TRANSNATIONAL POSITION PAPER FOR STANDARDIZATION OF SECONDARY RAW MATERIALS PHYSIOGNOMES

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1. Introduction

The European Union is committed to moving from a linear economy: “make, use, dispose”, to a circular economy, which aims to keep materials and their value within the economic cycle.

Nowadays, the definition of waste is based on the act of discarding, rather than the value of the material. A starting point of the circular economy is that materials shall only be in the waste phase temporarily, to then be reintroduced into the economy as product.

In the 2008 an update of the EU’s Waste Framework Directive (WFD), introduced the end-of-waste (EoW) criteria for the first time. According to the criteria, a product status can be achieved if:

- the substance or object is to be used for specific purposes;
- there is an existing market or demand for the substance or object;
- the use is lawful (substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products);
- the use will not lead to overall adverse environmental or human health impacts.

Such criteria should be set for specific materials by the Commission using the procedure described in Article 39(2) of the Waste Framework Directive (so called "comitology"). A mandate to set end-of-waste criteria was introduced to provide a high level of environmental protection and an environmental and economic benefit.

However, after 10 years, the end-of-waste criteria have only been defined for three different waste types: iron scrape, copper scrap and glass cullet.

Consequently, the responsibility for further implementation of end-of-waste was left to the member states, but there are different practices and approaches in EU countries.

Countries currently use various ways to determine EoW status, moreover, for the case-by-case decisions, different forms and procedures are used in the Member State.

Initiatives to encourage circular innovations involving EoW can be further promoted by setting up specific procedures to allow both operators to start innovative recycling processes and the market to test new secondary raw materials (SRM) during a specific permitting period and at a small scale.

2. The European Context of End of Waste Legislation

Secondary raw materials, however, have immediately presented some problems in terms of the application of Article No. 6 of Directive 2008/98/EC on End-of-Waste. There are a number of reasons for this. First, there are technical difficulties linked to the diversity of recovery and treatment technologies waste may undergo in producing different end materials. Secondly, it is difficult to mark the final stage in these different treatment processes which transform waste into another type of end product. Last but not least, there are issues linked to the variety and range of legal studies and experiences emerging in this area over the last twenty years at the internal and Community level.

To date, there are only three European rules specifying criteria for:

- **iron, steel and aluminium scrap** (see Council Regulation (EU) No 333/2011)
- **glass cullet** (see Commission Regulation (EU) N° 1179/2012)
- **copper scrap** (see Commission Regulation (EU) N° 715/2013)

There are also some current national level regulations in Italy, such as DM No. 22/13, concerning certain types of secondary solid fuels (CSS). However, these measures have not been sufficient given the numerous categories of waste and treatment types that exist.

Furthermore, the product legislation that comes into force, REACH, for example, can often be difficult for SRM to meet (e.g. could be difficult to trace the material according to the REACH requirements). Even if REACH does not apply to waste, to achieve an EoW status, a recovered material may require a REACH registration before it actually has ceased to be waste accordingly to the WFD. As a consequence, the material would remain waste and could not get the EoW status.

In the absence of EoW criteria at EU level, MS may establish such criteria. Where criteria have not been set, a country may decide on a case-by-case basis. The form of its decision is not specified in the WFD and can take different forms, depending on the MS legislation. A specific focus is required on the inputs, the process and the outputs and take into account the limit values for pollutants and any possible adverse environmental and human health impact.

Regulators and businesses often experience barriers and uncertainties due to this lack of homogeneity and they want to avoid the perception of their SRM as “waste”. Moreover, those receiving the SRM do not want to be perceived as waste treatment operators or prefer substances that meet the REACH requirements. While, the operators using the recovered material may prefer the certainty of applying the waste regime to the burden of proving REACH compliance.

Also considering the other points of article 6(1) of Directive 2008/98/EC could be difficult to prove that the use will not lead to overall adverse environmental or human health impacts.

