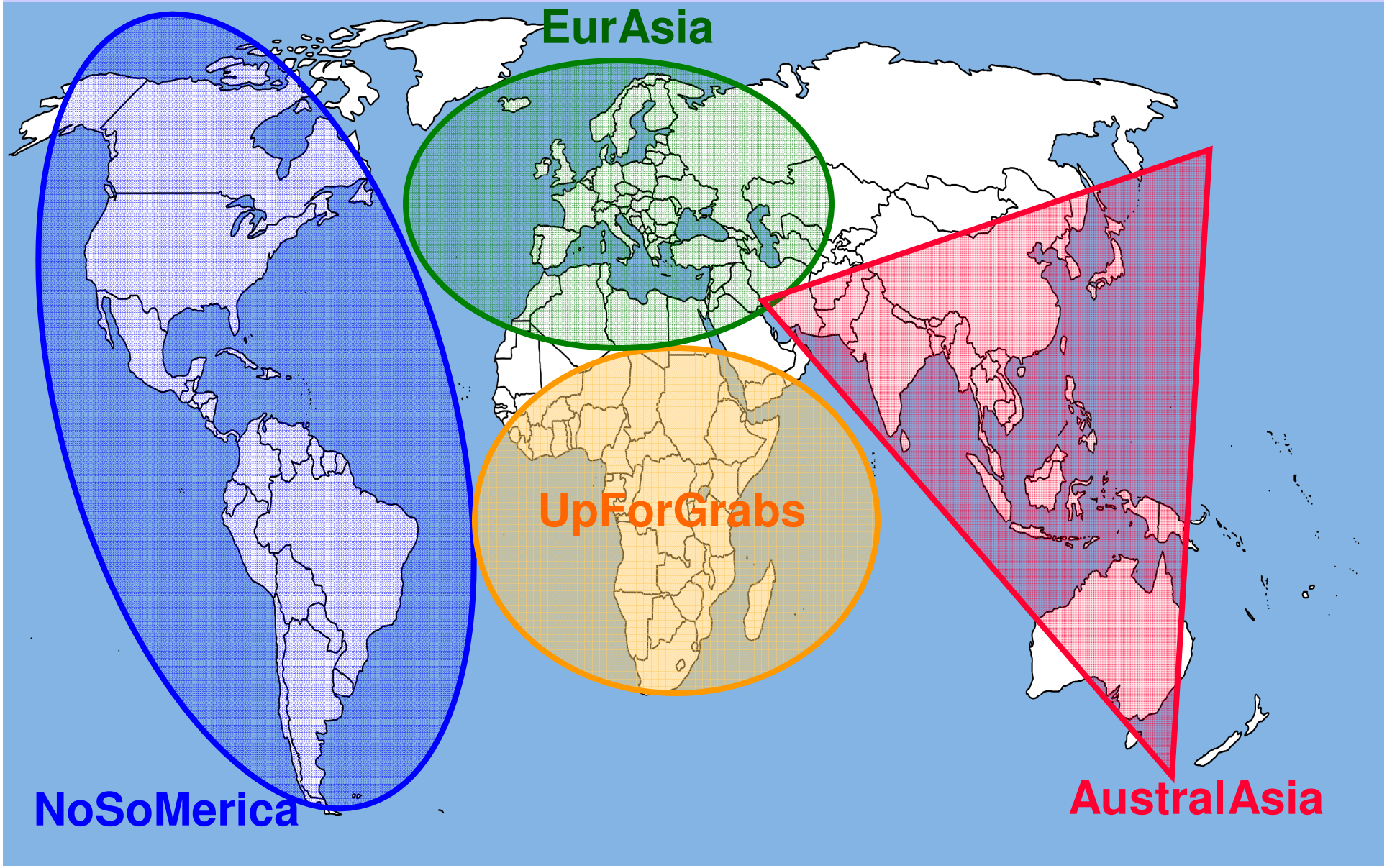
Jevons' Paradox:

Scarcity results in higher prices for raw material inputs, which should result in lower demand through substitution, but when substitution is not possible, a push for more efficient utilization of inputs is undertaken, which, if successful, will stimulate total demand growth, which in turn enables raw material supply expansion without glutting the market and triggering a price collapse.

