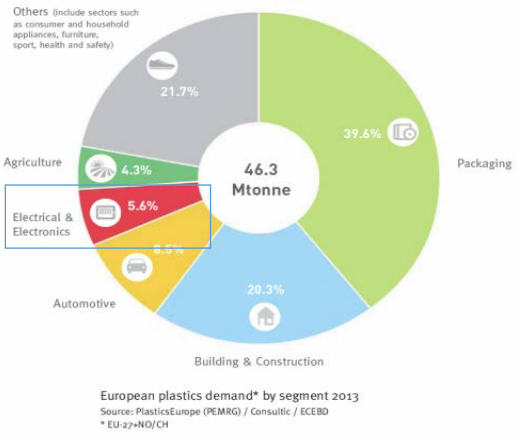
# EERA's comments and proposals for the EU Plastics Strategy 2017

**This document outlines the perspective of the E-Waste Recyclers regarding an EU Plastics Strategy and it contains clear proposals, ideas and comments as how to promote a transition towards a 'true' circular materials economy for plastics from WEEE.**

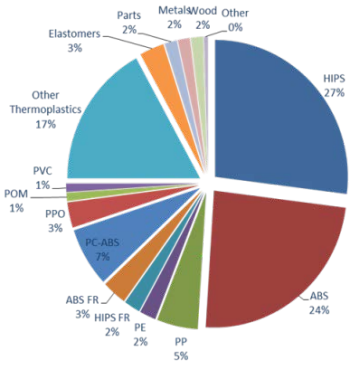
## Key Facts Electrical & Electronics

The total quantity of plastics used for the production of electric and electronic products amounts to some 2.6 Mio MT's, which is 5.6 % of the total demand for plastics in Europe. The majority of these plastics are solid plastics that are compounded to specification and these plastics contain a large number of engineering plastics. The relative value of these plastics is thus much higher, compared to the much larger volume plastics used in the packaging, agriculture and building and construction segments.



European plastics demand* by segment 2013
Source: PlasticsEurope (PEMRG) / Consultic / ECEBD
* EU-27+NO/CH

The return of electronics in the form of waste is regulated by the WEEEE regulation. The quantity of Waste from Electric and Electronic Equipment (WEEE) in the EU amounts to some 9.5 Mio tonnes per annum, of which quantity approximately 5-6 Mio tonnes are being recycled in Europe[1]. Some 1.2 Mio tonnes of this material are plastics materials (see Graph in Annex 1). Technology not only exists to deal with the challenges of dealing with the legacy substances such as Cadmium from historic colouring compounds or brominated flame retardants, the technology is also capable to produce pure Reach and RoHS compliant polymers from the complex mix of plastics from WEEE. The European recycling industry is thus capable to recycle over 50 % of this material into Post-Consumer Recycled (PCR) plastics. The remaining quantities of plastic materials that cannot be recycled – including those with the separated legacy substances – can be used for incineration with energy recovery.



Graph – composition of WEEE shredder residues (Source MBA Polymers)

A recent Life-Cycle Analysis comparing the production of virgin plastics with the production of PCR plastics from WEEE shows that there is an environmental benefit of a factor 6-10 in favour of the production of Post-Consumer Recycled (PCR) WEEE plastics. The same paper compares the recycling of PCR plastics from WEEE to the incineration of these plastics and the recycling is still a factor 4 better than the incineration route. There is a clear environmental benefit to the recycling option of WEEE plastics (see Annex 2). The estimated $CO_2$ emission reductions of WEEE plastics recycling is estimated to be over 2.5 Mio MT per annum, if all plastics from the

[1] CWIT Report 2015

returned WEEE would be recycled in Europe – this is the equivalent of a city of some 300 000 inhabitants.

The practical application of PCR plastics for the production of new Electric and Electronic Equipment has been proven in a significant number of cases, as several OEM companies in Europe have successfully demonstrated in the past few years.

## If the advantages are so clear, why is there so little WEEE plastic recycling?

The total recycling capacity of plastics from WEEE in Europe is limited to an estimated 250.000 MT and this is only some 20 % of the total amount of plastics that are returned in the WEEE Waste stream. There 4 principle reasons identified why there is such a small recycling capacity in Europe.

