

# Rare Earth Elements Letter

## INTERNATIONAL

*the independent information and advice bulletin for Rare Earth Elements and related investments*

---

January 2011

### ➤ Rare Earths Materials

**play key role in advanced environmental and modern technical products**

The “**REE**” Rare Earth Elements group, known as the lanthanide series, consists of 15 elements:

|                   |                 |
|-------------------|-----------------|
| lanthanum (La)    | terbium (Tb)    |
| cerium (Ce)       | dysprosium (Dy) |
| praseodymium (Pr) | holmium (Ho)    |
| neodymium (Nd)    | erbium (Er)     |
| promethium (Pm)   | thulium (Tm)    |
| samarium (Sm)     | ytterbium (Yb)  |
| europium (Eu)     | lutetium (Lu)   |
| gadolinium (Gd)   |                 |

The elements yttrium (Y) and scandium (Sc) are also lumped in with Rare Earths because they have similar chemical properties making 17 REE's in total.

In the oxide form, the group is collectively known as Rare Earths Oxides (REOs).

REE's are frequently found associated with radioactive elements, such as uranium and thorium, making mining them dangerous and subject to environmental restrictions.

Rare Earths play a key role in advanced green environmental products from energy efficient compact fluorescent light bulbs to hybrid cars, automotive catalytic converters and wind turbine generators. They are also essential in the development and manufacturing of many modern technological products from hard disc drives to flat panel displays, iPods and magnetic resonance imaging (MRI) scans.

Many defense applications, including missile guidance systems, mine detection, anti-missile defense and communication systems, also require rare earths elements.

Because of the large number of high-technology and defense applications that require rare earths, dependable, quality resources, are important to the Western economies and critical to continued manufacturing and production.

### ➤ Rare Earths prices

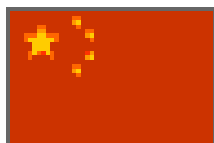
Due to the global economic slowdown which began in the fourth quarter of 2008, many industries have been experiencing inventory destocking as customers use existing inventory to preserve cash. This has caused raw material process to slump significantly at the upstream end of the supply chain.

The June 2008 Rare earths price for Lynas' average Mount Weld composition was US\$ 15.22/kg REO on a FOB basis, by June 2009 this dropped to US\$ 9.52/kg REO, a decline of 37%. In the same period the average composition price for China's Baotou Mine declined 40% from US\$ 12.67 to US\$ 7.65/kg REO.

When export quota costs, export tariff and value added tax are taken into account a Chinese company is estimated to receive less than US\$ 5.00/kg. These price levels are believed to be at the cash cost of production within China, which have increased from approximately US\$ 3.50/kg REO in 2002/03 to approximately US\$ 5.50/kg over the last five years due to higher energy, chemical reagents, labour and environmental compliance costs.

Rare Earths prices have risen strongly since the second half of 2009. Compared with the second quarter of 2009 the average Mount Weld composition increased 35% from US\$ 9.70 to US\$ 13.13/kg REO. With the reduction of the Chinese export quota recently announced prices have increased further to US\$ 70/kg REE in November 2010, having seven-folded this year.

| Pricing                           |                 |                 |                 |                 |                 |                 |                 |                 |                 |                          |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------------|
| Rare Earth Oxide (Purity 99% min) | Price June 2001 | Price June 2002 | Price June 2003 | Price June 2004 | Price June 2005 | Price June 2006 | Price June 2007 | Price June 2008 | Price June 2009 | Price change 2008 – 2009 |
| Lanthanum Oxide                   | 7.00            | 2.30            | 1.50            | 1.62            | 1.45            | 2.15            | 2.82            | 8.83            | 5.90            | -33%                     |
| Cerium Oxide                      | 4.00            | 2.25            | 1.68            | 1.62            | 1.37            | 1.65            | 2.63            | 4.38            | 3.80            | -13%                     |
| Neodymium Oxide                   | 11.00           | 4.35            | 4.42            | 5.75            | 6.05            | 11.07           | 31.15           | 32.88           | 14.50           | -56%                     |
| Praseodymium Oxide                | 6.20            | 3.94            | 4.19            | 8.00            | 7.55            | 10.70           | 30.37           | 32.61           | 14.50           | -56%                     |
| Samarium Oxide                    | 9.00            | 2.98            | 2.67            | 2.67            | 2.60            | 2.40            | 3.12            | 4.80            | 4.75            | -1%                      |
| Dysprosium Oxide                  | 35.00           | 20.00           | 14.60           | 30.30           | 36.40           | 70.44           | 88.30           | 120.80          | 112.00          | -7%                      |
| Europium Oxide                    | 310.00          | 240.00          | 235.40          | 310.50          | 286.20          | 240.00          | 311.00          | 491.00          | 495.00          | 1%                       |
| Terbium Oxide                     | 135.00          | 170.00          | 170.00          | 398.20          | 300.00          | 434.00          | 575.40          | 740.00          | 360.00          | -51%                     |
| Av. Mt Weld Composition           | 7.81            | 3.97            | 3.48            | 4.45            | 4.15            | 5.50            | 11.40           | 15.22           | 9.52            | -37%                     |
| Av. Baotou Composition            | 6.66            | 3.17            | 2.68            | 3.29            | 3.08            | 4.33            | 9.42            | 12.67           | 7.65            | -40%                     |



### ➤ China controls the world's Rare Earths industry

The strategic value of secure Rare Earth supplies has been much better and earlier understood in China than in the Western world. Already the late Chinese leader Deng Xiaoping once said "There is oil in the Middle East, there is Rare Earth in China". He foresaw the West's growing dependence on these elements for high-tech industries and put China on course to become the world's dominant supplier today with 95% of Rare Earths production. In 2009, the analogy to oil reserves is even more striking with Rare Earths use in zero-emission energy generation technology such as wind and solar.

However, the path that has led China to a virtual monopoly has not been without its own issues. The Chinese State-Owned Enterprises (SOE) that gained the processing technology could not protect this intellectual property.

As a result, the Chinese Rare Earths industry grew rapidly in the 1990s as many smaller Chinese enterprises set up Rare Earths processing plants. This led to intensive competition between Chinese producers which in turn drove down prices of rare Earths from the high prices associated with "specialty chemicals" to significantly lower "commodity" prices in a few short years.

Mining of rare Earths within China also grew unchecked within the provinces, especially in the south where small artisanal mining is possible. The main mine in China is the Bayan Obo Mine near Baotou in Inner Mongolia. This is controlled by a large SOE, Baotou Iron, and produced approximately 50,000 tonnes Rare Earth Oxides.

A second region is located in the Sichuan Province and is less consolidated. This region has lower value resources and mining is now underground, as opposed to open-pit mining. Sichuan has an estimated capacity of up to 20,000 tonnes REO, and is reported being consolidated by Jiangxi Copper, which company shall invest in the required infrastructure and upgrading of processing plants.

The southern region, which comprises of Jiangxi, Guangdong, Hunan and Fujian provinces, mine an "ionic" clay deposit. This is the third region within China producing Rare Earths and most of the "heavy" Rare Earths (europium, terbium, dysprosium and yttrium being the key heavy rare Earths) in demand globally today.

