

POLICY AREA: DEFINING CRITICAL RAW MATERIALS

“Major issues:

An expert group, chaired by Enterprise and Industry DG, recently released a report that presented a methodology to measure the criticality of raw materials at EU level. A raw material is labelled “critical” when the risk of supply shortage and their impacts on the economy are higher compared with most of the other raw materials. The report provides an analysis of 41 different minerals and metals, and concluded on a list of 14 critical raw materials. It also contained two sets of recommendations: recommendations for follow-up and further support, and policy-oriented recommendations to secure access to and material efficiency of raw materials.”

1. Do you have any comments on the methodological approach, including the scope, to determine criticality at EU level? If so, please specify.

In the study a relative concept of criticality is used including mainly two dimensions: supply risk and economic importance. Though for determining criticality three highly aggregated indicators are used: supply risk, economic importance and the environmental country risk of raw materials. From our point of view environmental criteria play a fundamental role in determining critical raw materials. Environmental pressures and environmental impacts occurring in the life cycle of raw materials have to be considered for defining criticality (See our comments on recommendation 2). In the study the environmental country risk is defined as the potential for environmental measures that may restrain access to deposits or the supply of raw materials. This definition is unacceptable as a definition of the third dimension of criticality from a sustainable development perspective. This interpretation of environmental risks must not create an EU interest to keep environmental standards of raw material exporting countries on a low level. An enduring raw material supply, also for future generations in the sense of a sustainable materials management needs sound environmental standards world wide.

Furthermore, also a well-defined indicator “environmental country risk” should principally not be used before the methodological basis is acceptable resolved. The indicator “environmental country risk” is based on the ‘Environmental Performance Index’ (EPI) published biannually by the Yale University. This index is composed out of 25 environmental indicators. Its aim is to evaluate the environmental performance of a country. The methodology to calculate the EPI is improved continuously throughout the different publications. Nevertheless several general critical points are still not solved properly. Especially the selection, conceptualisation and weighting of individual indicators and categories need to be more oriented on international standards. By now, several indicators are selected by expert opinion, as well as some data sources are based on own modelling of EPI experts. A recently published sensitivity analysis, on behalf of the EPI consortium, pointed out, that, through the used weighting of the indicators and categories, just a few indicators are dominating the total EPI number, whereas the remaining indicators have just a small influence on the total. Further, data quality and data availability is still not adequate for several indicators, as also stated as a critical point by the authors of the recently published EPI 2010 report.

Besides these general critics on the EPI as an environmental performance indicator, it is questionable whether a country wide environmental indicator such as EPI is suitable to assess the environmental impact of the use of a specific raw material. The relevance of the EPI is based on its explicit political dimension, which aims at stimulating a broad debate on scientifically sound cross-country methodologies and data sets, but seems not appropriate, due to the above mentioned critical points, to evaluate the environmental politics of a single country. For specific question like environmental policies in the field of raw materials the EPI is yet less suitable, since it does not have a direct reference to the environmental impacts of raw material production and processing.

General criticism concerning the study and the methodology can be passed on missing information about robustness of the indicators. Additionally there is no information about results of uncertainty and sensitivity analysis. This makes it difficult to evaluate the other two indicators as all of them are highly aggregated. Regarding thresholds for criticality there is no information about how to define these thresholds. The concept also does not allow for evaluating all three dimensions at once. For determining criticality of raw materials the economic dimension is the crucial factor in this study. Only those raw materials for which the economic importance is provided, are considered for criticality. Supply risk and environmental country risk are either-or-criteria. The weighting of the three dimensions is from an environmental perspective not acceptable.

2. Do you see any additional raw material that should be considered as critical? If so, please explain.

Some raw materials, which should be considered as critical from our point of view, were not on the list for criticality assessment in this study.

