

EUROMETAUX'S PROPOSALS FOR THE RAW MATERIALS INITIATIVE

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Jointly prepared by:



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Executive Summary

Background

The European Commission launched the “The Raw Materials Initiative — Meeting our Critical Needs for Growth and Jobs in Europe” in 2008. With the launch of this initiative, the EC drew attention to Europe’s supplies of essential raw materials. The EC stated that access to and the affordability of mineral raw materials was crucial for the sound functioning of the EU economy. Key sectors like the automotive, construction, aerospace, and machinery sectors, etc., which provide a total added value of € 1 324 billion and employment for some 30 million people, all depend on access to raw materials. Similarly, emerging renewable energy technologies (solar, wind, E-mobility, etc) at the core of the ambitions of the EU 2020 cannot function without speciality metals and materials. The EC calculated a trade deficit of 14.1 billion Euros in 2005 in trade of mineral raw materials with the lion's share for NFM alone.

The RMI addresses both primary and secondary raw materials. Europe, the most advanced region for recycling, has established a well-developed recycling sector, which is complementary to primary raw materials transformation. However, as shown in the Annexes to the RMI Communication, primary deposits of many metals within the EU are limited or non-existent, while secondary sources cannot meet the required demand. Even though the use of recycled scrap has increased significantly in recent decades and now represents 40% to 60% of input to EU metals production, imports of primary raw materials will remain an essential and major source of supply to the European markets for technical and structural reasons (e.g. long-term stocks and rising demand).

The EU Raw Materials Initiative (RMI) addresses many of the non-ferrous metals industry’s concerns. The proposed integrated approach is correct, and now needs to materialise into concrete measures that specifically address the numerous trade distortions and other illegal practices that are impeding fair access to raw materials for European companies. These measures are urgent, given that the supply conditions are worsening every year as a result of the aggravation of the world trade context. Beyond these concrete actions, Eurometaux strongly requests that the EU Commission develop voluntary diplomatic actions aimed at achieving a level playing field across all economic actors in relation with the European industry.

Contribution of Eurometaux to the RMI

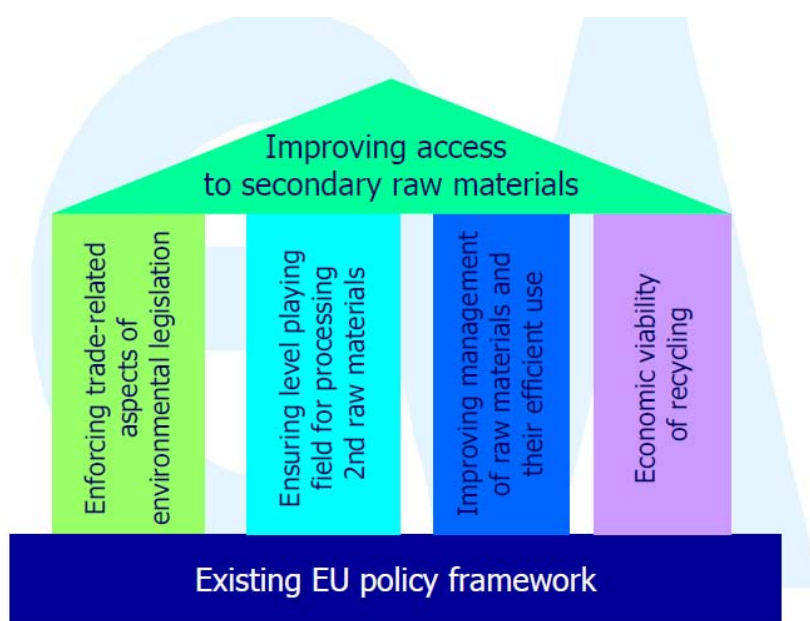
The problems described in the RMI Communication concern non-ferrous metals in particular. Non-ferrous metals companies are therefore keen to support EU policies to facilitate access to raw materials. Eurometaux (EM), the EU Non-Ferrous Metals Industry Association, commissioned Öko-Institut e.V., an independent research and consultancy organisation for sustainable development, to jointly elaborate a document supporting the Raw Material Initiative and providing concrete proposals whereby to improve and, whenever possible, guarantee, access to raw materials for EU industry. The document is structured as follows:

1. General challenges addressed in Sections 1 to 4:

- An introduction, explaining the scope and objective of this report (**Section 1**),
- Information about the non-ferrous metals industry in general (**Section 2**),
- Cross-reference to Eurometaux's activities relative to trade distortions (**Section 3**), and
- Three case histories that provide facts and figures on the situation, challenges and opportunities of the non-ferrous metals industry in Europe (**Section 4**).

2. Ten concrete proposals are presented under 4 pillars:

- **Enforcing the trade-related aspects of environmental legislation (Pillar 1),**
- **Ensuring a worldwide level playing field for processing secondary raw materials (Pillar 2),**
- **Improving the management of secondary raw materials and their efficient use (Pillar 3),**
- **Economic viability of recycling (Pillar 4)**



3. A brief conclusion

Access to primary raw materials is addressed in **Section 3**, which focuses on trade distortions and calls for continuing support from the EC. However, the main focus of this report is on concrete proposals whereby to improve access to secondary raw materials for the non-ferrous metals industry, and subsequently for numerous critical industrial applications, as outlined in **Section 5**.

Concrete proposals developed by EM

Each pillar addresses a different, yet often complementary, concern. The sum of the pillars, with the addition of trade-related measures covered in Section 3, offers a comprehensive palette (with the exception of the EU extractive industry's issues, which are covered separately by Euromines), whereby to improve the European industry's access to NFM raw materials. The proposals made within these pillars outline concrete actions whereby to address the pillar issues, but they make no claims to be complete. In this way, EM and Öko-Institut hope that this document will stimulate the development of complementary concrete proposals by other stakeholders, also aimed at remedying the current access shortfalls to raw materials addressed by the RMI Communication.

Pillar 1: Enforcing the trade-related aspects of environmental legislation

In their analysis of the problems and situation, Eurometaux and Öko-Institut have identified the urgent need to **enforce existing environmental legislation** rather than implementing new legislation. Consequently, **Pillar 1** includes three important measures aimed at improving the enforcement of the trade-related aspects of environmental legislation:

- **Improved enforcement of the waste shipment regulation to avoid illegal shipment of waste (Proposal I)**
- **Customs identification of second-hand goods (Proposal II)**
- **End-of Waste Concept (Proposal III)**

Harmonised implementation and enforcement of existing legislation that correctly address major issues of concern are essential to guarantee their effectiveness in ensuring that actors operate according to the same rules. Unfortunately, the requirements of the Waste Shipment Regulation (WSR), including the export of wastes only to sites able to treat them in an environmentally sound manner, have not been successfully implemented over the past 15 years. A series of actions aimed at ensuring better enforcement of the Waste Shipment Regulation and facilitating customs controls are proposed, as well as an assessment of future materials availability linked to the end-of waste concept.

Eurometaux is keen to work closely with the EC in order to make rapid progress on assessing and possibly implementing these measures, which address the very urgent issue of ensuring sustainable supplies of valuable secondary raw materials for Europe.

Pillar 2: Ensuring a level playing field worldwide for processing secondary raw materials

The unsatisfactory enforcement of existing legislation is jeopardising the level playing field principle with regard to access to secondary raw materials, a principle that is key to the competitiveness of EU industry and to the Environmental Sound Management principle. As a result, human health and environmental protection are jeopardised by a large number of unsound operations; furthermore, very poor recycling efficiency is responsible for the irremediable loss of valuable raw materials for society.

Eurometaux proposes two concrete measures aimed at ensuring level playing field conditions:

- **Certification of pre-processors, refiners and recyclers of waste and secondary raw materials (Proposal IV)**

- **Shipping of complex materials to BAT-recycling plants in Europe: “Best of two worlds” approach (Proposal V)**

Proposal IV aims to ensure a level playing field among industrial pre-processors and refiners recovering metals contained in waste and secondary raw materials via mechanical, chemical and metallurgical processes, by means of mandatory certification for access to, and the treatment of, EU secondary raw materials.

The obligation of certification for waste and secondary raw materials pre-processors and refiners shall apply to all shipments of waste and secondary raw materials:

- between EU Member States,
- exported from the EU to third countries.

Traders and collectors are not covered by such mandatory certification; they retain a “material owner declaration”, indicating the final (material) refiner/recycler of exported or intra-community delivered material. Export will only be authorised if a final processor is duly identified and certified. This provides an effective tool for the authorities responsible for export control to enforce the WSR, thereby creating a level playing field among operators as regards environment and health protection and minimum recycling efficiency. The certification audit shall be performed by independent companies approved by and registered in the EC. In the case of export to a pre-processor or any other intermediary operator, the final refiner/recycler needs to be declared and certified.

Eurometaux recommends that the EU Commission should conduct or commission a feasibility study on a **certification scheme** of this kind. Relevant DGs (ENV, ENTR, Trade) need to be involved in the process. Eurometaux would appreciate being involved in the designing of the scheme, and is keen to cooperate throughout the exercise.

The main objective of **Proposal V – “Best of two worlds” approach** - is to encourage international co-operation between European recycling companies and SMEs in developing regions such as Africa, so as to ensure the optimal recovery and recycling of raw materials, better protection of health and the environment, and a fair share of the added value chain in developing countries. Some concrete examples of cooperation schemes of this kind already exist or are being developed, providing a strong base for a broader implementation. Within the scope of **Proposal V** Eurometaux proposes to host a “take-off summit”, bringing together interested European companies (members of Eurometaux, shipping companies, etc.), representatives of the European Commission, the UNEP, selected representatives of developing countries and independent experts (e.g. from GTZ) to discuss the next steps for establishing such new and innovative business models on a broad basis.

Pillar 3: Improving the management of secondary raw materials and their efficient use

Pillar 3 comprises four different measures aimed at improving resource efficiency in the EU, with the focus on non-ferrous metals:

- **Improve collection schemes, their management, and access to the materials collected and to recycling (Proposal VI),**
- **Eco Leasing – A product of service (Proposal VII),**
- **Data on recycling (Proposal VIII),**
- **Research on recyclability (Proposal IX).**

Proposal VI focuses on secondary raw materials embedded in consumer goods, such as electronic and electric devices (WEEE) and rechargeable batteries. The main objective of the measure is to significantly improve **collection rates** in Europe for the post-consumer materials WEEE and portable rechargeable batteries, as a key step towards the better recycling efficiency of many precious, speciality and base metals. Among its concrete proposals, Eurometaux recommends improving the knowledge of the stock of battery-containing equipment in the economy so as to better target the collection flow. Due to the diversification of the types of electrochemical systems used in rechargeable battery technologies, it is recommended that a colour coding of portable rechargeable batteries should be implemented at international level in order to increase the recycling efficiency of their material content.

An EU Quality Certificate for Spent Batteries Recycling Plants should also be developed and implemented in order to guarantee the most appropriate end of life management of the batteries and to return their valuable materials content to the economy.

The European Commission should launch an impact assessment of the proposed measures. Eurometaux is keen to contribute to the impact analysis and the implementation of the resulting measures.

The proposed “**Eco Leasing – A Product of Service**” (**Proposal VII**) addresses metals such as aluminium (long lifetime applications: e.g. in buildings), based on the following objectives:

- To enhance resource efficiency through material valorisation along the lifecycle,
- To address the high initial costs of building solutions while delivering efficient building systems,
- To allow for the further improvement of building products while retaining ownership of embedded materials, and
- To provide customers with the opportunity to improve building efficiency throughout the lifetime of the lease contract.

This measure is geared to the “product of service” concept: products containing valuable technical “nutrients” would be reconceived as services rather than products that are bought,

owned, and disposed of by “consumers”. The proposal can also be extended to shorter lifetime metal applications. The manufacturers are responsible for materials throughout the lifecycle, thereby creating a market-based incentive to eco-design the product.

The next step should be to explore practical possibilities – e.g. with financial partners and the legislator – of facilitating the approach and providing recycling investment opportunities in new regulations.

Improved quality of data on recycling (**Proposal VIII**), combined with a specific and powerful research programme (**Proposal IX**) concerning new recycling solutions for non-ferrous metals are important measures whereby to ensure appropriate framework conditions for recycling and to foster the technological leadership of the European non-ferrous metals industry.

Pillar 4: Economic viability of recycling (Proposal X)

The objective of **Proposal X** is to ensure that the non-value driven recycling of strategic technology metals is guaranteed even when volume and environmental drivers are not present.

Eurometaux is aware that recycling is not viable for some non-ferrous metals present in small volumes and/or concentrations in EoL products. At the same time, however, some of these metals have been identified by the RMI as requiring new strategies to address their recycling.

Eurometaux recommends that a mapping of existing supporting financial schemes for non-value driven environmental recycling operations be carried out in Member States. A feasibility study to extend (and, where appropriate, improve) existing best supporting practices to the non-value, environmental and volume-driven recycling of strategic technology metals should subsequently be conducted or commissioned. Eurometaux is keen to support such an approach and to contribute by joining the steering committee of the corresponding feasibility study.