Accurate production figures are unavailable due to the artisanal mining in this region. However, estimates range from 35,000 – 55,000 tonnes REO.

The fragmented Rare Earths mining and processing industry in China suffered from inefficient extraction techniques leading to low recovery and in addition poor environmental protection compliance was prevalent across the industry.

The Chinese authorities realized the industry had to change and rationalization of the industry began in 2003 when export quotas on Rare Earths were introduced and issued to approved local operators.

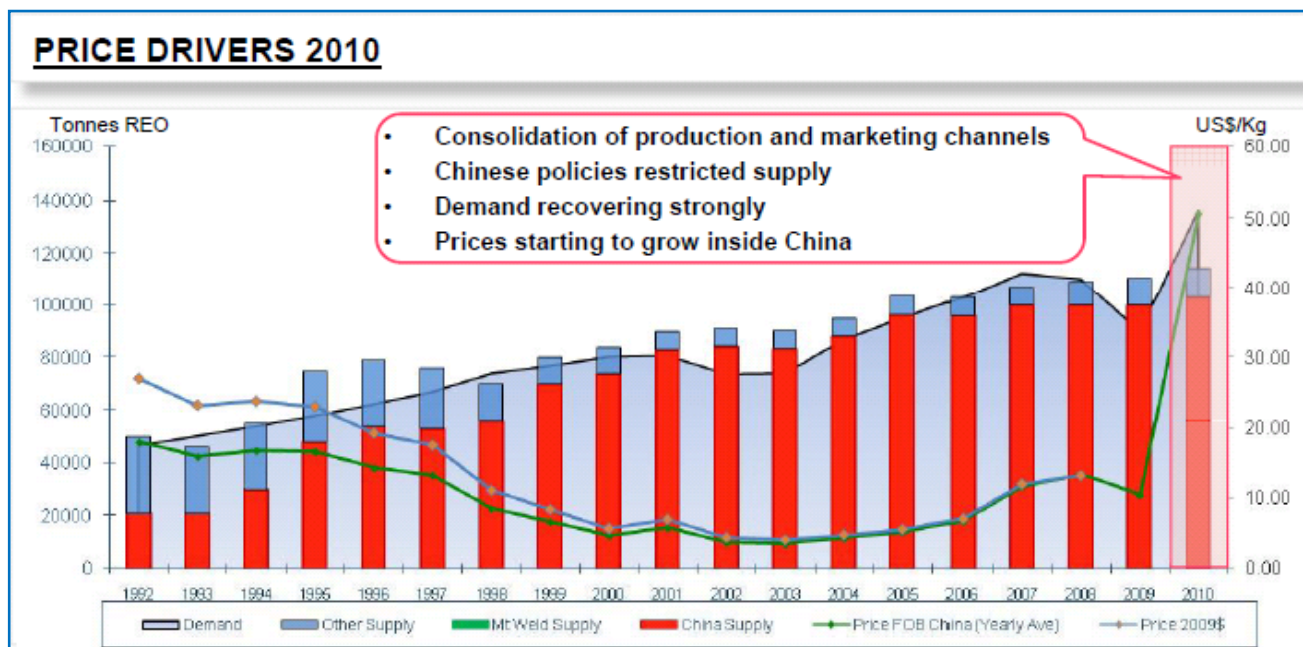
The tonnage of this export quota has been decreasing every each year. In 2006, the volume dropped to 48,000 tonnes, in 2007 to 43,574 tonnes, 2008 to 40,987 tonnes and in 2009 to 33,300 tonnes.

In addition to this export quota for local companies, foreign joint ventures secured export quotas from the Chinese Ministry of Commerce. In 2009, these quotas equaled 16,845 tonnes, giving a grand total of 50,145 tonnes.

These annually declining quotas, in conjunction with tightening of environmental regulation compliance, has led to the closure of many small processing operations.

To protect the fragile Rare Earths resources base within China over mining with low recovery processes and to enforce the environmental standards within the mining industry, the Chinese Government introduced “production quotas” in 2007.

The production quota for Rare Earths concentrates was 82,320 tonnes of REO in 2009, down 6% from 87,620 tonnes in 2008. The quota consisted of 72,300 tonnes for light rare earths from Baotou and Sichuan, down 7.9% as compared to 2008, and 10,020 tonnes for medium and heavy rare earths from the southern ionic region, up 8.87%.



Source: Lynas Corp

Both the Baotou and Sichuan regions appeared to be operating within this production quota policy, however, with the official production quota from the Chinese Ministry of Land and Resources of 10,020 tonnes per annum, the southern “ionic” clay region appears to be producing significantly above this quota level.

There are reports of continued government efforts to reduce mining in the southern ionic clay region, with MinMetals taking the lead in consolidating the mines and processing plants within Jiangxi.

In 2009, the Chinese government announced that it has stopped acceptance applications for prospecting licences and mining licences for Rare Earth resources until June 30, 2010.

On July 8, 2010, the Ministry of Commerce of China released 7,976 tonnes of approved rare Earths export quota for the second half of 2010, including export quota for both foreign-invested firms (1,768 tonnes) and local firms (1,768 tonnes). The export quota is 72% less than the export quota for the second half of 2009 (28,417 tonnes).

The total export quota for 2010 of 30,259 tonnes is 40% less than the total export quota for 2009 (50,145 tonnes).

Since mid-September, China blocked shipments of raw rare earths minerals to Japan due to a diplomatic dispute, and to the United States and Europe since mid-October.