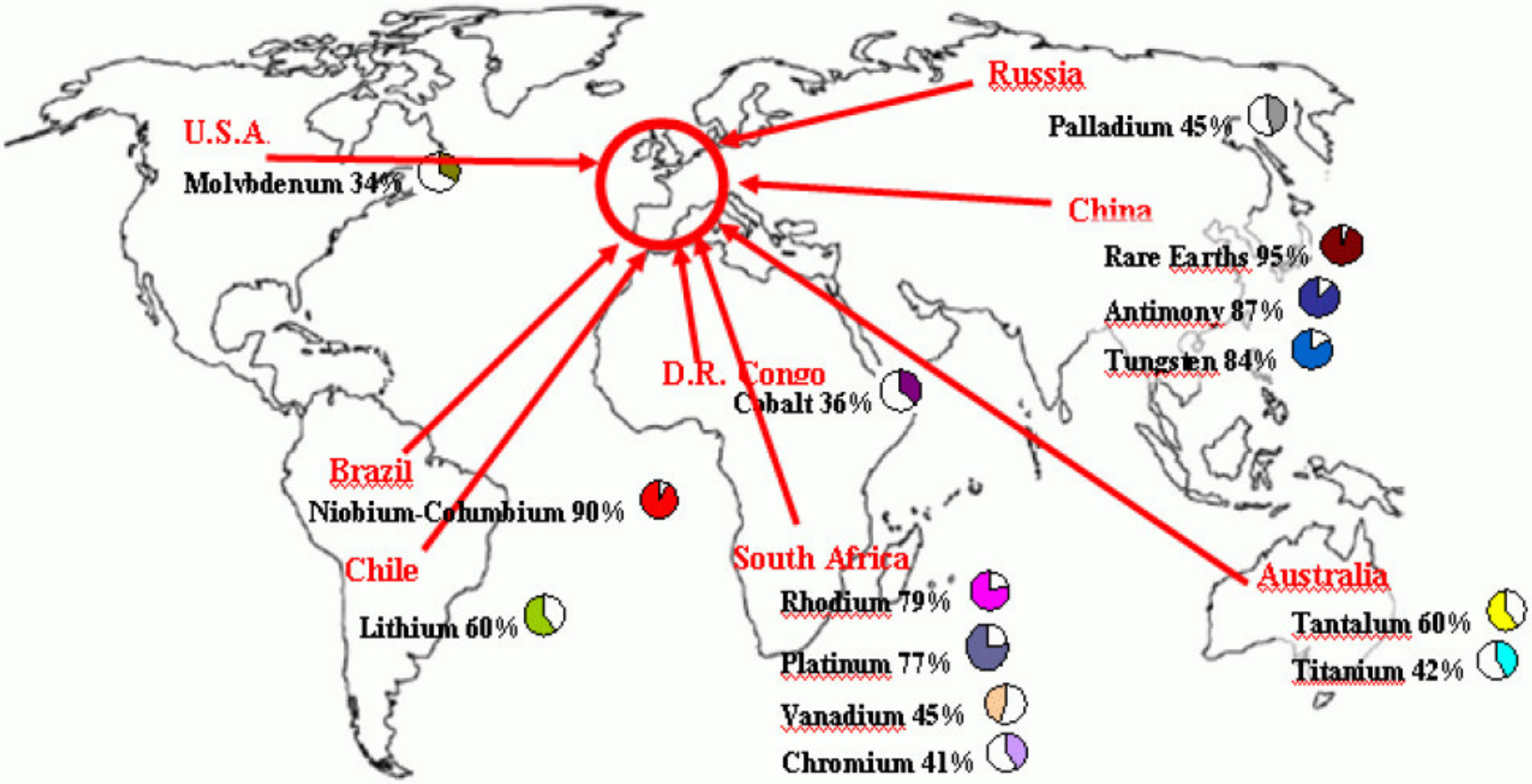
Rare Earth elements lend themselves well to R&D aimed at developing more efficient utilization.


Currency Exchange Rates
Per Chinese Renminbi (Yuan)
(Downtrend = weakening Yuan)
Euro:Yuan
CAD:Yuan
USD:Yuan
GBP:Yuan
0.20
0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
+17.5%
Re-Peg
Jan-99
Jul-99
Jan-00
Jul-00
Jan-01
Jul-01
Jan-02
Jul-02
Jan-03
Jul-03
Jan-04
Jul-04
Jan-05
Jul-05
Jan-06
Jul-06
Jan-07
Jul-07
Jan-08
Jul-08
Jan-09
Jul-09
Jan-10

Post-Globalization Economic Zone Fragmentation



Security of Supply for Critical Materials is becoming an issue for Europe, Japan and the United States as China moves to secure its own needs.