Outlook

The proposals drafted by the non-ferrous metals industry as a means of implementing the RMI and meeting its objectives, at least partly, were presented to stakeholders from the Commission Services, several Member States and others during a workshop held in Brussels on 19 April 2010. These proposals, together with the related actions and time schedule, are now being discussed with a broader audience, including other industry associations and NGOs, and are being further worked on with the Commission services. This report describes the concrete measures identified that should help to cope with the specific problems encountered by the NFM industry. For the non-ferrous metals industry, it is essential to establish the above-mentioned processes and improvements identified in order to improve access to secondary raw materials. A high level of attention and high-level steering are necessary in order to ensure that all the various proposals and large number of stakeholders and contributors keep to a coherent implementation course.

Eurometaux is of the opinion that the RMI initiative is a necessary precondition for the European Commission to reach its 2020 objectives, and will continue to encourage and support it.

Eurometaux and Öko-Institut would like to thank the EC and the DGs involved for the very committed and constructive spirit within the whole process of preparing this report, and look forward to fruitful co-operation in order to take the necessary measures that address the goals of the Raw Materials Initiative.

1 Introduction

Following the new EU strategy (Europe 2020) Europe wants to reach pole position as the most innovative region in the world. Key technologies in key sectors are crucial to this objective. Most of the innovative sustainable leading technologies like catalysts, batteries, renewable energies, new material compositions, LEDs etc. essentially depend on different non-ferrous metals. Therefore the European non-ferrous metals industry is a key-supplier for all the innovative industry sectors in Europe such as the chemical, electronic, solar, wind, automotive industries, etc. In this way the non-ferrous metals industry itself is a key sector in terms of fulfilling the objectives of the EU Lisbon Strategy and Europe 2020.

Europe is faced by the challenge of having quite a modest stock of natural resources in the case of non-ferrous metals. The Raw Material Initiative (RMI) has to give the right answers and develop appropriate proposals to ensure the sustainable supply of Europe with non-ferrous metals in a competitive global environment.

Globalisation has radically transformed the world economy. Currently, Russia, China, India and other regions of Asia and South America play a substantial role in shaping international supply and demand for raw materials and manufactured products. Furthermore, there is every reason to believe that this will be a lasting phenomenon. EU's industry's future requires an appropriate answer to the distorting and very self-serving practices of some countries. The latter pursue geostrategic economic policies with the clear aim of securing access to raw materials to develop their own industry. Against this background, the European non-ferrous metals industry is finding it increasingly difficult to maintain competitive access to the raw materials needed to continue the production, recycling and transformation of metals in Europe. The problem of access to non-energy raw materials encompasses trade, environmental, product-related and recycling-related issues.

Europe, the most advanced region for recycling, has established a well developed recycling sector, complementary to primary raw materials. However it is evident and clearly addressed in the Annexes to the RMI¹⁾ that for many metals primary deposits within the EU are limited or even nonexistent and secondary sources cannot meet the required demand. Hence the import of primary raw material will remain an essential and major source of supply for the European markets.

On 5 November 2008, the EC adopted a Communication¹⁾ which proposes a strategy to meet the critical needs of EU industry for raw materials with a view to ensuring its competitiveness and growth and jobs in the EU from now on.

The EU Raw Materials Initiative (RMI) properly takes many of Eurometaux's specific concerns into consideration. The proposed integrated approach is right. It is now necessary to materialise a number of concrete measures that are needed to remediate the distorting practices of concern. This report identifies a number of such concrete measures that would help cope with the specific problems encountered by the industry.

¹⁾ Commission Staff Working Document, accompanying the Communication from the Commission to the European Parliament and the Council: THE RAW MATERIALS INITIATIVE — MEETING OUR CRITICAL NEEDS FOR GROWTH AND JOBS IN EUROPE; (COM(2008) 699).

1.1 Scope of this report

The Raw Material Initiative (RMI) has been launched due to the high importance of raw materials for the sound functioning of the EU's economy and the growing dependence of the EU on imports of many high tech metals like cobalt, platinum, rare earths and many others. The Commission is scheduled to report to the Council on the implementation of the RMI two years after the communication. This RMI report is expected in October 2010.

The RMI aims to close the gaps for an integrated policy response at EU level to ensure that the economy of the EU has sufficient access to raw materials at fair and undistorted prices.

The RMI as an integrated strategy should be based on the three pillars:

- ensure access to raw materials from international markets under the same conditions as other industrial competitors;
- set the right framework conditions within the EU in order to foster sustainable supply of raw materials from European sources;
- boost overall resource efficiency and promote recycling to reduce the EU's consumption of primary raw materials and decrease the relative import dependence.

The RMI addresses primary raw materials as well as secondary raw materials. The use of recycled scrap has increased significantly in recent decades and now represents 40% to 60% of input to EU metal production. However, as mentioned above, the import of primary raw material will remain a major source of supply for the European markets.

Specific problems are in particular increasingly being encountered in the fields of secondary raw materials.

Access to secondary raw materials in the EU is regularly hampered by:

- illegal shipments to non-OECD countries of high-value waste, such as electronic waste, batteries and end-of-life vehicles
- trade distortions (see Section 3 and related Annex 4, addressing trade distortion to primary and secondary raw material)

and at the same time

- the complex regulatory framework of the Waste Shipment Regulation does not avoid but even supports the export of non-ferrous metal scrap to non-OECD regions

even though such materials could have been recycled more efficiently (in terms of environment, energy and resource efficiency) in Europe.

As a result the net-export of non-ferrous scrap has continuously been increasing for years.

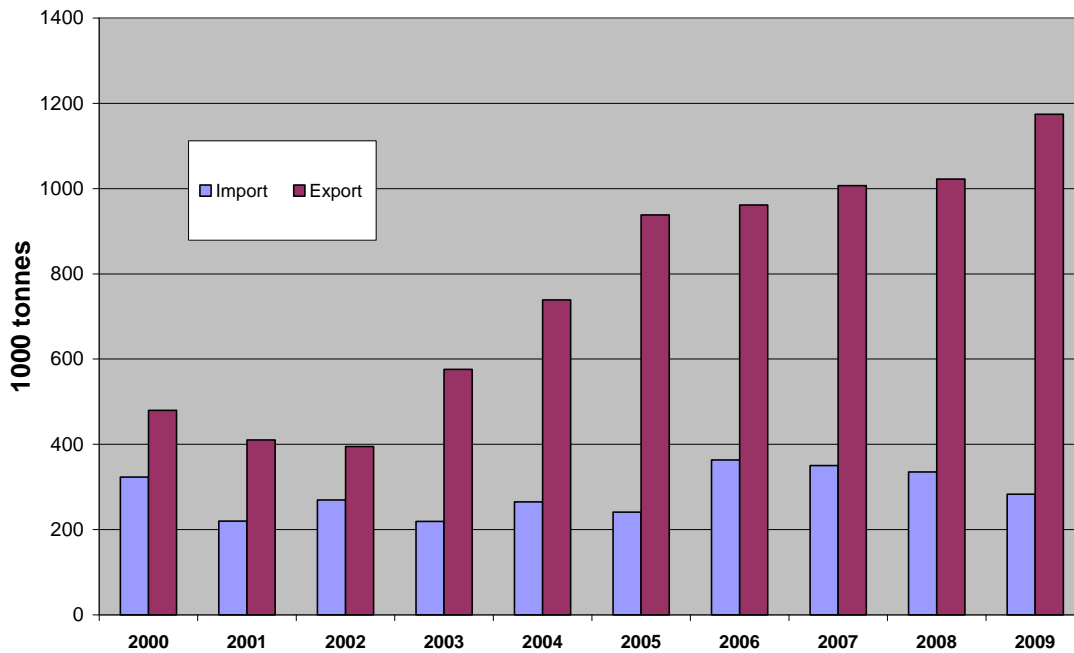


Figure 1: Import and export of EU27 for Copper scarp (according to code HS 7404) , indicating rising net export, *Source: Eurostat, extracted: Öko-Institut*

Higher collection rates within Europe and enforcement of the law with the aim to reduce illegal leakage of secondary raw material could support the access to secondary raw materials.

Access to primary raw materials mainly relies on imports and as a result distortions in the operation of international markets may significantly affect European industry in this respect. Trade distortions (which in fact affect both primary and secondary raw materials) are high on the agenda of the EC which has already been extensively briefed on this matter. This report will highlight trade distortions as one of the most important issues relating to access to raw materials but it will do so in general terms in order not to overload the report with issues already addressed by EU policy. It should be highlighted in this context that the EU industry's objective and request regarding trade distortions is to be able to import necessary feed supplies under free and fair terms of competition and to ensure that access to EU-sourced raw materials is not jeopardised by unfair competitive pressure from foreign competitors.

Mining within Europe is an important source of primary raw materials as well. The discussion of the conditions for mining are covered by the RMI and will be separately addressed by the European Mining industry.

The list of critical raw materials is not addressed in this report. It might be more appropriate to comment on this list in a separate document once the methodology for definition and the effects of the application of this list has become known.

Eurometaux – the representative of the non-ferrous metals industry in Europe has compiled this report with the support of

Öko-Institut, an independent non-profit organisation, to provide the EC with a comprehensive document for discussion on promoting the objectives of the RMI.

This report will mainly address concrete proposals to improve access to secondary raw materials, without forgetting that access to primary raw materials is essential as well.

1.2 Objectives

This report shall contribute to the ongoing work and discussions of the EC on the RMI. It provides the condensed views and proposals of Eurometaux and its numerous members regarding RMI issues. To achieve substantial progress Eurometaux has elaborated concrete proposals for practical measures aimed at implementation of the RMI in a way that shall improve and enhance access to RM for European sites (appropriate supply of critical materials which are necessary for future sustainable technologies). The European non-ferrous metals industry wants to ensure its role as a reliable supplier of essential metals for numerous crucial branches in Europe for sustainable development and likes to protect the high social and environmental standards of its member companies in Europe.

The proposals of measures outlined in **Section 5** are based on four key objectives:

1. improving enforcement of trade-related aspects of environmental legislation,
2. ensuring a level playing field for processing secondary raw material among the industry worldwide,
3. enhancing access to secondary raw materials through measures related to the improved management of raw materials and their efficient use; and
4. increasing the economic viability of recycling.

Eurometaux offers the EC an open discussion with their experts about the proposals of this report and would appreciate a vivid and constructive debate on the issues. The relevance and urgency of the topics have already been very well described in the "Communication from the Commission to the European Parliament and the Council - the Raw Materials Initiative — Meeting our critical needs for growth and jobs in Europe", COM (2008), 699.

In Eurometaux's view the report reflects the innovative potential of the European non-ferrous-metals industry as well as its high awareness about environmental and social issues. The report should stimulate implementation of several practical measures which address the main objectives of the RMI.

2 The non-ferrous metals industry in Europe²

In producing, processing and recycling a large number of metals that are essential to the economic development of Europe and society's needs, the European non-ferrous metals industry generates a turnover in excess of 250 billion euros (77% in metals fabrication / transformation, 21% in refineries, 2% in mining), and contributes over 2% of the gross national product (GNP) of the European Union, directly employing around 450 000 workers, and indirectly employing over one million workers.

The production of the European non-ferrous metals industry is based on both primary (ores and concentrates) and secondary (recycling) sources. The use of secondary raw materials is constantly increasing. For example, 80% of the lead produced in Europe comes from secondary raw materials; Europe has also become the world leader in terms of metals recycling.

The non-ferrous metals industry is energy-intensive and needs a large amount of fuel and electricity to extract the metal from the ore and refine it to the required degree of purity in order to process it and satisfy market demands. And, as energy is a major component of its cost structure, the industry has always striven to improve its energy efficiency, to the point where it has achieved a remarkable level of performance over the years. The European non-ferrous metals industry is committed to knowledge- and technology-based climate protection. It largely contributes to meeting the climate change challenges not only in terms of its own performance but also by producing materials which have a large potential for reducing power consumption and greenhouse gas emissions. The non-ferrous metals industry and its products are part of the climate change solution.

This is also a capital-intensive industry, characterised by very long-term investments. Its innovation and technological development strategies have therefore always been developed with a long-term perspective in mind, which requires that there is a minimum degree of predictability and stability in the legislative framework. Competitive access to raw materials, amongst other factors like energy, is another important factor in investment decisions made in the non-ferrous metals industry.

The non-ferrous metals industry also widely contributes to sustainable development thanks to its own practices and the performance of its products. Dealing with raw materials that are both essential and limited, the metals industry deliberately operates according to a sustainable development perspective; its strategy encompasses the concepts of sustainability and optimal use of resources by favouring recycling in particular. It is also aware that some of its products (metals, compounds) and processes can be a source of intrinsic danger, and hence possibly of risk, if exposure is not controlled. It takes note of the development of the regulatory framework within which it carries out its activities, particularly the trend towards placing more responsibility on the industrialists in respect of the products that are placed on the market. The latter's long life and practically infinite recyclability are characteristics that make metals particularly eco-efficient materials.

² This section has been written by Eurometaux alone.

