What is the purpose of the EIP on Raw Materials?

Why are we talking about Raw Materials?

Over the past decade, we have seen a significant increase in the global demand for industrial raw materials, whilst supply has struggled to keep up. This rise in demand has been largely driven by the industrial expansion of emerging market economies. This industrial expansion has led to a commodity prices boom, including metals and minerals, as well as industrial and agricultural products. In the past decade industrial input prices more than doubled, imposing significant additional cost to EU industry.  

Added to this, over recent years we have seen an increase in both economic and resource nationalism, with some of Europe’s key raw material suppliers restricting raw material supply to Europe. This diverts these raw materials to their domestic industries, such as was the case by China in the domain of rare earths, which are critical components in wind turbines, mobile phones and computers. Increasing geopolitical insecurity around the world has also added new risks to Europe’s raw materials supply chain such as conflict in Africa and unrest in the Middle East.

Much of Europe’s industry is heavily dependent on international markets to secure the raw materials it requires, with 100% of the primary platinum, cobalt, rare earths and natural rubber used by European industry currently imported from outside the EU. Figure 1 highlights the key world producers for the metals and minerals identified as being critical to the EU’s economy. This illustrates the importance of China in the supply of many of these materials, as well as countries such as Democratic Republic of Congo, South Africa and Brazil. Natural rubber is primarily dependent on supply from South East Asia.

The picture for some bulk metals and industrial minerals is not quite as acute, but the EU is still a large net importer for these materials (Figure 2). For wood and paper, EU industry is largely self-sufficient; however, there is growing demand for these materials from other industries, including bio-energy.

Figure 1: Global Production Sources of EU Critical Raw Materials

Source: European Commission (2010), Critical Raw Materials for the EU

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1 For example in the BRIC (Brazil, Russia, India and China) countries, annual GDP growth averaged 6.6% for 2002-2012; Source: Bloomberg
2 Between December 2002 and December 2012, industrial input prices increased by 132%; Source: Index Mundi
One further challenge currently faced by Europe is for secondary raw materials. Europe is a significant exporter of scrap metals, end-of-life-vehicles and waste electrical and electronic equipment, as well as for paper and plastics. This trade has witnessed a significant increase over the past decade, with the quantity of iron, steel, copper and aluminium all more than doubling between 1999 and 2011. A similar pattern is observable for exports of wood and paper waste outside the EU. It is also estimated that 100,000 end-of-life vehicles are exported each year. However, the benefits of international trade need to be balanced with that of encouraging greater recovery of raw materials within Europe.

In order to improve Europe’s resource efficiency, 20% improvement targets have already been set for greenhouse gas emissions reductions, renewable energy and energy efficiency. Additional targets are in consultation regarding material use and consumption; water use and land use. It is expected that the EIP may complement the existing EU resource efficiency initiatives. At present, the end-of-life recycling rates for many metals is very low (see Figure 3, in particular the metals shown in red), although for bulk metals, as well as for paper and wood, recycling rates significantly exceed 50%. As for waste electrical and electronic equipment (WEEE), which contains many of these critical materials, in 2010 17kg of WEEE were generated per capita each year, of which 6kg was actually recycled.

When these phenomena are combined, they are of critical importance to the EU due to the significance of non-EU raw material inputs to European industry. Raw material supply difficulties have a negative impact on Europe’s industrial performance and its overall economic performance, as it is estimated that at least 30 million jobs in the EU depend upon access to raw materials. Significant increases in the prices of non-EU sourced raw materials are of concern to European policy-makers and manufacturers alike, as they make European manufacturing less competitive vis-à-vis to manufacturing in emerging countries, many of which have ready access to competitively priced raw materials. Part of this involves a rebalancing of the EU economy towards industrial sectors, as well as mining, quarrying and forestry. For instance it was recently agreed that by 2020, 20% of European GDP should come from industrial sectors.

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1 European Environmental Agency (2012), Movements of waste across the EU’s internal and external borders  
3 European Commission (2012), Assessment of resource efficiency indicators and targets  
4 Eurostat Environmental Data Centre on Waste [accessed January 2013]  
**How can Europe build a sustainable supply for raw materials?**

In order to strengthen European industry, it is vital that industry is able to access raw material inputs on time and at a reasonable market price. To reduce European industry’s dependence on non-EU virgin raw materials, the European Commission has been promoting the following policies:

- Europe is a relatively minor player in terms of global mining, but has significant untapped mineral reserves. These reserves are currently being charted and analysed by various EU-funded scientific collaboration projects. However, there is a need to improve the public perception of mining, forestry and raw materials, such as by ensuring mining and forestry is done in an environmentally and socially sustainable manner.