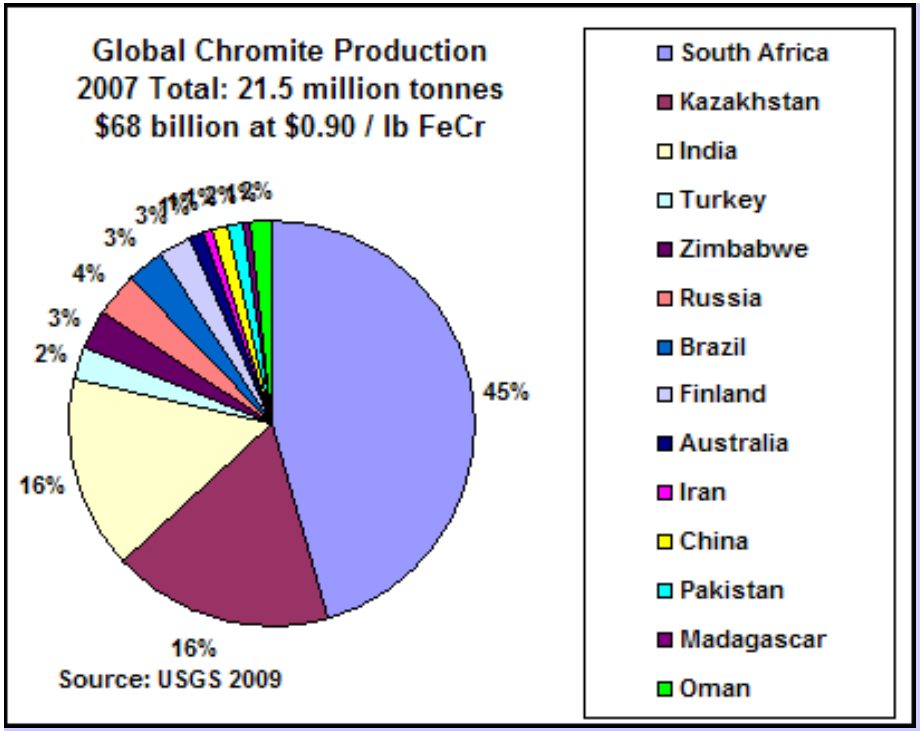
Source: EC Commission – The Raw Materials Initiative

Implications of the Collapse of Globalization and the loss of US dollar reserve currency status for the global economy

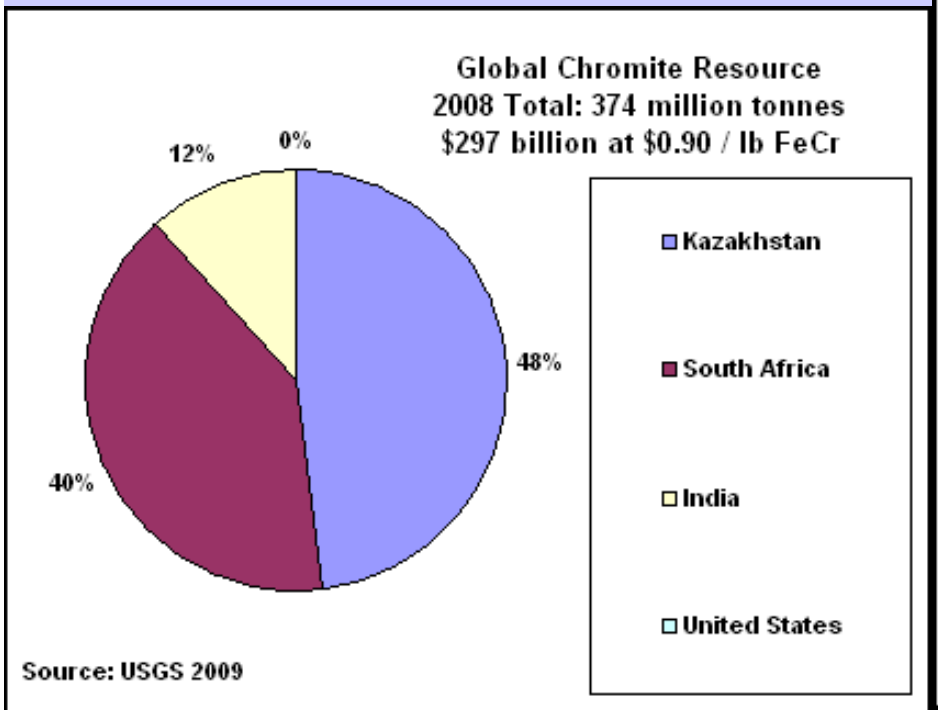
- Price discovery through futures commodity markets becomes chaotic
- Cost structure in so far that self-sufficiency within a closed system has not been achieved becomes unpredictable
- Economic analysis involving discounted value of future cash flows becomes pure guesswork
- Production decisions will hinge on rapid payback for mines with long resource lives
- The survivors will be those who have title to the means of production and security of supply with regard to the raw material inputs
- The global system will gravitate towards an equilibrium established through diverse and localized production

