EEB position paper on maximising the contribution of the EU Industrial Emissions Directive to the circular economy

Background

In the context of escalating global environmental pressures, it has become increasingly clear that Europe's prevailing model of economic development – based on steadily growing resource use and pollutant emissions – cannot be sustained in the long term. Europe's ecological footprint is already double its land area and the EU is heavily reliant on imported resources. In 2011, the EU imported almost 60% of its fossil fuel and metal resources[1].

Resource inefficiency, unsustainable production and consumption patterns are leading to yet another big environmental pressure: the generation of large amounts of waste. In 2018, the total waste generated in the EU by all economic activities and households amounted to 2 337 million tonnes; the contribution of the manufacturing sector was 10,6% or 248 million tonnes of waste[2]. Depending on its management, waste may impact both human health and the environment through emissions to air, soil, surface water and groundwater. But it also represents a significant loss of material resources, as metals and other recyclables are needlessly disposed of.

In the **European Green Deal (EGD)**[3], it was recognised that achieving the EU's climate and environmental goals requires a new industrial policy based on the circular economy – an economic model where the value of products, materials and resources is maintained for as long as possible, and

[1] EEA, Environmental indicator report 2012 — Ecosystem resilience and resource efficiency in a green economy in Europe
[2] Waste statistics - Statistics Explained (europa.eu)
[3] A European Green Deal | European Commission (europa.eu)

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the amount of waste generated is minimised. This transition is essential in ensuring the EU's efforts to develop a sustainable, low carbon, resource efficient and competitive economy.

In the **EU Circular Economy Action Plan (CEAP)**[4], one of the main building blocks of the EGD, the European Commission committed to enable greater circularity in industry. Key actions in the CEAP include:

- assessing options for **further promoting circularity in industrial processes in the context of the review of the Industrial Emissions Directive (IED)**[5], including the **integration of circular economy practices in upcoming Best Available Techniques reference documents.**

- **facilitating industrial symbiosis** by developing an industry-led reporting and certification system and enabling the implementation of industrial symbiosis.

- **addressing the entire value chain of key products,** such as textiles (e.g., by providing incentives and support to circular materials and production process), food (e.g., by facilitating water reuse and efficiency, incl. in industrial processes), electrical and electronic equipment, batteries, vehicles, and plastics.

This paper focuses on the first of the CEAP key actions listed above: the opportunity presented by the review of the EU Industrial Emissions Directive.

EU Industrial Emissions Directive (IED): the main EU instrument regulating the environmental impact of industrial installations. **Around 50 000 industrial activities of most polluting and climate damaging sectors listed in Annex I of the IED are required to operate in accordance with a permit.** The permit conditions are based on the IED provisions, most notably the sector-specific EU BREFs.

EU 'Best Available Techniques Reference Documents' (BREFs)[2]: industry-specific documents which define the most effective techniques that industry can employ to minimise the environmental impact of their activities – the so-called **'Best Available Techniques', or BAT.** BATs are already per today's definition technically and economically viable. The **BAT conclusions** (included in the BREFs) are used as a **reference to set permit conditions** such as emission limit values or other environmental performance levels, which conditions industrial installations must comply with.

'Best Available Techniques – Associated Emission Levels' (BAT-AELs): the emission levels achieved by the application of BAT.

'Best Available Techniques – Associated Environmental Performance Levels' (BAT-AEPLs): the environmental performance levels achieved by the application of BAT.

[4] new_circular_economy_action_plan.pdf (europa.eu)
[5] The Industrial Emissions Directive - Environment - European Commission (europa.eu)

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Promoting circularity in industrial processes: the IED untapped potential

Why are we talking about an untapped potential?

Under the current framework of the IED, the main EU instrument regulating industrial installations, the focus has been on the prevention or abatement of pollutant emissions, while other impacts of industrial activity such as the deterioration of climate, and the depletion of our natural resources, have been largely dismissed.

In IED Recital 2, it is noted that *'(...) it is necessary to establish a general framework for the control of the main industrial activities, giving priority to intervention at source, ensuring prudent management of natural resources (...)'.* The aspect of resource efficiency has been mentioned in several instances in the provisions of the Directive (see the relevant provisions in Annex I), but without concrete accompanying requirements. A case in point is IED Article 12(1)(b), merely demanding *'the description of the raw and auxiliary materials, other substances and the energy used in or generated by the installation'* as part of the permit application, without referring to any resource efficiency targets to be achieved by the operator.