The successful development of a European market for the material may be helped by a common harmonize approach regarding the material across different European countries. To overcome some of these barriers an exchange of information between regulators and policy makers it's crucial. The starting point should be a better understanding of the different measures, approaches and procedures in the different MS.

Equally important is the exchange of the best practices and the BAT (best available technologies) which may include practical tools for businesses and strategies for regulators and policy makers.

Related to this topic, production or recycling facilities will often require an IED (Industrial Emission Directive) permit.

A key element of the IED is the obligation for the regulator to use the BAT conclusions as the reference for the permit conditions that are described in the BAT reference documents (BREFs). For waste treatment facilities, questions may arise regarding the applicability of current BREFs and the updates normally take considerable time. It would be useful to set guidelines for regulator to asses emerging techniques that are not in the BREFs and, under certain condition, to allow a period of experiment in the early developing stages.

Another aspect to consider is the Waste Shipment Regulation (WSR) and the assessment of a material shipped across border: is it a waste, by-product or End of Waste?

Authorities of different MS might disagree on the waste character of a shipment. For instance, the exporting country can consider a goods as "destined for repair", whereas the recipient country can consider it as a waste. If the two country cannot agree on the classification as waste or not-waste, the substance shall be treated as waste.

Moreover, different waste codes are applied in different MS, which lead to questions whether the green or amber list procedure should be applied. Harmonisation on the classification process is needed and to speed up the process the use of shared database with classification code and EoW decisions can be useful.

3. How to enhance cooperation between countries

Across Europe are already existing on-line platform that enhance the trade of chemicals/waste/SRM. One example it's the "MOVECO Marketplace" an online platform where the demand and supply of waste and reusable materials and products meet to foster eco-innovation in the Danube region. Combining the opportunity to match demand and offer of waste and reusable materials and products, information on specific legal requirements and business practices related to waste shipment and recovery, as well as innovative technologies and consultancy services, the virtual marketplace aims to encourage creation of unconventional circular partnerships.

4. Best Practices across Europe

One of the first guidelines came from the Joint Research Centre (JRC) of the European Commission that together with the Institute for Prospective Technological Studies (IPTS) have developed a general methodology related to the analytical and impact assessment frameworks required to determine end-of-waste criteria (End-of-Waste Criteria, 2009).The procedure can be considered as a very comprehensive one to define EU wide end-of-waste criteria, requiring detailed information and studies.

The case studies on compost, metal scrap and aggregates have made it clear that there is a large amount of detailed information which one needs to examine in order to have a sufficient judgement basis for proposing end-of-waste criteria. The data needs include aspects such as the technical and economical viability of producing a material conforming to end-of-waste criteria, competing material in the perceived market and non-waste legislation which would regulate the management and use of the material. Full market and environmental assessments are required to reach robust conclusions on the overall beneficial or detrimental monetary, environmental and health impacts of applying end-of-waste criteria.

The first step in the process of establishing end-of-waste criteria is the analysis of potential input waste to be recovered in order to obtain a certain end-of-waste. The document highlighted the following points:

- Positive list of waste streams that are allowed;
- Negative list of waste that are excluded;
- Limit values for potential pollutants;
- Source control of the allowed waste based on the processing chain.

The second element for end-of-waste criteria could be some control over processing itself, possibly including technical process parameters and key process steps necessary to achieve a specific result meeting requisite product standard.
The third step it's related to the product quality

4.1. Austria

- **Austrian Recycling Building Materials Ordinance** (Recycling-Baustoffverordnung, 2016)

  The primary goal of the Recycling Building Materials Ordinance is to achieve a high-level quality of waste generated during construction and demolition work through better waste separation and selective demolition to promote the recycling of this waste. Corresponding of the Waste Framework Directive, the preparation for reuse, recycling and other material recycling should be increased to at least 70 percent by weight for non-hazardous construction and demolition waste by 2020.

  In addition to ensuring environmentally friendly recycling building materials, this also aims to ensure legal security with waste law for manufacturers and users. Another aspect is to motivate builders to use recycling building materials in new buildings.