**1. Recycling of E-Waste plastics is difficult**.

The large number of plastics in the WEEE waste stream requires a complicated recycling process to arrive to the separation of sufficiently pure polymers that can be extruded and compounded to REACH and RoHS compliant secondary resources. These processes also have to deal with legacy substances such as Cadmium containing colouring compounds as well as with restricted brominated flame retardants that have been used in the past. The complexity of the separation processes require a recycling facility to be of a fairly large size. It is also difficult as a WEEE plastic recycling facility has to deal with the complexity of both the waste- and the product-legislations.

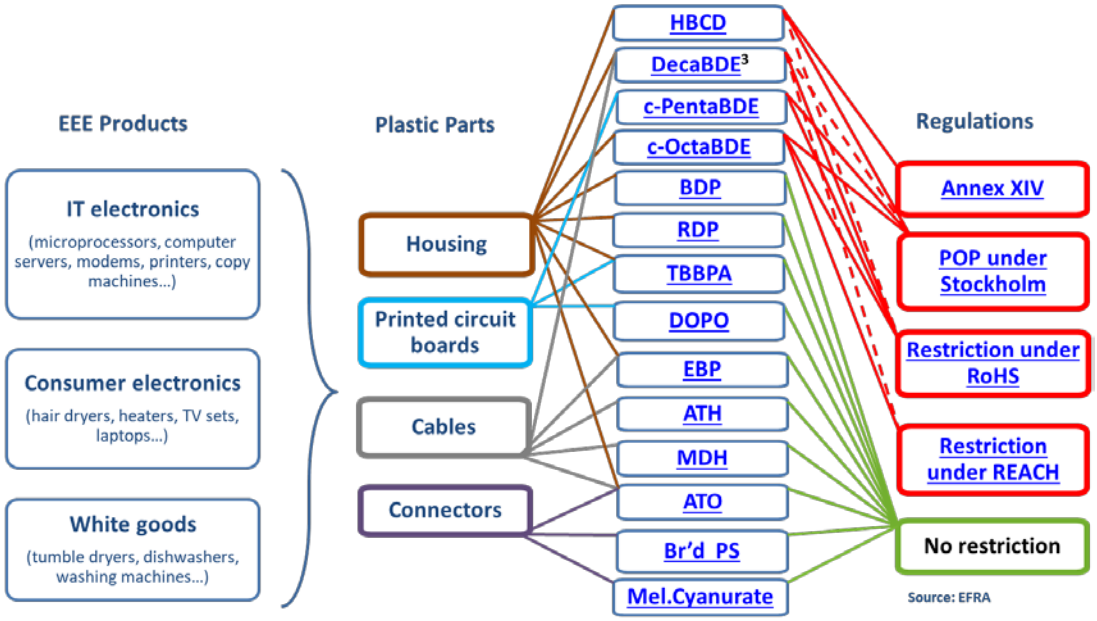
**2. Most of the E-Waste plastics disappear from Europe.**

The sourcing of WEEE plastics as input for recycling plants is facing a number of challenges. One of these challenges is the fact that Europe is an open market for products, services and persons, but not for wastes. At the same time, the traffic of plastics in containers from a number of European main ports is virtually non-restricted as a consequence of too little enforcement in these main ports. Container traffic with plastics materials to destinations outside Europe therefore is much easier compared to EU internal transports which are highly regulated. Furthermore the high demands for compliance placed upon EU recyclers do not apply in the same way for recyclers outside Europe, resulting in higher costs for recycling in Europe. The logistics costs of shipping material to the far-east are in many cases lower than those within Europe and the consequence of all this is that large volumes of plastics disappear from Europe. It is estimated that well over 75 % of the WEEE plastics are exported from Europe.

