

“Public Policies Regarding Rare Earths – 2011”

Vasili Nicoletopoulos
Member, Steering Committee
Head, Critical Materials Task Force
Euromines, Brussels



June 22, 2011

Federchimica 6th Workshop TACEC
Critical Minerals in the Future

1

“Public Policies Regarding Rare Earths – 2011”

1. Introduction

- Rare Earths [RE] in international headlines due to Chinese policy changes
- Complex & intriguing topic
- Will cause severe international concerns at least for next couple of years



“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

- Demand
- Prices
- Smuggling and illegal mining
- EHS
- Economics and finance
- Economizing, substituting, recycling
- New projects



“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

Demand...

- RE applications are magnets and high-efficiency lighting
- Magnets: small electric motors for vacuum cleaners, lawnmowers, washing machines, disc drives; high-tech: windmills, electric & hybrid car engines
- Catalysts, cell phones, metal alloys/batteries



“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

...Demand

- Many end uses sensitive: defense, aerospace, medical equipment, green technology
- World REE demand 135 k tpy, production ~ 125, difference stocks or inventories
- Domestic demand for RE in China increased 200 pct in last 12 mos, ~1/2 of that since the start of 2011
- World demand 180 k tpy by 2012 and >200 by 2014, barring economic downturn



“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

Prices

- Risen dramatically in last 2 years
- End April, 2011, cerium 20-fold over last year. Increase end-products, eg magnets made in Japan up by >40% from 1 July ... and availability not guaranteed
- REE market prices not terminally traded → difficult for speculators ...but speculative funds targeting the industry, exacerbating price increases



“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

Smuggling and illegal mining

- **Illegal production ~1/7 of world LRE supply, 1/2 of HRE**
- **Smuggling fm China 50% of RE exports to the Japan/S.Korea/Taiwan, 20 per cent of Japan’s RE imports from China**
- **Attacked by authorities**



“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

EHS [+low Chinese prices in '90s] →

- shutdown of Mountain Pass
- new Chinese policies - ‘fluorine, dust, hydrofluoric acid, sulfur dioxide, and sulfuric acid and radioactive waste residue’
- opposition to new processing projects outside China, including world’s biggest [Malaysia]: compare w/ Japanese radiation poisoning, reminding problems with last RE project, closed in 1992

“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

Economics and finance

- Baotou profit decline 67 pct '09/'08, but 2010 revenue increase 103%, net income 1,245%

- Financing in China easier than in 'West', eg. Baotou City subsidizes loan interest payment

- Molycorp net loss of \$909,000 for Q1 2011, year-earlier loss of \$7.7 mi. Many other 'Western' projects outside China at development stage → negative results.

- Baotou exchange to trade in RE, to 'regularise market flows of RE, give greater leverage over foreign buyers, further regulate the market, and help China influence RE pricing on the global market'

“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

Economizing, substituting, recycling

- Catalysts w/ RE content reduced factor of 4 phasing out from electric & hybrid vehicles

- Dismantling of Nd magnets from hard disks and compressors

extracting Dy and Nd from washing machines and air conditioners

- But: might take years for economically viable solutions

- Recycling cost, small quantities of RE uneconomical to recycle

“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

New projects...

- Mostly outside China. Years to materialize, esp. new discoveries
- Mountain Pass [Molycorp] could produce in 2012 but no government guarantees
- Trans-national investments & projects:...

“Public Policies Regarding Rare Earths – 2011”

2. The Policy Background

...New projects

- **China in Australian Arafura and China Yunnan Copper**
- **Molycorp in Estonian Stilmet**
- **Lynas in Malaysia**
- **Japan, ROK in Brazil, Kazakhstan, Uzbekistan, Vietnam**
- **US in Afghanistan, etc**
- **Taiwan chooses cooperation w/ China**

- **Prospects generally good, but worry about RE equities and plethora of RE exploration**



“Public Policies Regarding Rare Earths – 2011”

3. Criticality, Strategic Considerations...

- Chinese ‘withdrawal’ may starve ROW consuming industries of inexpensive raw materials
- US & Japanese analysts/policy-makers: will cause strategic threat ROW - dominate magnet industry
- ROW losing market share in envir. technology to China
- threat could get bigger if China starts importing RE



“Public Policies Regarding Rare Earths – 2011”

3. ...Criticality, Strategic Considerations

- EU, US list ‘Critical Raw Materials’
- Euromines sets up special Task Force
- US DOE: critical = combination of metal's importance to clean energy economy & risk of supply disruptions - 5 REM most critical short/medium term, another 3 near-critical metals in short term

“Public Policies Regarding Rare Earths – 2011”

4. Chinese Policies...

- Mid 2010 to 2011
- cut RE export quotas 40%
- Japanese buyers: China banned Japan RE exports, China denying denies embargo
- no new mining licenses to 2015
- consolidating the number of their RE companies to ~1



“Public Policies Regarding Rare Earths – 2011”

4. ...Chinese Policies...

