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Centre for
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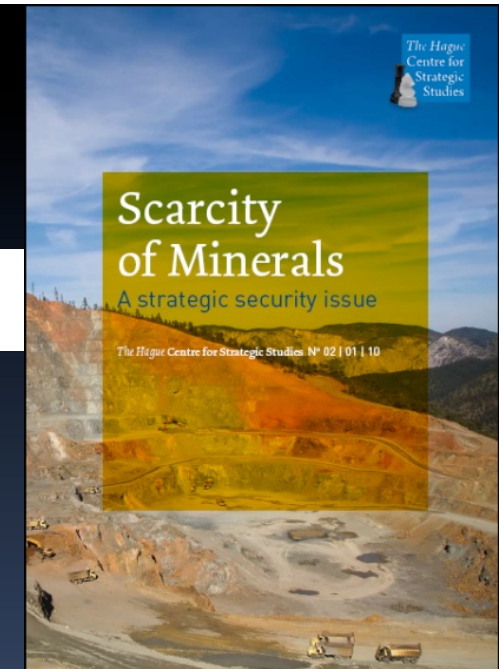
MINERAL SCARCITY A STRATEGIC SECURITY ISSUE !

Platform Mineral Scarcity

<http://www.materialscarcity.nl/default.aspx>

Mineral Scarcity report

http://www.georisq.nl/HCSS_Scarcity%20of%20Minerals.pdf



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Global Trends 2025: A Transformed World (NIC 2008)

Global Governance 2025: At A Critical Juncture (NIC 2010)

Certain

- VS less dominant
- Rise BRICS etc
- Emerging informal Groupings (G-20)
- Powershift towards non-state actors
- Population growth (+1.2 billion 2025)
- *Youth bulges* become dangerous

Uncertain

- Collaboration world community
- Development regional hegomones and regional stability
- Speed of transito toward sustainable energy
- Speed/Impact climate change

Systemic changes:

Emerging non-Western countries can lead to:

- Instability, because multi polarity not stable per definition
- Declining 'shaping power' of the West, weaker legal framework and effectiveness of institutions.
- More *black holes* in (regions of) *failed states*
- Growing instability as consequence of struggle over minerals, energy, effects climate change.
- Soft power of China: autocratic, resource rich countries and against resource poor democracies

Question: how will emerging powers handle geopolitical aspects of scarce resources, how will the West react and what is relation between scarcity and local/regional stability

- SCARCITY: AGE OLD FEAR & FASCINATION



I looked, and there before me was a black horse! Its rider was holding a pair of scales in his hand. Then I heard what sounded like a voice among the four living creatures, saying, "A quart of wheat for a dinars, and three quarts of barley for a dinars"



■ WHY COMMODITIES MATTER AGAIN...

- Commodities key part of the story, with
 - high price levels and strong volatility
 - tight markets and supply side constraints
 - states and their proxies (SWFs, regulatory bodies) as key actors in markets
 - added factor Climate Change debate

Intense politicization and securitization of commodity markets

Commodities as key strategic issue in a multipolar world

Emerging nexus of environmental, economic & security policy



Scarcity: source of conflicts

Examples: Africa according to UNEP 2009

- Angola (1975-2002): oil, diamant
- DRC (1996-2008): copper, coltan, diamant, cobalt, wood, tin.
- Congo (1997 -): oil.
- Ivory Coast (2002-2007): diamant, cacao, cotton.
- Liberia (1989-2003): wood, diamant, iron, palm oil, cacao, coffe, rubber, gold.
- Senegal: wood, cashew nuts.
- Sierra Leone (1991 –2000), diamant, cacao, coffe.
- Sudan (1983-2005): oil



Fact Sheet UN Environment Programme

- Since 1990, 18 violent conflicts have been fuelled by the exploitation of natural resources.
- 40% of all intrastate conflicts since 1960 have a link to natural resources.
- Intrastate conflicts linked to natural resources are twice as likely to relapse to conflict in five years.
- Less than a quarter of peace negotiations aiming to resolve conflicts with links to natural resources have addressed resource management mechanisms.





WHY COMMODITIES MATTER AGAIN...