**3. Constantly changing legal framework and differing interpretations by authorities.**

The complexity of the legal framework with regards to legacy substances is enormous. Just looking at brominated flame retardants as one group of some 65 substances shows this complexity. Flame retardants have been used (and still are used) to reduce fire hazards in products that have internal heat sources. Flame retardants can be found in various categories of EEE products and within these categories they can be used in various parts of these products. There can be many types of flame retardant substances and each or these substances can be regulated differently as the graph on the next page shows. It is understandable that this complexity results in simplifications by authorities that have to deal with these

restrictions and this often results in approaches like “brominated flame retardants” are bad despite the fact that the majority of the applied BFR substances are not restricted. The increasing tendency by authorities to apply product legislation on waste streams like plastics containing BFR’s makes it necessary to sample WEEE streams that contain such plastics. Analysing the individual brominated flame retarding substances is very expensive and it takes time.




Furthermore competent authorities dealing with the transboundary shipments of wastes make different interpretations on what is required with respect to waste streams of EEE.

Here are three recent concrete cases:

**Case 1**: Since the last COP 2017 meeting in Geneva, in which deca-BDE was listed as POP, we have been faced with a number of competent authorities, particularly Germany, that suddenly define plastics with risks to contain deca-BDE as “hazardous waste”. Interestingly most plastics recycling plants do not have permits to accept hazardous wastes. It means that WEEE plastics cannot be recycled by these compliant European facilities. As consequence these plastics will almost certainly be traded for export out of Europe.

**Case 2**: Also in Germany several competent authorities requested E-Waste recyclers to submit a RoHS analysis of the plastic rich fraction of the E-Waste to check on its hazardousness. RoHS is a product legislation and not a waste legislation. Clearly the waste was classified as hazardous as the analysis understandably showed a non-RoHS compliant material. No export was possible to a plastic recycling plant without permit to take in hazardous waste.

**Case 3**: In France the minister of environment requested to be very stringent about plastics that might contain POP listed brominated flame retardants. The French proposal insists on the incineration of all WEEE plastics that might contain POP brominated flame retardants (see also Graph in Annex 3). This case shows that it is assumed that plastics recycling facilities cannot separate plastics with brominated flame retardants from those without, which clearly is

a mistake. Similar argumentation is noted by some authorities in Germany, whereby especially in Germany the case of HBCDD in EPS foams has shown the practical market disturbances if suddenly large volumes of high calorific material needs to be incinerated. The incineration of plastics has its own market dynamics. The high caloric value of plastics imposes constraints on the throughput and capacity of incinerators resulting in 1,5 – 2 x higher costs for incineration than normal waste streams. Capacities might therefore not even suffice for this extra volume of high calorific input.

As a consequence of the differing interpretations of the EU legislations, the cross border traffic with WEEE plastics fractions has become extremely difficult and in some cases even impossible. Compliant EU WEEE plastics recyclers thus have difficulties in sourcing material for recycling and consequently illegal export of these fractions to locations outside the EU is stimulated. This is one of the reasons why investors hesitate to build more recycling capacities in the European Union. This counteracts the strive for circular economy and implies serious risks with regards to reaching the recycling targets set for WEEE. Therefore WEEE plastics require special attention within the EU plastic strategy.

**4. Constantly changing legislation banning legacy substances in plastics**

EERA supports the concept of removing hazardous substances from the WEEE stream. Technology is available to produce secondary raw materials made from durable goods that meet current product legislations. However legal initiatives and thresholds for particular substances change continuously. If product legislation is going to define threshold levels that are going to be lowered to levels that the recycling industry cannot match, plastics from WEEE might become unrecyclable and need to be discarded as a whole as a consequence.

This would make it impossible for the recycling industry to match the recycling and recovery targets set for WEEE in Europe, it would be in complete contradiction with the objectives of the development of a circular economy and it would result in immensely increased energy consumption and much higher $CO_2$ emissions.

**5. Clear views on End-of-Waste criteria for PCR WEEE plastics are missing.**

There are no clear views about the end-of-waste status of recycled plastics. Recyclers consider the recycled plastics to have reached end-of-waste if the material is RoHS and/or REACH compliant in terms of defined legacy substances.

Producers of EEE products cannot procure waste products as they are not permitted as waste treatment companies.

