ELECTRON ENERGY CORPORATION

EXPERTS IN

- RARE EARTH MAGNETS
- MAGNET DESIGN
- MAGNET SYSTEMS

Rare Earth Elements and Permanent Magnets

NCPA

Washington DC

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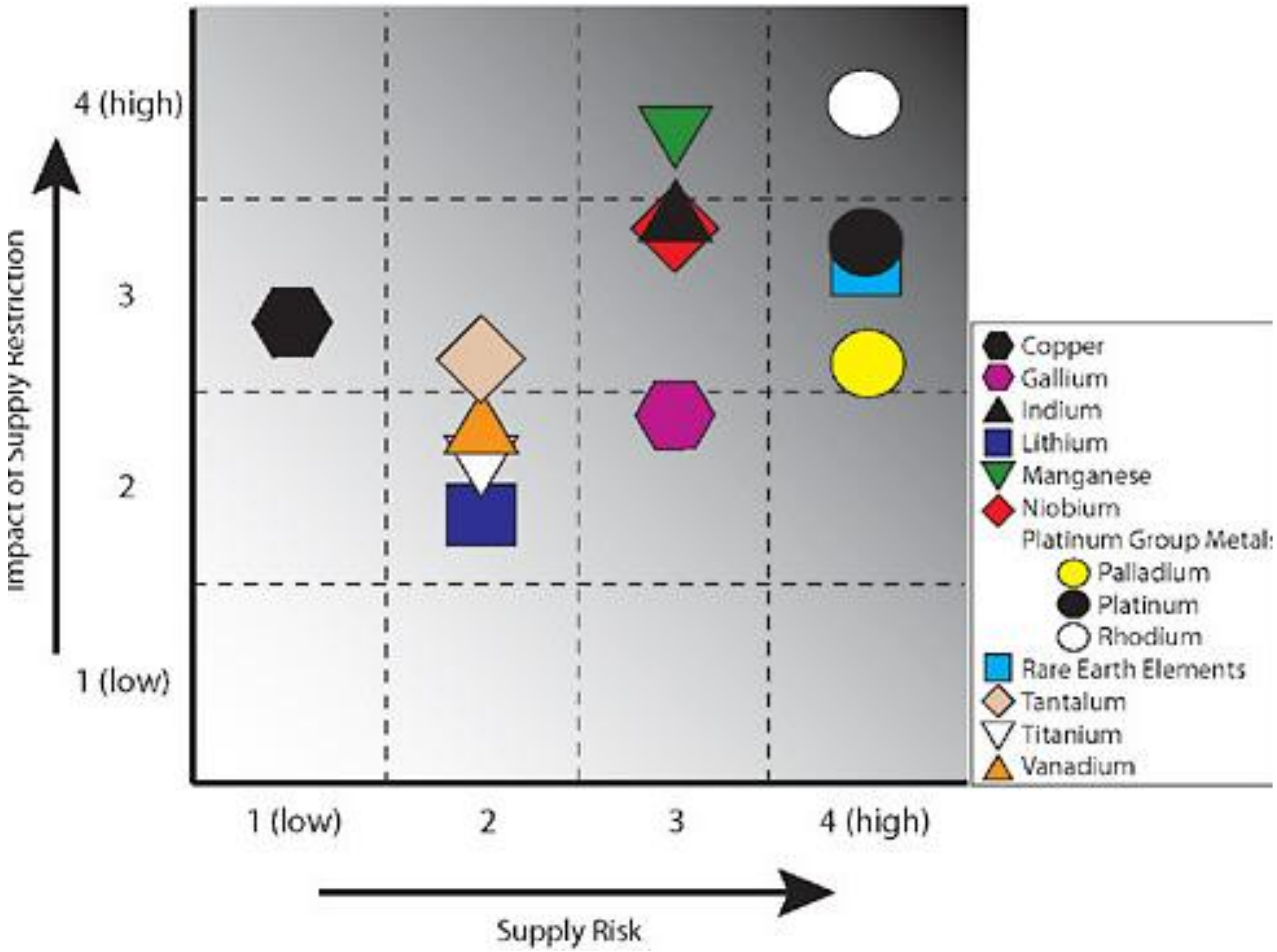