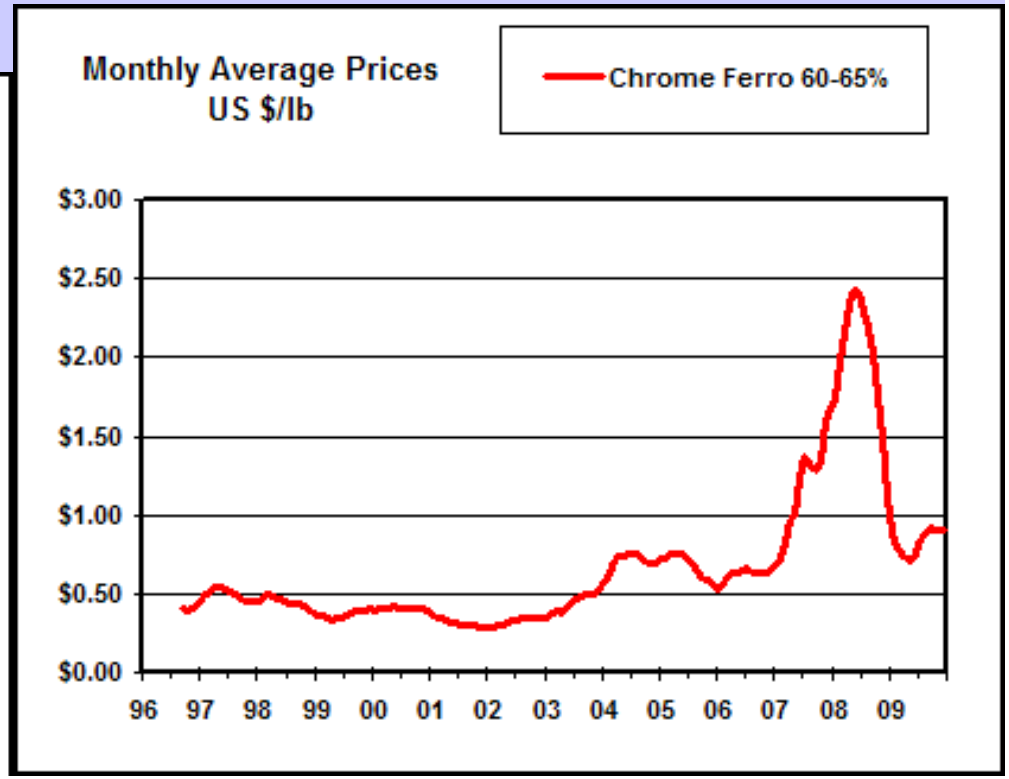
Economic vs Strategic Logic

- Is it a pure commodity play?
- Is there a security of supply problem in terms of limited geographical sources?
- Is the metal a critical but incremental input to downstream products with a substantially larger value?
- Could an unexpected supply glut expand market demand by encouraging aggressive product innovation and marketing with minimal negative impact on metal price?
- Would control of secure supply with surplus potential give a fabricator a competitive advantage in downstream products?
- If so, what strategic premium might such a project command?