Another related challenge is how to define and develop such targets and requirements.
With regard to pollution abatement, the process is straightforward: the emission limit values (ELVs) included in the permit are based on the EU BREFs, their BAT conclusions and BAT-AEPLs linked to the performance of pollution abatement techniques. When it comes to resource efficiency, however, the situation is different: apart from the fact that there is no explicit obligation to include environmental performance levels (equivalent to pollution ELVs) in the permit, the BREFs themselves do not systematically include BAT and accompanying BAT-AEPLs linked to the performance of techniques boosting the resource efficiency of installations. This issue is further discussed under point 3.

The EEB asks for the necessary changes in the legal framework, including both the IED and the EU rules[6] concerning guidance on the drawing up of the BREFs (the so-called 'BREF guidance'), to ensure that the operating permits of installations across Europe include specific targets enabling us to move faster towards a circular economy.

[6] Commission Implementing Decision of 10 February 2012 laying down rules concerning guidance on the collection of data and on the drawing up of BAT reference documents and on their quality assurance referred to in Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (notified under document C(2012) 613)Text with EEA relevance (europa.eu)

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EEB proposal

1) Introduce a Circular Economy Plan as part of the IED permit:

We propose that a Circular Economy Plan (CEP), with clear, monitorable objectives, (preferably quantitative) targets and performance indicators, and a concrete timeline, is introduced as part of the permit.

What would a CEP include?

a) Value chain and inter-sectoral potentials considerations:

According to the CEAP, the EU industry is recognised to have a key role in transitioning to a circular economy, particularly regarding sustainable sourcing and cooperating across the value chain and across sectors.

The value-chain and intersectoral approach has the potential to further contribute to the achievement of the EU Green Deal's goals of zero pollution and carbon neutrality, broadening the focus from BAT that aim to limit the (direct) environmental impact of the installations themselves, to also techniques that will reduce the environmental impact elsewhere in the value chain.

- **Specific related elements to be considered by the operator when developing a CEP:**
  - the environmental footprint (notably the carbon, material, and water footprint) of the plant's feedstocks and related upstream processes
  - the potential for substitution of primary raw materials by secondary ones incl. through internal re-use or recycling of the residues of the process itself or via industrial symbiosis (IS) applications (the same applies for the use of water, energy, and other resources. IS is further discussed under point 2)
  - The environmental impacts associated with the management of the plant's waste (if this waste cannot be prevented as per the 'waste hierarchy'[7]) and related downstream processes: the conversion of the waste into new secondary raw materials, and their use (or the use of process by-products) to replace primary raw materials in the same or in other sectors incl. via IS applications (the same applies for the use of water, energy and other resources. More on IS under point 2)
  - The feasibility of implementing innovative approaches *'where the whole installation is strategically viewed for its potential to create a more circular business case: the installation looks at its whole value chain, or wider industrial landscape, moving from a focus on one product, with related waste streams, to producing a range of products and by-products optimising resource use and minimising waste generation*[8]*'.*

[7] The foundation of EU waste management is the five-step "waste hierarchy", established in the Waste Framework Directive. It establishes an order of preference for managing and disposing of waste: Waste Framework Directive (europa.eu)
[8] Making the Circular Economy Work - MiW-IMPEL Guidance for regulators on enabling innovations for the circular economy | European Circular Economy Stakeholder Platform (europa.eu)

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Country-specific example:
A bio refinery plant uses wood chippings to develop a variety of products. Previously, the wood chippings would have been used as fuel in a co-incineration installation. Through a chemical process, the lignine, cellulose and hemi-cellulose components are separated from the wood. The cellulose and hemi-celluslose (sugars) are transformed into new monomers and from there into plastics (PET). The lignine is used as fuel for the process.

Source: Making the Circular Economy Work - MiW-IMPEL Guidance for regulators on enabling innovations for the circular economy | European Circular Economy Stakeholder Platform (europa.eu)

To be noted that while promoting circular innovations, in any case and under any circumstances, the precautionary principle[9], and Article 13 of the EU Waste Framework Directive[10] on the protection of human health and the environment, shall be respected.

b) Operator's measures for the optimisation (or if needed the redesign) of the process in terms of resource efficiency (raw and auxiliary materials/feedstock, water, energy use).

