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MEEuP methodology

7th April 2011

Joint position of the metal Industry

Although supportive of the idea of fostering resource-saving through eco-design measures, the metals industries collectively have severe reservations as to the current methodological MEEuP approach, which for metals focuses on recycled content only:

1. Current recycled content in itself is an important, but not a sufficient indicator of resource saving. Some products may have a high recycled content, but may not be recyclable a second time because of unacceptable loss of properties. Metals, in contrast, are recyclable again and again.

2. Current recycled content reflects the past but does not say much about the future. We can only recycle now what was produced years, sometimes decades ago, when metals production was still much lower. In the melting of metallic alloys, the lack of availability of scrap is the main reason why the recycled content is not even higher. Today's virgin material is the recycled material of tomorrow. It involves an investment, and not the consumption, of raw materials and energy.

3. Scrap metal is a commodity with a world-wide market. Because of the intrinsic financial value, this market works autonomously and provides a natural incentive for metal collection and resource-saving. In the case of metals, economy naturally works in favour of recycling. The EU regulatory framework should support these dynamics by using LCA methodology which addresses properly this unique specificity of metal products.

A fine-tuning of the MEEuP methodology therefore appears necessary to ensure that metals receive fair treatment.

This document describes the specific issues related to the inadequacy of the MEEuP methodology for considering the recycling of metal products.

Background

Metals are critical to today's and tomorrow's economy. Therefore, future development will not occur without metals. Metals are essential due to their specific properties including conductivity, strength, lightness, durability and recyclability. The properties of metals are unaffected by melting processes. Thus, metals and their alloys maintain their inherent properties after scrap melting and are indefinitely recyclable into new metal products. As metals are often in use for many years, both primary and secondary metals are essential to meet the growing demand.

Production of metals from secondary materials is very energy efficient; achieving savings of between 95% and 60% of the energy needed to produce material from primary sources. This explains why scrap is a highly valuable material which has a significant environmental and economic value. Hence, there is a strong market demand for metal scrap which is then limited by the scrap supply/availability and not by the scrap demand as incorrectly reported in MEEuP.

In view of the above, any life cycle assessment (LCA) methodology should not be restricted to the recycled content without ensuring that it can be recycled at the end of life. Otherwise, the criterion is meaningless. As recommended by the ILCD methodology, an LCA methodology addressing products should also reflect the recycling of the product at the end of life. The value of metal implies that the collection and the recycling of metal products at the end of their life needs to be fully and properly considered in order to assess the environmental performances of metal products throughout their whole life cycle. Hence, it is crucial to distinguish and to understand the two typical indicators which are used to measure the recycling performances: **the recycled content (which may refer also to the "production mix") and the (end of life) recycling rate.**

- The **recycled (metal) content** is a sector related concept and looks at how much recycled material is used in the production of a new product. So the recycled content concept is situated at the start of the supply chain i.e. at the manufacturing stage of a product. Whereas the recycling rate looks at the end-of-life stage of a product and assesses how much of it can be recycled. As an example of recycled content, we can take the production of stainless steel batch where 17 t of recycled steel are used to produce 26t of stainless steel.

- The **(end of life) recycling rate** relates to the fraction of metal products or a metal product group which is effectively recycled into a new metal product. Metals products are recycled at a recycling rate usually exceeding 90%. Depending on the metal product and the market specificities, the recycling of a metal product can follow a close loop scheme, an open loop scheme or even a mixed scheme. Hence, in many cases, there is no direct link between the recycled content of a product and its end of life recycling rate.

From a metal product life cycle perspective, the end of life recycling rate is a much more relevant recycling indicator. Any study or assessment performed with the recycled content is incomplete and only partial. Hence, any assessment based on the recycled content approach needs to be completed (with the additional aspects of recycling from the end of life) to reflect the true recycling performances on a full life cycle of the metal product.

In addition to use the recycled content methodology for metal products, the MEEuP methodology uses subjective recycled content estimates as well as crediting rules which are not consistent and which can lead to discriminatory results.

This documents aims at highlighting these MEEuP inconsistencies and, in addition, proposes an alternative methodology which considers recycling on the full life cycle of the metal products.

Detailed description of MEEuP issues and proposed alternative methodology

The 4 major issues as well as the proposed methodology solution are reported in the table below and are further described.