The metals industry is crucial in terms of what it contributes, upstream of its lifecycle, to the manufacture and use of modern, efficient, ultra-recyclable products, the contribution of which to the modern world is indisputable. We believe that this industry has a future in Europe, where it creates wealth, lasting and high added value jobs and innovative products that respect the environment.

Finally, it is an industry that operates in a totally international market. Metals are basic commodities offered for sale in an international market. This industry has to import essential raw materials, and widely contributes to the European trade balance by exporting high-technology products with a high added value.

The transition to a greener economy, as called for by the EU 2020 strategy, will ease the pressure on natural resources and the environment which result from an increasing global population with legitimate claims on a better standard of living. Europe can play a leading role in this respect, but it cannot act in isolation, disregarding the new economic realities of an ever more global world and their effect on the competitiveness of European operators.

The EU has embarked on shaping a society that in future will (have to) use energy and raw materials in a much more sustainable manner as the present pattern of exploitation and consumption can hardly be maintained in a world of 8 billion people as expected by 2025. The non-ferrous metals industry and its products have the necessary characteristics to contribute effectively to the challenges of cleaner production processes, more efficient feedstock use, and more sustainable consumption patterns.

The recyclability and durability properties intrinsic to non-ferrous metals are unique in being able to reduce the carbon and resource intensity footprint of the whole value chains of consumer goods out of which they are made. From energy saving of lighter vehicles made of aluminium or high engine gas cleaning performance achieved by precious metals based catalysts, to high energy efficiency of copper electricity transportation by copper or corrosion protection conveyed by nickel or zinc, all metals have a tremendous record of contributing to solving environmental and health challenges. Tomorrow's economy will require non-ferrous metals to meet climate change and other sustainable development challenges!

Its capacity to produce these substances and products according to the highest environmental standards makes the European non-ferrous metals industry a key component in the move towards an EU greener economy and should make it a pillar of the EU 2020 strategy.

3 Trade dimension and distortions of access to raw materials³

The issue

Only a marginal share of total feed supplies of the EU non-ferrous metals industry is secured through upstream integration (= access to captive supply of raw materials) thus the market, and henceforth trade, plays a key role in securing raw materials for this industry.

It is therefore of vital importance to:

- ensure undistorted operation of the EU and international market for raw materials,
- promptly challenge the causes of trade distortions,
- prevent the further distortions arising, and
- promptly remedy their negative effects.

Certain trade and industrial policy measures operated by third countries provide our competitors in these countries with a purchasing edge on the EU or international market for raw materials.

Predatory industrial policies pursued by certain countries rich in mineral resources are creating dual prices for inputs and eventually scarcity of feed supply whilst dumping pressure is imposed by the same countries on processed products.

International trade rules and disciplines are not able to address the injurious impacts of new patterns of competitive distortions which increasingly and pervasively affect raw materials markets in particular.

Actions

Actions already in place, notably at WTO level, must be pursued in order to combat:

- trade distorting policies,
- dual pricing practices,
- export restrictions and import subsidies.

A list of relevant actions that have been taken since 1994 is attached in **Annex A-4**.

New rules and disciplines must be developed and endorsed at international level.

The EU must be inflexible in requiring compliance by its partner countries with their trade commitments at bilateral and multilateral level.

The EU must engage without reservation in international and bilateral consultations and awareness building on any policies that create trade distortions in access to raw materials.

³ This section has been written by Eurometaux alone.

4 Case stories: Improving access to secondary raw materials

In previous communication with the EC the situation, challenges and proposals of the non-ferrous metals industry have been demonstrated by several presentations addressing example issues. Each of these case stories has its own particularities and provides strong evidence on why the measures proposed later on are essential and why a high level of attention to appropriate implementation is required. In addition the case stories provide many facts and figures to strengthen and support the EC in its efforts to continue the RMI.

The following Case Stories are attached as an annex to this report.

Annex A-1: High-tech copper recycling needs a level playing field
(prepared by Aurubis)

Annex A-2: Rechargeable batteries (prepared by Umicore and RECHARGE aisbl)

Annex A-3: Aluminium applications (prepared by Hydro)

The first case story on **copper recycling** illustrates the demand and supply situation for copper in Europe as well as the composition of IT/PC scrap and thus the potential for state of the art recycling in Europe. It provides detailed information on changing conditions regarding the trade of copper scrap where a relevant portion is now exported from EU27 to China. At the same time the trade distortions caused mainly by China are addressed. Measures are proposed to establish a global level playing field for the copper industry in general and ensure better access to secondary raw materials in Europe.

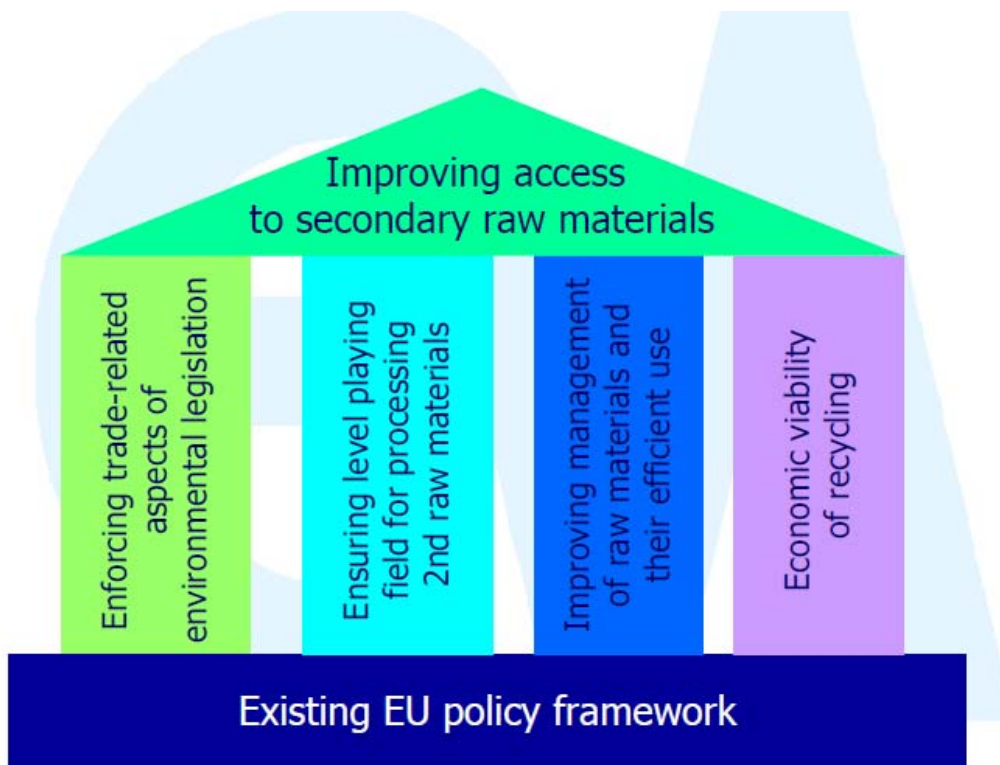
The second case story on **rechargeable batteries** is an example of a short- to medium-term application period (and return period). The facts and figures provide evidence that many relevant metals are used for the production of rechargeable batteries and many of them can be recycled; therefore a relevant portion of the required raw materials could be provided by secondary sources of raw materials. However the collection rates are relatively low as many of the rechargeable batteries are integrated in portable devices which are disposed of in different ways and selective recovery is only applied to a limited extent for the rechargeable batteries. The case story concludes with recommendations on how the collection rates shall be improved to secure this important source of secondary raw materials. The case story demonstrates the need to differentiate the type of batteries, consider eco-design for the recyclability, the need to establish dedicated collection targets for product categories and to establish more challenging targets with regard to the time line and the collection rate. The case story is established as an example and many aspects do apply for specific WEEE streams as well.

The third case story covers **aluminium applications** with a long lifetime (e.g. used for buildings), use of alloys in the automotive industry and applications with a shorter life time (e.g. packaging and cans). The different applications have different effects on the availability of secondary raw materials. Rising stocks (inventory in use) of long-term applications promise long-term availability whilst for alloys an open-loop recycling system (alloy cascade defined by aluminium content or level of alloying elements) needs to be considered and last but not least for short-term applications collection is key. The relevant industry asks the EC to conduct an economic and environmental impact assessment to address the effects of the application of end-of-waste criteria.

5 Proposed measures to improve access to secondary raw materials

Eurometaux has elaborated in cooperation with Öko-Institut concrete measures to improve access to secondary raw materials for NFM and to support and strengthen the approach of the EC with regard to the RMI.

The proposed measures are structured according to the following four key objectives, depicted as pillars:



The concrete proposal, which encompasses the above-mentioned objectives, is outlined according the following structure:

- identification of the issue
- objective of the proposal
- detailed Outline of the proposals
- implementation approach

Some of the proposals are already being processed (e.g. the consultation process for the revision of the WEEE Directive); for other proposals new processes need to be established. For some of the proposals comprehensive background documents have been prepared and cover much detail.

The following figure displays the areas addressed by the 10 measures proposed:

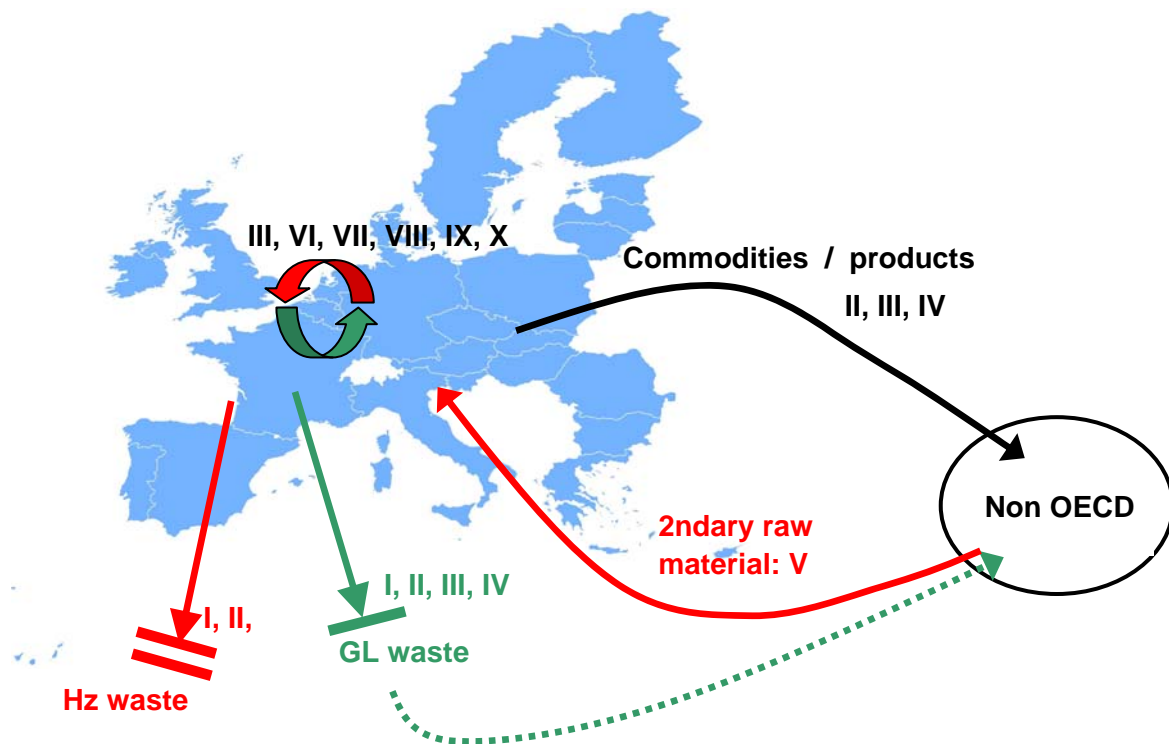


Figure 2: The different areas of action

- I: Improved enforcement of the Waste Shipment Regulation
 - II: Customs identification to distinguish between new and used goods
 - III: Assessment of the economic and environmental effects of the end-of-waste concept
 - IV: Certification scheme for pre-processors, refiners and recyclers of secondary raw materials (containing NFM)
 - V: “Best of two world approach”
 - VI: Improvement of collections schemes
 - VII: Eco-leasing
 - VIII: Data on recycling, traceability
 - IX: Research on recyclability
 - X: Economic viability of recycling
- GL waste = Green listed waste
 Hz waste = Hazardous waste

Pillar 1: Enforcing trade-related aspects of the environmental legislation including Waste Shipment Regulation

Eurometaux' members fully endorse EU sustainability and environmental regulatory objectives and requirements. However the lack of enforcement of the related EU policies have consequences on the external competitiveness of the industry, most notably in terms of its capacity to secure competitive access to raw materials on the international and EU market.

An effective enforcement of the Waste Shipment Regulation (WSR) would contribute to:

- creating a global level playing-field for recycling,
- increasing the availability of EU recyclable materials, and
- assuring that the quantified collection, recovery and recycling objectives set up by the EU legislation (e.g. in the WEEE, ELV, Packaging or Batteries Directives) are met prior to the exportation of the material.

I. Improved enforcement of the waste shipment regulation to avoid illegal shipment of waste

The enforcement of the Waste Shipment Regulation shall be improved to avoid the illegal drainage/export of valuable secondary raw materials. Other proposals of this report generally support this aim.