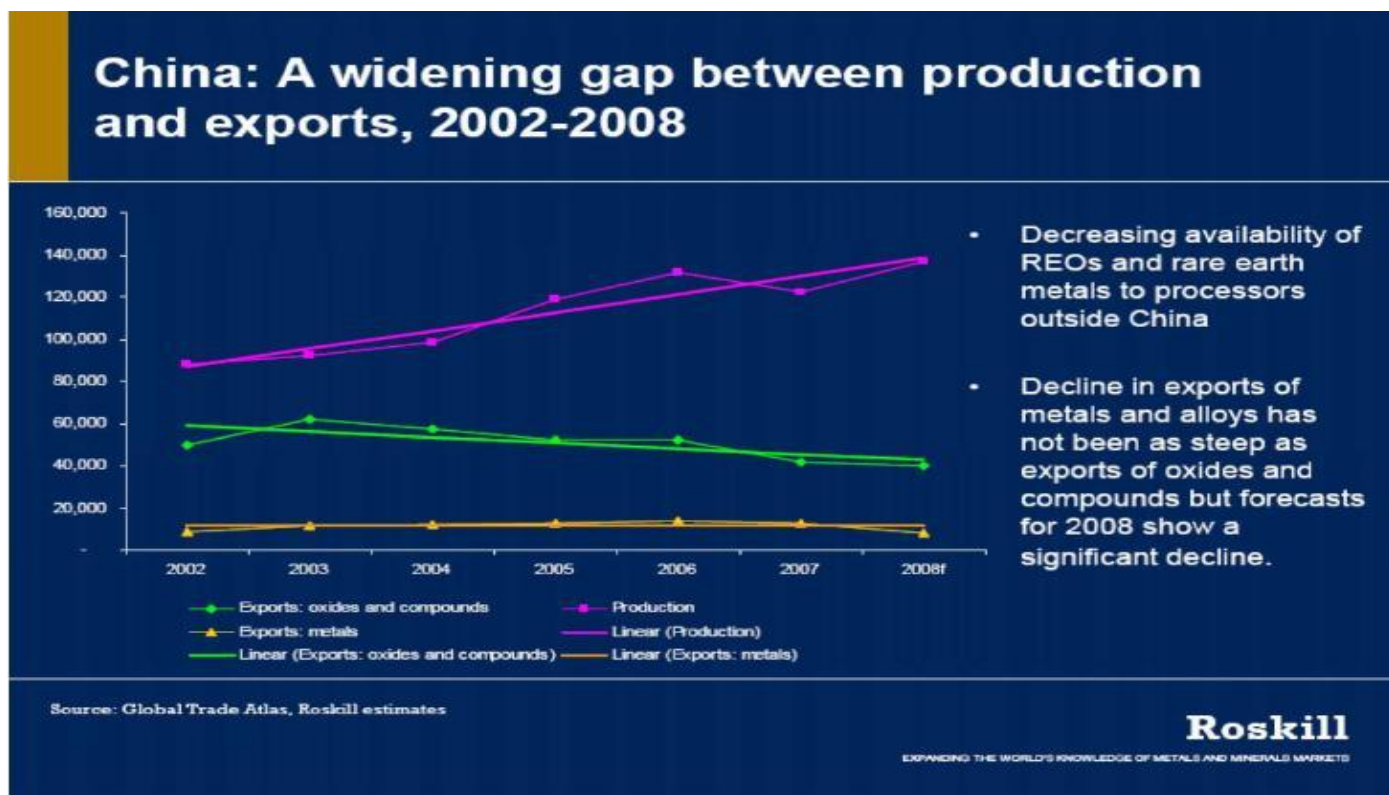
However, by the end of October the export embargo to the United States and Europe was ended.

In this respect, it should be noted that from the 2010 export quota of 30,259 tonnes less than 2,000 tonnes remained to be exported by the end of September 2010.

According to Chinese rare earths industry officials the strong cut in export quotas is justified by the fact that after many years of continued growth in exports, the industry didn't receive the profit returns with the policy having been adjusted to ensure that China's resources are optimally utilized.

On December 28, 2010 the Chinese Ministry of Commerce announced the quota allocations for Rare-Earth export quotas for the first half of 2011. A total of 14,508 million tons of Rare-Earth export quotas to 32 different companies in China, a reduction of 35% compared with the quotas for the same period last year when the allocation was 22,282 metric tons. In the first half of 2010, 16,304 metric tons were allocated to Chinese-owned companies and 5,978 metric tons to foreign owned companies.

Of the 14,508 metric tonnes of quota for the first half of 2011, 10,762 metric tons went to 22 Chinese trading companies, and 3,746 metric tons went to 10 foreign-owned companies.



### ➤ Western hemisphere urged to respond to **China's** Rare Earths monopoly

With China further tightening supply regulations to shore up prices, there is growing urgency to ensure own supplies in the Western hemisphere particularly for Heavy Rare Earth Elements (HREEs), indispensable for high-tech manufacturing.

As to actually producing HREE rich ores and refining them no facilities exist today in the Western world that are extracting and/or refining HREEs to separate and justify them for high technology end uses. All such facilities today are in China.

For the **United States**, it will be necessary to develop, prove-out and construct at least one North American facility to produce the Rare Earth metals and their alloys in metallic form before anyone can make rare earths based magnets for any application.

**Molycorp Minerals** will be the first company in the western hemisphere to challenge Chinese domination in the production of REE's by reopening its Mountain Pass Mine in California with mining expected to go full scale by 2012.

**Lynas Corp.**, owing the richest deposit of Rare Earths in the world at Mount Weld in Western Australia, the first new project outside China, is expected to be the next producer with the first feed to kiln at the Lynas Advanced Material Plant in Malaysia on target for the third quarter of 2011.

On November 20, 2010, Japanese trading company Sojitz, based in Tokyo Japan, announced that it had forged a \$ 250 million procurement deal with Lynas to start shipping 3,000 metric tons a year of Rare-Earths from the Mount Weld Mine, beginning late next year.

Sojitz and Lynas aim to increase shipments to more than 9,000 metric tons as year by early 2013.

With half of China's export of REEs going to Japan – about 25,000 metric tons a year – the transaction responds to China having blocked Japan-bound shipments for two months beginning in mid-September after a dispute over islands controlled by Japan but claimed by China.

| <b>2014 FORECAST SUPPLY ASSUMPTIONS</b> |                 |
|---|-----------------|
| <b>SUPPLY SOURCES</b>                   |                 |
| • Baotou                                | 60,000t         |
| • Sichuan                               | 20,000t         |
| • Ionic Clay Regions                    | 30,000t         |
| • Recycling in China                    | 4,000t          |
| <b>China Total</b>                      | <b>114,000t</b> |
| • Mount Weld                            | 22,000t         |
| • Mountain Pass                         | 20,000t         |
| • Others (India & Russia)               | 12,000t         |
| • Recycling outside China               | 1,800t          |
| <b>Outside China Total</b>              | <b>55,800t</b>  |
| <b>Grand Total</b>                      | <b>169,800t</b> |

| <b>KEY UNDERLYING ASSUMPTIONS</b>  |  |
|--|--|
| • Baotou – 10% production increase 2010 / 2014   |  |
| • Sichuan – full production quota to be utilised   |  |
| • Ionic Clay – 2010 reduced from 2008 reported levels due to news reports. 2014 reduced to double current production quota (conservative estimate, could be lower) |  |
| • Mountain Pass – full production (20,000tpa) achieved   |  |
| • Recycling – 20% Nd, Pr & Dy recycled from previous year's magnet production (~30% SWARF losses)  |  |

| <b>2014 GROWTH RATE AND DEMAND FORECAST BY APPLICATION</b> |                      |                     |
|--|----------------------|---------------------|
| Application  | Growth rate p.a. (%) | Demand (t)          |
| • Magnets  | 12%                  | 55,100              |
| • Battery Alloy  | 15%                  | 32,500              |
| • Metallurgy ex batt                                       | 2%                   | 12,700              |
| • Auto catalysts   | 8%                   | 12,200              |
| • FCC  | 4%                   | 24,900              |
| • Polishing Powder   | 10%                  | 28,000              |
| • Glass Additives  | 0%                   | 7,800               |
| • Phosphors  | 8%                   | 10,800              |
| • Others   | 8%                   | 6,100               |
| <b>Total</b>   | <b>9%</b>            | <b>190,100t REO</b> |

**Distribution by Value**

**100% = US\$11.2 billion**

Source: Lynas Corp

At the end of December 2010, **Bloomberg** launched its **Rare Earth Mineral Resources Index**. This is a “modified market capitalization weighted index” comprising publicly-traded companies with advanced rare-earth projects.