Industrial Minerals are the Enablers of Modern Technology





European Imports

Source: EU Raw Material Initiative

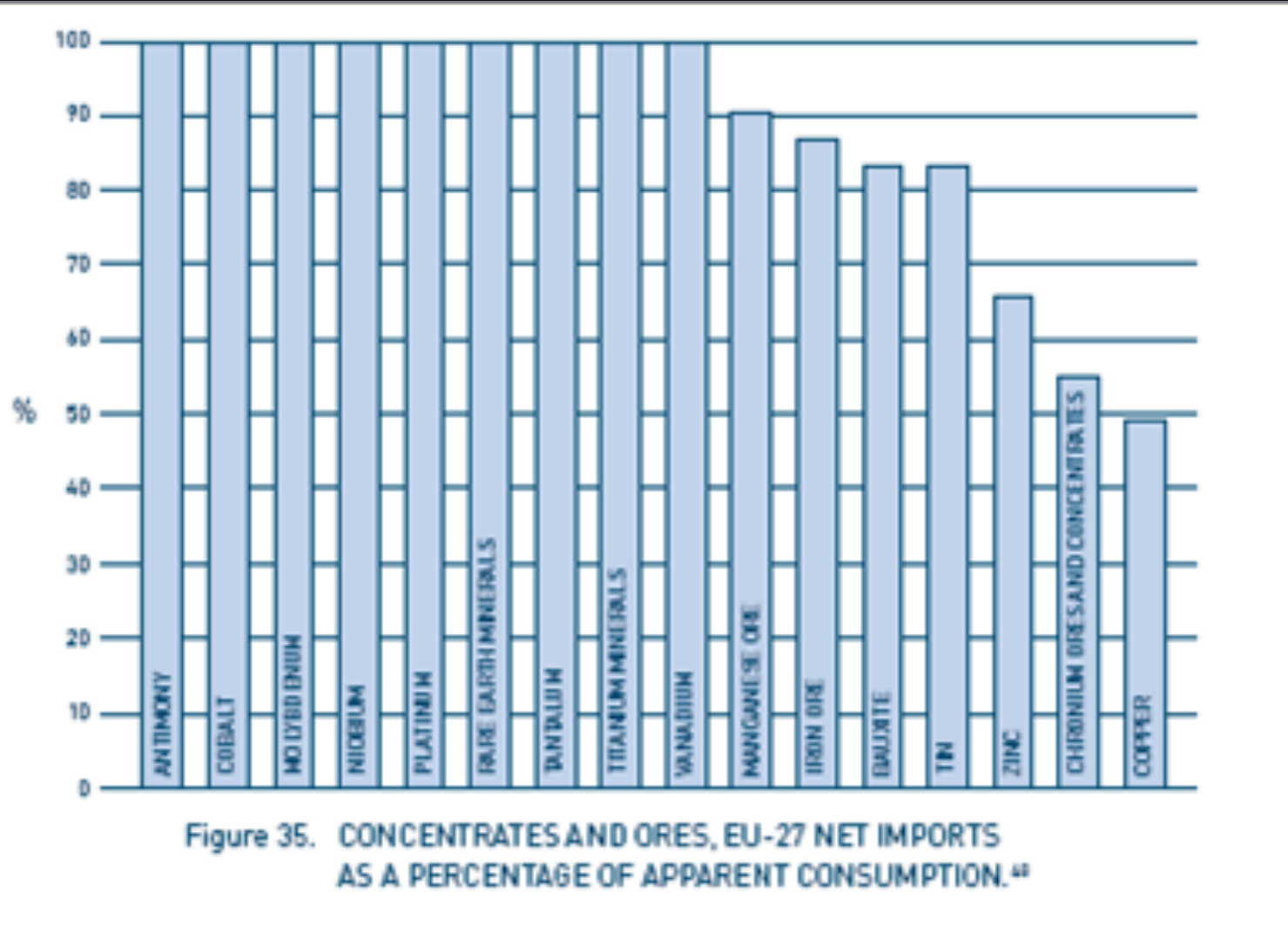
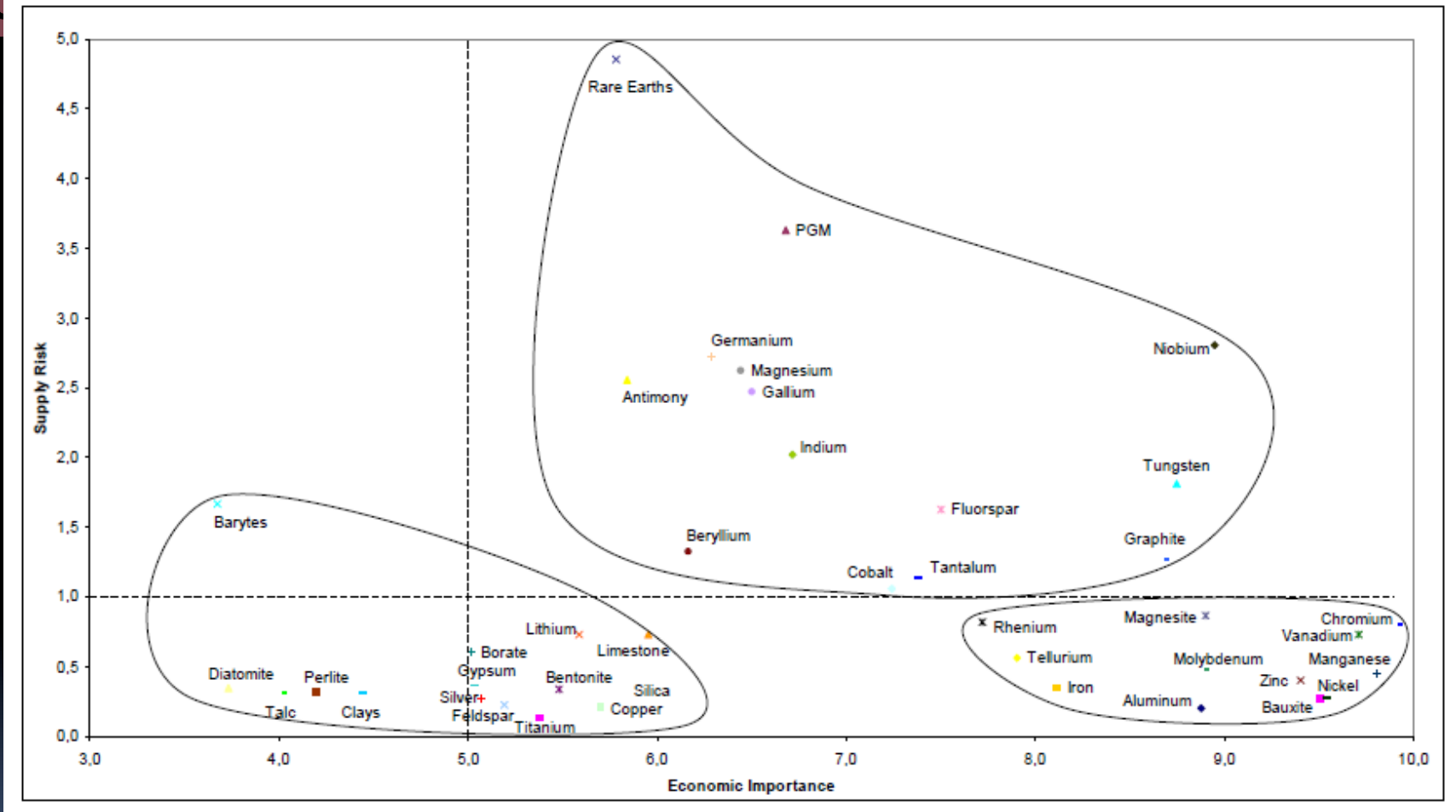