Circular innovations at production facilities can specifically aim for the use of fewer resources per unit produced, and prevention or reduction of the waste produced by[11]:

- changing the production process so that the proportion of the input material included in the final product is increased;
- changing the production process so that production residues can be used elsewhere as by-product or as end-of-waste;
- reducing the use of hazardous substances, e.g. through substitution, and consequently the hazardousness of the residues that could be reused as by-products or end-of-waste.

The link with the EU BREFs

These measures shall be based on the Best Available Techniques included in the EU BREFs. This highlights the need for the BREFs to systematically include BAT promoting circularity (as per the key actions of the CEAP), incl. BAT-AEPLs.

Furthermore, the (quantitative) targets and indicators of the CEP shall be based on the BAT-AEPLs, and shall constitute binding requirements for the operator, in the exact same way that ELVs for polluting substances (based on the BAT-AEPLs of pollution abatement techniques) are included in the permit of every IED-regulated installation. The BAT-AEPLs are further discussed (under point 3).

[9] The precautionary principle (europa.eu)
[10] LexUriServ.do (europa.eu)
[11] Making the Circular Economy Work - MiW-IMPEL Guidance for regulators on enabling innovations for the circular economy | European Circular Economy Stakeholder Platform (europa.eu)

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Country-specific example:
IT-Veneto Region: a guideline to perform self-monitoring by waste treatment IED installations was published including the monitoring of resource efficiency, using indicators and reporting the trends of these in an annual report. This tool can help improve resource efficiency and best practices development, combined with benchmarks or targets (currently lacking) to ensure that actions are taken.

source: Making the Circular Economy Work - MiW-IMPEL Guidance for regulators on enabling innovations for the circular economy | European Circular Economy Stakeholder Platform (europa.eu)

Entering the digital age

The information and data to be obtained through the CEP shall be made publicly available through an appropriate digital infrastructure e.g., a centralised dedicated database or through the European Pollutant Release and Transfer Register (E-PRTR), in order to allow for timely access for more informed assessments and decisions on circular economy matters (serving policymakers, economic actors, academia as well as NGOs and the public):

- Disclosure of such information can, for example, help establish minimum performance requirements for certain processes and for environmental foot-printing of products (e.g., carbon foot-printing as part of product passport), and potentially benchmarks for installations (or even entire sectors) aiming for tracking progress and encouraging continuous improvement.
- The data could also feed into other databases, such as digital marketplaces to bring together demand and supply of approved by-products, end-of-waste or secondary raw materials.

2) Promote industrial symbiosis

Industrial Symbiosis (IS) is an innovative approach that brings together companies from all business sectors with the aim of improving cross-industry resource efficiency through the commercial trading of materials, energy and water, and sharing assets, logistics and expertise. IS allows for reuse, and thus more sustainable management of industrial waste, by-products and municipal waste.
IS has clear benefits for resource efficiency and in implementing a more circular economy, but there are only few measures at present that support a wider overall uptake.

In a 2020 systematic review[12] of implementation barriers of IS, frequently encountered barriers were **technical** (e.g. lack of necessary quality, quantity and continuity of material and energy flows to respond to a stable demand), **economic** (e.g. barriers related to investment such as different investment cycles, costs, and uncertainty e.g., uncertain profits, margins and risk) and **regulatory** (deficiencies of the regulatory framework, lacking support from public institutions), as well as **information** (limited information or accessibility on resource quality and quantity, collaboration methods or inefficient information flows, limited information disclosure due to confidentiality) and **cooperation issues** (cooperation issues may arise because of differences in the involved companies' strategies e.g., unwillingness and discontinuity regarding collaboration, conflicts of interest and objectives, or a lack of support tools e.g., information systems for communication, coordination and collaboration).

The IED review gives us the opportunity to address some of the issues mentioned above.

First, we welcome the CEAP commitment for the development of a reporting and certification system to enable IS applications.

However, we believe that additional measures are necessary such as the requirement for the operator to consider the feasibility of IS applications as part of its permit application (or update) process (through the CEP) as already mentioned under point 1 above.