Identification of issues

An increasing volume of waste is shipped globally and the amount of illegal shipment is enormous (up to 40% according to an IMPEL study⁴).

For instance thousands of items of second-hand EEE equipment are imported without controls to Nigeria, of which 75% are out of order and can only be disposed of. For Ghana the amount disposed of is even higher. In contrast, Asia wants "working" units but still a high portion of the declared "used goods" are not in working order and are thus illegally exported waste. The disposal is mainly carried out locally, sometimes after some dismantling, followed by some local "backyard refining"⁵.

Legislative (administrative, environmental) requirements sometimes discourage suppliers to sell to Europe. This behaviour is sometimes supported by the refusal of logistics companies to accept shipments of raw materials classified as (hazardous) waste. A high and

⁴ http://ec.europa.eu/environment/impel/pdf/seaport_2_report2.pdf

⁵ For details on illegal WEEE exports from Germany, see the extensive report "Transboundary shipment of waste electrical and electronic equipment / electronic scrap – Optimization of material flows and control" http://www.umweltbundesamt.de/uba-info-medien-e/mysql_medien.php?anfrage=Kennummer&Suchwort=3933

complicated administrative burden of having to recycle materials within Europe can also be an incentive to export material (illegally) out of Europe. Overall this results in reduced access to raw materials in Europe and entails potential disruption of the supply chain and possible environmental leakage.

Due to the huge amount of exported commodities, it is evident that not all shipments can be effectively controlled. Spot checks lack the information of which shipments might be of interest. Therefore the aim must be to provide export authorities with the chance to better distinguish legal and illegal exports in order to allocate their limited resources to the export streams which are genuinely affected by this behaviour. Accordingly the **Proposal II** recommends introducing information on “used goods” in custom documents so that the Customs Authorities (CAs) can focus on shipments of used goods. But even for goods where such information was already available (e.g. used vehicles), enforcement is still weak⁶.

Secondly the **Proposal IV** on certification addresses the appropriate enforcement of the Article 49 (protection of the environment) of the WSR by implementing a certification scheme.

Last but not least the data on extra EU27 cross border trade of secondary raw materials and waste shall be improved as outlined in **Proposal VIII**.

In result all stakeholders are aware that inspection is needed but the means available to the responsible Customs Associations (or the police) are not sufficient to implement it.

Objective of the measure

Ensure appropriate enforcement of the WSR including identification of illegal shipments. Such efforts shall reduce illegal shipments and thus reduce the illegal drainage of valuable waste such as EoL vehicles or electronic devices. The aim should be to ensure that the raw materials are refined or used by sustainable companies, while respecting free trade worldwide, thereby improving the supplies to state of the art plants.

Outline of the proposal

Enforcement of the WSR shall be improved by several EC measures:

- i. Continue and boost the support to the European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) to strengthen and expand IMPEL network and activities against illegal shipment of waste.
- ii. Encourage (national) efforts to conduct road or ship spot checks by police or customs raid. To harmonise the approach in Europe a minimum level of means for inspections shall be defined by the European Institutions to achieve standardised enforcement of the WSR across the 27 Member States. A minimum number of special inspections for exports to non-OECD countries are required as well.

⁶ Draft Correspondents' guidelines for distinguishing between used vehicles and waste vehicles is in preparation and might improve the situation. For electric and electronic equipment (EEE) the correspondents' guidelines No. 1 and 4 are established but enforcement is hampered by identifying the used goods from amongst the new goods, because the customs documents lack information on used EEE.

- iii. Boost cooperation between national customs/enforcers, including an extensive and systematic exchange of information on illegal shipments and setting-up a collective mechanism to inform authorities on illegal shipment flows.
- iv. Make the correspondents' guidelines for WEEE legally binding (as envisaged in the Annex IC of the current Council proposal of the WEEE Directive) and provide for effective enforcement.
- v. Speed up the finalisation of the correspondents' guideline on ELV, make it legally binding in the next revision or by a separate regulation such as new Annex of the ELV-Directive. Provide for effective enforcement.
- vi. The general enforcement of the mentioned guidelines (WEEE and ELV) once they are established as legally binding should be seen as a separate task.
- vii. Introduce a similar requirement to Art 6 (5) WEEE Directive in the ELV Directive⁷.
- viii. Support the "Solving the E-Waste Problem (StEP) Initiative"⁸.
- ix. Enhance awareness (at national level and public level) of illegal streams / channels of (waste) materials which have a potential of environmental harm or loss of valuable material, to avoid illegal shipment.
- x. The burden for intra-EU trade shall be reduced by improvement of certain regulatory features of waste shipment: to facilitate intra-EU trade by enabling EU enterprises to draw actual benefit from regulatory features of the WSR.
 - o The pre-consented facilities provision should provide real benefit and should be widely recognised/accepted (for example in terms of lower financial guarantees according to Art. 6 WSR).
 - o Intra-EU shipment should be made less burdensome (having waste treated within EU is as difficult as shipping waste to non-OECD countries) e.g. by using a "certification number", which identifies the certified treatment facility involved, in combination with periodic declarations.
 - o Greater harmonisation of pre-/post-notification systems (notification via flexible electronic systems 24 h before arrival in an EU port and forwarding of information to Customs Authorities)

Implementation approach

The proposed measures are rather a working program and continuous tasks than a single measure. Accordingly it should be covered by a comprehensive program to facilitate

⁷ According to Art. 6 (5) of the WEEE Directive, green listed WEEE waste exported out of the EU shall only count for the fulfilment of the recovery targets if the exporter can prove that the recycling operation took place under conditions that are equivalent to the requirements of this Directive. Export authorities currently have no instrument at hand to implement Art. 6 (5) effectively. For providing evidence for the equivalent requirements, please refer to our **Proposal IV "Certification"**.

⁸ <http://www.step-initiative.org/index.php>

appropriate enforcement of the WSR, limiting on one hand the administrative burden to European industry and at the same time avoiding illegal shipment with all its negative effects on the non-ferrous industry in Europe.

Eurometaux and its members would be glad to support the EC in its efforts to enhance the enforcement of the WSR as described above.

II. Customs identification of second-hand goods

Identification of issues

Large amounts of valuable recyclable non-ferrous metals are “lost” during the export of end-of-life goods (“waste”) which are fraudulently declared as used or second-hand goods

No clear or legally binding guidance has been established to distinguish i) new goods from second-hand goods and ii) second-hand goods from end-of-Life goods (“waste”). Thus enforcement of European legislation in this case is required to distinguish between new goods, used goods legally exported and illegally exported waste declared as used goods. Guidance documents for EEE and vehicles to distinguish between used goods for re-use and waste which is illegally declared as used goods are available but not yet legally binding⁹.

The Combined Nomenclature (CN)¹⁰, used for export and import in EU, maintains for some selected goods (e.g. some used vehicles or EoL cells/batteries/accumulators¹¹) different codes for new and used (or second hand) goods but for all electric and electronic equipment such a distinction has not been established¹². Accordingly custom officers do not know whether it is new or used products that are being exported. Establishing new codes for used goods will require international acceptance and is rather time consuming.

Objective of the measure

The proposal shall:

- ensure a more efficient and effective distinction in the customs declaration between new and second-hand goods in order to allow focused control on the export shipments of the latter. The purpose is to enhance action against illegal shipments of “waste” under the cover of second-hand goods;
- compile information on, and intelligence of, “illegal” waste streams;
- be easy to implement on a European level without changing the international Combined Nomenclature. It shall facilitate implementation and ensure a harmonised and simple approach through electronic declaration.

⁹ See <http://ec.europa.eu/environment/waste/shipments/guidance.htm> and also the draft correspondents' guidelines on “Shipments of waste vehicles and related waste”.

¹⁰ The CN8 contains the goods classification as prescribed by the EU for customs purposes and international trade statistics. The CN is an 8-digit classification consisting of a further specification of the 6-digit Harmonised System. The annual changes are the result of adjustments which are necessary for customs procedures as well as official statistics.

¹¹ CN code 8548 specific for EoL cells/batteries/accumulators is deemed by the Industry / Eurometaux as not really efficient.

¹² E.g. CN code 8517 includes mobile phones which are new, second-hand or end-of-life (i.e. shipped for recycling).

Outline of the proposal

In "input box 44" of the Single Administrative Document (SAD)¹³, "Additional information / Documents produced / Certificates and authorisations" shall be reported. The proposal is to use this box 44 for the specific purpose as described below.

Eurometaux proposes for a clause to be inserted in the Modernised Community Customs Code – Implementing Provisions (MCCC-IP) 14 that makes compulsory the explicit declaration/identification of second-hand exported goods by filling box 44 of the SAD with a specific code.

The use of a specific code in input box 44, makes it easy (for customs) to distinguish new as opposed to second-hand material regardless of the material or product.

The code for second hand material could be used as a "red flag" by customs, increasing the risk profile of the declaration (especially in relation to the declaring party for instance AEO or not, certified party or not and so on).

The implementation is feasible in a reasonable time frame at EU level as there is no need to adjust the CN code, which would require international agreements.

Implementation approach

The EC / DG.TAXUD is requested to take up the matter in the Implementing Provisions of the Modernised Community Customs Code (MCCC-IP).

¹³ EU Customs document. The SAD is used in the EU for trade with third countries and for the movement of non-EU goods within the EU. The SAD covers the placement of goods under customs procedure (export, import, transit where the new computerised transit system (NCTS) is not yet used, warehouses, temporary import, inward and outward processing, etc.).

¹⁴ The Modernised Customs Code (MCC) lays down the general rules and procedures applicable to goods brought into or out of the customs territory of the Community. The MCC entered into force on 24 June 2008, following publication in Official Journal L 145 of 4 June 2008. It will be applicable when its implementing rules enter into force between 24 June 2009 and 24 June 2013.

III. The end-of-waste concept

Identification of the issue

“Clean” scraps which have commercial value always find their way to recycling facilities. According to the Waste Framework Directive (2008/98/EC) waste can cease to be waste if certain end-of-waste criteria are fulfilled.

The Institute for Prospective Technological Studies (IPTS), one of Joint Research Centres (JRC) of the EU, has worked on end-of-waste criteria applicable to aluminium and is starting work on copper scrap.

The holder of waste which complies with such end-of-waste criteria can decide for each shipment whether to keep it in the waste regime or to apply the end-of-waste criteria, whereby the waste ceases to be waste.

It needs to be highlighted that in the case that waste ceases to be waste REACH is applicable.

The implementation of the end-of-waste concept therefore poses some problems:

- Lack of harmonisation of status: the same material (compliant with the end-of-waste criteria) can be waste for one shipment and product for another shipment leading to complete confusion and double legislative burden.
- Its status as product (once waste has ceased to be waste) will enormously favour the export of these materials which form Europe's urban mine and are energy-rich.
- Lack of traceability of the flows of these materials

Objective of the measure

Strict criteria for the end-of-waste concept

Development of coherent enforcement strategies

Outline of the proposal

Conduct an extensive impact assessment (including economic and trade aspects) of the EoW concept linked to the RMI.

Implementation approach

Industry calls for the EC to launch the impact assessment prior to implementation of the EoW criteria. Industry is keen to participate in the exercise.

Pillar 2: Ensuring a level playing field worldwide for processing secondary raw materials

Enforcement of existing legislation is essential to ensure that actors play according to the same rules. Unfortunately the Waste Shipment Regulation (WSR) requirements, including the export of waste only to sites that will treat them in an environmentally sound manner, have not been successfully implemented over the last 15 years.

This jeopardises the level playing field principle with regard to access to secondary raw materials, a principle that is key to the competitiveness of EU industry to be addressed by the RMI. At the same time unsuccessful implementation of the WSR jeopardises human health and environmental protection in some countries.

Eurometaux believes that action needs to be taken as soon as possible to address the side effects of the lack of enforcement and lack of level playing field.

Eurometaux wishes to propose two concrete measures that aim at ensuring level playing field conditions:

- Certification of pre-processors, smelters/refiners and recyclers of waste and secondary raw materials containing metals: This would practically ensure enforcement of the equivalent requirement in the WSR (**Proposal IV**)
- Establishment of collection schemes in developing countries in combination with refining of secondary materials in Europe at certified smelters/refiners (**Proposal V**: "Best of both worlds" approach)

Eurometaux's proposals are tailored to be as practical, based on principles embedded in existing legislation, and enforceable by EU authorities as possible.

IV. Certification of pre-processors, smelters/refiners and recyclers of waste and secondary raw materials

The topic focuses on secondary raw materials containing metals and the related social, environmental, technical (resource efficiency) and management standards applied at the plants of pre-processor, smelters/refiners and recyclers. It shall be based on European standards for plants (like BREF notes) already established; thus the extra burden for the certification to European plants shall be rather limited. For non-European plants this should be based as far as possible on similar existing tools - however with an equivalent level of performance.