Figure 35. CONCENTRATES AND ORES, EU-27 NET IMPORTS AS A PERCENTAGE OF APPARENT CONSUMPTION.⁴⁸

EUROPEAN POLICY RESPONSE TO CRITICAL RAW MATERIALS



Source: European Commission, DG Enterprise and Industry “Critical Raw Materials for the EU” Brussels, 2010.



Forecast Global Supply and Demand 2012

Forecast Global Supply and Demand in 2012				
Rare Earth Oxide	Demand		Supply/Production*	
	REO Tonnes	(%)	REO Tonnes	(%)
Lanthanum	54,000	28.4	59,000	26.8
Cerium	69,500	36.6	89,000	40.5
Praseodymium	7,000	3.7	10,500	4.8
Neodymium	39,000	20.5	36,000	16.4
Samarium	2,000	1.1	4,500	2.0
Europium	1,100	0.6	1,000	0.5
Gadolinium	200	0.1	3,500	1.6
Terbium	600	0.3	300	0.1
Dysprosium	2,500	1.3	2,000	0.9
Erbium	850	0.4	1,000	0.5
Yttrium	13,000	6.8	12,000	5.5
Ho-Tm-Yb-Lu	250	0.1	1,200	0.5
Total	190,000	100.0	220,000	100.0