  The regulation specifies several requirements to be met when demolishing buildings:

  - Separation obligation on construction sites
  - carrying out a pollutant investigation, depending on the amount of waste generated including detection of potentially re-usable components
  - a recovery-oriented dismantling of buildings
  - Enabling the non-destructive removal of reusable components before mechanical dismantling in correspondence with existing demand
  - Provisions for further treatment of construction and Demolition waste
  - Quality specifications for the recycled building materials to be manufactured
  - Predefined areas of application/markets for recycling building materials

4.2. IS IT WASTE tool – The England Experience

One of the main outcomes of the Equal project was the IsitWasteTool, a web application, based on Article 5 (by-products) and 6 (end-of-waste) of the WFD. It's a self-assessment tool to help decide whether a material is likely to be a waste or not. It's free to do a self-assessment. Th user have the option to submit a request to the Environment Agency's Definition of Waste Service for an opinion on the waste status of the material but there's a charge to use this service.

The IsItWaste tool user guide explains that the following steps have to be followed for end-of-waste:

1. Start report (company details)

2. Description and source of the material inputs and the processing: details on the Eural code entries, composition and consistency of input waste, as well as data for each processed waste have to be produced; the same for the output material and for other input material (not waste) used in the recovery activity

3. Market assessment: evidence must be provided of the current or prospective purchasers of the material as well as the evidence of the price or the economic benefit for the producer

4. Technical product requirements: the output material has to be compared against an equivalent non-waste comparator: the reference of existing and suitable standards has to be provided as well as comparison of the physical and chemical properties of obtained material against a virgin material for similar use.

5. Environmental and human health impact: the applicant must provide information on the environmental and health impact of the output material, showing that no properties, including trace components and contaminants, will lead to an unacceptable risk. If there is a non-waste comparator, the properties of the obtained material have to be compared with that, otherwise a generic or site-specific risk assessment has to be performed. For the last purpose a specific guidance was drafted under the Project Equal, „End of Waste and by product hazard and risk assessment "which may be used to determine the risk to human health, soil, crops, livestock, air, controlled waters.

In order to support the comparison of the by-product or end-of-waste material with a non-waste material another tool was developed – the Waste Comparator. This is an excel file summarising the results of several reports, which collate the analytical results of various materials used as comparators for the uses reported in Table 2. It simply provides characterisation data that may be used for self-assessment or submission purposes

4.3. FRENCH RDC/VNC guidance

In France end-of-waste status is given by the national criteria through ministerial orders. The procedure foresees the issuing of a ministerial order at the end of the assessment procedure performed until now by the Offices of the Ministry, consisting of:

- a consultative phase with the public and private stakeholders;
- submitting a draft of the criteria to a Consultative Commission on end-of-waste (CCSD).

No case-by-case decisions are taken, because it was decided to guarantee harmonised criteria at a national level.

RDC Environment and Vincent Nedellec Consultants (VNC), funded by the public Agency ADEME, drafted a guidance document to support the technical discussions about a new end-of-waste application

For each topic specific and detailed guideline were developed and included in the general guide.

The procedure consists briefly of the following steps:

- End-of-waste request – description of the case study, which includes a description of foreseen life cycle with end-of-waste, quality management, description of the uses and other data for stakeholder consultation (waste producer, recyclers and current and potential users).
- Assessment of the 3 first conditions namely the evidence of usefulness and demand (current or potential) and the aspect of relevant product legislation and standards. The last should include REACH. The technical specifications and standards shall include technical and environment and health elements.
- Qualitative risk assessment before use stage, to be performed before the end-of-waste status if the activities aren't covered by environmental permits. This analysis should be carried out also if between the end-of- waste point and the use stage significant changes in composition take place or further treatments (not commonly performed on the substituted product) are applied or if the steps before use are associated with significant additional risks compared to the substituted product.

- Qualitative assessment of environmental and sanitary impacts, at a local and global level, based on the risks related to the presence of hazardous substances for human health or the environment.

In some cases, a quantitative health risk assessment should be carried out, for instance if certain hazardous substances of concern are not already regulated for the same purpose by product legislation.