This results in an incoherent and confusing situation with regards to the end-of-waste status of the produced Post-Consumer-Recycled WEEE plastics.

## EERA's input for the European Plastics Strategy

Different to the bulk of the plastics used in Europe, the WEEE plastics are treated by specialized companies at the end of the recycling chain. As a consequence they are not involved as directly with the Extended Producer Responsibility (EPR) take back schemes as many other of the plastics such as packaging plastics.

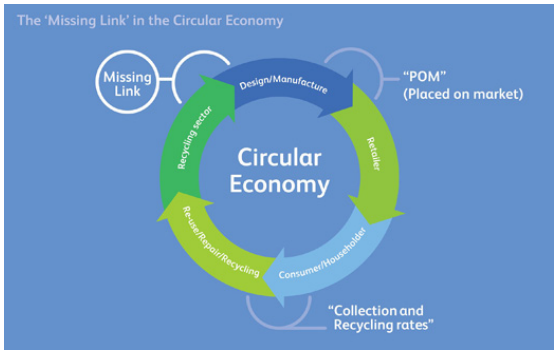
The value of the material, the legal framework and the relating specific challenges that are outlined in this paper, justify that **WEEE plastics have an own chapter, a sub-set so to say, within the EU plastics strategy.**

Within this WEEE plastics strategy EERA proposes to embed the following areas of focus:

- Product legislation should not apply to waste stream but only on materials that result from recycling and that are being applied in new products. In other words product legislation should only apply to plastic granulates that are 'end-of-waste' and applied in new 'products'.

- Procedures for the procurement and **facilitating transboundary shipment** of complex mixes of raw materials such as WEEE plastics as input material for the production of secondary raw materials by compliant recyclers should be made easier, quicker and cheaper. The classification of waste materials as hazardous should become harmonized in Europe. It should become impossible that one and the same category of waste is named green listed in one, amber listed in the next and yet even hazardous country or region within Europe.

- The primary focus of any WEEE plastics strategy should be directed to closing the "missing link" in the circular economy. This focus should on **demand creation** for Post-Consumer Recycled content in order to convert the linear supply chain into a circular material flow model.




This could take the form of:

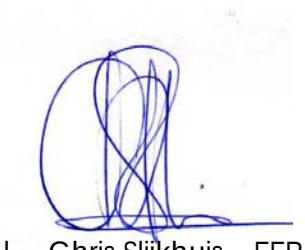
  - **Public Procurement** rules to enforce a change towards products that contain well-defined quantities of PCR content. This to cover durable product purchases, electrical and electronic goods, vehicles and construction materials (Example – EPEAT in USA federal law).
  - **Private sector** – develop positive, reward-based drivers to make product manufacturers specify and use recycled materials (especially plastics). With measured and proven levels of virgin-material substitution being encouraged by positive benefits accruing to those companies who make the changes. (e.g. increased R&D and/or capital investment tax allowances linked to higher levels of traceable PCR content in new products).
  - **Recycled plastics** could be exempted from VAT with the reason that these taxes have already been paid when the plastics were applied for the first time. Such a cost benefit will boost the application of recycled plastics, which often meet specifications of the industry, but because they are perceived as 'second hand' command lower prices than virgin materials.

One key area that needs to be recognized during the envisaged 'transition period' from a linear manufacturing economy to one that embodies circularity, is a pragmatic recognition that the huge urban mine of materials that is already in place

will contain some substances that are no longer seen as desirable in modern materials.

The legal situation that applies to the recycling industry with both waste and product legislations that apply (REACH, ROHS and others for products, POP, WSR, WFD, WEEE and others for waste) is extremely complex. For example the Waste Framework Directive does not allow any mixing of materials with the purpose to reduce the levels of these substances of concern.

The WEEE plastics strategy should therefore include proposals to define **realistic thresholds** for substances of concern and for a continuous exchange of views between the legislator and the recycling industry if changes are planned. In some cases, a solution can be found by creating exemptions and/or well defined transitory periods for certain thresholds for PCR materials.