<p>This certification scheme shall explicitly not apply to the import of primary raw materials as this would hamper the access to import of raw materials and reduce the competitiveness of the existing smelters/refiners. Standards for primary raw materials to be imported need full international implementation at UN level and can therefore not be the focus of the European RMI.</p>

Identification of issues

Most European plants of pre-processors, smelters/refiners and recyclers are among the most advanced plants in the world in terms of environmental standards and resource efficiency. But access to scrap as a source of secondary raw material is becoming more difficult in Europe.

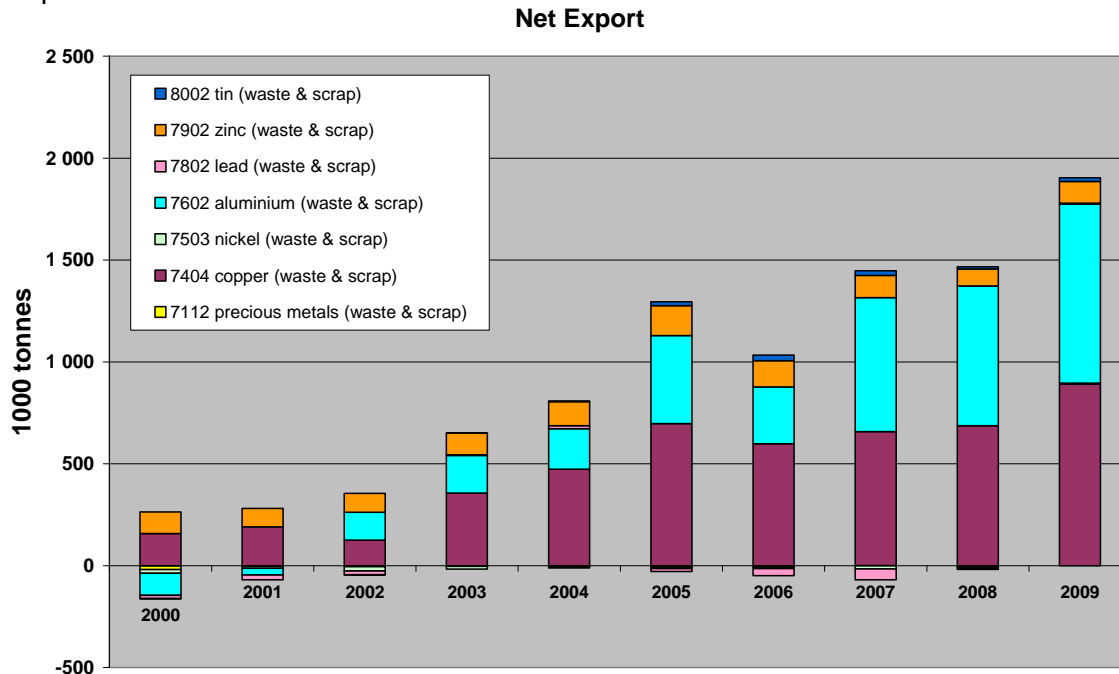


Figure 3: Net EU27-export in 1000 tonnes for selected non-ferrous metals. (negative net export = net import) Source: Eurostat, extracted: Öko-Institut

Over the past 10 years, the EU27 net export (export minus import) of scrap and waste for selected non-ferrous and precious metal waste increased from approx. 100 thousand tonnes to an amount of more than 1.9 million tonnes per year. This applies as well to the non-ferrous metals traded in (comparatively) small amounts as tin, precious metals, nickel and lead which progressively moved from a net import in year 2000 to a net export (some metals displaying remarkably high value in €). The trend would be even higher if exports of “worn-out” products illegally declared as second-hand goods were included (not identifiable in the statistics).

Most of these scraps are exported to operators with less advanced environmental standards and lower metal recovery rates

As a result existing material-efficient and environmentally advanced refining plants in the EU are more dependent on imports and some are left with idle capacity.

The three items below address the aim to reduce illegal and shadowed export of secondary raw material with the potential of environmental harm in the country of destination:

- enhanced enforcement of the WSR (**Proposal I**)
- support custom services in developing better distinction of waste and used goods exported - see proposal on custom codes (**Proposal II**),

- ongoing revision of the WEEE, in particular the proposed Annex 1 of the proposal (**Proposal VI**)

Other material streams of metal bearing material which contain relevant¹⁵ secondary raw materials are lacking attention as for instance:

- other (non-ferrous) scraps¹⁶,
- non-ferrous residues of industrial processes,
- intermediate products from metal refining processes, etc.

As far as these secondary raw materials are declared as waste¹⁷, many of them are listed in the “Green” Listed Waste (Annex III of the WSR)¹⁸. As far as the country of destination opts for instance “c) to apply with no control”, export from EU27 is easy to carry out without taking into account either the EHS conditions or the efficiency of the recycling.

Even if Article 49 (protection of the environment) of the WSR stipulates that any exported waste shall be managed in an environmentally sound manner throughout the period of shipment, including recovery or disposal in the third country of destination, it became evident during the recent years that its enforcement is difficult to apply as no detailed regulation or guidance is in place to define what is to be deemed as an “environmentally sound manner”.

Thus those materials classified as “Green” Listed Wastes are treated in plants outside the EU many of them less advanced regarding their EHS standards and resource efficiency. These differences in resource efficiency and environmental and health standards are jeopardising the economic viability of secondary material refiners in Europe.

Objective of the measure

¹⁵ “Relevant” with regard to: a) amount, b) value, c) requirements to avoid environmental harm, d) need to ensure high material / energy efficient processes and e) the risk of losses of raw materials due to inefficient processing.

¹⁶ Referring to industrial scraps rather than WEEE.

¹⁷ Again referring to industrial scraps which might cease to be waste according to the procedures given by the Waste Framework Directive.
Even if WEEE is listed in Annex III of the WSR (depending on the composition) as “Green” Listed Waste (GC010, GC020) the shipment of WEEE and related procedures are not applied. As reported for instance in http://www.umweltbundesamt.de/uba-info-medien-e/mysql_medien.php?anfrage=Kennummer&Suchwort=3933 all used or worn out electric and electronic devices shipped outside the EU are declared as “used goods”.

¹⁸ For such “Green” Listed Wastes the Non-OECD countries may opt if they would like.
a) to prohibit the import
b) to require prior written notification and consent
c) to apply no control
d) for other control applying national law

The Commission Regulation (EC) No 967/2009 of 15 October 2009 amending Regulation (EC) No 1418/2007 “concerning the export for recovery of certain waste to certain non-OECD countries” provides the detailed information which non-OECD country opted for which waste streams for which approach (a) to d) above).

The measure aims to ensure a level playing field for industrial pre-processors and secondary material refiners recovering metals contained in waste and secondary raw materials via mechanical, chemical and metallurgical processes.

Such a level playing field shall be established by a certification scheme covering:

- environmental aspects,
- social aspects including but not restricted to health and safety,
- process efficiency including metals recovery yields,
- operational excellence standards and (non-energy) resource efficiency

Competition among industry players shall therefore be based on an equal footing, preventing non-compliant operators gaining cost advantages versus best in the class.

Last but not least the proposal shall contribute to effective enforcement of the “environmentally sound manner” provision of the WSR.

Outline of the proposal

A **certification scheme** shall be established for industrial companies as pre-processors, and refiners which recover metals contained in waste and secondary raw materials via mechanical, chemical and metallurgical processes. The certification shall be applied to the recycling process/plant of the recycling process and not to the company. It shall be applied to waste and secondary raw materials.

The obligatory certification of pre-processors and secondary material refiners shall apply to all shipments of waste and secondary raw materials:

- between EU Member States,
- exported from the EU to third countries.

Traders and collectors are not included in the certification process but these stakeholders shall keep a “material owner declaration”, indicating the final (material) refiner/recycler of exported or intra-community delivered material.

Export may only be authorised if a final processor is duly identified and certified. This provides an effective tool for authorities in charge of export control to enforce the WSR.

In the case of export to a pre-processor, the final refiner/recycler needs to be declared and certified. Otherwise a certified pre-processor could be used as a dispatcher to non-certified recyclers/refiners.

The criteria to be met (including technical criteria for pre-processing, refining and recycling efficiency) need to be clearly defined. The criteria shall refer to existing registration/certification as much as possible to limit the additional burden for the relevant companies. For non-European plants this should be based as far as possible on similar existing tools with, however, an equivalent level of performance.

For instance:

- basic company information, e.g. financial solvency, internal control system, security etc. - see AEO¹⁹ status (art 5a) of the Regulation (EC) No 648/2005 of the European Parliament and of the Council of 13 April 2005 amending Council Regulation (EEC) No 2913/92 establishing the Community Customs Code) and the related assessment procedure;
- labour management and ethical conduct, e.g. ILO principles, GeSI²⁰ type of questionnaire; and
- EHS: compliance with BREF Notes²¹ (sector specific), implementation of management system.

In addition the certification shall be based on process efficiency (avoiding loss of metals).

The assessment of the criteria and delivery of the certificates shall be carried out by independent verification bureaus approved and certified by EU authorities, using for instance the following approach:

- Listing in an EU regulation of the verification bureaus accepted by the EU for certification of pre-processors, smelters/refiners and recyclers of waste and secondary materials bearing metals.
- Application for certification has to be requested and paid for by the pre-processor, refiner or recycler.
- Registration of certified companies/processes in an official EU register.
- A certified process will be registered under a unique registration number.
- Shipments of waste to certified refiners/recyclers in the EU (be it from another Member State or imported from a third country) to be made subject to simplified (automated) procedures.

¹⁹ www.ec.europa.eu/taxation_customs/customs/policy_issues/customs_security/aeo/index_en.htm

²⁰ www.gesi.org/

²¹ <http://eippcb.jrc.es/reference/nfm.html>

Implementation approach

Eurometaux would prefer for a certification scheme of this kind to be laid down in a regulation that is directly applicable and does not involve legal implementation by each Member State. This could take the form of a new regulation or an amendment of an existing regulation, e.g. the WSR²². Such an amendment or a new regulation allows shipments of waste and secondary raw material only to certified companies²³ and the details of the certification will be established in an Annex.

Aspects to be considered for implementation:

- Rated system ensuring access by large and smaller companies with a progressive approach.
- Transitional period to allow for the upgrade of processes to meet the prescribed criteria.
- Application for certification to be carried out and paid for by the pre-processor, refiner, recycler and can be limited to some specific activities or a specific process in a plant.
- Simplified procedures for shipments of waste to certified refiners/recyclers in the EU (be it from another Member State or import from a third country) with automated procedures.
- Extra-territoriality application of EU regulations and compatibility with international laws.

Stakeholders to be involved:

- EU Commission (taking the Initiative)
- Pre-processors, refiners and recyclers
- Collectors and traders, as far as affected
- NGOs in the field of environment, health and safety.

First step:

The EU Commission conducts or commissions a feasibility study for such certification scheme. Relevant DGs (ENV, ENTR, Trade) need to be involved in the process. Eurometaux would appreciate the opportunity to contribute to the definition of the scheme.

²² Establishing a tool to enable enforcement of Article 49 of the WSR.

²³ On the condition that the export of certain products to certain persons, companies or countries is not prohibited or subject to other restrictive conditions (EU-based or other legislations).

V. Shipping of complex materials to BAT-recycling plants in Europe: “Best of two worlds” approach

Topic

In non-OECD countries, tremendous increases in the quantities of waste flows, which were former second-hand goods (re-use material) as well as former new products could be identified. Many of those post-consumer materials (ELV components, batteries, EEE) contain significant amounts of non-ferrous metals. In these countries no or at least no sufficient infrastructure for the appropriate recycling of such waste flows and the embedded metals is in place.

Identification of issues

In many developing countries recycling take place at a very local level, even within individual households. Such backyard practices almost invariably involve no attention to controlling the exposure to hazardous materials or controlling emissions from the frequently crude technologies employed. The open use of fire and chemicals causes extremely high emissions of toxic and harmful substances like mercury, nitrous oxides, hydrogen cyanide, dioxins and so on which constitutes a dramatic health risk for many people and a disastrous negative impact on the environment in those countries.

Examples which regularly attract attention in the media and contribute to the industry at large having a poor image in this respect include the treatment and recovery of electronic waste (for the precious metals contained) and scrap lead acid batteries (for their lead content). Much bad publicity has resulted and well documented cases exist of serious health and environmental problems.²⁴ Furthermore the resource efficiency of such backyard recycling procedures is very low, which means tremendous total losses of different valuable metals. A case study in India for instance detected a total gold recovery of just 25% for such backyard recycling procedures.²⁵ In modern refining processes which are standard in Europe, total recovery rates of more than 95% for gold are realised. This example underlines that the widespread backyard recycling of non-ferrous metals in many non-OECD countries is a threat for the environment as well as an incredible waste of secondary resources on a global scale. Besides urgent measures to stop illegal waste exports from Europe to non-OECD countries (see **Proposal I**), significant progress is necessary to deal with the fast growing waste flows in those countries and to start win-win opportunities concerning the appropriate recycling of non-ferrous metals.

²⁴ Puckett, J. et al.: Exporting harm. Seattle: Basel Action Network, 2002.

Pucket, J. et al.: The digital dump, Seattle: Basel Action Network, 2005.