Gold must be seen as critical because it is dissipatively used, in particular in consumption goods with a short useful life such as cellular phones and computers. The gold demand of the electronics sector is increasing while the recycling rate of gold from electronic waste is poor. Used devices are often disposed with the regular household garbage or illegally exported and therefore in most cases not properly recycled. From an environmental point of view, gold has to be considered as critical, because gold mining and processing has strong environmental impacts, mainly because of the enormous quantity of material that has to be moved per mass unit of gold and the associated energy use. Furthermore, in small mines, gold processing is often linked to toxic emissions of cyanides and mercury. Even though the absolute amount of the gold production from small mines is of minor importance for the world market, small mines contribute significantly to the total environmental impact of gold mining and processing.

In comparison with gold, **tin** has lower specific environmental impacts, but due its high production volume, tin mining and processing shows high absolute environmental impacts. Because of its use in electric and electronic equipment and the poor recycling rate of these devices, tin recycling shows a large potential for optimization.

Not only because of its essential role for life in general and particularly agriculture and nutrition, **phosphorus** must be regarded as a critical raw material. An arising problem is the increasing contamination of phosphate rock with toxic heavy metals (Cadmium) and radionuclides (Uranium) and the related risks for human health and environment. The

common open-cast mining of phosphate rock leads to large-area destruction and pollution of the environment. Phosphorus is an essential, not substitutable plant nutrient and therefore plays a key role for the nutrition of the growing world population. FAO assumes that global phosphate fertilizer demand will rise by 2 % per year.

Also under economic and geostrategic aspects, phosphate rock has to be regarded as a critical raw material, since 90 % of the global phosphate rock deposits are located in only 5 countries. The fact that 28 % of the phosphate rock deposits are located in Western Sahara, which was annexed by Morocco in violation of the law of nations, holds an elevated risk for conflicts and therefore represents an increased supply risk for the EU. Although research in resource efficient use and recycling of phosphates is increasing, phosphorus loops are far from being closed.

Silver was included in the list for criticality assessment, but under economic aspects not regarded as critical. From an environmental point of view, silver has to be critically assessed because silver mining and processing is associated with large material flows, comparable to gold. Its dissipative use in electronic devices with short useful life leads to significant material losses, since the devices often don't enter proper recycling pathways.

3. Do you have any comments regarding the recommendations of the report? If so, please specify.

General Remark: The reference documents overemphasise the economic facet of the raw materials issue, that is securing raw material supply, and thus miss to accord due weight to the conservation and protection of natural resources and other environmental aspects.

Recommendation 2:

„The Group recommends that steps be taken to:

- *encourage more research into life-cycle assessments for raw materials and their products on a “cradle-to-grave” basis;”*

Any assessment of the criticality of a raw material must include environmental aspects, i.e. an assessment of its impacts on the environment. This is achieved best by LCA. In case of raw materials, LCA can only cover the scope between “cradle” and “gate” (while the latter means the point where the raw material is converted into something different). This is because a full LCA by definition requires a functional unit, which a raw material - without any specified intention - does not have.

Furthermore, any cradle-to-grave approach of raw materials would require allocation methods between material system and various product systems and thus would lead to inaccuracy. We therefore do not recommend spending further work on the pursuit of a cradle-to-grave approach.

Cradle to gate LCI data of raw materials, however, should be collected for as many materials as possible and as specified as possible since they can be very helpful for different purposes. Multiplied with the annual consumption of the respective material they can indicate the overall environmental impacts of the material as well as the benefits if the material is avoided or recycled.

Recommendation 4:

„The Group recommends policy actions to improve access to primary resources aiming at:

- *„Promoting exploration and ensuring that exploration by companies is regarded as research activity”*

UBA opposes a view that any exploration carried out by companies shall be regarded as research activity. Exploration by companies is a typical entrepreneurial activity of a mining company, is usually being carried out solely or mainly in an economic interest and lacks the particular scientific purpose that characterises research.

Moreover, on grounds of the fundamental freedom of sciences (Art. 13 of the Charter of Fundamental Rights of the EU) research activities are often less restricted compared to mere economic activities. It seems firstly not to be prudent to grant those alleviations to any economic activity of exploration. Secondly such privilege could constitute an unreasonable unequal treatment regarding economic activities other than exploration not enjoying the advantage of being regarded as research. Therefore exploration by companies shall not be regarded as research activity.