- Global reserve base "sufficient to meet conceivable demand for centuries" (USGS)
- China lacks chromite resource
- US has 54% import reliance
- No substitute for chromium in stainless steel production
- South Africa pushing to restrict chromite ore export, dominant producer of ferro chrome
- Kazakhstan unreliable supplier

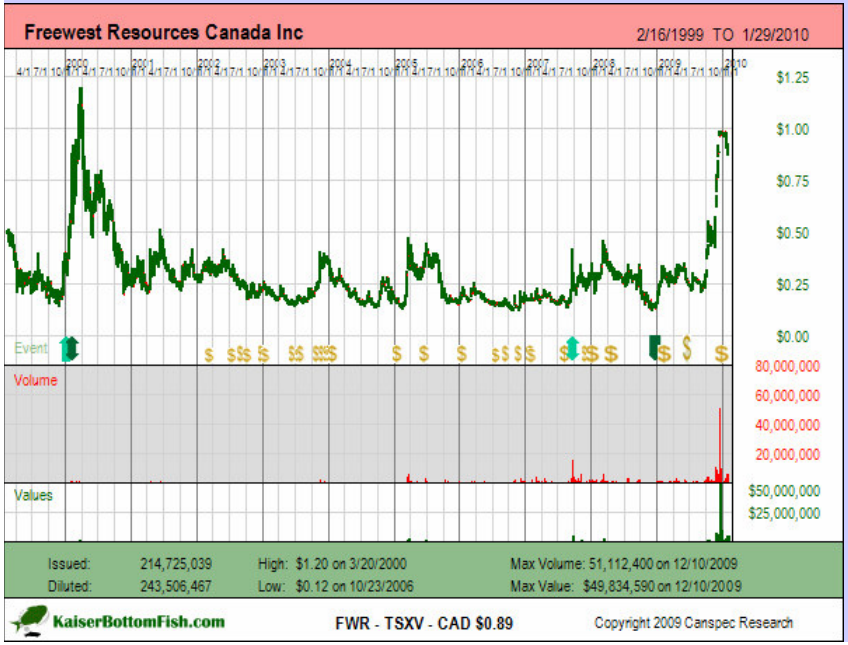




Cliffs Natural Resources Inc

- NYSE listed producer of iron ore pellets and coking coal
- 2008 revenues of $3.6 billion
- Significant NA operations
- Supplies US steelmakers
- Market capitalization of $5 billion
- Bought Freewest's chromite asset via takeover bid of 0.20106 CLF share for 1 FWR share

Freewest Resources Canada Inc



- TSXV listed resource exploration junior
- Zero revenues and no prospect of such
- Buyout value $217 million
- Owns 100% of Black Thor chromite discovery and 40% of Big Daddy in northern Ontario
- 122 million tonne open-pittable footprint, grade range 27.8%, below South African standard of 40%+
- Estimated $1.5 billion capital cost

Critical & Strategic Metals

- Chinese trend is for state controlled entities to make investments in raw material supply around the world which often go hand in hand with parallel infrastructure investments guided by long term security of supply rather than profit goals
- Free markets in which metals go to the highest bidder will become thinner and less reliable for just-in-time procurement strategies
- Mainstream mining companies are unlikely to invest in primary specialty metal mines such as rare earth deposits, and will at most add circuits to recover them as by-product metals from existing base metal mines
- Volatility in currency exchange rates and energy costs rule out long term price based contracts while lack of transparency and poor price discovery mechanisms make spot market pricing unreliable
- End users with large downstream markets at stake will need to make upstream equity and/or debt investments in resource juniors which raise risk capital to acquire and advance specialty metal deposits
- Rare earth producers will either need to be owned and operated by a consortium of downstream users, or the producers will need to own downstream operations which add value to the mined raw materials
- Profits will reside in the downstream products for which metals are a critical but incremental input, not in the margin between mining cost and market price

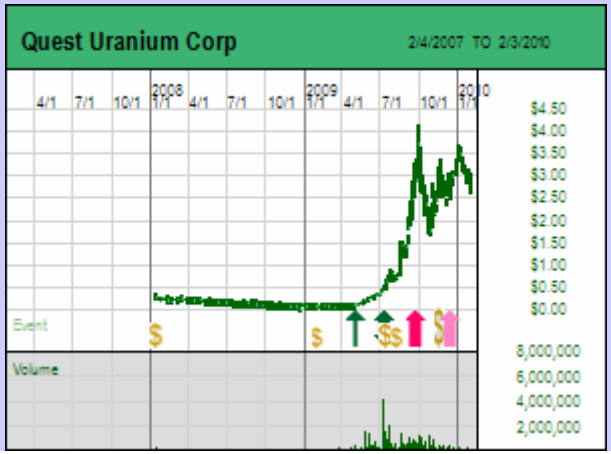
Key Australian RE Index Members

- Nolans Bore apatite LREE + HREE + phosphate deposit
- 30.2 MT 2.78% TREO $267/t, in situ $8 billion
- Working on metallurgy, 25% China
- Mt Weld LREE carbonatite complex: 4.7 MT 13.8% TREO $1299/t, 4.8 MT 8.96% $844/t, 2.8 MT 3.98% $497/t, in situ $11.5 billion
- Raised A $450 million for construction
- Dubbo zirconium+LREE+HREE
- 73.2 MT 0.89% TREO $106/t, in situ $7.7 billion
- working on metallurgy