Bridgen, K. et al.: Chemical contamination at e-waste recycling and disposal sites in Accra and Korforidua, Ghana. Amsterdam: Greenpeace 2008.

Kuper, J.; Hojsik, M.: Poisoning the poor: electronic waste in Ghana. Amsterdam: Greenpeace 2008.

²⁵ Keller, M.: Assessment of gold recovery processes in Bangalore, India and evaluation of an alternative recycling path for printed wiring boards, Master Thesis ETH and Empa, Zürich and St. Gallen, Switzerland, 2006.



Figure 4: Second-hand goods and WEEE in West Africa *Photo: Öko-Institut, 2009*

Objective of the measure

Access to raw materials is not only an issue for the primary metals industry. The European Union has a well-regulated and well-managed network of responsible recyclers which are subject to regular inspection and monitoring to ensure that plants operate to the highest health and environmental standards. The EU industry can therefore play an important part in resolving potential health and environmental issues in less developed countries by offering a route through which problem materials can be properly recycled.

Currently the EU industry has more than enough capacity to handle many end-of-life product streams arising within the EU. The creation of new powerful business models via international co-operations leads to opportunities for further investments, employment and tax revenues within Europe by sourcing additional secondary raw materials from outside the EU. This has the twin benefits of improving global access to much needed raw materials whilst at the same time helping to address the health and environmental problems of developing countries. Umicore and the Swiss EMPA Institute for example are engaged as pioneers in such a collaboration project in India, with support from the German Development Organisation GTZ.

Provided that proper market prices are paid for such materials, those people previously engaged in inappropriate, or indeed illegal, activities in developing countries can be converted into collectors, improving both their economic circumstances and their health and the local environment. This model has been successfully employed by the lead industry in Senegal for example (where scrap batteries are exported to France) and efforts are being made to replicate this approach in various other regions of the world.

The main objective is to encourage international co-operations between European recycling companies and SMEs in developing regions like Africa to achieve a better supply of

secondary raw materials for Europe and the global economy as well as better protection of health and environment and a fair share of the value added chain in developing countries.

The urgency and global dimension of the described issue is underlined by the new and well respected study of StEP "Recycling – From E-waste to Resources".²⁶

Outline of the proposal

The global recycling of critical metals will fail on a large scale if a decisive improvement of the basic recycling infrastructure in developing countries does not succeed in the next 5-10 years. Especially Europe has the experiences and premises (leading level of technical, legal and logistical know-how on how to build up circular economies!) to contribute to these global targets decisively.

The "best of two worlds" approach means a laboured and appropriate business co-operation between European recycling companies and SMEs in developing countries. In this co-operation the European companies carry responsibility for the appropriate transport of the discarded materials from developing countries to Europe and for the refining of the embedded metals in their state of the art facilities. Recycling capacities in Europe as well as shipping capacities are already available (e.g. the loading of ships starting from Europe to Africa is significantly higher today than previously due to the high amounts of exported re-use material). Furthermore, the European companies have to co-operate with suitable partners in developing countries (SMEs) to achieve progress in knowledge transfer and capacity building. This model has been successfully employed by the lead industry in Senegal as mentioned above and efforts are being made to replicate this approach.

In a first step, the selected partners in the developing countries have to install appropriate local and regional take-back and collection systems for suitable devices (e.g. circuit boards, automotive catalysts, scrap batteries, wires). In a second step appropriate pre-treatment steps for separated materials within the developing countries should follow. Practices like open use of fire and chemicals in backyards should be strictly prohibited to achieve real progress in the working and living conditions of the people. These steps will create fair jobs on a local level and will ensure capacity building in the non-OECD countries. Suitable fractions of the waste flows like batteries catalysts should be transport to state of the art installations in Europe to refine the non-ferrous metals with the best recovery rates. Other parts of the waste flows (e.g. steel) could be recycled in the country itself or – if no plants available – in nearby countries.

The partners in Europe and the developing countries ("two worlds") have to develop optimised interfaces for the overall recycling flows. In this way a win-win constellation with best results in terms of resource efficiency, protection of health and environment and fair share regarding the value added chain are to be secured.

²⁶ Kuehr, R. et al.: Recycling – from E-Waste to Resources", United Nations University, Empa, Umicore Precious Metals Refining, published by UNEP, Paris 2009.

Implementation approach

Implementation should build on ongoing experiences gathered with projects like the EU funded “e-waste in Africa: from Waste to Resource Efficiency”²⁷. Based on such pioneer projects European exporters of used goods, recycling companies and shipping companies could initiate serious business models in selected countries and regions (e.g. West Africa) which focus on substantial fractions of discarded materials from non-OECD countries. A necessary pre-condition would be development funding from EU institutions (e.g. European Investment Bank) to help establish such schemes in various developing countries, to improve access to global raw materials, and enhance health and environmental conditions in developing countries, along with the image and sustainability of EU industry. Development funding initiatives by the EU are crucial to minimising the particular risks and burdens for European companies, which have already been encountered in developing countries especially in the initialising phase of business co-operations.

Eurometaux suggests that the EU hosts a “take-off summit” which aims to bring interested European companies (members of Eurometaux, shipping companies, etc.), representatives of the European Commission, the UNEP, selected representatives of developing countries and independent experts (e.g. from the GTZ) together to negotiate the next steps for establishing such new and innovative business models. The active involvement of the DG Development would be very much appreciated, particularly with a view to linking the objectives of this approach with development policy. Professional legal advice for the actors and affected non-OECD countries should be negotiated to help with, for instance, the conditions for re-shipment of waste materials to Europe (e.g. for the notification procedures according Basel Convention in different countries and seaports in West Africa for the export of waste materials to refine non-ferrous metals in Europe).

²⁷ The project is implemented by the Basel Convention Coordinating Centre based in Nigeria and the Basel Convention, Regional Centre based in Senegal in co-operation with partners including Swiss EMPA, Öko-Institut, IMPEL, UNESCO and the Partnership for Action on Computing Equipment (PACE).

Pillar 3: Improving management of secondary raw materials and their efficient use

VI. Improve the collection schemes, their management and access to the materials collected and to recycling

Topic

The topic focuses on secondary raw materials embedded in consumer goods like electrical and electronic equipment (WEEE) and rechargeable batteries. WEEE and rechargeable batteries contain many valuable non-ferrous metals, but the collection rates of those waste materials need to be improved as well as the overall recycling rates of their non-ferrous metal content. The collection of portable rechargeable batteries is strongly influenced by the collection and dismantling efficiencies of small WEEE. The implementation of the disassembly requirements of Annex 1 of WEEE (2002/96/EC) is critical. In the context of the recast of the WEEE Directive, Eurometaux is following closely the amendments which shall aim at setting specific collection targets for small household appliances.

Identification of issues

Despite the existence of legal frameworks for WEEE (WEEE Directive 2002/96/EC) and batteries (Battery Directive 2006/66/EC) within the EU, the collection rates for end-of-life products like WEEE and rechargeable portable batteries are still modest and have to be improved.²⁸ EEE have a significant impact on the global non-ferrous metals demand (see the examples in the next figure²⁹).

Important EEE metals		World mine-production*	By-product from	Demand for EEE	Demand related to mine production	Metal price**	Value of EEE use	Main uses in electro/electronics
		t/a		t/a		\$/kg	billion \$	
silver	Ag	20 000	(Pb, Zn)	6 000	30%	371	2,2	contacts, switches, (leadfree) solders, conductors, MLCC, ...
gold	Au	2 500	(Cu)	300	12%	19 350	5,8	bonding wire, contacts, IC
palladium	Pd	230	PGM	32	14%	10 288	0,3	Multilayer capacitors (MLCC), connectors, PWB plating, ...
platinum	Pt	220	PGM	13	6%	36 748	0,5	hard disks, thermocouple wires, fuel cells
ruthenium	Ru	30	PGM	6	20%	6 162	0,0	hard disks, resistors, conductive pastes, plasma display panels
copper	Cu	15 000 000		4 500 000	30%	7	30,3	cables, wires, connectors, conductors, transformers, e-motors
tin	Sn	275 000		90 000	33%	9	0,8	(leadfree) solders
antimony	Sb	130 000		65 000	50%	5	0,3	flame retardants, CRT glass
cobalt	Co	58 000	Ni, Cu	11 000	19%	36	0,4	rechargeable batteries
bismuth	Bi	5 600	Pb,W,Zn	900	16%	11	0,01	leadfree solders, capacitors, heat sinks, electrostatic screening, ...
selenium	Se	1 400	Cu	240	17%	52	0,01	electrooptic, copiers, solar cells, ...
indium	In	480	Zn, (Pb)	380	79%	822	0,3	LCD glass, leadfree solders, semiconductors/LED, ...
						total	41,0	

* rounded, source: USGS Mineral commodity summaries 2007; GFMS; JM-Platinum
** avg. 2006

²⁸ The collection rates and recycling efficiency of lead batteries in the automotive sector are a prominent example of an existing recycling sector in Europe with an excellent performance. Nevertheless problems could be highlighted here, e.g. with regard to exported second-hand cars to non-OECD countries (e.g. in West Africa) which have no basic recycling infrastructure.

²⁹ Buchert, M. (Öko-Institut e.V.); Hagelüken, C. (Umicore Precious Metals Refining): The mine above ground – opportunities & challenges to recover scarce and valuable metals from EOL electronic devices, IERC Salzburg, 17th January 2008.

The existing WEEE Directive claims a yearly collection of minimum 4 kg WEEE per inhabitant (by Dec 31, 2006). Furthermore different recycling/recovery ratios are requested depending on product categories (IT equipment: 65% / 75%). The following weak points regarding the existing WEEE Directive could be identified:

- delay of implementation in some Member States (e.g. Italy, Spain),
- mass-based ratios do not adequately address the numerous precious and speciality metals (gold, silver, PGM, cobalt, indium etc.) embedded in the WEEE, with the result that total losses caused by non-applicable collection and pre-treatment procedures could occur without violating the WEEE Directive, and
- large quantities of WEEE are exported to non-OECD countries under the false declaration of second-hand goods.

In the case of batteries, difficulties regarding collection rates could be identified for the sub-group portable rechargeable batteries (PRB), which are made of metals such as cobalt, lithium, nickel and rare earth. The current collection rates for Li Ion batteries (cell phones, laptops appliances) are estimated at approx. 6% and for Ni MH batteries (power tools appliances) approx. 9% (spent batteries collection versus annual sales within the same year on a weight basis). The reasons for these low collection rates for PRB are, among others, the difficulties and costs of removal of certain types of batteries from the devices, exports via WEEE to non-OECD countries and home storage effects (hoarding) of PRB or PRB containing devices.³⁰

Therefore the main challenge with regard to WEEE and portable rechargeable batteries is the improvement of collection rates to enhance the overall resource efficiency for the recycling of manifold, valuable non-ferrous metals.

Objective of the measure

The main objective of the measure is to significantly improve **the collection rates** for materials like WEEE and portable rechargeable batteries. It should also include a better recycling efficiency for many precious, speciality and base metals.

This objective urges for more targeted and ambitious collection rates with further specification (e.g. product categories and selected appliances) in the revised WEEE and the Batteries Directive compared to the current legal status. Additional accompanying activities should also be initiated. In this context the evaluation of the stock in the economy (hoarding) is a key knowledge element that needs to be addressed. It is also important to improve WEEE pre-treatment to separate portable rechargeable batteries (PRB) and to ensure the traceability of batteries returned with electric vehicles.

The outline of the measure, which should help to reduce significant losses of non-ferrous metals, is described below.

³⁰ Umicore and Recharge: A case study – the portable rechargeable battery industry in EU, RMI Eurometaux meeting 2nd February 2010.

Outline of the proposal

The WEEE Directive (2002/96/EC) is currently under revision. Eurometaux offers the Commission its expertise in taking the opportunity of this revision process to propose tailor-made collection targets for WEEE, which could considerably enhance resource efficiency in the case of many non-ferrous metals. One of the first key issues to be addressed is the problem of dumping WEEE within the EU. As proposed and currently discussed in a co-decision process, an overall 65% collection target for WEEE should not mean a permit for landfilling the other 35% that is not collected for recycling. Therefore **the landfilling of WEEE within the EU should be legally suspended** to enhance the competitiveness of collection, pre-treatment and recycling systems and to reduce total losses of valuable non-ferrous metals from WEEE.

A further specification of the collection targets for different EEE product groups is urgently requested by Eurometaux. This should avoid that achievement of the collection target of large white goods (mainly made of steel) could be sufficient to achieve the overall target. The sustainable supply of European industries with essential precious, speciality and base metals could be improved significantly if the small and medium concentrations of metals like copper, tin, silver, gold, palladium, indium in end-of-life EEE are recycled with better overall yields than today. As the European non-ferrous metals industry already runs state of the art plants to refine such metals with high process efficiency, better collection rates at the beginning of the recycling chain are crucial for success. Eurometaux could bring the combined expert knowledge of its members into the developing process regarding suitable differentiated collection targets for EEE product groups.

In the case of portable rechargeable batteries the collection target in the existing Battery Directive (45% for all portable batteries) does not sufficiently address the specific problems linked to the collection of PRB. Indeed collection efficiency should be calculated on the basis of a comparison of waste arising and not on waste arising versus sales.