Recommendation 5:

“The Group recommends that the following policy actions, with regard to trade and investment as defined in the trade raw materials strategy, be pursued:

- *Foster an effective exchange-of-views on certain policies made within the institutional framework of EU economic cooperation agreements (e.g. with China on the latter country's NFM recycling plan to year 2015) [...]*

We agree that a comprehensive exchange-of-view on raw materials with other countries is necessary. The EU should take the lead to enter into an intensive dialogue with producer and consumer countries on sustainable resource management. The objective of such an open dialogue is to agree on principles, objectives, measures and instruments of sustainable resource management. Resource protection should be mainstreamed into existing bi- and multilateral agreements. Moreover, the EU should ultimately aim at the creation of an international convention for the protection of natural resources.

Recommendation 6:

“The Group recommends that policy actions are undertaken to make recycling of raw materials or raw material-containing products more efficient, in particular by:

- *mobilising EoL products with critical raw materials for proper collection instead of stockpiling them in households (hibernating) or discarding them into landfill or incineration;*
- *improving overall organisation, logistics and efficiency of recycling chains by focusing on interfaces and system approach;*
- *preventing illegal exports of EoL products containing critical raw materials and increasing transparency in flow;*
- *promoting research on system optimisation and recycling of technically- challenging products and substances.”*

We agree on the proposed policy actions, but would like to add that from a sustainable materials management perspective, it is moreover absolutely necessary to support the build-up of environmental sound recycling infrastructure in non EU-countries in order to minimize the loss of secondary raw material and environmental impacts of recycling globally.

An optimization of the recycling system should furthermore include the prevention of critical contamination of the recycling material.

4. Are you aware of any initiatives in your country that aim to assess the criticality of raw materials? If so, please describe briefly.

The Federal Environment Agency (UBA) and the Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) commissioned a project to develop measures and strategies for metals that are characterized by high environmental impacts and high material losses during their life-cycle (mainly nationally realisable measures). Thereby we focus on “rare” metals. “Mass metals” like iron, copper and aluminium are not in the scope of the project.

Why focus on these metals?

- Often characterized by high environmental impacts in their production due to low metal concentration in ores.
- Material losses at the end-of-life caused by hindered recycling due to dissipative use.
- Low life-expectancy but need for “green technologies” such as photovoltaics.
- Preservation of resources in terms of sustainability and intergenerational justice.

The general aims are:

- Minimization and avoidance of linked environmental impacts,
- Increase material efficiency,
- Find environmentally more advantageous substitutes,
- Improve recycling and close material cycles.

The project is structured in 3 phases:

- Phase I: Identification of ten relevant metals
- Phase II: Life cycle analysis
- Phase III: Deduction and development of measures and strategies for policy making

In Phase I ten metals were identified that are dissipatively used, cause significant environmental impacts during their extraction and/ or are characterized by a low reserves-to-production-ratio. The selected metals are: Gallium, Gold, Indium, Manganese, Nickel, Palladium, Silver, Tin, Titanium, and Zinc. In Phase II the whole life-cycle will be analysed and significant environmental impacts and material losses will be identified. Therefore, different applications will be regarded. We assume that applications like electrical and electronic equipment will play a major role, but also applications like alloys. Currently, Phase II is being finalised and in order to prepare Phase III the most relevant potentials for improvement will be selected. Phase III will discuss measures and strategies to reduce material losses and environmental impacts.

POLICY AREA: TRADE

“Major issues:

One pillar of the Raw Materials Initiative consists in developing a European external strategy in order to guarantee the sustainable supply of raw materials from global markets at undistorted conditions. In this, trade policy plays an important role.

DG Trade has recently completed its 2009 activity report on raw materials, which summarizes the progresses accomplished along the three axes of the trade raw materials strategy:

- *Include, as appropriate, the relevant trade disciplines on sustainable supply of raw materials in bilateral and multilateral trade agreements.*
- *Identify illegitimate trade distortive measures taken by third countries and tackle them using all available instruments, including through bilateral consultations, the Market Access Partnership process or, if necessary, the WTO dispute settlement; while delimitating more clearly permissible exceptions for e.g. development purposes.*
- *Reach out to third countries to show that the question of sustainable raw materials supply is an issue relevant to all countries, developing or developed, resource-rich and resource-poor alike as the uncontrolled, unregulated multiplication of trade restrictions can lead to a generalized beggar-thy-neighbour policy detrimental to most countries; while recognising the importance of respecting internationally agreed rules on the subject.”*

8. Do you have any comment regarding the main findings of DG Trade activity report? What activities should be prioritised? Are there, in your opinion, additional activities not mentioned in the report which should be pursued in this strategy?