Source: Roskill 2007 and IMCOA

*Figures have been rounded, Analysis is based on current industry average grades

Examples: recent Chinese investments in Africa

- Sudan: 40% of its oil goes to China
- Guinea: negotiations over 7 billion investments in infrastructure-for-minerals (oil, bauxite, iron ore)
- Liberia: treaty of 2.6 billion iron ore exploitation
- Nigeria: negotiations for 15% of oil reserves exploitation (\$30-50 billion)
- Niger: loan of \$95 million for uranium mine
- DRC: \$9 billion deal for infrastructure-for-minerals
- Angola: 40% van oil goes to China
- Rwanda: loan of \$250 million for infrastructure-for-minerals
- South Africa: biggest trade partner. Part: 20% in Standard Bank.
- Zimbabwe: loans (\$950million), weapon deals and MOU for nickel, copper and cobalt



GOVERNMENT INTERVENTION IN RARE METAL MARKETS

- Rare metals are especially prominent in the resource debate due to:
 - Western import-dependence & crucial role of China
 - indispensability for high- & green-tech applications
 - inelasticity & concentration of supply
 - fast-growing & highly volatile demand

This creates supply security concerns and makes (some) metals into “strategic” resources!

The strategic value & political economy of each metal is unique, evolving rapidly, and ...



- GOVERNMENT INTERVENTION IN RARE METAL MARKETS
 - In response to supply security concerns, **importing countries**
 - designate particular rare metals as “critical”
 - actively monitor supply and demand
 - create stockpiles & develop domestic supply
 - diversify & secure supply
 - regulate trade and consumption
 - Authorities of **exporting countries** seek to
 - increase profits through taxation, licensing, nationalization
 - control valuable downstream industries through preferential supply or export restrictions
 - use rare metals as strategic bargaining chips.



EUROPEAN POLICY RESPONSE TO RARE METALS DEBATE

- Raw Materials Initiative (RMI) led by DG Enterprise & Industry resulted in the **2008 Communication** with focus on non-energy mineral resources:
 - Ensure equal access for European industry globally
 - Promote supply expansion from European sources
 - Boost resource efficiency and recycling
- Follow-up **EU criticality study** released June 2010:
 - Examines 41 minerals and metals with 14 labeled as “critical”
 - Recommends to tailor policy responses for each critical material
 - Extensive consultation process has just been wrapped up
- Watch out! A new **Commission Communication** on latest developments and the progress of the RMI at the end of this year



- COMMISSION RESEARCH INTO
- RARE METAL SUPPLY CHAIN BOTTLENECKS

EU 2020 strategic targets:

- 20% less carbon emissions
- 20% energy savings
- 20% green energy supply

•The **Joint Research Commission** (JRC) is examining rare metals supply chain bottlenecks that might prevent realization of 2020 Targets

(HCSS, Oakdene Hollins, and Namtec in the lead)

•Will list metals that provide serious obstacles to deploying **high-priority energy technologies**

•Includes **concrete recommendations** how to ensure adequate supply

•Study to be published **Spring 2010**



WHERE DOES EUROPE STAND ON RARE METALS?

- EU is stepping ahead with member states' responses still fragmented:
 - Germany is in the lead
 - Strong French response has been somewhat delayed
 - UK is still looking to develop a coherent policy
- Compared to US and Japanese efforts to ensure supply security:
 - No stockpiling ; No establishment of domestic / Western supply chains for rare metals
 - Little government investments as of yet



Conclusions

- No immediate depletion in short term expected
- Picture for longer term is worrisome for a number of important materials
- Friction effects can be expected well before actual depletion
- Need to formulate balanced message:
 - High prices for some materials
 - Need to Reduse, Reuse and Replace
 - Foreign Direct Investment
- Need to distinguish between
 - production capacity shortage and reserve depletion
 - trade conflicts and physical shortage
- Need for a Dutch National Research Programme



Netherlands

- National Research Programme
 - Monitoring & Analysis
 - Contextual developments: resources, scarcity, policy
 - Analysis of solutions: technology & policy
 - Innovation & Transition
 - Hightech materials & energy
 - Policy & Capacities
 - Policy to influence context and develop perspectives
 - Context dependent solutions, technology driven