The primary criterion for inclusion in the Index is that a company has a rare-earth project with a defined 43-101- or JORC-compliant mineral resource. The Index will be updated and re-weighted on a quarterly basis, so that companies with new mineral-resource definitions will be eligible for inclusion.

In the first iteration of the Index, Bloomberg chose the following companies and weightings:

| Member Companies on the Bloomberg Rare Earth Mineral Resources Index and their weightings (at Dec 21, 2010) |                            |               |
|---|----------------------------|---------------|
| Company   | Ticker Symbols             | Weighting (%) |
| Molycorp Inc.   | NYSE:MCP                   | 16.4          |
| Lynas Corporation Ltd.  | ASX:LYC, PK:LYSCF          | 15.0          |
| Avalon Rare Metals Inc.   | TSX:AVL, AMEX:AVL          | 11.4          |
| Rare Element Resources Ltd.   | TSX.V:RES, AMEX:REE        | 11.2          |
| Arafura Resources Ltd.  | ASX:ARU, PK:ARAFF          | 10.0          |
| Greenland Minerals and Energy Ltd.  | ASX:GGG, PK:GDLNF          | 6.7           |
| Quest Rare Minerals Ltd.  | TSX.V:QRM, PK:QSURD        | 6.3           |
| Frontier Rare Earths Ltd.   | TSX:FRO                    | 5.9           |
| Alkane Resources Ltd.   | ASX:ALK, PK:ALKEF          | 5.0           |
| Tasman Metals Ltd.  | TSX.V:TSM, PK:TASXF, F:T61 | 4.6           |
| Great Western Minerals Group Ltd.   | TSX.V:GWG, OTCBB:GWMGF     | 4.2           |
| Navigator Resources Limited   | ASX:NAV                    | 2.1           |
| Matamec Explorations Inc.   | TSX.V:MAT, PK:MTCEF        | 1.2           |



**Great Western Minerals** (GWG – TSX.V), an integrated rare earth producer, has a facility capable of producing rare earth metal alloys for battery production (nickel metal hydride) production in Michigan (US) and a facility producing samarium cobalt and neodymium iron boron magnet “alloys” in the UK.

GWMG holds an option with respect to the former Rare Earths producing **Steenkampsgraal Mine** in South Africa, as well as seven Rare Earth exploration and development properties in North America and plans to bring the Steenkampsgraal mine back to production.

On December 21, 2010, GWMG confirmed that it had made an all-cash offer for 79.2% shares of Rare Earth Extraction, the owner of the Steenkampsgraal Mines, not already held by GWMG.

GWMG is to purchase 37.64 million shares at a price of 3 SA Rand per share.



**Molycorp Minerals** (MCP – NYSE) will be the first company in the western hemisphere to challenge Chinese dominance in the production of Rare Earths metals by reopening its **Mountain Pass Mine**, California at rebuilding costs of approximately US\$ 530 million. Since having discovered

rare Earth mineralization (bastinasite) in

1949 at Mountain Pass and production having begun in 1952, the Company produced about 40% of global Rare Earths in 1990. However, in 1998 separation activity suspended due to inability to continue using off-site wastewater evaporation facilities followed by final mining and milling campaigns of bastinasite are compiled and mill tailings impoundment are being closed after 30 years of service.

In 2007, the extraction circuit for neodymium/praseodymium restarted for the first time since 1998, with production having commenced in the fourth quarter.

On September 30, 2009, privately held Molycorp Minerals, successor of Molycorp Inc a wholly owned subsidiary of Chevron, acquired the Mountain Pass facility from Chevron Mining, as a foundation to build an integrated rare earth products and technology company. With processing of stockpiled bastinasite having begun in 2009, mining of fresh bastinasite is planned to begin in 2011 and to go full scale by 2012.

Molycorp is presenting the Mountain Pass Mine, a superior Rare Earth ore body both in quality (high-grade) and quantity, containing the most abundant Rare Earth deposit in the Western hemisphere. The Mine is expected to produce high quality REO's including cerium, lanthanum, neodymium, praseodymium and europium.

In June 2010, Molycorp signed a Letter of Intent with **Neo Material Technologies** (NEM – TSX) of Canada, a global producer of neodymium-iron-boron magnetic powders and rare-earth based engineered materials and applications to cooperate in the rare earth “Mine to Magnets” supply chain to their mutual benefit.

On December 13, 2010, Molycorp announced that it had secured the last of several environmental permits necessary to begin construction of its new, \$ 53.1 million state-of-the-art Rare Earths manufacturing facility at Mountain Pass. The construction period is estimated at 18 months. Full capacity is scheduled to occur by the end of 2012.

On December 10, 2010, the Company and Sumitomo of Japan agreed to a US\$ 130 million equity and debt investment in Molycorp in exchange for a Rare Earth supply agreement.

On December 21, 2010, Molycorp and Japan-based Hitachi entered into an agreement regarding the planned formation of joint ventures for the production of Rare Earth alloys and magnets in the United States.



**Lynas Corp.** (LYL – ASX) owns the richest deposit of Rare Earths in the world at **Mount Weld** in Western Australia. A feasibility study has been completed on the Mount Weld Deposit and all Australian approvals required for Project development have been received.

A comprehensive evaluation of the Deposit has been completed by independent specialists Hellman and Schofield, resulting in a substantial upgrade in the resource to 7.7 million tonnes at 12% for 917,000 tonnes REO.

Due to the high ore grades the ore production level is forecast to be relatively small, for example: production of 10,500 tonnes REO in the first year of operations will require 120,000 tonnes of ore to be processed. With current demand at 95,000 tonnes per annum the Mount Weld production will represent approximately 11% of the global market.

Based on the proposed ore treatment options current reserves were calculated by Australian Mine Design and Development as 2.1 million tonnes @ 15.5% REO containing 321,000 tonnes REO. This is about 35% of the available resources.

Lynas confidently expects that further ore processing studies and inclusion of lower grade ore will result in a mine life in excess of 20 years.

In November 2009, Lynas completed a A\$ 450 million capital raising to enable the completion of construction of the Concentration Plant at Mount Weld and Lynas Advanced Materials Plant (LAMP) to process the Mount Weld concentrate through the final Rare Earth oxides (REOs) in the Gebeng Industrial Estate, Kuantan, Pahang, Malaysia.

The first feed of ore into the Concentration Plant is on target for the first quarter of 2011.

On November 24, Lynas signed a Strategic Alliance with Sojitz of Japan to secure additional supply of Rare Earths products for the Japanese market.

Phase I operations are scheduled to begin in the third quarter of 2011, with an initial capacity of 11,000 tonnes REO per annum and the capacity of the LAMP to be doubled to 22,000 tonnes per annum in 2012.

On December 22, 2010, Lynas received approval from the Government of Malawi for the acquisition of the fully permitted Kangankunde Rare Earths Resource. The Company expects to complete the acquisition of this asset within the next few weeks for the contract sum of US\$ 4 million.