Since 1990, at least eighteen violent conflicts have been fuelled by the exploitation of natural resources. In fact, recent research suggests that over the last sixty years at least forty

percent of all intrastate conflicts have a link to natural resources. Civil wars such as those in Liberia, Angola and the Democratic Republic of Congo have centred on “high-value” raw materials like timber, diamonds, gold, and minerals.¹

The EU should aim to strengthen the Kimberley Process Certification Scheme (KPCS) for rough diamonds in order to exclude the trade of any rough diamonds, which have been mined in the context of serious violations of human rights, violations of humanitarian law or violations amounting to crimes under international law. In addition, the EU should take the lead to develop certification schemes for other conflict-related raw materials. In the absence of robust certification schemes, the EU should ban the import of conflict-related raw materials from conflict areas.

POLICY AREA: DEVELOPMENT

“Major issues:

The 2008 RMI Communication highlighted that development policies play a relevant role in at three ‘levels’:

- *‘Strengthening States’*
- *Promote a sound investment climate that helps increase sustainable supplies of raw materials*
- *Promote sustainable management of raw materials In 2010, within the context of the EU-African Union partnership, the European Commission and the African Union Commission recently agreed to develop a bilateral co-operation in the field of raw materials and to work together, taking fully into account the Africa Mining Vision of February 2009 and the EU Raw Materials Initiative of December 2008, in particular on issues such as governance, infrastructure and investment and geological knowledge and skills.”*

11. What specific actions would you consider most relevant needed in the following areas:

- **Good governance;**

In view of the security relevance of the raw materials sector, the EU – through its development assistance - should support measures to integrate security aspects into raw material development strategies. The EU should provide developing countries with best practices of sustainable raw materials management.

- **Geological knowledge / skills;**

Raw material production is in the position to play an important role in the economic development of less developed countries producing these materials. The development policy of the EU must use this potential and promote a sustainable raw materials policy in the less developed countries which is aimed at the conservation of resources and avoids environmental degradation due to mining and use of raw materials. We welcome the

¹ United Nations Environment Programme, From Conflict to Peacebuilding. The Role of Natural Resources and the Environment, 2009

proposal by the Commission for a strengthening of responsible government executives in the less developed countries producing raw materials. Proceeds from mining should be used in a transparent way emphasizing the common welfare in order to prevent corruption, minimize distribution conflicts and fight poverty. A fair proportion of proceeds generated from stripping the natural resources of any particular community should be reinvested into the sustainable development of the area, especially in terms of mitigating the environmental impacts of the operation and restoring the land afterwards to ensure that the local population are still able to have a livelihood. A sustainable resource policy should also comprise measures for crisis prevention, conflict resolution, consolidation of peace and promotion of education and health.

Development cooperation should promote the development of a suitable environmental law framework for mining. This includes the clarification of proprietary rights in order to prevent overexploitation of resources, among other negative consequences.

We recommend outlining best practice of raw material production processes and the development of benchmarking indicators.

The EU should advocate the worldwide dissemination of such best practice for the raw materials economy. In addition, the EU should promote and strengthen initiatives in the raw materials sector supporting the population concerned in terms of social improvement and environmental protection (for example for a better water supply).

- **Infrastructure/investments;**

From our point of view, it is meaningful to continue activities such as the organization of twinning projects and establishment of recycling partnerships between industrializing countries and the EU, in order to support capacity building in third countries in terms of plant construction and recycling establishments. Further potential is seen, for example in operator models for infrastructure projects, contracting and leasing models as well as product-accompanying services (maintenance, upgrading, increases in efficiency, adaptations and environmentally safe disposal).