Top Kaiser Rare Earth Picks

- Nechalacho (Thor Lake) LREE & HREE peralkaline complex, NWT: Basal 48.7 MT 1.94% TREO $298/t, Upper 19.9 MT 2.01% $213/t, in situ $18.7 billion
- Working on metallurgy

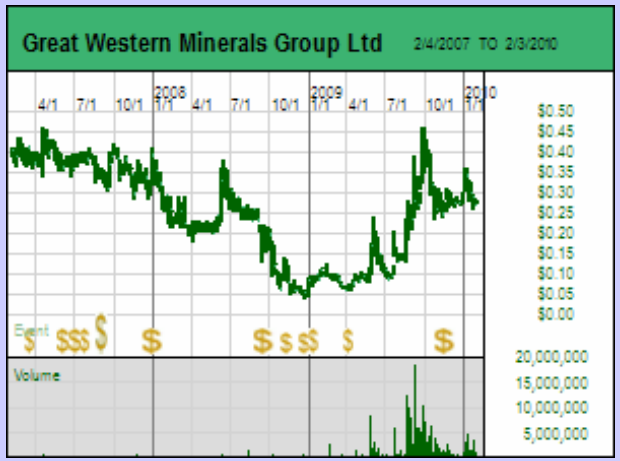
- Bear Lodge LREE carbonatite dyke complex in Wyoming: oxide zone 4.6 MT 4.29% $266/t, $1.2 billion in situ
- Resource expansion and metallurgy



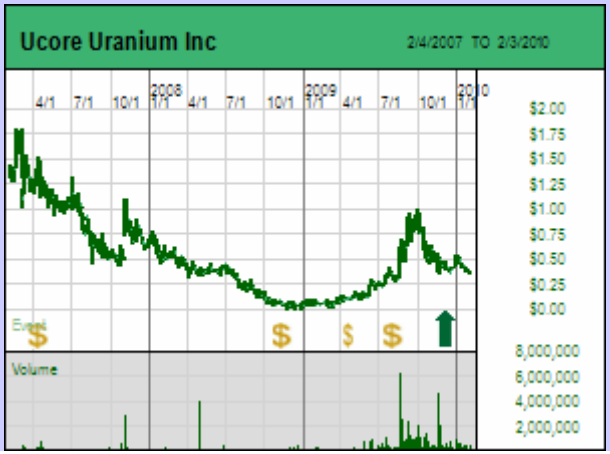
- Strange Lake LREE+HREE peralkaline complex in Quebec/Labrador
- BZone major new discovery, expecting 43-101 resource estimate Q2 2010

Other interesting RE Index Members

- Kipawa pegmatite system with HREE in southern Quebec
- Former Unocal project, 2,500 m drill program underway



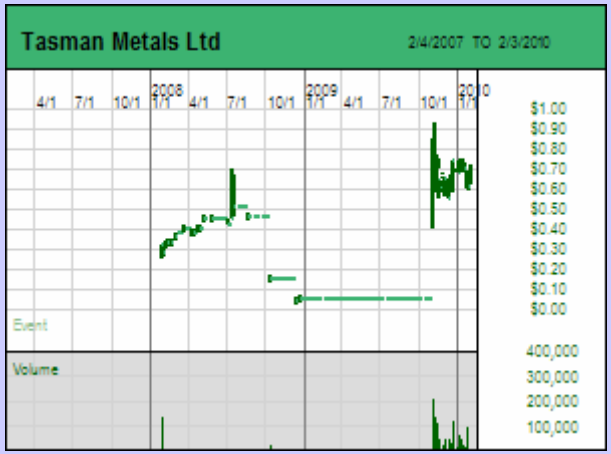
- Hoidas Lake apatite vein, Douglas River & Benjamin River HREE plays
- Steenkampskraal – South Africa
- LCM magnet processor