- Recycling is a key way for reducing European demand for non-EU raw materials. There is potential to extract sizeable quantities of raw materials from end-of-life industrial and consumer goods in Europe such as the rare earths found in computers, platinum found in car exhausts or wood contained in furniture. Encouraging greater re-use or recycling of these goods means that these raw materials could be extracted and fed back in to the European industrial supply chain, although also this needs to be balanced with the benefits of international trade.

- Europe is a world leader in technological Research and Development (R&D) in the field of substitution of critical raw materials. This means replacing one industrial component with a more readily raw material in the EU, whether it is a rare metal or an import dependent material such as natural rubber.

- Ensure a level playing field in access to resources in third countries, by pursuing a proactive strategy for international cooperation of the EU in multilateral organisations and bilateral relations with key third countries including the United States, Japan and Australia.

*Figure 3: End-of-life recycling rates for sixty metals*


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What are the European Innovation Partnerships (EIPs)?

Aims, objectives and scope
A programme of European Innovation Partnerships (EIPs) was established by the Commission in 2010 as part of the Innovation Union flagship initiative with the twin aims of:
1. improving conditions and access to finance for research and innovation in Europe
2. ensuring that innovative ideas are turned into products and services that create growth and jobs

European Innovation Partnerships (EIPs) were launched for policy areas where the Commission identified that the combined strength of public and private efforts at regional, national and EU level in innovation and research and development (R&D), as well as demand-side measures, were needed to achieve key targets faster and more efficiently. This is the case for raw materials.

The key objectives of the EIP on raw materials are:
- Reduction of import dependency (“Reducing Europe's import dependency on the raw materials that are critical to Europe's industries”) by improving supply conditions from EU and other sources and providing resource efficiency and alternatives in supply (“Providing Europe with enough flexibility and alternatives in the supply of important raw materials”) through substitutions or new products.
- Putting Europe to the forefront in raw materials sectors (“Making Europe a leader in the capabilities related to exploration, extraction, processing, recycling and substitution by 2020”) and mitigating the negative environmental and social impacts (“taking into account the importance of mitigating the negative environmental and social impacts of some materials during their life cycle”)

The EIP on raw materials will target non-energy, non-agricultural raw materials (metals and minerals, as well as other industrial raw materials such as natural rubber, paper and wood). It is envisaged that the EIP will help to ensure more sustainable access for European industry to raw materials by creating better linkages between existing policy instruments, reinforcing Member State co-ordination in the field of raw materials and promoting the development of integrated value chains in the private sector.

Work programme and targets
The EIP on raw materials will target innovation in both technology-focused and non-technology policy areas, as well as international cooperation. The Commission has proposed concrete targets to be achieved by 2020 for each area of focus:
- Up to 10 innovative pilot actions, e.g. pilot plants for exploration, mining, processing, collecting and recycling;
- Substitutes for at least 3 applications of critical raw materials
- Regulatory framework for primary raw materials that would provide stable and competitive supply from EU sources and will be supported by the promotion activities and certification for EU mining operations;
- Network of Research, Education and Training Centres on sustainable raw materials management organized as a Knowledge and Innovation Community (KIC);
- Raw materials knowledge base with raw materials flows and trends, using standardised instruments for the survey of resources/reserves and an industrially relevant raw materials map covering primary and secondary raw materials;
- Enhanced efficiency in material use and in waste prevention, re-use and recycling, with a specific focus on flows that are common to many product life-cycles and have potentially negative impact on the environment; and identified opportunities and new ideas for innovative raw materials and products with market potential.
- Pro-active international cooperation strategy of EU at bilateral and multilateral level, such as the US, Japan, Australia, Canada in the different areas covered by the EIP
**Metrics for Monitoring the Performance of the EIP on Raw Materials**

It is important to set metrics in order to monitor the performance of the EIP on Raw Materials. The following are targets that could be included. Discussion is expected regarding their suitability.

These high-level goals must be easily communicated to Europe’s citizens:

- Import Dependency
- Resource Efficiency
- Competitiveness

These goals are likely to be accompanied with additional targets and actions that are more technical or specific, but they will contribute to achieving the high-level goals set out above. These might include product or materials specific targets. Targets may also be appropriate at a Member State level.

**Import Dependency**

A measurable objective to reduce the EU’s raw materials import dependency is central to the EIP, given that EU industry is 100% import dependent for some raw materials. This high level target will document the EU’s progress on opening new mines, improving recycling and developing substitutes. A target relating to the fair access to raw materials may also be appropriate.

However, at present there is no unified metric for the overall dependency of the EU on raw material imports and the level of import dependency varies wildly by different materials (Figure 2). The EIP needs to agree how the target might be measured and what might be achievable. Table 1 provides a high level summary, by broad category, and weighted by annual world production.