The Deposit has an Inferred resource of 107,000 tonnes of REO at an average grade of 4.24% REO using a 3.5% REO cut-off grade.

| Rare Earth Oxide        | Mt Weld Distribution | 2007   | 2008   | 2009   | Q2 2010 | Q3 2010 | 10/01/11 |
|-------------------------|----------------------|--------|--------|--------|---------|---------|----------|
| Lanthanum Oxide         | 25.50%               | 3.44   | 8.71   | 4.88   | 7.49    | 23.67   | 61.00    |
| Cerium Oxide            | 46.74%               | 3.04   | 4.56   | 3.88   | 6.42    | 23.05   | 62.00    |
| Neodymium Oxide         | 18.50%               | 30.24  | 31.90  | 19.12  | 33.20   | 55.81   | 88.50    |
| Praseodymium Oxide      | 5.32%                | 29.05  | 29.48  | 18.03  | 33.07   | 54.37   | 88.00    |
| Samarium Oxide          | 2.27%                | 3.60   | 5.20   | 3.40   | 3.40    | 14.40   | 35.00    |
| Dysprosium Oxide        | 0.124%               | 89.10  | 118.49 | 115.67 | 200.50  | 281.54  | 305.00   |
| Europium Oxide          | 0.443%               | 323.90 | 481.92 | 492.92 | 529.80  | 585.31  | 640.00   |
| Terbium Oxide           | 0.068%               | 590.40 | 720.77 | 361.67 | 538.50  | 593.38  | 615.00   |
| Av. Mt Weld Composition |                      | 11.59  | 14.87  | 10.32  | 16.02   | 34.06   | 70.75    |

*Note: Mt Weld distribution totals 98.9%, the balance is made up of Gadolinium, Holmium, Erbium and Yttrium oxides. Regular pricing information is not available for these metals.*

*Source: Lynas Corp.*



**Greenland Minerals and Energy** (GGG – ASX) has secured to acquire 61%, with options to acquire up to 100% of the **Kvanefjeld Project** on the southwest tip of Greenland and is recognized as the world's largest undeveloped multi-element occurrence of rare earth oxides, sodium fluoride and uranium.

In June 2009, Greenland Minerals and Energy released an updated resource statement confirming Kvanefjeld, at a total 4.91 million tonnes REO, including 0.12 million tonnes or 283 million pounds of uranium oxide (U<sub>3</sub>O<sub>8</sub>) and 2.21 million tonnes of sodium fluoride (NaF), to be the largest undeveloped rare earth resource in the world.

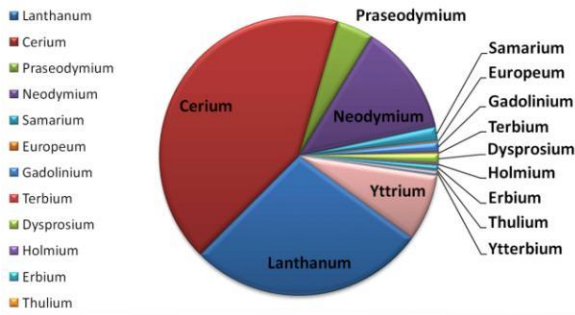
Early indications are that uranium represents approximately a quarter of the total in ground value of the Kvanefjeld Deposit, to be estimated at more than US\$ 50 billion.

In 2009, Greenland Minerals' focus has shifted from exploration and resource definition to the requirements of a Pre-Feasibility Study on the Kvanefjeld Project, the results of which were released on February 1, 2010, and provide a Net Present Value (NPV) of US\$ 2.18 billion and calculated a free cash flow of US\$ 8.9 billion over the 23-year mining period, if developed.

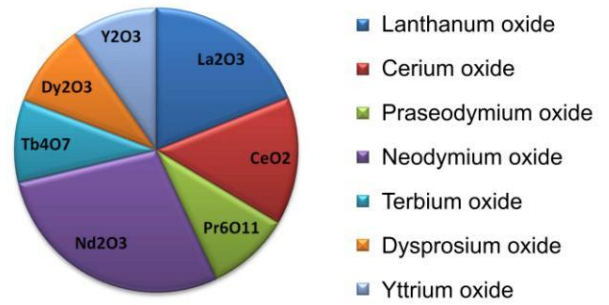
Mining studies indicate a large open-pit with low waste strip ratio and the highest grades presenting near-surface.

Total life mine production is 293.3 million tonnes at an average mine grade of 314 ppm U<sub>3</sub>O<sub>8</sub> and 1.01% TRE.

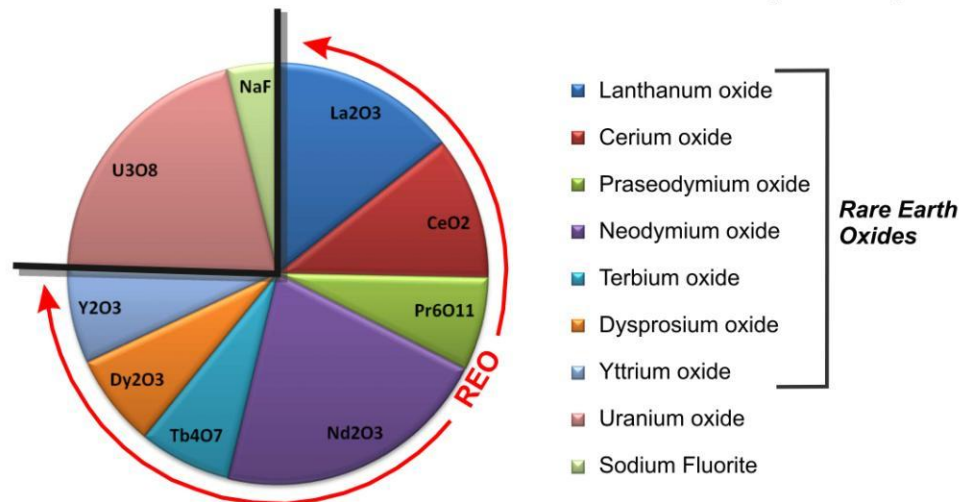
### RARE EARTH ELEMENT CONSTITUENTS OF KVANEFJELD ORE



### RELATIVE VALUE OF RARE EARTH OXIDE CONSTITUENTS



### IN-GROUND VALUE DISTRIBUTION OF KVANEFJELD MULTI-ELEMENT ORE (per tonne)



\*Based on REE grades in the geological model and metal prices as of July 08 (IMCOA)

A mine processing plant capable of treating 10.8 million tonnes per year is expected to cost US\$ 2.31 billion. Construction is scheduled to commence in 2013.

Nominal forecast annual production is equivalent to 43,729 tonnes of REO and 3,895 tonnes of U3O8. At this level of production Kvanefjeld could potentially supply >20% of the global Rare Earth demand of 2015/2016.

On May 26, 2010, Greenland Minerals announced that the South Greenland Municipal Council officially supports removal of the current uranium policy of zero tolerance, and on ongoing feasibility studies at Kvanefjeld. The Company aims to commence these work programs in 2011 and work through the definitive feasibility process in close consultation with Greenlandic stakeholders.

Greenland's labor union (SIK) has backed a change from the current uranium policy to a by-product ruling with a uranium concentration of 0.1%.