It should be further noted, that in doing so, priority should be given to those IS applications with the highest gains in terms of circularity and environmental impact. The underlying reasoning is the following: in a number of cases, such as the case of steel slag, there are different applications possible which all have some level of positive environmental impact. However, in absolute numbers, there might be big differences amongst the different 'circular routes' chosen. Whereas some forms of IS are more linked to e.g., downcycling, other forms are linked to raw materials substitution. Hence, priority should be given to those forms of IS which generate the biggest GHG gains. Taking the example of steel slag, it can be used as clinker substitute in cement production (rather high CO2 impact), but also serve as soil fertilizer (more doubtful in terms of CO2 impact).

[12] Implementation Barriers of Industrial Symbiosis: A Systematic Review (2020) Proceedings of the 53rd Hawaii International Conference on System Sciences Microsoft Word - HICSS IS barriers_submission_camera ready 2.docx (hawaii.edu)

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The link with the EU BREFs

Furthermore, the BREFs currently contain limited such information needed for unlocking the potential for more resource efficient value chains.

The CEP measures should be based on dedicated BAT conclusions outlining IS applications, that should be systemically included in the BREFs. BAT conclusions are further discussed under point 3 below.

Country-specific example:
The recent UK 'industrial decarbonisation strategy' report highlights that good case examples of industrial symbiosis applications are rare, or hard to find, even if that sounds like a nice - catchy concept. The main barrier seems to be lack of knowledge and access to data on opportunities (which seem to be connected barriers) https://www.gov.uk/government/publications/industrial-decarbonisation-strategy
The Chapter 5 of this paper is where most information around this concept can be found and highlights the following: *'the UK already has considerable experience in this area, with the National Industrial Symbiosis Programme having operated between 2005 and 2013, however, there is significant scope to continue these efforts. Studies have shown the primary barriers to increased use of secondary materials by industry include a lack of knowledge, resourcing constraints, and access to data on potential symbiosis opportunities. We will determine how industrial symbiosis can be further supported to address these barriers and reduce industrial emissions arising from waste. Early-stage research on how a facilitated industrial symbiosis network could operate in the UK has already been commissioned.'*

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3) Best Available Techniques – Associated Environmental Performance Levels:

- **Make their binding nature explicit**
- **Define suitable metrics so that they serve as circularity drivers and indicators**

The environmental performance levels achieved by the application of BATs (referred to as 'Best Available Techniques – Associated Environmental Performance Levels' or BAT-AEPLs) may include pollutant emission levels, resource consumption levels or other relevant information (e.g., technique abatement efficiency).

The IED evaluation process revealed heterogeneous approaches between (and within) EU member states when implementing the BAT-AEPLs in permits. Some member states consider that BAT-AEPLs, except for BAT-AEPLs linked to emissions of polluting substances (also referred to as 'BAT-Associated Emission Levels' or BAT-AELs), do not have a binding nature, so they do not take them into account when setting permit conditions. The result is a lack of permit requirements e.g., resource efficiency-related requirements, especially quantitative ones.

This can be largely attributed to the lack of clear IED provisions, prescribing their inclusion in the permit: IED Article 14(1)(a) on permit conditions explicitly mentions only the inclusion of pollutant emission limit values: *'Those measures shall include at least the following: (a) emission limit values for polluting substances (...)'. Furthermore, IED Article 15(3)(a) demands that 'the competent authority shall set emission limit values that ensure that (...) emissions do not exceed the emission levels associated with the best available techniques as laid down in the decisions on BAT conclusions (...)'.*

We need to complement and clarify these provisions to make the binding nature of all types of BAT-AEPLs explicit (in the same way as with BAT-AELs) for new permits and permit reviews.

The implementation of BAT-AEPLs addressing energy use in particular, as well as BAT regarding the source(s) of energy, need to be explicitly and firmly demanded. Such requirements could be more effective in delivering on the carbon neutrality goal than GHG emission limit values alone.

Country-specific experience:

BAT-AEPLs in the Czech Republic and in Poland are almost never reflected in the permits and, when they do, they are rarely enforced by the authorities, unless if the operator adopts them voluntarily. The opinion of the authorities is that, if the IED does not explicitly render the BAT-AEPLs binding, it means that they do not have to be considered; or that they can be considered, but in case of non-compliance, the authority is not obliged to take any steps.