- co-ordinated pricing
- VAT rebate on exports withdrawn
- imposing tougher EHS
- increasing taxation for RE producers
- R&D assistance
- stockpiling strategic reserves



“Public Policies Regarding Rare Earths – 2011”

4. ...Chinese Policies...

- Most against Chinese producers
- Rather ‘macro’:
 - for many years exporting RE at very low prices, causing local environmental damage & at expense of domestic consumption
 - inflation, rising labor costs
 - power shortages in China

“Public Policies Regarding Rare Earths – 2011”

4. ...Chinese Policies

- *Lifton: ‘We effectively told them in the past that we wanted them to produce our RE. Now, we are saying why did you do this to us?’.*
- Many companies in the West [indirectly] depend on Chinese illegal mining and smuggling.
- Quota cuts only apply to raw RE, not processed forms eg magnets
- strategy to develop Chinese domestic manufacturing industry [owned or not by Chinese]
- trading ‘resources for technology’



“Public Policies Regarding Rare Earths – 2011”

5. Historical perspective

- Other emerging economies devt strategies: trade, taxation, investment instruments → reserving resources for exclusive use, thru govt measures eg export taxes, quotas, subsidies
- RE not the 1st Chinese case. Last 35 years transformation fm exporting cheap raw mats to higher-price/ higher-value-added. '80s: EU magnesia/fluorspar antidumping duties → export license regime, capture ‘surplus’ domestically, moved up value chain to finished products
- 1985: China dominance in Sn, large quantities @ low prices – ROW miners out. Even today, China > 85 pct of Σ Sn output
- **Would Beijing repeat this w/ RE?**



“Public Policies Regarding Rare Earths – 2011”

6. ‘ROW’ Reactions and Policies...

On the positive side for ROW:

- if illegal mining & smuggling taken into account, Chinese production and exports considerably higher than officially reported
- US Pentagon distancing fm ‘strategic danger’ rhetoric
- Non-Chinese companies secure RE by operating in China, benefiting fm cheaper RE prices, eg Rhodia processing near Baotou
- German wind turbine ‘not using magnets containing Nd, only 5% of wind turbines in Germany’
- RE projects might cause overcapacity, especially if/when abrupt deceleration of Chinese economy and negative effect on world commodity demand and prices

“Public Policies Regarding Rare Earths – 2011”

6. ...‘ROW’ Reactions and Policies...

Nevertheless, many countries officially opposing Chinese 2010-2011 RE policies

- pressuring to relax export restrictions
- stimulating supply outside China, discovery & devt REE domestically or through international cooperation agreements.

US, aiming at energy independence:

- ‘promotion of alternative sources of power generation crucial’
- ‘REE applications highly specific, substitutes inferior +/- or unavailable
- Oct ’10 House of Representatives RE and Critical Materials Revitalisation Act ‘reestablish US as leading REE producer, self-sufficient, never depend on China for national security’

“Public Policies Regarding Rare Earths – 2011”

6. ...‘ROW’ Reactions and Policies...

Japan, world’s largest REE importer, to lose more. Like ROK

- establishing jv and supply agreements w/ 3rd countries
- strategic stockpiles outside China
- economizing/substituting/recycling

EU

- undertaking study of economical RE deposits
- examining raw materials stockpiling
- working on R&D in reducing the need for RE and developing substitutes for them



“Public Policies Regarding Rare Earths – 2011”

6. ...‘ROW’ Reactions and Policies

WTO

- decision expected on US/EU/Mexico etc complaint on ‘1st wave’ of minerals, China argues environmental grounds justify their policies
- EU considering a ‘2nd wave’
- Neither ‘waves’ include RE



“Public Policies Regarding Rare Earths – 2011”

Basis: Report ‘Rare Earths Worldwide: An Industry and Policy Analysis’, now available from Natural Resources GP

Thank you!
Vasili Nicoletopoulos