On September 20, 2010, Greenland Minerals announced that the Greenland government has introduced an amendment to Standard Terms of Exploration licences in Greenland. The amendments allow for, upon application, approval, the inclusion of radioactive elements as exploitable minerals for the purpose of thorough evaluation and reporting.

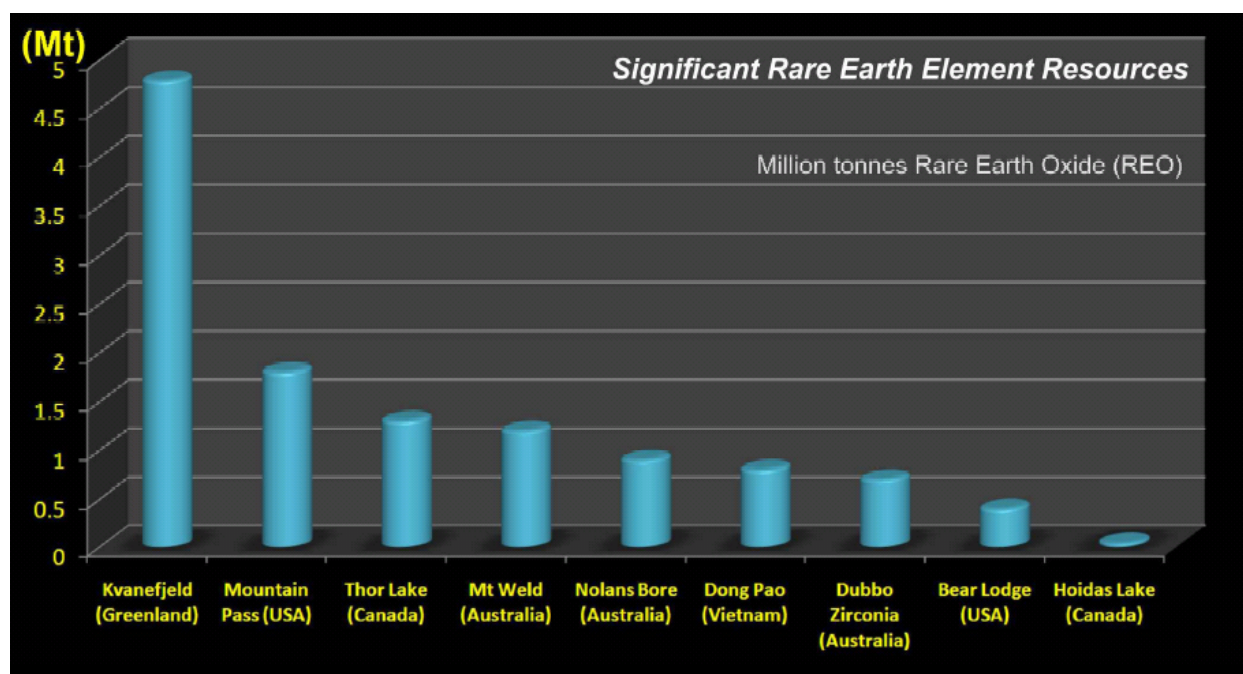
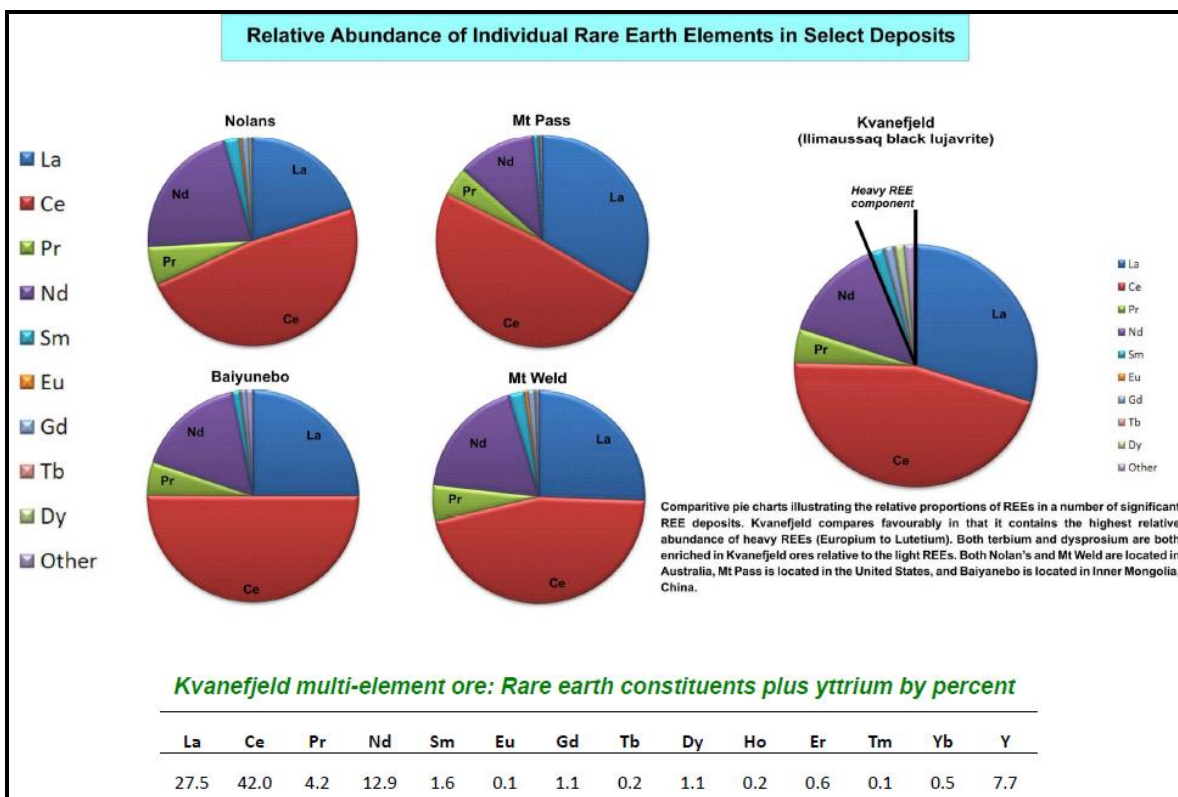
Greenland Minerals' application under these regulations has been approved.

On December 4, 2010, Greenland Minerals announced that it has received approval by the government of Greenland to fully evaluate the Kvanefjeld multi-element Project, inclusive of radioactive elements (uranium).

In 2011, Greenland Minerals is planning on closing out the current pre-feasibility study with a final report before commencing a definitive feasibility study in the latter half of the year.

Results from the 2010 exploration program will be finalized and announced in early 2011.

In early July 2010, Greenland Minerals formalized a A\$ 6 million capital raising and established an A\$15 million equity facility that provides the Company with a further A\$ 21 million to fund ongoing work programs on the Kvanefjeld Project.





**Alkane Resources** (ALK – ASX) is a multi commodity explorer and miner, focused on the Central West of New South Wales, Australia, about 400 kilometres northwest of Sydney

Alkane's **Dubbo Zirconia Project (DZP)**, developments located 30 kilometres south of the large regional centre of Dubbo is one of the world's most advanced zirconium, niobium, yttrium and rare earth productions and is based upon a world class reserve.