With regard to technology transfer, the EU should encourage waste management and recycling companies in industrialized and rapidly industrializing countries as well as product manufacturers to engage themselves in less developed countries in order to support infrastructures permitting an improved global production of secondary raw materials. With its Regional Centres the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal could serve as a basis for capacity building. Fostering a reprocessing and waste management industry in the receiving country would help to alleviate the social and environmental burdens caused by the high consumption and discard rate of such items and their subsequent dumping on 'third world' markets.

12. Regarding transparency, what measures do you believe the EU should take to foster revenue transparency in the mining industry in raw material resource-rich countries? What are your views regarding existing initiatives currently being taken in this area, namely by the Extractive Industries Transparency Initiative (EITI)?

Transparency in the mining industry is a prerequisite to sustainable resource management. The EU should continue its support for transparency related initiatives like the Extractive Industries Transparency Initiative. In view of the many problems related to the

implementation of EITI in many countries, the EU should increase its assistance to developing countries for a successful implementation.

However, transparency related to income is not sufficient for sustainable resource management. Transparency must also be valid for the spending of the public budget. The EU – through development assistance – should support transparency reforms of the fiscal sector.

14. Do you consider that wood should be addressed in the framework of development policy? If yes, please specify what are the main issues to be analysed.

Yes, we think that wood should be addressed in the framework of development policy, since the demand of wood is growing over the years. The sustainable forest management is in danger, if wood logging rates are growing without limit.

In Europe the main uses of wood beside the fuel production are furniture production, building industry and paper production. For instance the wood consumption for paper production is increasing significantly since the paper consumption is continuously growing. The consumption per capita doubled between 1970 with 125 kg/a and 2008 with 250 kg/a.

Many native forests are in danger since illegal logging takes place not only in tropical regions. Because of the growing markets in China and India and the growing exports from Russia many native forests in the boreal area are facing deforestation.

Other problems are caused by illegal logging of tropical wood, deforestation for agricultural purpose, or the production of export goods to industrialised countries like palm oil, soy beans, coffee etc. Losing of livelihood for indigenous people like the Sami people is also a problem.

POLICY AREA: IMPROVEMENT OF THE REGULATORY FRAMEWORK CONDITIONS INSIDE THE EU

“Major issues:

The Commission has proposed in the Raw Materials Initiative adopted in 2008 to provide clarity on how to reconcile non-energy extraction activities in or near Natura 2000 areas with environmental protection. In consultation with stakeholders a guidance document has been finalised and will be available on the web site of DG Environment before summer break.

As regards ways to improve the regulatory framework within the EU by promoting the exchange of best practices in the area of land use planning and administrative conditions for exploration and extraction, a report has been delivered by the relevant ad hoc Working Group.

This report covers the following topics:

- *Minerals Policy*
- *Land use planning policy for minerals*
- *Authorisation and permitting procedures*
- *Achieving Technical, Environmental and Social Excellence*
- *Improving the EU's geological knowledge base*

- *Better networking between the national Geological Surveys*
- *Need to integrate terrestrial sub-surface information into the GMESLand Service"*

20. Do you consider that EU regulatory framework conditions for wood and/or recovered paper need to be further analysed? If yes, please specify.

Contamination of waste paper endangers the paper recycling increasingly. Therefore measures for the prevention of contamination of paper with possible harmful substances must be improved. This should be dealt with at the source for instance at the chemical or printing industry and not as an additional burden for the paper recycling industry, i.e. the regulatory framework for recovered paper itself is sufficient, but measures for deinkability and recyclability as part of product stewardship should be specified on a other place. Measures for reducing paper consumption in general are missing.

In July 2010 the European Parliament adopted the obligation of operators who place timber and timber products on the market to prohibit the trading in illegally harvested timber or timber products. However, books, newspapers, pictures and other products of the printing industry are not included in this obligation. To prevent illegal logging effectively also the trading in graphic paper products like books and newspapers made from illegal harvested timber should be prohibited by the obligation.