In addition, Eurometaux suggests that the way by which the recycling efficiency (RE) is to be evaluated must be re-considered. The RE has to be determined for each process in order to avoid that the waste stream is split up into various factions between different recyclers operating with different recycling performances.

The analysis indicates that there is a need to better target the Ni-MH batteries that are placed on the consumer market and the Li-Ion batteries mainly placed on the market in added value equipment: laptops, cordless tools and mobile phones, cameras and other audio/video equipment. For the rechargeable batteries returned with primary batteries from the consumer market, there is a need for securing the efficient sorting of Ni-MH single cells from the primary batteries as well as other rechargeable batteries. For lithium batteries, better control is needed of the flow of spent PRB returned with WEEE and currently not disassembled from WEEE. On average, incorporated PRB represents less than 1.0 % of the weight of the total WEEE and close to 10 % of small household appliances. It is often a costly operation to separate the PRB from the WEEE.

In the context of WEEE dismantling, there is a need for distinction between the handling of white goods (washing machines, fridges, dishwashers, etc), small household and assimilated appliances by means of which the large majority of PRB is placed on the market. The control of WEEE exported illegally may be beneficial (see **Proposal I**) if it is combined with the above. There is a large hidden mine of PRB in the economy: the knowledge of this stock has

to be developed and verified by an in-depth market survey at EU level. The loss of material and value due to the collection of approximately 10 % of the PRB placed on the market should be quantified. As a complementary evaluation, the loss of materials and value resulting from the non-collection of more than 50% of primary portable batteries placed on the market each year should also be quantified.

Due to the diversification of the types of electrochemical systems used in rechargeable battery technologies, there is a recommendation to implement a colour coding of portable rechargeable batteries at international level in order to increase the recycling efficiency of their material content.

An EU Quality Certificate for Spent Batteries Recycling Plants should also be developed and implemented to secure the most appropriate end of life management of the batteries and the return of their valuable material content to the economy.

Finally there is a need to integrate the development of the HEV/PHEV/EV markets and related increase of the need for collection and recycling of large battery systems in the future developments of the Battery Directive.

Implementation approach

The implementation of the outlined measures will proceed in several steps with different timelines for WEEE and portable rechargeable batteries. In the case of WEEE Eurometaux supports the current revision process of the WEEE Directive and requests that the Commission takes into account the described facts and proposals to enhance the collection rates and the necessary differentiation of collection targets. Furthermore Eurometaux will support the Commission after the revision of the WEEE Directive to monitor the implementation in practice and to assess success stories and remaining weak points not solved after the ongoing recast to achieve continuous progress in terms of the collection rates and the overall recycling efficiencies of all non-ferrous metals.

In the case of portable rechargeable batteries Eurometaux will provide the Commission with detailed proposals concerning necessary improvements of the collection and recycling efficiencies of portable rechargeable batteries. Eurometaux will support the Commission in revision processes regarding the Battery Directive and other Directives (ELV) in the coming years to address the framework conditions for the collection and recycling of the rising amount of batteries (Li Ion, NI-MH) in the automotive sector (HEV/PHEV/EV). This will be one of the most relevant new issues for sustainable resource management in the years ahead.

As a next step an impact assessment of the proposed measures should be initiated by the European Commission. Eurometaux would be keen to contribute to the impact analysis and the implementation of the measures proposed.

VII. Eco leasing – A product of service

Topic

The topic focuses on applications of base metals like aluminium in buildings, which usually means that the embedded metal has a long in-use lifetime (about 40 years).

Identification of issues

Long-term aluminium applications like commercial buildings are important resources for future secondary raw materials at their end of life. Industrial metal mass can be designed to retain high metallic qualities for multiple uses and re-uses. But products with a long-life cycle provide a specific challenge in terms of dismantling and recycling of valuable contained metals.

Objective of the measure

The proposed measure “Eco Leasing – A Product of Service” addresses metals like aluminium in buildings (long lifetime application) and should significantly foster the following objectives:

- To enhance resource efficiency through material valorisation along the life-cycle,
- To address high initial costs of building solutions while delivering efficient building systems,
- To allow for further improvement of building products while retaining ownership of embedded materials,
- To provide customers with the opportunity to improve building efficiency through the lease contract life-time.

A commercial building uses on average 8kg of aluminium per m² and is in use for up to 40 years. The eco leasing concept allows the aluminium industry to own this metal while it is in use – thereby enabling the aluminium industry to reuse that metal back in Europe into a building solution, at its end of life or on the occasion of refurbishment due to energy efficiency purposes:

Outline of the measure

The measure should be designed for high volume/share of aluminium in building applications, with an average lifetime of 40 years; and building heights of between 25 and 150m. The appropriate destruction of such buildings will yield large volumes of secondary aluminium which is a high quality material for recycling. The contribution to reducing greenhouse gas emissions by enhanced recycling of aluminium is one of several important reasons for this strategy.

The measure is based on the “product of service” concept: products containing valuable technical nutrients would be reconceived as services rather than products which are bought, owned, and disposed of by “consumers”. Products containing valuable technical nutrients would be reconceived as services people want to enjoy. A technical nutrient is a material or product that is designed to go back into the technical cycle, into the industrial metabolism from which it came. In this case, that would be aluminium back into aluminium cast-house.

The aluminium industry estimates that up to 30% of the total aluminium volume in buildings could be recovered through this model. The proposal can be also extended to shorter life-time metal applications. The manufacturers are responsible for materials throughout the lifecycle, thus creating a market based incentive to eco-design the product. There is a capital risk, as the capital asset is maintained on manufacturer's balance sheet; for example the capital risk associated with the metal value, metal volume, appreciation and depreciation factors.

Therefore the viability of the system should be ensured by a European metal leasing organisation as > 40 years long contracts (see figure on next page).

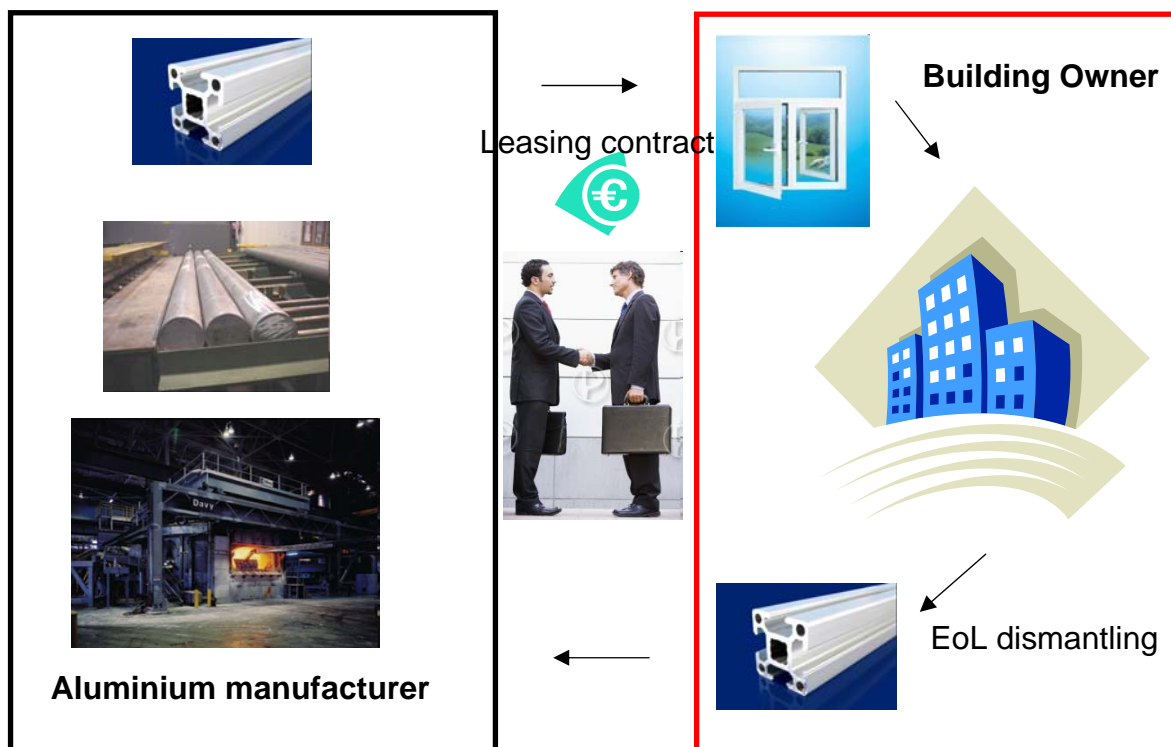
With this model, material valorisation is maintained. The ensured quality of the returned material enables the aluminium industry to continually develop building technologies - to design for recyclability. The difference between this concept and a car lease for example is that the leasing agent returns the material to the manufacturer at its end of life. The manufacturer has the intellectual property to disassemble their design, thereby maintaining material valorisation.

A qualified leasing agent is essential to realise this model based on their experiences – to develop contracts for up to 40 years, allowing service level agreements and quantifying the material value over that lifetime, to name just a few leasing aspects. Service level agreements incorporated within this 40-year lease would provide refurbishment opportunities, encourage the use of the latest technologies and benefit from the associated efficiencies. With access to high quality metals at its end of life the aluminium industry is then able to re-design it into a new building product.

The proposed concept can achieve the following three “wins”:

- win for European industry: accessing 30% of the metal volume used in commercial buildings to be reused back into a building solution in Europe,
- win for the building owner: addressing the high initial cost of efficient building solutions; and a
- win for the tenant: with refurbishment opportunities achieving up to 20% efficiency gains, and the associated reduced costs for heat energy.

Process map



It is important to ensure that other regulations of the EC do not jeopardise this model, given the timeframe of > 40 years (e.g. building product recovery targets). Thermal regulations should be optimal – these would encourage both the owner and manufacturer to maintain thermal efficiencies. In this way the use of service level agreements for refurbishment and the uptake of new technologies should be encouraged. Therefore recycling investment opportunities should be developed in new regulations and the awareness of this leasing model – especially amongst large building contractors – should be increased.

Implementation approach

The next steps should be to involve the European Investment Bank in shaping the proposal with professional leasing agents. DG ENV and DG Energy are asked to assess the possibility of integrating such models into building certifications – such as LEED and BREAAAM - and providing recycling investment opportunities in new regulations. The ambition of the European aluminium industry in terms of this concept is to obtain and reuse two and a half kg per m² of aluminium - currently used in commercial buildings - back in building solutions in Europe.

VIII. Data on recycling

To a certain extent the non-ferrous metals industry lacks data on secondary raw material flows, the material volume put on the market and stocks and hoardings. These data are important for tailoring the industries' processes to future quantities and qualities.

Identification of issues

Recycling is an integral part of the non-ferrous metals industry. Sector analyses of some of the metal commodity groups showed that up to 70% of the EU metals production originate from the recycling of metals which include secondary raw materials. The raw materials input for the recycling installations is characterised by a wide range of material streams ranging from clean production scraps to end-of life products with a complex mixture of various metals. The interaction between the recycling companies ensures an efficient recycling of respective metals.

Data of critical importance for recyclers

Reliable and detailed data on metals and metal bearing products throughout the life cycle are of key relevance for the EU non-ferrous metals industry. Detailed knowledge of the material streams entering the use phase, the amount of metals existing in society as stock as well as the amount of metals bearing waste leaving the "society stock" at the end-of life stage are of great relevance. Any information on quantities as well as on qualities is relevant for metals recyclers. They help in identifying trends, enabling industry to tailor its processes to future qualities, and to adjust its capacities to quantities expected in the future.

Due to the high importance of materials flow data, the recycling industry under the lead of the metal commodity groups has carried out various projects aiming at tracking metals flows throughout the life cycle. In parallel and with support from industry, a number of academic organisations have launched similar projects. A number of models and calculations resulted from the various initiatives.

Lack of data and future data needs

An in-depth analysis of the existing models shows a lack of information on important phases of metal flows throughout the life cycle. Accordingly the missing information had to be replaced by models or best assumptions. These assumptions, as well as the models themselves inevitably involve a high level of uncertainty. Attempts by industry to collect reliable and robust information however failed for various reasons, mainly those associated to limited accessibility to data. Data collection through EU and national authorities may allow a structured and simplified access to this sort of information. Eurometaux therefore requests the support of EU and national authorities within the framework of the RMI to this end.

Objective of the measure

(1): General Information on scrap flows

Official statistical data bases such as EUROSTAT in combination with the data collection of the International Metal Study Groups (INSG, ICSG, ILZSG, (Lisbon)) provide an overview of metals production, their flows (imports and exports) as well as of some raw materials for primary metals production. However, structured information collection is lacking on secondary raw materials such as scraps. In some areas the data collection may come into

conflict with confidential business information, especially when focusing on industrial or home scrap which is traded on an international scale. A good balance needs to be found between data collection and business confidentiality.