Issue	Description	Proposed solution
1) Confusion between recycled content and recycling rate	The methodology report confuses recycled metal content concept and the end of life recycling rate.	Reformulating the recycling section of the MEEuP methodology report to clarify these 2 distinct concepts as well as their consideration into the methodology.
2) Incorrect statements regarding recycling credits	For some metal products, MEEuP methodology does not consider recycling (see case 1 of annex 2 of this document) so that statements about metal recycling credits are incorrect	Removing any misleading statements regarding recycling credits for metal products
3) Use of subjective Recycled Content	Subjective increase of the recycled content of some metal products. This is inconsistent with LCA fundamentals.	Using objective data (based on facts and figures) to assess the recycled content of all types of metal products (see case 3 in annex 2)
4) Inconsistent treatment of materials	End of life performances of plastic products (i.e. through credits) are considered. Yet metals are not treated in the same manner, while there is no loss of properties through metal recycling.	Adapting MEEuP methodology to a consistent LCA methodology according to ISO standards or/and ILCD handbooks.
5) Proposed alternative	Complete the recycled content approach with the end of life recycling approach	Adapting MEEuP to also reflect the real recycling rate attached to product groups, as used in CEN/TC350 standards (see examples in annex 2)

1) Confusion between recycling rate and recycled content

Currently, the methodology report confuses the recycling rate and the recycled content concepts (see pages 38 to 43). Table 2 in page 41 of the methodology report relates to the recycled content estimates and not to the recycling rate estimates as stipulated.

As an example, a “recycling rate” of 0% is reported for copper wire in table 2 while copper wire is currently recycled at the end of their life cycle with a recycling rate of more than 90%. Hence, reported recycling rate for copper wire as zero is incorrect.

For this metal product, MEEuP completely neglects recycling benefits (see case 1 of annex 2).

Hence, the metal industry recommends reformulating the recycling section of the MEEuP methodology report to clarify these 2 concepts as well as their consideration into the methodology.

Should be « recycled content » instead

Table 2. Recycling rate and Energy Requirement Plastics and Metals (EuP Unit Indicators table, VHK 2005)

Material PLASTICS	Re cyc %	Primary Energy per kg GER (total) MJ	Material METALS	Re cyc %	Primary Energy per kg GER (total) MJ
LDPE	0%	78	St sheet galv.	5%	34
HDPE	0%	77	St tube/profile	50%	17
LLDPE	0%	74	Cast iron	85%	10
PP	0%	73	Ferrite	0%	51
PS	0%	87	Stainless 18/8 coil	63%	62
EPS	0%	84	Al sheet/extrusion	11%	193
HI-PS	0%	92	Al die-cast	85%	55
PVC	0%	57	Cu winding wire	0%	143
SAN	0%	89	Cu wire	0%	117
ABS	0%	95	Cu tube/sheet	60%	51
			CuZn38 cast	85%	38
PA 6	0%	120	ZnAl4 cast	85%	28
PC	0%	117	MgZn5 cast	50%	162
PMMA	0%	110			
Epoxy	0%	141			
Rigid PUR	0%	104			
Flex PUR	0%	104			

2) Incorrect MEEuP statements regarding recycling credits for metal products

Recycling credits should refer to the end of life recycling. Therefore, a recycling rate of about 90% should be taken for metals products. Hence the below footnote appearing in each eco-report is misleading and not correct for metal products (see also the example 1 in annex 1 to this document).

***=Note: Recycling credits only relate to recycling of plastics and electronics (excl. LCD/CRT). Recycling credits for metals and other fractions are already taken into account in the production phase.**

3) Use of subjective recycled content figures

A LCA methodology shall assess objectively the environmental impact of a product throughout its whole life cycle. A LCA methodology should specifically avoid including any value-choice or subjective scenario or data. Increasing artificially the recycled content of some cast alloys independently from any fact and figures is a subjective choice that cannot form part of an LCA methodology.

As an example, the MEEuP report stipulates at the top of page 41 that

> whereas e.g. for die-casts we use the technological maximum of typically 85%[30] instead of the current recycling rate (excl. run-around scrap) of 60-65%.

(Further more, according to the previous point, the terminology "*recycled content*" should here be used instead of "*recycling rate*".)

This artificial increase is a value-choice that is not part of an LCA methodology and which leads to a transfer of recycling credits from one product to another one. A basic LCA principle stipulates that **recycling credits shall be allocated to the product which is at the origin of the recycled materials and shall not be transferred to any other products.** Hence, this is contradictory to the LCA principle!

4) Inconsistent treatment of materials

The two examples reported in the annex 1, i.e. one dealing with copper wire and the other with Nylon (PA- 6), shows that two different rules are applied when considering the recycling aspects of these materials. Recycling credits are considered at the end of life for Nylon but not for copper wire, while both have production impacts calculated from primary material only**. Such a rule is inconsistent and is discriminatory towards some metal products**.