In Czech Republic they do not even include the key parameter of energy efficiency to the permits of large combustion plants (LCPs). This means that, not only it is not regulated, but it also cannot be compared with the BAT-AEELs. The Czech Ministry of Environment has issued a new guidance to address the issue, following NGOs intervention, stating that energy efficiency should be included in the permits when implementing the EU BREF for LCPs. The guidance has yet to be implemented, and information about energy efficiency of LCPs is still unavailable.

source: interview with Frank Bold lawyers (10/03/2022)

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Challenges related to the BAT-AEPLs derivation

Another issue to highlight here is the EU expert groups working methods[13] towards the derivation of BAT-AEPLs, except for BAT-AELs, during the elaboration of BREFs. In contrast with the process of deriving BAT-AELs, much less effort and resources are put into the collection of data and their subsequent analysis. The result is that such performance benchmarks are very often not included in the BAT conclusions, over concerns of the overall data quality and lack of contextual information, with the exception of energy-related BAT-AEPLs (so called BAT – Associated Energy Efficiency Levels or BAT-AEELs). The lack of BAT-AEPLs in BAT conclusions have been noted in the 2019 study 'IED contribution to the circular economy'[14]. This omission leaves competent authorities with the (voluntary) task to derive such benchmarks themselves if they wish to set such quantified permit conditions – a task that in most cases won't be undertaken, and if it is undertaken it may lead to an unlevel playing field for operators.

More resources need to be dedicated into the development of all types of BAT-AEPLs, to tackle the challenges linked to their derivation: (un)availability of data and expertise, cross-media effects, confidential business information considerations.

(Un)availability of data and expertise:

- We should adjust the BREF review process to facilitate the information exchange and the drafting of such BAT conclusions, e.g., by establishing dedicated subgroups on circular economy within the BREFs Technical Working Groups (TWGs), and ensure that circular economy experts are present in these TWGs. This is the case with the on-going review of the BREF on the ceramic manufacturing industry (CER BREF), where it was decided to set up a subgroup dedicated to issues of circularity and decarbonisation of ceramics production, and circular economy experts from academia were invited to share their insights.
- This concerns especially new areas such as the development of IS or value-chain BAT conclusions (see points 1 and 2 above), in collaboration with upstream and downstream partners. As noted in the 2018 study 'Best available techniques and the value chain perspective', for example, *'if a process uses a specific raw material, the BREF should consider the impacts of mining and obtaining this raw material, as well as opportunities to recover this material from waste and products at the end of their life cycle'.*
- The circular economy experts are expected to guide and advise the TWGs regarding the data to be collected, the contextual information needed for the data analysis, the evaluation of potential cross-media effects, and develop the right metrics so that the BAT-AEPLs can serve as circularity indicators and drivers (this is further discussed below). The experts may also advise on new monitoring and reporting requirements when the desirable data (for the indicators development) is not available to the operators themselves; so that they are available for the next BREF review.

[13] Working procedures to elaborate BREFs | Eippcb (europa.eu)

[14] IED Contribution to the circular economy -Service Request 13 under Framework Contract (ENV.C.4/FRA/2015/0042 - Final report for European Commission - DG Environment - 07.0201/2018/785987/SFRA/ENV.C.4)

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Confidential Business Information considerations:

Another challenge for the setting of environmental performance benchmarks, but in particular for deriving circular economy-related BAT-AEPLs, is that certain information (e.g. production levels, process or product specifications, or the resource use per unit produced) is considered by industry to be confidential business information (CBI).