**Table 1: Metrics for EU Import Dependency of Raw Materials (%)**

<table>
<thead>
<tr>
<th>Raw Material</th>
<th>Import Dependency</th>
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<tbody>
<tr>
<td>Natural Rubber</td>
<td>100%</td>
</tr>
<tr>
<td>High-Tech Metals</td>
<td>96%</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>85%</td>
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<tr>
<td>Critical Raw Materials*</td>
<td>77%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Raw Material</th>
<th>Import Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Metals</td>
<td>57%</td>
</tr>
<tr>
<td>Industrial Minerals</td>
<td>46%</td>
</tr>
<tr>
<td>Wood</td>
<td>15%</td>
</tr>
<tr>
<td>Paper</td>
<td>9%</td>
</tr>
</tbody>
</table>

* As defined by the EU. These 14 raw materials include a combination of high-tech metals, bulk metals, as well as industrial minerals

Source: European Commission (2010), Critical Raw Materials for the EU & some additional references

**Resource Efficiency**

EU targets have already been set for 20% improvements in greenhouse gas emissions, renewable energy and energy efficiency; and are under consultation for other resource efficiency metrics. Recycling or collection targets are already in place for wastes such as packaging, tyres, end-of-life vehicles, batteries and waste electrical and electronic equipment. The EIP needs to decide whether any additional specific targets and measures are required in relation to raw materials efficiency in order to meet the overall objectives of the EIP.

**Competitiveness**

With the aim of rebalancing the EU economy, a target has already been set that by 2020, 20% of European GDP should come from the industrial sectors. The EIP therefore links in and supports existing EU industrial policy. However, the EIP might decide that this should be supported with additional metrics specific to economic activity, productivity or jobs in the mining, quarrying and forestry sectors.
Annex: Existing EU Initiatives and Studies on Raw Materials

The European Innovation Partnership on raw materials has been designed to add value to the various existing EU and other initiatives relating to raw materials, including:

European Commission, DG-Enterprise and Industry

DG-ENTR has conducted or participated in the following studies and initiatives:
- **Critical Raw Materials at EU Level** (2010 & 2013), which identified 14 raw materials of critical importance to the EU. This study is currently being updated and extended.
- **Statistical Information on EU Raw Materials Deposits** (2013), to develop an action plan for harmonisation of European mineral resources data.
- **Study Ramintech** (2012-2013), to identify and assess possible pilot plants and innovative technologies in the area of raw materials along the entire value chain.
- **Study on the wood raw material supply and demand for the EU wood processing industries** (2012-)
- **Study of the By-Products of Copper, Lead, Zinc and Nickel** (2012), active participation at the International Study Groups on this market study for many high-tech metals.

European Commission, DG-Research and Innovation

In the field of raw materials, DG-RTD has commissioned the following projects:
- **EU funded FP7 projects**:
  - Promine, Eurogeosource, European Geological Data Infrastructure (EGDI), and I²Mine; which all relate to geological and mining aspects of raw materials extraction. EU-PEARLS, which relates to EU-based production and exploitation of alternative rubber and latex.
  - **Critical Metals in Strategic Energy Technologies**, (JRC IET, 2011 & 2013), an analysis of potential bottlenecks for the realisation of the EU’s renewable energy and decarbonisation targets.
  - **Transatlantic and Trilateral Workshops on Raw Materials** (2010-2013), jointly with United States and Japan to discuss the national strategies on R&D and supply chain management.

European Platform Initiatives

The following European Platform Initiatives are of relevance for the EIP on raw materials:
- **European Resource Efficiency Platform** (DG-ENV), to provide high-level guidance on the transition process towards a more resource efficient economy.
- **ERA-MIN - ERA-NET programme on raw materials for European Industries** (FP7), to foster coordinated research on the entire raw materials value chain.
- **European Technology Platforms**:
- **Possible Knowledge and Innovation Community (KIC) on Raw Materials** to add value to existing initiatives and bring about a real boost to innovation in Europe.

European Parliament

The European Parliament is actively engaged in the raw materials debate in the following initiatives:
- **European Parliament Raw Materials Group** (Set-up in February 2011 – Cross-party group of MEPs chaired by Karl-Heinz Florenz MEP)
- **Study on Rare Earths and their Recycling** (Greens/EFA Group, January 2011)
- **Study on Future Metal Demand of Photovoltaic Cells, Wind Turbines** (STOA 2012)

Existing Member State Initiatives

In addition many of the Member States also have their own raw materials policies including France, Germany, Finland, Netherlands and UK. A common theme in many Member States is the desire to cooperate at both EU and global level in order to secure raw material supplies for domestic industry.