-Increase use of periodic table of elements

-Semiconductors-24 plus new elements used in 2000 and beyond

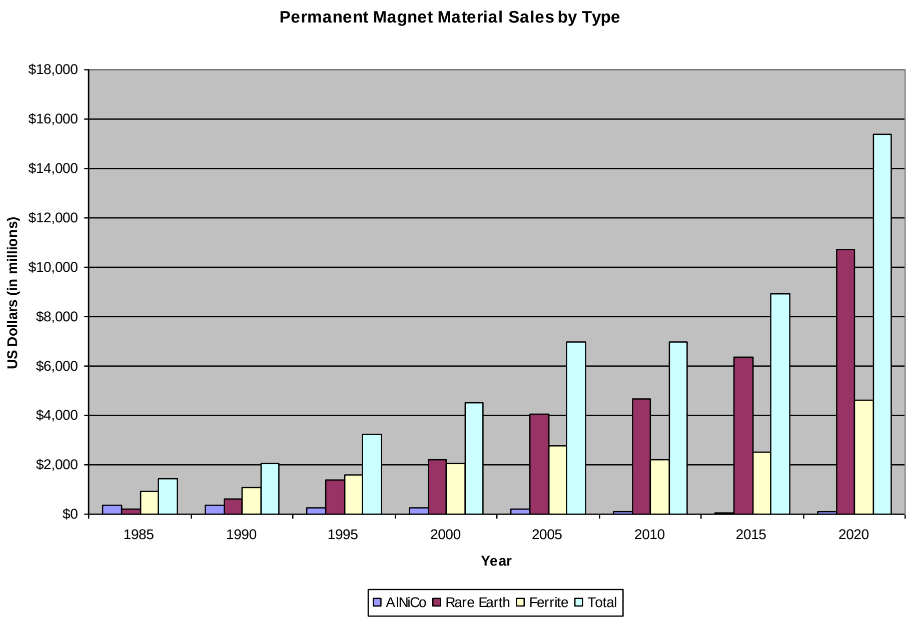
-11.3 Tons/year per person non-fuel minerals

-Careful with supply statistics

Criticality Matrix (US National Academies, 2008)

This matrix was devised by the U.S. National Academies and published in 2008 in [Minerals, Critical Minerals, and the U.S. Economy](http://books.nap.edu/openbook.php?record_id=12034&page=165#p200140369960165001) (2008). The matrix preceded by a detailed explanation of the conclusions from which it was created is (free) on the Internet at http://books.nap.edu/openbook.php?record_id=12034&page=165#p200140369960165001

Magnet Sales Worldwide



Data courtesy of Webmagnetics.com

- Market is growing due to automotive & more uses, miniaturization
- People pay lots more for better magnet performance - 20X
- Ferrite 89% of magnet production by weight, Nd-Fe-B 9.8% by weight
- Smaller magnets make smaller less costly systems
- Lower systems costs will increase market sizes & use
- “More electric” means more magnets