The EEB proposal[15] regarding the handling of CBI boils down to the following elements:

- The establishment of a procedure for the validation of CBI claims linked to clear criteria:
    - What information can(not) be considered as CBI? We need to agree on certain principles such as that information 'relating to emissions into the environment' is by default considered as public information (overriding any CBI claim) as provided by the Aarhus framework[16].
    - We further suggest that CBI claims need to be validated by the European Commission's European Integrated Pollution Prevention and Control Bureau (EIPPCB)[17] and/or the EU member state concerned (first level controller), while the representative(s) of civil society organisations (CSOs) / environmental non-governmental organisations (NGOs) should act as (second level controller) on the validated CBI claims.
- The establishment of tracking system on CBI claims received, and validated or rejected.
- The establishment of a procedure for dealing with information accepted as CBI:
    - In this case, we suggest that this information is kept under the EIPPCB´s responsibility and not be distributed without prior consultation with the data holder.
    - Exception to the point above would be the necessary information exchange during the analysis of data and the decision-making process on the BAT-AEPLs. This exchange would only include those TWG members that are not actual competitors, such as member state and CSOs/NGOs representatives. With regard to the industry stakeholder group, a further suggestion would be the nomination of a third-party representative bound by a non-disclosure agreement.

Our suggestion is that, upon decision on the way forward, the adopted procedure is outlined under section 5.3 of the BREF review rules, to enable a consistent (among the different BREF reviews) handling of such data.

[15] 2021_01_20 Annex to CBI discussion.pdf (eipie.eu)
[16] Notably Art 4(4) point d) of the Aarhus Convention, transposed in Regulation (EC) 1049/2001, Art 4(4) and Regulation (EC) 1367/2006, Art 6
[17] Front page | Eippcb (europa.eu)

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Defining the appropriate metrics: BAT-AEPLs to serve as circularity drivers and indicators

When deriving circular economy-related BAT-AEPLs, it is important to think about the appropriate metrics. We propose to consider at the least the following:

- Ratio input of raw materials / output (resource efficiency metric)
- The environmental footprint of the process inputs (resources incl. raw materials, energy) per output, at least the carbon and material footprint of input material
- Minimum use of recycled / secondary raw material per output
- Waste generation per output and fate of generated waste

The Ellen MacArthur Foundation published (2015) a report and supporting toolkit on Circularity Indicators[18] with the aim to provide a framework for determining how effective a company is in making the transition from 'linear' to 'circular' models.
The Material Circularity Indicator proposed in this work focuses on the following product characteristics:
• the mass of virgin raw material used in manufacture,
• the mass of unrecoverable waste that is attributed to the product, and
• a utility factor that accounts for the length and intensity of the product's use.
In the 2018 study 'IED Contribution to the circular economy'[19] the authors suggest that such an indicator could be used as a starting point for a more bespoke circular economy indicator for the IED sectors to monitor their progress.

We should also not forget that the data obtained (during the BREF process) may further be used for the purpose of delivering on the EU's strategy on Sustainable Products[20], notably by providing input for the products' environmental foot-printing.

Both aspects are to be considered when defining the metrics of the BAT-AEPLs; and the concept shall already be recognised in the revised IED (e.g., in Art 14a, 15). The next step would be the standardisation of this process (of defining meaningful BAT-AEPLs' metrics) in the BREF guidance (based on inputs from the IED Forum).

For more information, please contact: christian.schaible@eeb.org; aliki.kriekouki@eeb.org

[18] Measuring a circular economy | Ellen MacArthur Foundation
[19] IED Contribution to the circular economy -Service Request 13 under Framework Contract (ENV.C.4/FRA/2015/0042 - Final report for European Commission - DG Environment - 07.0201/2018/785987/SFRA/ENV.C.4)
[20] Sustainable product policy & ecodesign (europa.eu), A proposal for an updated sustainable products initiative was adopted as part of a circular economy package on 30 March 2022.

ANNEX I

Current provisions in the IED:

- Recital 2: In order to prevent, reduce and as far as possible eliminate pollution arising from industrial activities in compliance with the 'polluter pays' principle and the principle of pollution prevention, it is necessary to establish a general framework for the control of the main industrial activities, giving priority to intervention at source, ensuring prudent management of natural resources and taking into account, when necessary, the economic situation and specific local characteristics of the place in which the industrial activity is taking place.
- Article 12-1(b): A permit application includes a description of (b) the raw and auxiliary materials, other substances and the energy used in or generated by the installation.
- Article 13-2(a) BAT reference documents and exchange of information: The exchange of information shall, in particular, address the following: (a) the performance of installations and techniques in terms of emissions, expressed as short- and long-term averages, where appropriate, and the associated reference conditions, consumption and nature of raw materials, water consumption, use of energy and generation of waste
- Annex III, Criteria for determining best available techniques: (9) the consumption and nature of raw materials (including water) used in the process.