5) Proposed solution: the "complete approach"

Considering the economic and environmental value of scrap, the end of life recycling rate of metal products usually reaches more than 90%. Hence, compared to the recycled content figures used in the MEEuP methodology report, the use of the end of life recycling rate indicator leads to significantly different results for many metal alloys or semi-products as reported in below table.

Metal alloys/semi-products	MEEuP recycled content estimate [1]	Difference in 2 approaches [2]	Corresponding case in annex 2
Steel galvanised sheet	5%	High	Case 1
Steel tubes/profiles	50%	High	Case 1
Cast iron	85%	No	No
Ferrite	0%	High	Case 1
Stainless steel 18/8	63%	Medium	Case 2
Al extrusion or sheet	11%	High	Case 1
Al die Cast	60-65% (instead of 85%!)	Medium (Low if 85% is used)	Case 2
Cu Winding wire	0%	High	Case 1
Cu wire	0%	High	Case1
Cu tube/sheet	60%	Medium	Case2
CuZn38 cast	85%	Low	-
ZnAl4 cast	85%	Low	-
MgZn5 cast	50%	High	Case1

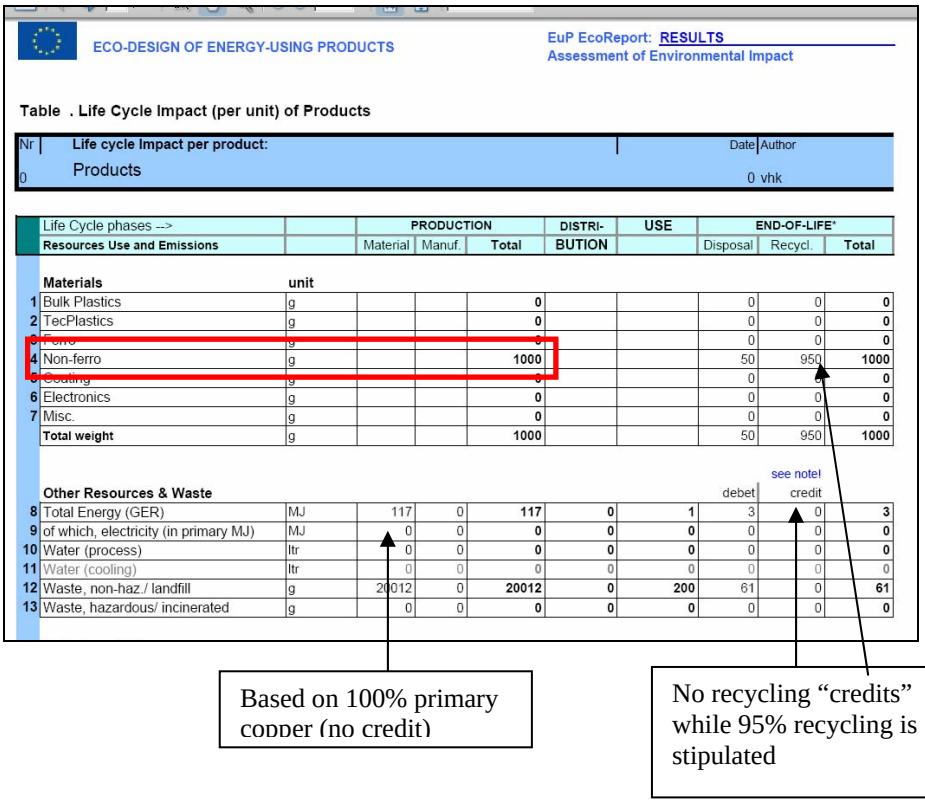
[1] Figures not endorsed by the metal industry, updated figures can be proposed if requested.
[2] Difference > 30% = High, between 20 and 30% = medium, <10% = low

As illustrated by the large difference of recycled content vs. recycling rate for many metal semi-products in the above table, the recycled content approach does not reflect properly the recycling aspects of metal products throughout their whole product life. In other words, the various recycled content figures used in MEEuP provide partial and incomplete information of the recycling performances of a metal product.

Hence, the metal industry recommends that the additional benefits resulting from the end of life recycling of metal products are considered in the revised MEEuP methodology. These additional benefits can easily be calculated and reported as end of life recycling credits while avoiding any double counting or crediting issues resulting from consideration of the recycled content at the production stage. Such approach has been used recently in the CEN/TC350 standardisation process (Building Sustainability) and should be used in the MEEuP methodology to tackle properly the true recycling performances of metal products throughout their whole life cycle. Examples of this complete approach are reported in annex 2.