4.4. Netherlands

The Dutch Ministry of Infrastructure and Water Management issued its "Leidraad afvalstof of product", ("Waste or Product Guidance") in July 2018. As the title already suggests, it is a tool for determining the waste status of a material. The guidance can particularly be used by the holders of materials who have doubts about the legal status of the materials concerned. It also serves as guidance for regulators (permitting and inspection authorities).

The guidance starts with discussing the waste definition ('to discard', Article 3 WFD). On the basis of the WFD and related case law from the Court of Justice of the European Union (CJEU), it explains how the waste definition should be applied, addressing all relevant aspects such as the aims of the WFD, the need to consider all the specific factual circumstances involved in a particular case and that, in principle, the burden of proof lies with the holder of the material. Furthermore, it discusses the relevance of end-of-waste or by-product criteria for specific material streams at European or national level (in the Netherlands, national end-of-waste criteria have only been established for recycled aggregates from construction and demolition waste).

Next, the waste definition is further clarified by looking at possible situations where it is unclear whether or not a material has a waste status. References are made to provisions in the WFD and EU case law. Three situations are distinguished, i.e. when a material is or becomes:

1. non-waste ('not to discard' ≠ article 3(1) of the WFD);
2. a by-product (article 5(1) of the WFD); and
3. end-of-waste (article 6(1) of the WFD).

The final part of the Waste or Product Guidance deals with how the waste definition and the conditions for obtaining the by-product and end-of-waste status are interpreted in practice. The guidance introduces three benchmarks for assessing the non-waste status. These benchmarks are based on the relevant articles in the WFD and related case law. The use of the assessed material must be:

- lawful;
- certain enough; and
- of a sufficiently high quality (based on the waste hierarchy and waste management plan).

4.5. Spain

Article 5 of Law 22/2011, of July 28, on waste and contaminated soils, grants the Ministry of Agriculture and Fisheries, Food and Environment the power to establish by ministerial order, specific end-of-waste criteria for certain types of waste that have undergone a recovery operation.

There is no procedure for operators to request for an end-of-waste declaration like there is for by-products (Procedure for by-product Declaration46). It is the Ministry that decides on the waste streams for which it is most appropriate to evaluate the possible establishment of end-of-waste criteria.

Currently, priority is being given to those waste streams that may have greater environmental relevance, considering the type of waste, the impact on large sectors of economic operators and the quantities of waste affected.

Where innovative recovery treatment processes produce new end-of- waste materials, for which uses or technical/environmental standards are not yet established, it may be important to promote an experimental procedure or permits in order to test new materials at a reduced scaleso as to stimulate innovations which contribute to the circular economy.

At a national level there are examples of acts that have specific provisions on permitting of trial operations. See for instance the Italian and Austrian Waste Management Acts and the England Modernising Waste Regulation which can issue “trials Regulatory Position Statements”. Article 15, point 5 of IED allows for a testing period (9 months maximum) to perform trials and to test emerging techniques.

The experience of some cases show that a possible general experimental procedure may require:

- Short term permit;
- Small scale size of the plant;
- Experimental trials, that should for instance:
  - demonstrate that there is a sure use and a market for the end-of-waste materials;
  - demonstrate that a full-scale upgrade of the process is feasible;
  - define technical and environmental standards;
  - support gathering of information to allow evaluation of the overall impact on the environment and human health.

5. An European Database collecting the EoW case-by-case decisons: state of the art

This chapter will propose the tool explained in the book "Making the Circular Economy Work – MIW, IMPEL"

The access to the pieces of information gathered in the suggested database could encourage uniformization across Member States and allow to identify common technical and environmental standards, making end-of-waste movements across the borders easier.

At the same time, such a database could help operators to find information such as standards and provisions set in other Member States for the same secondary raw material they would like to produce, in order to gather a comprehensive documentation when accessing a self-assessment or permitting procedure.

Public access is considered an added value with respect to transparency, availability of environmental data and building trust on new products derived from recycling of waste. Eco-innovative products are likely not to be known by many actors and this can create difficulties to customers as well as to public authorities.