- Bokan peralkaline dyke system, Alaska
- HREE intensive
- Awaiting drill results

Other interesting RE Juniors

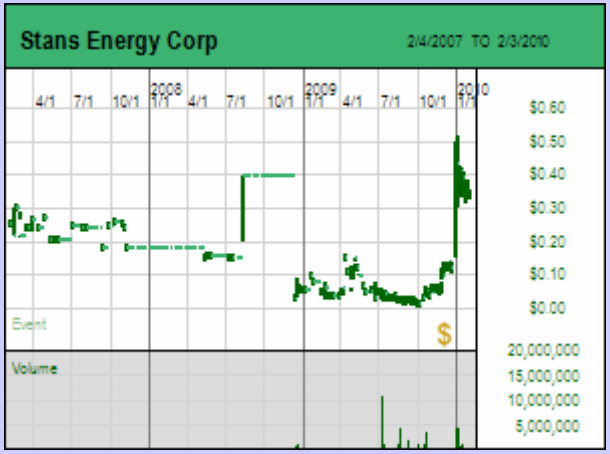
- Sarfartoq carbonatite in Greenland, high neodymium values
- Former Hecla niobium play



- Norra Karr – large at surface zirconium + LREE + HREE body in Sweden found by Boliden
- New REO vehicle for Hudson, Saxon, Henstridge

- Clay-Howless carbonatite in northern Ontario
- Wade Dawe & Stares brothers

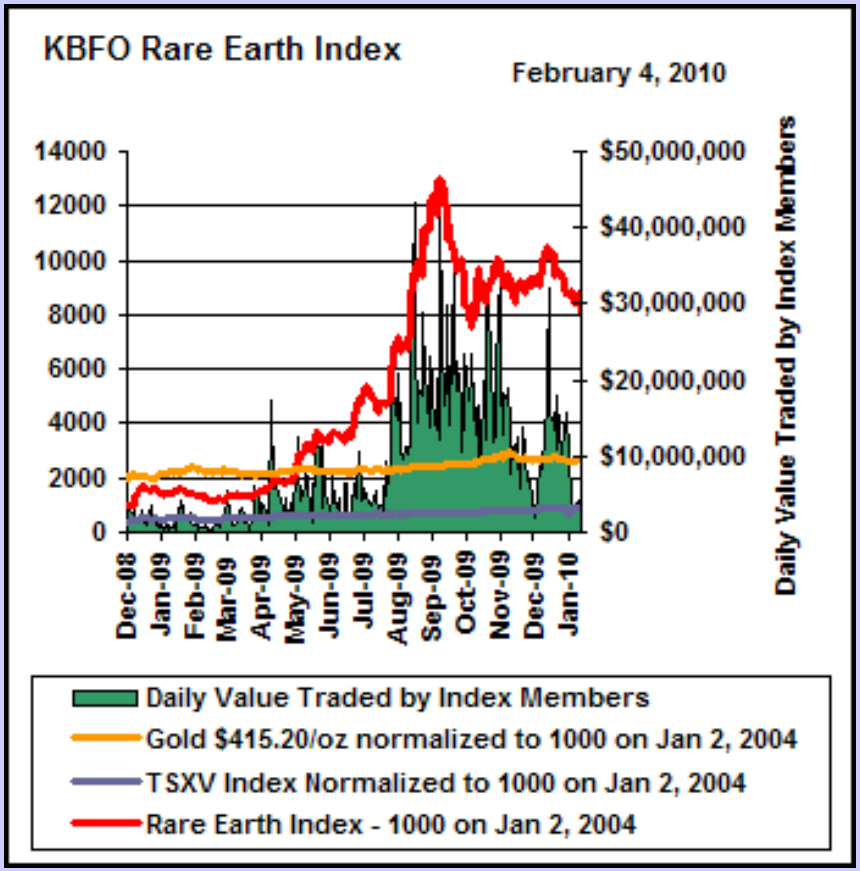
Other interesting RE Juniors



- Kutessay II former mine in Kyrgyzstan
- Former supplier of HREE to Soviet Union
- Stans to assess putting back into production
- Earlybird staking of REE systems in northern Argentina

Kaiser Services

- Kaiser Bottom-Fish Online Membership – US $250 per quarter or $800 per year
- One time one month KBFO Trial at $100



www.KaiserBottomfish.com