Annex 1 – Examples of results from the Eco report tool

Annex 1 - Example 1 of a metal product - 1 kg of copper wire



ECO-DESIGN OF ENERGY-USING PRODUCTS

EuP EcoReport: RESULTS
Assessment of Environmental Impact

Table . Life Cycle Impact (per unit) of Products

Nr	Life cycle Impact per product:	Date	Author
0	Products	0	vhk

	Life Cycle phases -->		PRODUCTION			DISTRI-	USE	END-OF-LIFE*		
	Resources Use and Emissions		Material	Manuf.	**Total**	**BUTION**		Disposal	Recycl.	**Total**
	Materials	**unit**								
1	Bulk Plastics	g			**0**			0	0	**0**
2	TecPlastics	g			**0**			0	0	**0**
3	Ferro	g			**0**			0	0	**0**
4	Non-ferro	g			**1000**			50	950	**1000**
5	Coating	g			**0**			0	0	**0**
6	Electronics	g			**0**			0	0	**0**
7	Misc.	g			**0**			0	0	**0**
	Total weight	g			**1000**			50	950	**1000**
	Other Resources & Waste							debet	see note! credit	
8	Total Energy (GER)	MJ	117	0	**117**	**0**	**1**	3	0	**3**
9	of which, electricity (in primary MJ)	MJ	0	0	**0**	**0**	**0**	0	0	**0**
10	Water (process)	ltr	0	0	**0**	**0**	**0**	0	0	**0**
11	Water (cooling)	ltr	0	0	**0**	**0**	**0**	0	0	**0**
12	Waste, non-haz./ landfill	g	20012	0	**20012**	**0**	**200**	61	0	**61**
13	Waste, hazardous/ incinerated	g	0	0	**0**	**0**	**0**	0	0	**0**

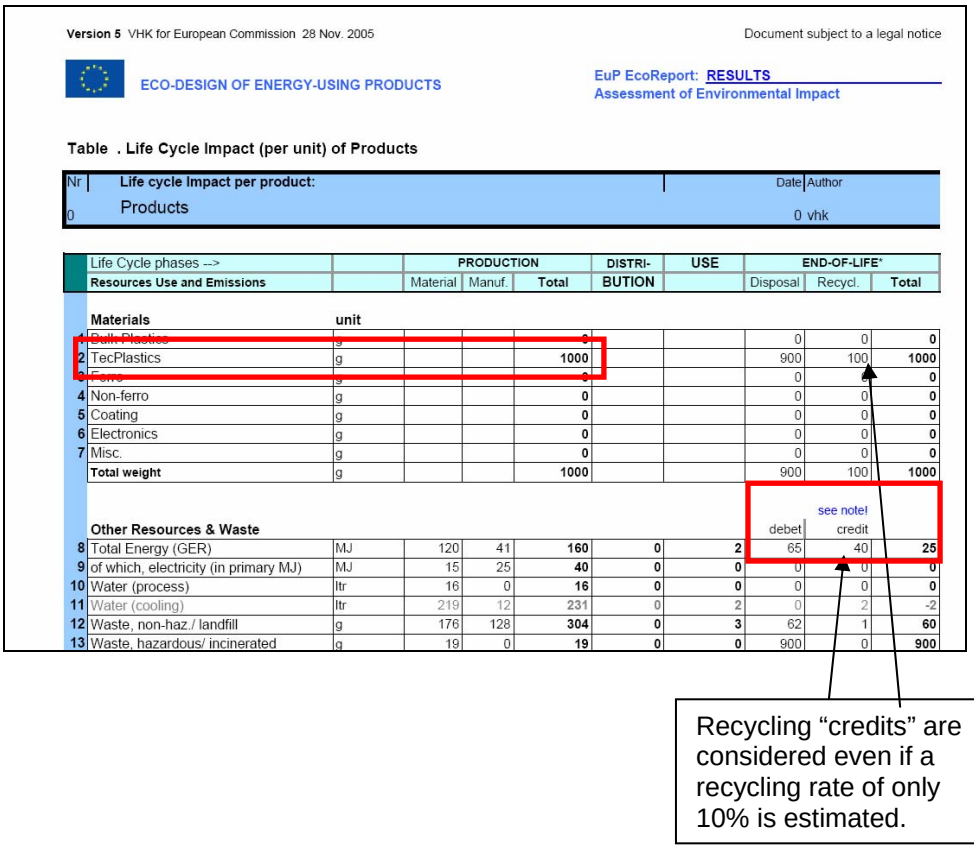
Based on 100% primary copper (no credit)

No recycling "credits" while 95% recycling is stipulated

Issue: no recycling credits are assigned (even though 95% recycling rate is reported) and production is fully based on primary metal, i.e. 100% of primary metal at the production stage Hence, the below footnote is incorrect and is misleading:

***=Note: Recycling credits only relate to recycling of plastics and electronics (excl. LCD/CRT). Recycling credits for metals and other fractions are already taken into account in the production phase.**

Annex 1 - Example 2 of a plastic product - 1 kg of PA-6 (Nylon)



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ECO-DESIGN OF ENERGY-USING PRODUCTS

EuP EcoReport: RESULTS
Assessment of Environmental Impact

Table . Life Cycle Impact (per unit) of Products

Nr	Life cycle Impact per product:	Date	Author
0	Products	0	vhk

	Life Cycle phases -->		PRODUCTION			DISTRI-	USE	END-OF-LIFE'		
	Resources Use and Emissions		Material	Manuf.	**Total**	**BUTION**		Disposal	Recycl.	**Total**
	Materials	**unit**								
1	Bulk Plastics	g			**0**			0	0	**0**
2	TecPlastics	g			**1000**			900	100	**1000**
3	Fe-ni-s	g			**0**			0	0	**0**
4	Non-ferro	g			**0**			0	0	**0**
5	Coating	g			**0**			0	0	**0**
6	Electronics	g			**0**			0	0	**0**
7	Misc.	g			**0**			0	0	**0**
	Total weight	g			**1000**			900	100	**1000**
									see note!	
	Other Resources & Waste							debet	credit	
8	Total Energy (GER)	MJ	120	41	**160**	**0**	**2**	65	40	**25**
9	of which, electricity (in primary MJ)	MJ	15	25	**40**	**0**	**0**	0	0	**0**
10	Water (process)	ltr	16	0	**16**	**0**	**0**	0	0	**0**
11	Water (cooling)	ltr	219	12	**231**	**0**	**2**	0	2	**-2**
12	Waste, non-haz./ landfill	g	176	128	**304**	**0**	**3**	62	1	**60**
13	Waste, hazardous/ incinerated	g	19	0	**19**	**0**	**0**	900	0	**900**

Recycling "credits" are considered even if a recycling rate of only 10% is estimated.

Issue: recycling credits (negative impacts) are considered for plastics but not for metals! This methodological approach is inconsistent.

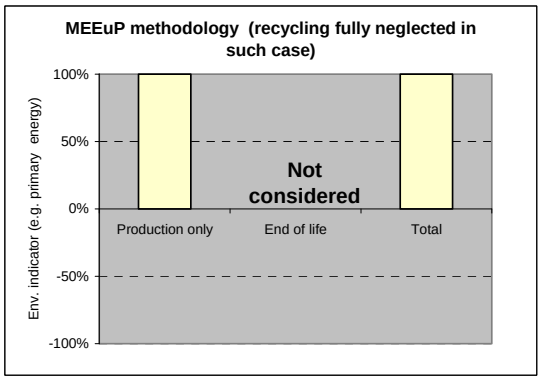
Annex 2 – MEEuP vs. complete methodology for considering recycling of metal products
The use phase is neglected since it is not relevant for the issue at stake
For the reported environmental indicator, it is assumed that recycling has an impact of 30% compared to the impact of the primary production. This ratio is used for illustrative purposes and may vary significantly according to metal and environmental indicator considered.

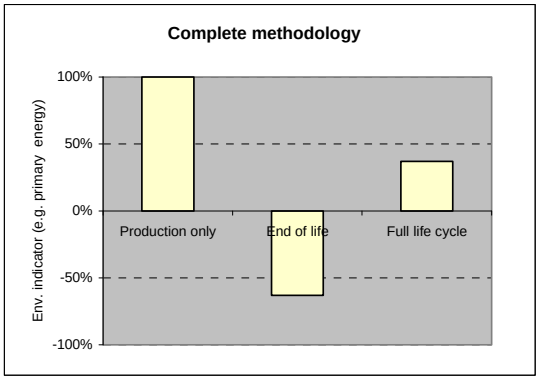
Case 1: recycling fully neglected by MEEuP - Metal product with 0% recycled content, e.g. copper wire

MEEuP recycling scenario	
Recycled content	0%
EoL recycling rate	Not considered

Complete recycling scenario	
Recycled content	0%
EoL recycling rate	90%

Environmental indicator	
Primary production	100%
Recycling	30%





Case 2 : recycling only partly considered by MEEuP - Metal product with 50% recycled content (e.g. steel tubes)

MEEuP recycling scenario	
Recycled content	40%
EoL recycling rate	Not considered

Complete recycling scenario	
Recycled content	40%
EoL recycling rate	90%

Environmental indicator	
Primary production	100%
Recycling	30%