POLICY AREA: PROMOTING SKILLS AND RESEARCH, DEVELOPMENT AND INNOVATION

"Major issues:

- *Promote skills not only in the mining sector but also in other raw materials sectors is a matter of concern. The Commission is currently supporting this challenge via programmes such as ERASMUS MUNDUS with the specific Minerals and Environment Programme (EMMEP).*
- *Focussed research on innovative exploration and extraction technologies, recycling, materials substitution and resource efficiency. The Commission has recognised the European Technology Platform on Sustainable Mining (ETP-SMR) to catalyse excellent research and development collaborative projects between the industry and research organisations. In addition, via the 7th framework programme for research, development and innovation the next call for proposals in the area are expected to be public in July9."*

26. Are there any other aspects related to skills, R&D and innovation for other raw materials, such as wood, that need to be further promoted? Please, specify.

The development of environmental sound (low migration and deinkable) inks for all printed paper would help to avoid contamination of recycled paper. An assessment of the effects of chemical additives in non-paper components of paper on the recycling loop is needed. For instance: ,phthalates, PAK, formaldehyde. Contamination of waste paper endangers the paper recycling increasingly.

POLICY AREA: RESOURCE EFFICIENCY & RECYCLING

“Major issues:

The 2008 RMI Communication identified that the increased use of secondary raw materials contributes to security of supply and energy efficiency. However, today many end-of-life products do not enter into sound recycling channels, resulting in an irremediable loss of valuable secondary raw materials. This mainly concerns exports of end-of-life vehicles and electronic equipment, which leave Europe as reusable products but end up being dismantled abroad. To counter these trends, the need to reinforce the Waste Shipment Regulation and related legislation was identified. Furthermore, prices of some recovered materials have reached record levels due to the high demand from third countries.

The Waste Shipment Regulation also contains requirements on exporters of waste to third countries to ensure that this waste will be treated in an environmentally-sound manner. However, compliance with this principle is not always respected.

Finally, stakeholders have identified the need for an improvement in statistics on secondary raw materials. This includes actions to be taken to measure the extent of illegal trade in products containing these secondary materials.”

27. In your view, and beyond measures already being taken (e.g. the recast of the WEEE Directive), what practical measures can be taken by the EU and by Member States to prevent the illegal shipment of obsolete end-of-life vehicles and electronic equipment? and

28. In what ways should statistics on trade in, and recycling of, products containing secondary raw materials be improved?

- Juridifying the so-called Correspondents' Guidelines as regards the differentiation between waste and product –

The recast of the WEEE Directive should include provisions concerning the distinction between EEE and WEEE. The latest proposal provides for the exporter to prove to the authorities that he is shipping used electrical and electronic equipment. An important point is the provision of proof of the functionality of the equipment in order to make the problematic differentiation between waste and product more practicable.

- Increasing public awareness -

Despite various private- and public-sector activities at national level, consumers know little about the undesired consequences of exports of end-of-life vehicles and WEEE. Raising awareness is considered to be a basis for behaviour changes and for gaining acceptance of further measures. It can also be expected to lead to greater efforts towards self-regulation on the part of manufacturers and other actors involved.

The EU should therefore step up its activities to raise public awareness of this issue.

- Transparent statistics –

For major types of equipment such as monitors, television sets, refrigerators, European statistics should distinguish between new and used devices by introducing corresponding

codes to the Combined Nomenclature. Global harmonisation would be advisable in the longer term.

- Considering whether used equipment should preventatively be classified as waste -

The EU should explore whether it would be appropriate to extend waste law in this problem area to also cover used EEE and vehicles in order to strengthen their control and remedy the problems associated with such exports. A fact that might speak against an extension of the waste regime is that the waste hierarchy laid down in the revised Waste Framework Directive calls for waste, firstly, to be prevented and, secondly, to be recovered.

29. Have you identified major problems with recovered paper? What are the main issues that need to be further analysed?

Measures for the prevention of contamination of paper with none-paper components such as inks and glues that may include potentially harmful substances are insufficient. Since some of those substances might be carried over in the recovered paper product. This should be dealt with at the source like the chemical or printing industry and not as an additional burden for the paper recycling industry. Measures for increasing the awareness in the chemical research institutes for the life cycle of paper products are needed.