A Demonstration Pilot Plant (DPP) has been operating at the laboratory facilities of ANSTO Minerals at Lucas Heights south of Sydney since May 2008 and to date has recovered 1,300 kg of zirconium chemicals and nearly 300 kg of niobium concentrate.

The DPP is currently operating for short periods to trial engineering and process innovations and check specific aspect of the flow sheet for production development.

Laboratory scale testing processed to recover **yttrium** and **heavy rare earths (HREE** = gadolinium, terbium, dysprosium and erbium) has been operating within the DPP and about 20 kilograms of filter cake recovered to date. This filter cake has to be further processed to produce a marketable YHREE product and the program to achieve this has commenced

The yttrium and rare earth distribution in the DPZ ore deposit is unusual, having about 25% in the "heavy" category, which is very different to the standard distribution of about 95% light and 5% heavy.

Alkane's light earth program has taken second priority to the yttrium-heavy rare earth recovery and zirconium-zirconia development, but now has increased in importance and it is anticipated that the LREE circuit will be added to the DPP in the December quarter of this year.

The DPP operation has confirmed the process flow sheet and is providing engineering data for capital and operating cost estimates, and continues to generate substantial product for market evaluation. Data from the DPP and Letters of Intent from future customers will be incorporated in the current DFS which should be completed early 2011.

Depending upon financing and Development Consent from the New South Wales State government, the DPZ could be in production late 2012 or early 2013.



**Canadian International Minerals** (CIN – ASX) which became listed on the TSX Venture Exchange on September 29, 2010, is a junior resource company focused on the exploration, discovery and development of deposits of rare metals and minerals in demand for technologies related to renewable energy, hybrid vehicles, clean air and carbon emission reduction.

The Company's flagship property is the **Carbo Rare Earth Project** located in British Columbia, Canada, which encompasses a series of Niobium and Rare Earth Element (REE) bearing carbonatite and alkaline intrusions. The Property consists of four claims which straddle and directly adjoin Spectrum Mining's property. In late October 2009, this company reported significant rare earth element mineralization on claims contiguous to the Carbo Property.

Highlights included a 48.64 metre interval which averaged 3.55% REE, a 72 metre interval that averaged 2.92% REE and a 144 metre interval that averaged 2.20% REE in three widely separated drill holes.

In late October 2009, **Spectrum Mining**, a private company, reported significant rare earth mineralization on claims contiguous to the Carbo Property. Highlights include a 48.64 metre interval which averaged 3.55% REE, a 72 metre interval that averaged 2.92% REE and a 144 metre interval that averaged 2.20% REE in three widely separated drill holes.

Mineral analysis on 2009 drill core has indicated that the primary REEs are contained in coarse grained monazite and a bastnesite-synchistite parasite mineral.

The Carbo claims straddle and directly adjoin Spectrum's Property, with the reported drilling approximately 2 kilometres from a Carbo carbonite showing which hosts analogous mineralization.

In August 2010, CIN announced that a permit to conduct a 1,000 metre diamond drill program on the Carbo Project has been issued by the B.C. Ministry of Energy, Mines and Petroleum Resources.

On December 12, 2010, the Company announced the completion of the 2010 diamond drilling program at the Carbo Project consisting of a total of 9 holes over 1,938.9 metres.

The drilling was concentrated within an approximately 500 metre square area within the northeastern portion of the Carbo claims. The drilling sites lie approximately 1 km northeast of Spectrum's drilling in 2008.

Results from the drilling will be released following completion of the analytical procedure.

It is anticipated that the 2011 drill targets will be more widely dispersed along the approximately 5 km long trend of the Wicheeda Carbonatite Complex.

The 100%-owned Solar claim group, consisting of 7 claims totalling 1,779 hectares, are located approximately 2 km northeast of the town of Golden, British Columbia. The claims cover 5-6 km of favourable Mount Wilson Formation which consists of fine grained white quartzites up to 500 metres wide. They host two operating silica mines including the Moberly Mine, owned by Heemskerk Consolidated, an Australian listed mining house.

The Solar claims directly adjoin the Moberly Mine which has been in continuous production since 1980, and has recently completed an expansion and upgrading of production and processing.

The privately owned Hunt Mine is located approximately 12 km to the south of the Solar claim.

Both mines have stripped metallurgical grade silica to a ferrosilicon refinery in Washington State during the 1980-90s.

An exploration program consisting of geological mapping and sampling has been completed on the Solar and Silicon projects. Twenty eight large rock samples are currently being processed for potential as metallurgical grade silica (> 99.7%). Assays are pending.

On December 1, 2010, CIN announced that it had acquired a 100% interest in mineral claims located in the Thunder Bay Mining Division, Ontario, known as the Prairie Lake North./South and Prairie Lake West Properties, approximately 40 kilometres northeast of Terrace Bay.

The Prairie Lake North/South Property consists of 218 mineral claims in 116 claim blocks covering 3,504 hectares.

The Prairie Lake West Property consists of 37 mineral claims in 3 claim blocks covering 582 hectares.

Field work conducted by the vendor and confirmed by CIN has located multiple new occurrences of alkaline rocks which contain REEs as well as elevated radiometric signatures.

