
Press Release

- **Soaring Demand for Metals Calls for Rethink of Recycling Practices, Says International Resource Panel**
- **Raising Recycling Rates through Product-Centric Approach Can Mitigate Negative Environmental Impacts**

Berlin, 24 April 2013 – The growth in demand for metals, which could see needs rise by almost ten times current levels, calls for a rethink of recycling practices in order to address negative environmental impacts, according to two reports released today by the UNEP-hosted International Resource Panel.

Launched during a high-level dialogue on Resource Efficiency and Sustainable Management of Metals in Berlin, *Environmental Risks and Challenges of Anthropogenic Metals Flows and Cycles* provides an overview of the environmental challenges of metals and the potential contribution of recycling to mitigate them. *Metal Recycling – Opportunities, Limits, Infrastructure* outlines improvements required to metal recycling systems in the 21st century.

“As populations in emerging economies adopt similar technologies and lifestyles to those currently used in OECD countries, global metal needs will be three to nine times larger than all the metals currently used in the world,” said UN Under-Secretary-General and UNEP Executive Director Achim Steiner.

“A far more sophisticated approach is urgently needed to address the challenges of recycling complex products, which contain a broad variety of interlinked metals and materials,” he added. “Product designers need to ensure that materials such as rare earth metals in products ranging from solar panels and wind turbine magnets to mobile phones can still be recovered easily when they reach the end of their life.”

Metals are an essential part of the global economy as core raw materials for infrastructure. Demand is expected to remain strong in the future: in developing countries because of rapid industrialization, and in developed countries because of modern technologies. While renewable energy technologies—as part of the transition to an inclusive green economy—cut greenhouse gas emissions from metals production, they are likely to increase demand as they are more metal-intensive than fossil-fuel energy sources.

“An increased share of recycling of metals can be expected to alleviate some of the adverse environmental pressures from the use and production of metals,” said Ernst Ulrich von Weizsäcker and Ashok Khosla, co-chairs of the IRP, in a joint statement. “However, increased recycling rates alone will not be sufficient but need to be accompanied by a levelling off of the demand curve for metals.”

The integrated use of metals and their compounds cause local impacts from mining and use 7-8 per cent of the global energy supply. There are also issues related to metal emissions from sources such as fossil fuels and phosphate fertilizer, and the need for a final disposal solution for certain metals where supply has exceeded demand.

Recycling requires significantly less energy per kilogramme of metal produced than primary production, and also decreases the overall local impact of mining. Recycling also slows down the need for exploiting low-grade ores—a more energy-intensive process that is likely to become more common as demand grows—and can help ward off future scarcity of certain commonly used precious metals.



Theoretically, metals can be recycled almost indefinitely, thus presenting a valuable opportunity to reduce environmental degradation, energy and water use and contribute to the transition to a low-carbon, resource-efficient Green Economy.

However, the growing complexity of products makes it difficult to extract all and reuse valuable metals due to the laws of physics and related economics. For example, a mobile phone can contain more than 40 elements, including base metals such as copper and tin and precious and platinum-group metals such as silver, gold and palladium.

In order to boost historically low recycling rates, a global move from a Material-Centric to a Product-Centric approach, in which recycling targets specific components of a product and their complexity at its End of Life (EoL) and devises ways to separate and recover them, is essential.

Optimizing the recycling of EoL products can avoid losses in efficiency throughout the chain of recycling. The global mainstreaming of such a Product-Centric view would be a remarkable step towards efficient recycling systems, resource efficiency and a Green Economy.

“Our aim must be to break the raw materials spiral by using materials more consciously,” said German Federal Environment Minister Peter Altmaier. “In Germany, raw materials are already applied much more efficiently than ten years ago. But we can achieve even more: By 2020 we want to double raw materials efficiency compared to 1994 levels.”

The potential for recycling is enormous when the amount of electrical and electronic equipment waste being generated is considered. Such waste is estimated at 20 to 50 million tonnes, or three to seven kilogrammes per person, each year.

In Europe alone, the amount of such waste generated is about 12 million tonnes per year. This is expected to increase in the coming decades at a rate of at least four per cent annually—about three times higher than the growth of municipal waste.

However, recycling rates have been consistently low—a previous report by the IRP found that less than one-third of some 60 metals studied have an end-of-life (EoL) recycling rate above 50 per cent and 34 elements are below one per cent recycling.

Recommendations

The reports issued a series of recommendations to attain a workable sustainable metals management system, including:

- Certified systems based on Best Available Technologies (BATs) and other measures increasing energy and entropy efficiency for mining as well as recycling industries have been developed and need to be applied on a global level. These techniques differ between regions, and do not necessarily need to be high technology.
- Weight-based targets hinder rather than promote recycling of the many critical elements in complex products, usually present in very low concentrations. Priorities have to be set for different metals, such as base metals, special metals, critical-technology metals, etc.
- Policy targets for recycling must account for the loss of metals due to mixing, must not exceed physical, technological and thermodynamic limits, and should not prioritize one or two metals at the inadvertent expense of others. Targets that go beyond what is thermodynamically possible are likely to fail. Policy makers can set appropriate targets from a life-cycle perspective by drawing on the expertise and tools available within the recycling industry.



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- System optimization and design can further increase recycling rates and decrease environmental impacts. Product designers should take life-cycle approaches as well as metallurgical knowledge and rigorous process recycling system simulation into account when designing new products. Research and education is critically important for preserving this knowledge and for driving innovation that maximizes resource efficiency
- Policy goals for the recycling system must dovetail with economic drivers. With so many operators in the collection and recycling industry, regulation enforcement is unlikely to be sufficient by itself for determining the destination of metal-containing waste-streams.
- Primary production energy-efficiency increases can be achieved by improved process efficiency and use of waste streams (fly ash, sludge, slags, precipitates and suchlike) as sources of metals.

About the Resource Panel

The International Resource Panel was established in 2007 to provide independent, coherent and authoritative scientific assessment on the sustainable use of natural resources and the environmental impacts of resource use over the full life cycle.

By providing up-to-date information and the best science available, the International Resource Panel contributes to a better understanding of how to decouple human development and economic growth from environmental degradation. The information contained in the International Resource Panel's reports is intended to be policy relevant and support policy framing, policy and programme planning, and enable evaluation and monitoring of policy effectiveness.

<http://www.unep.org/resourcepanel/>

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