China Dominates Magnet Materials

WW Total Market Size $8B 2010, $17.2B by 2020

Japan, US, European producers close plants, move production

NdFeB magnets 75%

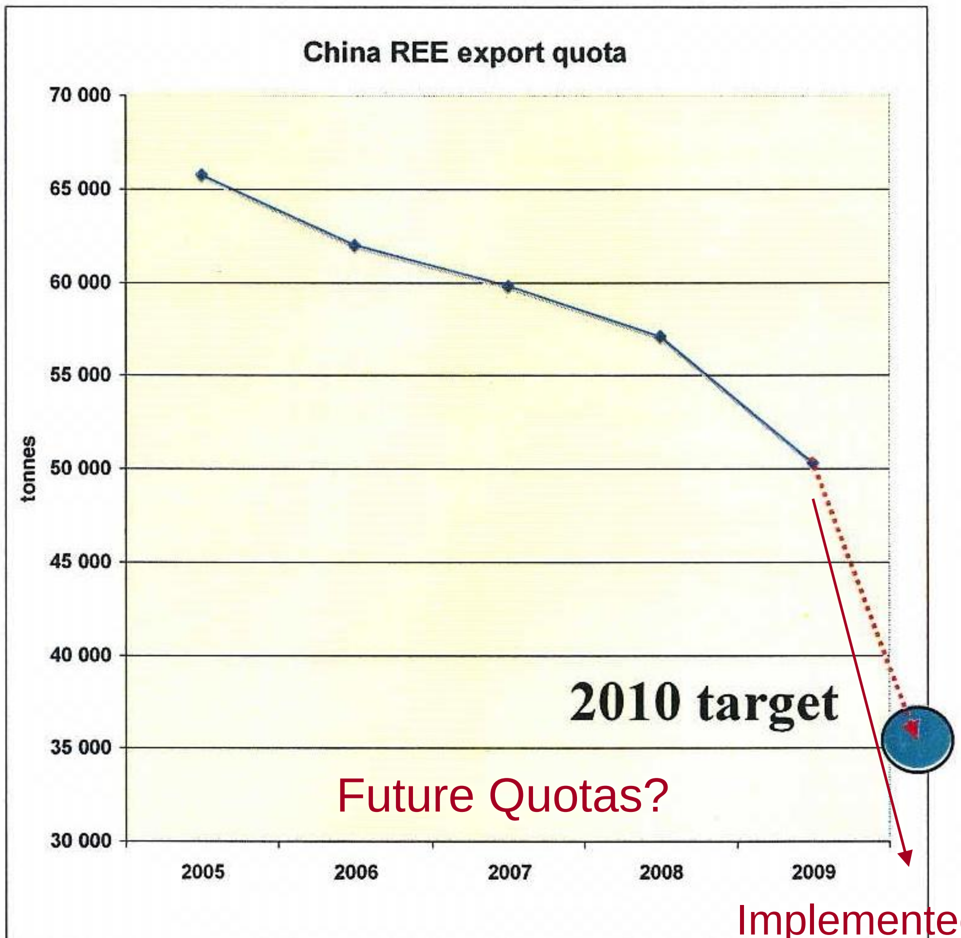
Approx ½ WW Alnico & SmCo production

Rare Earth Oxide Ore production 95%

Hard ferrites 65+ %

Rare Earth pure Metals nearly 100%

China RE Export Quotas



- July 2010 China reduces export quota by
  - 72% for H2 2010
  - 40% for CY 2010
- Supply access issues
  - Companies potentially adding capacity in China instead of ROW due to REE access
    - Hitachi Metals -1000T NdFeB
    - Intermatix Phosphors
    - Showa Denko
    - Santoku - RE alloys
    - Toyota, Honda to China
- Prices Skyrocket
- Temporary unavailability
- Trade issues WTO

Implemented 30,250 T 2010 & 30,246 T for 2011 (adding alloy)

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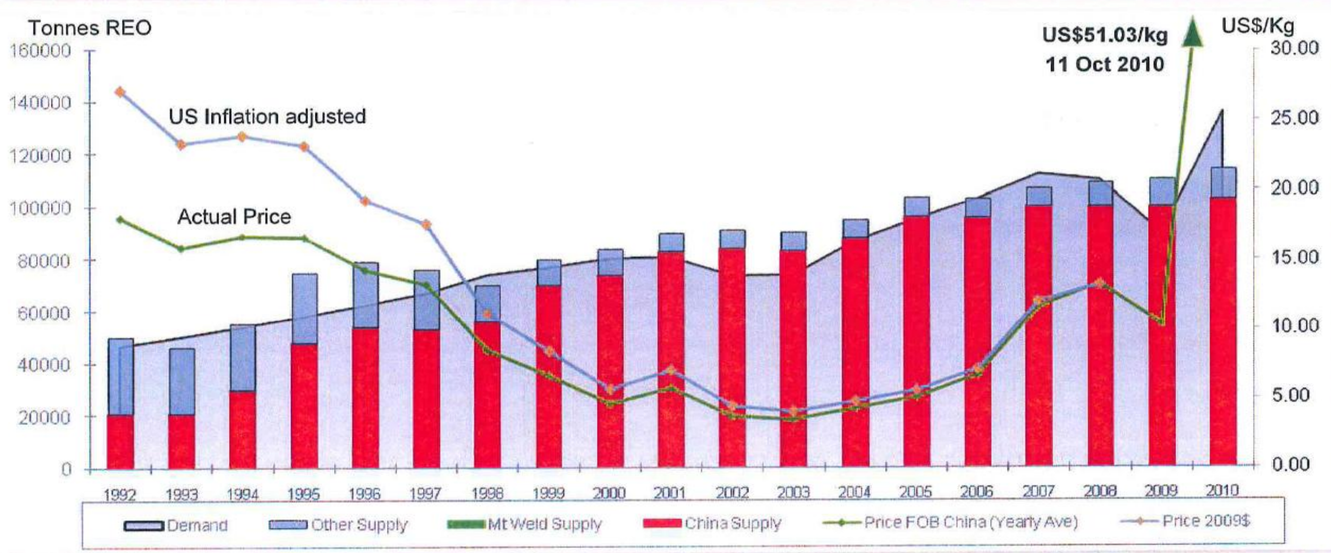
Rare Earth Prices

Prices are returning to historic levels

HISTORIC SUPPLY, DEMAND AND PRICING



-Current price shocks

-Future Prices? –

-Two tiered pricing structure

-Stability

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Core REE Issues

- What impact of new RE or non RE applications & substitutions?
- What REE producers will make it to market?
- What will China do? – Baotou 1 month production hiatus
- Can a sustainable REE supply chain independent of China be developed?
- When can markets stabilize?
- What can technology's role be?

Technology's Role

- Increase production – More, more, more
- Manufacturing improvements
- Technologies mitigating REEs
- Replacements & substitutions
- Recycling
- Train engineers & scientists

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Questions?

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