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**Annex 1** – Assessment of quantity of plastics returned in the WEEE waste stream

| European Market | Mio MT | in % |
|---|---|---|
| Placed on Market (POM) EEE | 9,50 | |
| Officially reported collections/recycling | 3,30 | 35% |
| Informal collections/recycling | 3,20 | 34% |
| Exports (of which 1,3 Mio MT not documented) | 1,50 | 16% |
| "Scavenging" for parts | 0,75 | 8% |
| Losses (such as through waste bin) | 0,75 | 8% |

**WEEE Plastics some 1,2 Mio MT**

| Plastic Content in WEEE per category | |
|---|---|
| SDA | 30% |
| LDA | 15% |
| ICT | 20% |
| Tools | 10% |
| Temp Control Equipm. | 25% |
| Screens | 20% |

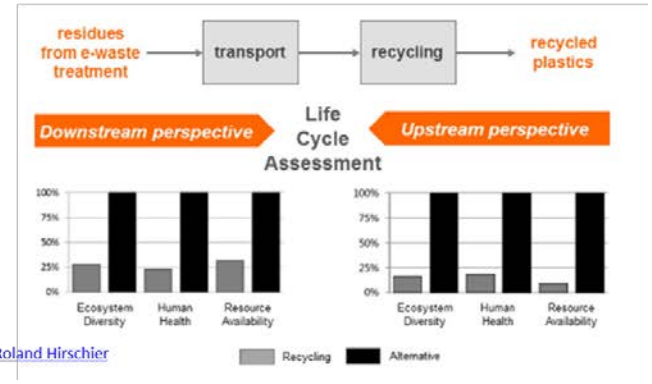
**Annex 2** – LCA's Recycling WEEE plastics vs. Production Virgin and vs. Incineration

1. **Incineration of WEEE plastic and**

**Recycling PCR WEEE plastics 4 times better than Municipal Solid Waste Incineration**

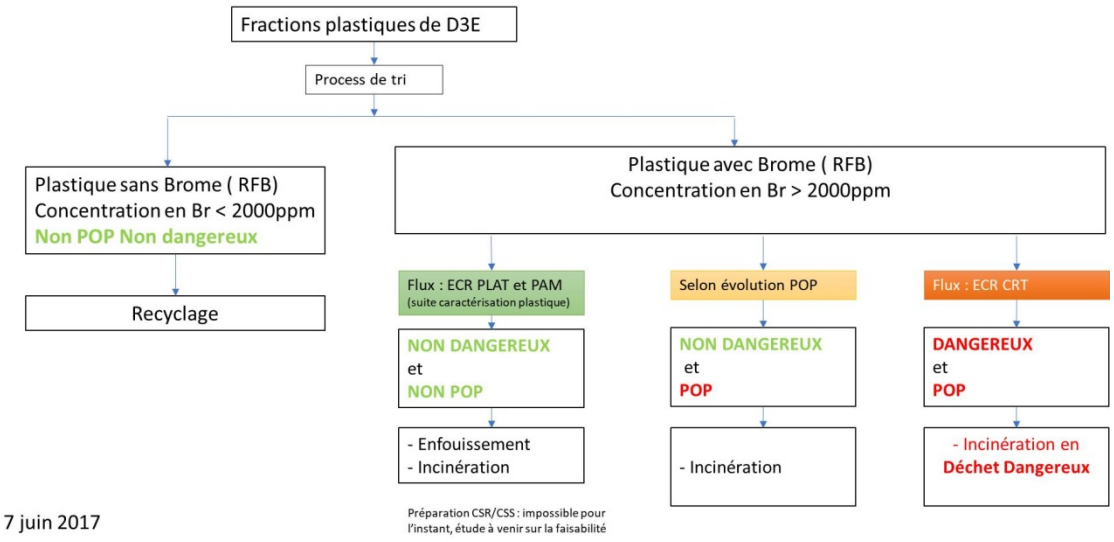
2. **Production virgin plastics**

**Recycling PCR WEEE recycling option 6-10 times better than producing virgin plastics**




Source: Science of the Total Environment 529 (2015) 158–167, Patrick Wäger, Roland Hirschier

**Annex 3** - French proposal to deal with WEEE plastics with BFR's

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