(2): Information related to materials in stock:

Massive amounts of metals are in use in society (stock). Besides those metals bearing products which are in use, a number of articles still remain in society after the end of their useful life but do not enter end-of life management (hoarding). These are potential sources for the metals recycling industry. Reliable data on the amounts of these metals are, however, not available. Both data are of importance since they define, on the one hand, the new raw materials qualities that will arrive after their use in the recycling installations. On the other hand the information on both quality and quantity of materials hoarded will be a crucial information basis for the amount and qualities of materials – and when these materials can be expected to enter a recycling scheme. In a subsequent step, further studies could assess how to secure access to those material streams.

(3): Information related to waste disposal:

A number of metals and metal bearing articles leaving the use phase do not reach the recovery processes as foreseen and requested by authorities and industry. These material streams are either disposed of in landfills or escape from EU recovery processes through export, in some cases for sham reuse by backyard recovery operations in developing countries. Data on these material streams which are lost due to wrong end-of life management is of great interest to industry. Such information would allow an assessment of the economic viability of i) extracting metals from historic mining ii) extracting metals from waste destined for landfill, indicate where metals bearing materials can be collected iii) or how their disposal in the future can be prevented and instead be forwarded to a collection scheme.

Outline of the proposal

(1.a) We propose that the European Commission Services launch a structured data collection of secondary raw materials as part of the official statistical data collection by member states. The data shall be added to the official data bases and made available to the public (EUROSTAT). The data collection shall focus on areas where metal losses occur. In order to avoid conflicts with confidential business information, the data collection shall not cover areas such as information gathering on the trade and treatment of internal scrap.

(1.b) We propose a further strengthening and extension of the data collection exercises carried out by the International Metal Study Groups.

The European Commission shall therefore encourage Member States to continue their data provision on metal production, uses and flows and to extend data collection to secondary raw materials.

(2) We propose the collection of information on materials in stock as well as materials which have left the use phase but do not enter the end-of life management phase since they are being hoarded.

(3) We propose that an EU Waste Agency or member state authorities systematically collect information on the quality and quantity of waste going to disposal, with a special focus on recyclable raw materials such as metals, glass, paper. The information shall be forwarded to the European Commission and compiled in terms of a report that is shared with stakeholders such as the metals industry.

Implementation approach

Eurostat operates the three Environmental Data Centres (EDCs) for "Waste", "Natural Resources" and "Products". The scope of work addressed in the proposed measures above fits perfectly to the scope of the three EDCs. A joint working group of the three EDCs shall establish a working program to address the measures proposed. To the extent that the proposals are beyond the scope of work of the EDCs, DG.ENV shall be involved.

Eurometaux would be happy to contribute to the outline of such working program.

IX. Research on recyclability

Topic

The topic focuses on process slags and by-products as well as on post-consumer materials with certain contents of non-ferrous metals, which currently cannot (or not properly) be recycled.

Identification of issues

Despite the high technological performance of the European non-ferrous metals industry many new challenges concerning the recycling of different non-ferrous metals need to be addressed in the years ahead. These challenges are mainly caused by a tremendous broadening of new products and applications in the last three decades for which non-ferrous metals are integral parts. They play a major role for numerous modern high tech and clean tech applications such as dentistry, magnets, photovoltaic, batteries, fuel cells, catalysts and different kinds of electronic devices as well as opto-electrics. Therefore the demand for many precious and speciality metals (gallium, indium, ruthenium, platinum, tantalum, rare earths metals etc.) as well as many base metals (nickel, copper, aluminium etc.) has boomed in the recent decades. The quantities mined in the last 30 years represent high or very high shares compared to the total mined quantities since 1900 for many non-ferrous metals: e.g. > 90% for rhenium, gallium, indium and ruthenium, > 80% for palladium, rhodium, iridium and rare earth metals, > 60% for nickel and also high shares for the most important base metals copper (60%) and aluminium (40%).³¹ Consequently the stock of non-ferrous metals in the technosphere (vehicles, computers, infrastructures, buildings, etc.) has increased significantly in recent decades. For Europe this increasing metals stock in the technosphere is an opportunity to secure valuable resources via an extended and profitable circular economy in the future.

New high tech products and clean tech applications mean many new and special production processes (e.g. sputter technologies) which lead to new types of by-products, production scraps and waste flows from manufacturing. Many new high tech products are designed as a complex material matrix which includes numerous metals in very different concentrations. A mobile phone for instance contains up to 60 elements.³² The waste flows of the new production processes as well as the post-consumer waste flows caused by complex compounded high tech products can not always be treated by the existing recycling infrastructure and refining processes. In particular suitable collection and pre-treatment procedures are necessary for those new pre-consumer and post-consumer waste flows. Furthermore in the cases of some metals like tantalum and rare earth elements their recycling faces "thermo-dynamical or chemical constraints", for which new refining procedures have to be researched and developed.

³¹ Hagelüken C. (Umicore Precious Metals Refining): Extracting the „mine on wheels“ - an important contribution to sustainability, IARC Basel, 4th March 2010.

³² Buchert, M. (Öko-Institut e.V.) ; Hagelüken, C. (Umicore Precious Metals Refining): The mine above ground – opportunities & challenges to recover scarce and valuable metals from EOL electronic devices, IERC Salzburg, 17th January 2008.

Objective of the measure

The position of the European non-ferrous metals industry as a technological leader in the field of the recycling of non-ferrous metals should be further strengthened by well-directed research programs and projects funded by the EU Commission. The research activities should focus on:

- interdisciplinary research regarding end-of-life product collection, pre-treatment processes and optimisation of the interfaces between several steps and stakeholders involved along the recycling chain,
- optimised treatment of process slags, effluents, etc. (both from primary and from secondary processes), enhanced recovery of by-products,
- in-depth data collection concerning selected relevant products (e.g. sales numbers, composition, product lifetimes, stock data etc.) and transparency of end-of-life material flows,
- innovative new recycling technologies to address non-ferrous metals like rare earth metals, tantalum with "thermodynamical and chemical constraints",
- recycling of critical metals under economic constraints,
- investigations on the likelihood and feasibility of systematic waste deposits as sorted, intermediate stocks for EoL products that cannot be recycled economically today but might become interesting in future.

The comprehensive research program should help to address the new recycling challenges and overcome current and foreseeable technological, logistic and economic constraints concerning the appropriate recycling of distinguished pre- and post-consumer waste flows. The research program should deliver application-oriented results which could support European enterprises to realise new recycling processes and technologies with high resource efficiency. Furthermore it could give support to the Commission and the Member states to install the right framework conditions for the appropriate infrastructures. These objectives are in compliance with the EU 2020 targets and should contribute to an environmentally sound and economically successful Europe which is less dependent on material suppliers from non-EU countries.

Outline of the proposal

The described new challenges regarding the appropriate recycling of non-ferrous metals from certain pre- and post-consumer waste flows require for intensive collaborating projects conducted by enterprises from the non-ferrous metals industry and partners from involved branches like the automotive industry, electronic industry, chemical industry, recycling industry, etc. and specialised research institutions. The measure should only address "real research issues" with strategic relevance regarding critical metals and the improvement of Europe's competences for the recycling of non-ferrous metals. The research program shall cover short-term feasibility studies as well but the core research activities should be carried out within mid- and large-scale projects.

Implementation approach

The implementation should be conducted within two stages. The period 2011–2012 should be used for feasibility studies and similar activities to select and define the most important research demands for the recycling of non-ferrous metals in detail. Eurometaux will support the Commission in identifying and selecting the most important cases which need to be urgently addressed by in-depth research activities to achieve further breakthroughs regarding the recycling of valuable non-ferrous metals. Eurometaux will also support the Commission to determine cases where no research funding is needed any more since good solutions already exist (like autocat or circuit board recycling). This is necessary to avoid misguided approaches and wasting tax payers' money "by free riders". The optimal utilisation of the research funding has to be secured to achieve the objectives.

The results of the first phase (2011 – 2012) should lead to a profound and well-described list of recycling issues concerning non-ferrous metals which could be adopted as the content of a distinguished research program under the umbrella of the next – the eighth – EU Framework Program which will follow the ongoing Seventh Framework Program (2006 – 2013). It could be estimated that for an appropriate funding of a specific EU research program on the recycling issues of non-ferrous metals a funding volume of at least 50 million Euros will be necessary to address the manifold challenges and support the competitiveness of a key branch which is an essential partner for all innovative industries in Europe.

Pillar 4: Economic viability of recycling

X. Economic viability of recycling

Topic

Recycling is currently either driven by value, when the value of recovered substances is significantly higher than the cost of separating them from a waste stream, or by societal concerns related to EHS (environment, human health and safety) and/or volume aspects of waste streams. Societal concerns are best addressed by legislation. Several Directives such as WEEE, Packaging and ELV consider the producers' responsibility.

However significant gaps still remain for the efficient and continuous recovery of and access to strategically important metals from a number of waste streams. In spite of their strategic importance, such metals cannot be economically recovered today based on intrinsic metal valorisation alone.

Identification of issues

There is a need to ensure that recycling revenues are not limited to the intrinsic metal value if continued future access to these strategically important resources is to be guaranteed.

Indeed, if a metal is in too low a concentration for its value to sustainably exceed the specific incremental cost for its extraction and refining, there is a strong chance that such a metal will be definitively lost in certain waste streams. This is a significant issue today for many precious and speciality metals like palladium, gold, silver, indium, gallium, e.g. in electric and electronic waste streams.

It should be borne in mind that there is a complete recycling chain to remunerate. On the one hand there are the total costs (collection, (gross) sorting, shipment, pre-treatment and refining) of the chain, which by nature are hard to compress. On the other hand, as a revenue there is the intrinsic recovered metal value which, in addition to their presence not being guaranteed, is subject to significant frequent short-term price fluctuations due to metals market trading conditions. At best, these fluctuations may lead to temporary stockpiling until metal prices eventually improve.

Under these conditions of a lack of visibility on future revenues, making rational, long-term (>10 years) investment decisions for research and development into new more efficient processes and subsequently for installation of new plants and equipment requires "nerves of steel".

It follows that especially in the case of so-called technology metals which mostly appear in small concentrations in end-of-life products, these market mechanisms have fatal consequences for the end-of-life recycling rates and hamper the development of new pre-treatment and recycling technologies. Without adequate financing, there is no, or at best only variable, motivation for society-driven non-value recycling to take place sustainably. This leads to a negative, or at best variable, economic result across the recycling chain.

Objective of the measure

The objective of the measure is to ensure that non-value driven recycling of strategic technology metals is guaranteed even when volume and environmental drivers are not

present. Mitigating the shortcoming of market would ensure continuous access to valuable metals.

Outline of the proposal

Eurometaux proposes that the European Commission initiate an assessment of the European and Member State strategies and legislation concerning the non-ferrous metals identified by the Raw Material Initiative.

The aim of this study would be to ensure appropriate recycling and identify constraints and risks for the economic viability of such recycling and propose suitable actions that will help eliminate the current shortfalls.

Eurometaux is aware that for some of the identified non-ferrous metals only minor volumes are involved and recycling is not viable. At the same time these metals have been highlighted by the RMI, indicating the need for new strategies to address the recycling of these metals.

Implementation approach

Next steps:

The EU undertakes the assessment referred to above; the feasibility study of a financing scheme for non-value driven recycling operations should be based on already existing schemes for EHS and volume driven recycling in some Member States.

Eurometaux will support such an approach and would be more than willing to contribute further by joining the steering committee on such a feasibility study.

Annex A-1 :
A CASE STORY ON RECHARGEABLE BATTERIES,
prepared by UMICORE and RECHARGE

**Annex A-2:
A CASE STORY ON COPPER SCRAP AND WEEE
prepared by AURUBIS**

**Annex A-3:
A CASE STORY ON ALUMINIUM APPLICATIONS
prepared by HYDRO**

Annex A-4: EUROMETAUX "TRADE" ACTION

- 1994 TBR complaint against South Korea and India for tariff escalation on copper raw materials**
- 1996 Submission on distortions caused by China on the copper scrap market**
→ Bilateral consultations by EC + statistical surveillance of exports in 1999-2000
- 2001 Submission on export taxes operated by Russia in the frame of the WTO accession negotiations**
→ On EC negotiation agenda but no satisfactory outcome
- 2002 Submissions on distortions caused by China on the copper raw materials market**
→ Repeated EC interventions within the framework of the WTO China Transitional Review Mechanism
- 2003 2-year advocacy plan for awareness and alliance building at EU and national level on distortions in access to raw materials**
- 2004 Submission on the injury caused to the copper and aluminium refining sectors by competitive distortions caused by China on the copper raw materials and aluminium scrap markets**
- 2005 Submissions in the frame of the DDA for new disciplines on export taxes -**
from then on, continuous monitoring of export restrictions operated on metal value chains worldwide and focused interaction with DG Trade and DG Enterprise
→ EC proposals on export taxes and forbidden subsidies in the framework of the DDA
→ Development of a data base in DG Trade and elaboration of a comprehensive action plan
- 2006 BUSINESSEUROPE position paper and BIAC discussion paper**
- 2007 EU Competitiveness Council calls for a coherent policy approach regarding raw materials and G8 Summit acknowledges importance of the issue**
- 2008 Raw Materials Initiative**