## Overview of major Rare Earths and Lithium companies

| December 31, 2010                          | Trading symbol |       | Share price | 12 months prices |       | Net shares issued million | Market cap. million |
|--|----------------|-------|-------------|------------------|-------|---------------------------|---------------------|
|  |                |       |             | H                | L     |                           |                     |
| <b>Rare Earths:</b>                        |                |       |             |                  |       |                           |                     |
|  |                |       | US\$        | US\$             | US\$  |                           | US\$                |
| Molycorp Minerals                          | MCP            | NYSE  | 49.90       | 55.22            | 12.10 | 82.3                      | 4,106.8             |
|  |                |       | Cdn\$       | Cdn\$            | Cdn\$ |                           | Cdn\$               |
| Avalon Rare Metals                         | AVL            | TSX   | 6.21        | 6.77             | 1.89  | 92.4                      | 573.8               |
| Rare Element Resources                     | RES            | TSX.V | 15.95       | 17.24            | 1.94  | 35.3                      | 563.0               |
| Quest Rare Minerals                        | QRM            | TSX.V | 5.53        | 5.75             | 1.74  | 56.9                      | 314.7               |
| Frontier Rare Earths                       | FRO            | TSX   | 3.35 x      | 3.75             | 2.80  | 89.6                      | 300.2               |
| Great Western Minerals                     | GWG            | TSX.V | 0.58        | 0.61             | 0.15  | 355.6                     | 206.2               |
| Tasman Metals                              | TSM            | TSX.V | 4.40        | 4.90             | 0.40  | 38.9                      | 171.2               |
| Stans Energy                               | RUU            | TSX.V | 1.30        | 1.34             | 0.19  | 130.1                     | 169.1               |
| Commerce Resources                         | CCE            | TSX.V | 0.79        | 0.94             | 0.21  | 130.6                     | 103.2               |
| Hudson Resources                           | HUD            | TSX.V | 1.64        | 1.74             | 0.46  | 59.5                      | 97.6                |
| Ucore Rare Metals                          | UCU            | TSX.V | 0.67        | 0.74             | 0.20  | 136.7                     | 91.6                |
| Matamec Explorations x                     | MAT            | TSX.V | 0.64        | 0.64             | 0.11  | 116.2                     | 74.4                |
| Eagle Plains Resources                     | EPL            | TSX.V | 0.64        | 1.28             | 0.11  | 89.4                      | 57.2                |
| Pele Mountain Resources xx                 | GEM            | TSX.V | 0.33        | 0.36             | 0.09  | 129.2                     | 42.6                |
| Midland Exploration                        | MD             | TSX.V | 1.90        | 2.00             | 1.20  | 22.2                      | 42.2                |
| Quantum Rare Earth Development             | QRE            | TSX.V | 0.50        | 0.64             | 0.22  | 69.9                      | 35.0                |
| <b>Canadian International Minerals *</b>   | CIN            | TSX.V | 0.62        | 0.78             | 0.13  | 52.3                      | 32.5                |
| Rare Earth Metals                          | RA             | TSX.V | 0.40        | 0.68             | 0.14  | 75.6                      | 30.2                |
| Bon Terra Resources                        | BTR            | TSX.V | 0.45        | 0.71             | 0.08  | 53.9                      | 24.3                |
| Bolero Resources                           | BRU            | TSX.V | 0.52        | 0.59             | 0.16  | 30.9                      | 16.1                |
| Paget Minerals                             | PGS            | TSX.V | 0.21        | 0.36             | 0.14  | 38.0                      | 8.0                 |
| <b>Int. Montoro Resources *</b>            | IMT            | TSX.V | 0.14        | 0.17             | 0.03  | 48.7                      | 6.8                 |
| <b>Kirrin Resources *</b>                  | KYM            | TSX.V | 0.15        | 0.15             | 0.04  | 37.8                      | 5.7                 |
| Electric Metals                            | EMI            | TSX.V | 0.16        | 0.28             | 0.06  | 30.6                      | 4.9                 |
| Alix Resources                             | AIX            | TSX.V | 0.22        | 1.50             | 0.15  | 12.3                      | 2.7                 |
|  |                |       | A\$         | A\$              | A\$   |                           | A\$                 |
| Lynas                                      | LYC            | ASX   | 2.06        | 2.07             | 0.38  | 1,662.5                   | 3,424.8             |
| Arafura Resources                          | ARU            | ASX   | 1.48        | 1.79             | 0.38  | 366.3                     | 542.1               |
| <b>Greenland Minerals and Energy * xxx</b> | GGG            | ASX   | 1.20        | 1.24             | 0.31  | 288.7                     | 346.4               |
| <b>Alkane Resources * xxxx</b>             | ALK            | ASX   | 1.00        | 1.19             | 0.23  | 249.0                     | 249.0               |
| Navigator Resources xxxxx                  | NAV            | ASX   | 0.22        | 0.28             | 0.12  | 465.5                     | 102.4               |
| Northern Uranium xx                        | NTU            | ASX   | 0.41        | 0.50             | 0.06  | 163.8                     | 67.2                |
| Metallica Minerals                         | MLM            | ASX   | 0.30        | 0.37             | 0.20  | 125.1                     | 37.5                |
| Globe Metals and Mining xx                 | GBE            | ASX   | 0.33        | 0.51             | 0.12  | 101.0                     | 33.3                |
| Gippsland                                  | GIP            | ASX   | 0.05        | 0.07             | 0.03  | 625.1                     | 31.3                |
| <b>Ram Resources *</b>                     | RMR            | ASX   | 0.03        | 0.06             | 0.01  | 546.8                     | 16.4                |

x based upon IPO of Cdn\$ 60 million offering 17.65 million units for Cdn\$ 3.40 each; listing as at November 17, 2010

x also gold and base metal assets  
xxxx also major gold assets in Australia

xx also uranium assets  
xxxxx also gold producer in Australia

xxx also major uranium assets

\* featured as Special Situation

| December 31, 2010               | Trading symbol |       | Share price  | 12 months prices |              | Net shares issued million | Market cap. million |
|---------------------------------|----------------|-------|--------------|------------------|--------------|---------------------------|---------------------|
|                                 |                |       |              | H                | L            |                           |                     |
| <b>Lithium:</b>                 |                |       | <b>Cdn\$</b> | <b>Cdn\$</b>     | <b>Cdn\$</b> |                           | <b>Cdn\$</b>        |
| Talison Lithium                 | TLH            | TSX   | 6.86         | 7.80             | 3.10         | 91.2                      | 625.6               |
| Canada Lithium                  | CLQ            | TSX   | 1.99         | 2.23             | 0.40         | 152.9                     | 304.3               |
| Lithium Americas Corp.          | LAC            | TSX   | 1.90         | 2.30             | 1.04         | 73.8                      | 140.2               |
| Western Lithium Canada          | WLC            | TSX.V | 1.43         | 2.49             | 0.69         | 76.0                      | 108.7               |
| Lithium One                     | LI             | TSX.V | 1.66         | 1.73             | 0.85         | 49.5                      | 82.2                |
| Nemaska Exploration             | NMX            | TSX.V | 0.57         | 0.60             | 0.26         | 59.3                      | 33.8                |
| Rock Tech Lithium               | RCK            | TSX.V | 0.43         | 0.44             | 0.08         | 67.6                      | 29.1                |
| TNR Gold (Int. Lithium) x       | TNR            | TSX.V | 0.19         | 0.38             | 0.15         | 137.6                     | 26.1                |
| Dios Exploration                | DOS            | TSX.V | 0.32         | 0.38             | 0.17         | 34.6                      | 11.1                |
| Pan American Lithium            | PL             | TSX.V | 0.30         | 0.82             | 0.14         | 29.1                      | 8.7                 |
| Sirios Resources                | SOI            | TSX.V | 0.07         | 0.10             | 0.04         | 92.1                      | 6.4                 |
| x also copper assets            |                |       |              |                  |              |                           |                     |
|                                 |                |       | <b>US\$</b>  | <b>US\$</b>      | <b>US\$</b>  |                           | <b>US\$</b>         |
| LI 3 Energy                     | LIEG           | OTCBB | 0.23         | 1.12             | 0.10         | 90.9                      | 20.9                |
| American Lithium Minerals       | AMLML          | OTCBB | 0.37         | 1.44             | 0.31         | 54.4                      | 20.1                |
|                                 |                |       | <b>A\$</b>   | <b>A\$</b>       | <b>A\$</b>   |                           | <b>A\$</b>          |
| Galaxy Resources                | GXY            | ASX   | 1.45         | 1.65             | 0.90         | 191.9                     | 278.3               |
| Orocobre x                      | ORE            | ASX   | 3.29         | 3.38             | 1.11         | 91.2                      | 300.0               |
| x also lithium-potash resources |                |       |              |                  |              |                           |                     |