EU Resource-Efficiency Flagship

Euromines Position

March 2011
Resource-Efficiency is the new Environmental Policy

- A central environmental, economic and security issue in a multi-polar world

- A policy concept that should yield optimum solutions to the many trade-offs that exist between the environmental, social and economic imperatives of Sustainable Development
Key challenges and opportunities

- Meeting minimum EU demand for metals & minerals, but also for jobs
- Remaining relevant in a global economy – “having something to sell to the world”
- Increased competition for resources and therefore increased supply risks
- Further de-coupling of economic growth from resource and energy use (Producing more value with less material)
Not all “Resources” face the same issues

<table>
<thead>
<tr>
<th>WHICH RESOURCES ARE SCARCE?</th>
<th>Renewable Resources</th>
<th>Non-Renewable Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Resources</td>
<td></td>
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<tr>
<td>Water</td>
<td>Potable Water</td>
<td>Land &amp; Soil</td>
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<tr>
<td>Nutrient cycling</td>
<td></td>
<td>Biodiversity</td>
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<td>Carbon cycling</td>
<td></td>
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<tr>
<td>Other Ecosystem Services</td>
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<tr>
<td>Biotic Resources</td>
<td></td>
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<tr>
<td>Fish</td>
<td>Oil</td>
<td>Energy Minerals</td>
</tr>
<tr>
<td>Crops &amp; Forest products</td>
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<tr>
<td>Livestock</td>
<td></td>
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<tr>
<td>Foodstuffs</td>
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<tr>
<td>Abiotic Resources</td>
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<tr>
<td></td>
<td></td>
<td>Non-Energy Minerals</td>
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<tr>
<td></td>
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</tr>
<tr>
<td>Colour Legend:</td>
<td>= Scarce</td>
<td>= Abundant</td>
</tr>
</tbody>
</table>

European association for mining industries, metal ores and industrial minerals
Meeting minimum EU demand for raw-materials and jobs

- Upgrade and maintenance of infrastructure (health, transport, energy,...)
- Accommodating increased resource-efficient urbanisation
- Deploying new sustainable technologies
- Sharing equitably the benefits of information technology
- Re-balancing lifestyles and employment across all Regions of the EU

Note: Recycling alone cannot meet the minimum needs of the EU before 2050
Minimum needs exceed available scrap

The World Copper Factbook 2010

**World Copper Mine Production, 1900-2009**

(enthousand metric tonnes)

Source: ICSG

Secondary resource base available today

8.5 Mt/yr

50% of current annual demand

“In-use” life of Copper 25? yrs

Source: International Copper Study Group
Having something to sell to the world

- Resource-Efficiency must include industrial competitiveness

- A factual baseline must be determined to put future performance into context

- EU Innovation must rival that of competitors and not be hindered by taxation

- “Regulation-Efficiency” is also critical
  - priorities must be nurtured
Main Mineral Deposits of Europe and Key Metallogenic Provinces

- **Lapland (Fe)**
- **Skellefte-Pyhäsalmi (Cu, Zn, Au, Ni, Co)**
- **Bergslagen (Fe, Zn)**
- **Irish (Zn)**
- **Foresudetic basin (Cu, Co, Pt, Re)**
- **Carpathians (Pb, Zn, Au)**
- **Balkans (Cu, Au, Sn)**
- **Iberian Pyrite Belt (Cu, Zn, Sn)**
- **Greece (Al, Ni)**
Critical raw materials in Europe


<table>
<thead>
<tr>
<th>Commodity</th>
<th>Very large</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>16000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Beryllium</td>
<td>25000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Cobalt</td>
<td>66000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Fluorspar</td>
<td>150000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Gallium</td>
<td>50000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Germanium</td>
<td>10000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Indium</td>
<td>50000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Magnesium</td>
<td>1500000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Nickel</td>
<td>100000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Tin</td>
<td>100000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Tantalum</td>
<td>100000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Tungsten</td>
<td>100000</td>
<td>2200</td>
<td>200</td>
<td>50</td>
</tr>
</tbody>
</table>

Deposits classes according to the tonnage expressed in metric tons (1,1074 kg).

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Increased competition for resources

- Several measures are available
  - resource-efficiency only one of them

- Free & Fair Trade and Primary Production (i.e. mining) are also needed

- Diverse parallel measures will reduce the EU’s vulnerability to supply risks

- Some measures may be counter-productive
  (e.g., stockpiling or resource-taxes, which create further market distortion)
Mineral Supply is directly related to Exploration effort

Average yearly investments forecast in non-ferrous mineral exploration by regions ($ value on 31/12/07, corrected by the change in the CPI index).


Source: P. Christmann 2009

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Further de-coupling of economic growth from resource use

- Relative de-coupling comes from improved standards of living

- Historical long-term demand for base-metals has steadily increased by 1-3% per annum globally and this is likely to continue between now and 2050.

- Further decoupling must be balanced with development, climate and energy security needs
Resource Efficiency requires contributions from the whole value-chain
Euromines 2050 Resources Vision

By 2050, the EU should:

- Achieve 100% responsible and balanced **sourcing** of its mineral resources

- Where necessary, achieve **secure closure** of all historically abandoned waste dumps in the EU

- Be the "**international partner of choice**" for several aspects of mineral resource management (sustainable development and transformation of primary and secondary resources)

- **Lead by example**, by regularly meeting its own resource-efficiency targets using validated indicators and assessment techniques
Suggested 2020 objectives

By 2020, the EU should:

- Attract the same level of **exploration investment** as Africa per hectare
- Match the degree of self-sufficiency in mineral resources of Asia
  - **develop the world-class ore-bodies** in Greece, Iberia, Ireland, Poland, Romania and Scandinavia (including Finland)
- Possess a complete modern database and **economic assessment** of primary and secondary resources across the EU
- Have the **liability framework** in place to allow public-private re-processing and/or secure closure of historically abandoned waste
- **Lead the world in technology** for several aspects of mineral resource management and efficiency (design, exploration, extraction, transformation to products for export, re-processing, recovery, reuse, recycling, materials flow monitoring, life-cycle assessment)