The lack of information and uniformization is an obstacle to innovation and detrimental to exchange of best practices, particularly in those situations where no market is present at all and there are no technical standards to refer to.

The fields evaluated in this work are a starting point to elaborate a new database that collects the information related to case-by-case decisions. The database may become a strategic tool to promote the exchange of information and to guarantee uniformity of behaviour for the proper circulation of end-of-waste new products.

The suggested voluntary database is excel based, the idea behind it is to keep it easy to be filled in, simple and clear.

The pieces of information requested are grouped in six clusters:

1. Compiler information: This section is relative to whom is filling in the database; it may be useful if somebody wants to contact the compiler. All the fields are required.
2. Permitting authority: This part is requested when the end-of-waste status is granted within a permit. It is not requested in case of operator self-assessment. Contact details of the permitting authority can be useful if asking for more information is needed.
3. Recycling company: This part is optional; the data of the producer can be public available if included in a permit. In case of self-assessment, it is up to the operator whether to publish the requested information or not.
4. Input waste: It contains crucial information about provisions of the waste to be recycled.

5. Treatment and final use: This section requires information about the recycling process, the destination market of the end-of-waste, the substance/material replaced by end-of-waste, etc.
6. Environmental and technical standards: This section collects crucial data about technical standards required, environmental standards, REACH registration.

To respect the protection of privacy, sensitive fields are optional while technical information is mandatory.

6. Inspection Systems - guarantee the efficiency without slowing down the process

Promoting end-of-waste recycling or other recovery processes within the framework of circular economy has important consequences for the activity of the Environmental Inspection Authorities, which have to align their planning activities and competences according to the following new tasks:

- inspecting compliance of end-of-waste processes producing new (secondary) products destined to new markets;
- prevent and tackle new waste crimes related to illegal production of supposed end-of-waste.

End-of-waste status assessment follows different processes and approaches across Europe. A prior permitting system as well as an operator self-assessment and verification system are used in different Member States. General binding rules, Quality protocols and declaratory legally non-binding opinions are tools used as well.

End-of-waste criteria can be set at European or national level. According to the WFD 2018, “Where criteria have not been set at either Union or national level, a Member State:

- may decide on a case-by-case basis,
- or take appropriate measures to verify, that certain waste has ceased to be waste

In the case of self-assessment, the end-of-waste status is not explicitly granted beforehand by the government for instance in the specific permit of the installation. Compliance with the general end-of-waste conditions should be checked (verified) by the Inspection Authority during the inspection activities. It implies to have an efficient inspection system in place to guarantee a level playing field across the MS.

The legal non-binding opinion, where present, can function as guidance for the Inspection Authority to check compliance.

A set of non-binding general criteria on inspections is set out in Recommendation 2001/331/EC providing for minimum criteria for environmental inspections in the Member States ('RMCEI'). In the RMCEI, environmental inspection entails carrying out activities including:

- site visits;
- monitoring achievement of environmental quality standards; consideration of environmental audit reports and statements; consideration and verification of any self-monitoring carried out by or on behalf of operators of controlled installations;
- assessing the activities and operations carried out at the controlled installation;
- checking the premises and the relevant equipment (including the adequacy with which it is maintained) and the adequacy of the environmental management at the site;
- checking the relevant records kept by the operators of controlled installations.

In many MS different Inspection authorities are involved along the end-of-waste recycling chain. The main public authorities involved along the compliance assurance chain are:

- environmental Inspectorates undertaking inspections of authorized plants;
- law enforcement authorities (e.g. police, customs, the forest corps, undertaking investigations on suspected breaches through site-search, wire-tapping etc.);
- REACH inspection Agencies;
- prosecutors.

The involvement of different inspection subjects at different instances of the end-of-waste recycling chain requires formal and informal arrangements for cooperation and coordination within and between authorities at the local, regional and national level in each country.

Cooperation and coordination are especially crucial to tackle transnational environmental crime related to end-of-waste fluxes.