State of play:

Cluster (Critical) metals in a continuous cycle –

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1 (CRITICAL) METALS IN A CONTINUOUS CYCLE

LEADER: AGORIA, FEDERATION FOR THE TECHNOLOGY INDUSTRY

INTRODUCTION

Flanders is already one of the top regions when it comes to closing metal cycles, thanks to its high-tech processing infrastructure, innovative collection system, focussed training and broad stakeholder network. But is the cycle closed yet? Well, not entirely. Current working points include the prevention of illegal collection and export of end-of-life products that contain expensive materials, the more efficient recuperation of critical and valuable metals from scrapped products and industrial residues and the design of product so that the metals can be easily recuperated.

AMBITIONS AND REALISATIONS

In 2015-2016 work is taking place on 5 actions:

- Designing an ideal legislative framework in Flanders and Europe, which is adapted for the optimum management of cycles of critical and valuable metals
- Rapid valorisation of the existing distribution and collection network and knowledge about waste collection and sorting
- Directed development of technology in separating, sorting, pre-treatment and recycling
- Measures to combat the illegal export of critical metals.
- Measures for strengthening the lead in knowledge and know-how for cycles.

We will discuss these 5 themes and the corresponding action points below.

1.1 DESIGNING AN IDEAL LEGISLATIVE FRAMEWORK IN FLANDERS AND EUROPE

Just 1% of critical metals are recycled. For other precious metals, too, there are currently excessively large losses. Why? The current recycling targets for Waste Electrical and Electronic Equipment (WEEE), disused vehicles and batteries are formulated on a weight basis. As a result, the recycling of critical and precious metals that are present in very small amounts only is not encouraged. Alongside quantity, a suitable legislative framework must also cover collected quality.

We have already increased the collected volume of scrapped vehicles. Vehicles that are technically a total write-off also fall into this category according to waste legislation. However, insurance and leasing companies are not always aware of this fact. A protocol for optimum collection has now been signed with a few of these companies.

In 2015, SuMMa finalised a 'quick wins' study, in which it looked at which components and parts from WEEE, disused vehicles and batteries could contain a substantial concentration of critical or precious metals. On the basis of the results of this study, SuMMA selected two cases which were interesting in terms of further, detailed investigation: the recycling of platinum and neodymium from Hard Disk Drives on the one hand, and the recycling of tantalum from condensers from printed circuit

boards, on the other. This follow-up study will be conducted in 2016 by the KU Leuven, VITO and IMEC. The study will investigate whether the selected critical and precious metals can be separated in a cost-effective and efficient manner from WEEE and can then be prepared for recycling.

1.2 RAPID VALORISATION OF THE EXISTING DISTRIBUTION AND COLLECTION NETWORK AND KNOWLEDGE ABOUT WASTE COLLECTION AND SORTING

In order to ensure the necessary valorisation and the connection between research and development regarding closing cycles on a European level, we are working on two action areas.

The KU Leuven and VIT drew up a summary of the recycling cluster in order to gain an improved insight into desirable foreign investments in the chain. With their recommendations, we can further embed this cluster in Flanders.

In addition, we are creating a summary of possible connections from the Flemish Materials Programme to various European initiatives such as RARE/EIP-MIN, with the focus on flows for which separation and recycling could be improved. From Flanders, a great deal of influence is exercised on the European Innovation Partnership (EIP) with respect to raw materials. Maximum efforts are thus being made on the Urban Mining/Recycling cornerstone.

Close the Gap, an international NGO that collects used computers for reuse in developing countries by social projects, collected 67,000 in 2014 alone from 115 companies worldwide. In addition, Worldloop, a sister organisation of Close the Gap, is setting up collection and recycling facilities for electronic waste in developing countries. In 2014 no fewer than 471 tons of e-waste was collected and recycled, preventing 387 tons of CO2 from being emitted.

Finally, the ‘Sustainable design & precious metals’ workshop on 18 June 2015 is also worth a mention. 24 designers, producers, processors and collectors within the value chain of precious metals collectively reviewed how greater consideration could be made of the principles of design for recovery, reuse and recycling when developing new products.

1.3 DIRECTED DEVELOPMENT OF TECHNOLOGY IN SEPARATING, SORTING, PRE-TREATMENT AND RECYCLING

Certain materials are very scarce. That is why it is becoming more important economically to treat and recycle the available materials within our own Flemish economy, thus closing the cycle. To this end, a further strengthening and development of the recycling industry is needed. In this context, there is a distinction between end-of-life products on the one hand, and industrial residues on the other. For both flows, further optimisation is possible in terms of inventory, sorting, separation, pre-treatment, recovery of metals and manufacturing of recycled products.

1.4 MEASURES TO COMBAT THE ILLEGAL EXPORT OF CRITICAL METALS

The fight against illegal exports must take place within a European framework. We must work together with various European ports (particularly an alliance between the ports of Antwerp, Rotterdam and Hamburg), the European Commission and the competent control organisations on developing the same control system. We can then come up with a transparent and uniform monitoring system for legal and illegal import and export flows for recycling. And also avoid losing precious metals from the European market.

The Preventilex project – targeting the fight against the illegal export of waste and facilitating the legal trade in waste and materials - was submitted by Agoria within the EIP in 2014. Even though it was accepted as a Raw Material Commitment, Preventilex did not receive any Horizon2020 funding. It is the intention, in the near future, to organise an event in the port of Le Havre.

A few other activities from the action sheet have started already, such as combating the illegal export of second-hand vehicles and developing reuse criteria. These are incorporated within the approved MIP project Carloop.

1.5 MEASURES FOR STRENGTHENING THE LEAD IN KNOWLEDGE AND KNOW-HOW FOR CYCLES

Flanders is a leading light when it comes to metallurgic processes and the collection, separation and sorting of waste. However, our neighbouring countries are gaining ground thanks to research programmes, stimulated innovation and other initiatives. A more integrated knowledge base can be created by coupling initiatives within the SuMMA centre, Strategic Initiative Materials (SIM) and the Knowledge and Innovation Community (KIC), within the European Institute for Innovation and Technology.