Annex II

A. Current provisions in the BREF guidance:

It is clear from the **BREF guidance**[21] that the information exchange and the BAT conclusions shall address resource use *and* waste generation. The environmental performance and operational data sought during the elaboration/review of a BREF include:

- **raw and auxiliary materials/feedstock use:**
  - quantity (inc. secondary/recycled material) and composition;
  - indication of the techniques used to maximise the efficient use of resources
- **water use:**
  - information about the origin of the water used and about the receiving water;
  - whether treatment of supply waters is carried out on site and an indication of the type of treatment performed (e.g. desalination, filtration);
  - indication of the techniques used to reduce the consumption of water;
  - indication whether water is reused and if so how much
- **energy use:**
  - type and quantity of fuel/energy used (e.g. fuel oil, liquefied petroleum gas, natural gas, steam, electricity, waste, biogas, biofuel or biomass used as fuel);
  - fuel/energy consumption (per type)
- **residues/waste:**
  - type(s) and quantities of residues/waste generated;
  - characteristics of the residues/waste generated (e.g. metals content, average dry solid content);
  - the specific weight of organic and inorganic residues/waste disposed of and the specific weight which is recycled/ reused internally or externally;
  - indication of the techniques used to prevent the generation of residues/waste or, when this is not practicable, to reduce the generation of residues/waste.

Furthermore, it is clearly noted in the **BREF guidance** that the BAT used to enhance resource efficiency and to prevent/minimise the generation of waste may be **accompanied by BAT-AEPLs** leading to clear and concrete BAT conclusions. However, as aforementioned, and shown in the 2019 study 'IED contribution to the circular economy'[22], these issues have been inadequately addressed in BREFs reviews so far.

[21] Commission Implementing Decision of 10 February 2012 laying down rules concerning guidance on the collection of data and on the drawing up of BAT reference documents and on their quality assurance referred to in Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (notified under document C(2012) 613)Text with EEA relevance (europa.eu)

[22] IED Contribution to the circular economy -Service Request 13 under Framework Contract (ENV.C.4/FRA/2015/0042 - Final report for European Commission - DG Environment - 07.0201/2018/785987/SFRA/ENV.C.4)

● Rue des Deux Églises 14-16, 1000 Brussels, Belgium ● ☏ +32 228 91090 ● eeb@eeb.org ● www.eeb.org
International non-profit association ● Association internationale sans but lucratif (AISBL) ● EC register for interest representatives:
ID number: 06798511314-27 ● BCE ID number: 0415.814.848 ● RPM Tribunal de l'entreprise francophone de Bruxelles

B. The example of the Waste Treatment BREF (WT BREF) and its review

In the original WT BREF (2006)[23] there were dedicated **BAT conclusions on utilities and raw material management** covering energy consumption reporting, setting up energy efficiency plans with performance indicators, internal benchmarking on raw materials consumption and exploring options for the use of waste as raw material for the treatment of other wastes. These BAT conclusions were mainly focusing on outlining 'good management practices' without including concrete elements and targets that the operator shall aim to achieve and the competent authority to verify. Even in the case of the more complete BAT conclusions addressing water consumption/reuse where specific techniques were detailed, the absence of qualitative and quantitative targets remained – **it is highly questionable what a permit writer could get out of this and how these requirements can be enforced.**

The same apply for BAT conclusions linked to **residues management**: BAT included the implementation of a management plan, internal benchmarking and a monitoring inventory, as well as re-using of the residues. However, these requirements were drafted in a very generic manner. Specific conclusions, such as reusing the vacuum distillation residues from the re-refining of waste oils as asphalt products (BAT 102 of 2006 WT BREF), are rare. Moreover, no concrete requirements on the destruction/removal efficiency of hazardous substances have been set.

Provisions that would enable the waste industry (even at the end of the chain) to fulfil its **role in the transition to the circular economy** are required. For example, BAT conclusions addressing the outputs quality (without necessarily prescribing specific criteria/end-of-waste criteria for all potential end uses, if addressed by legislation or standards) and industrial symbiosis applications. The only BAT that was addressing this in the original WT BREF was linked to the production of waste fuels and the requirement to have a quality assurance system in place to guarantee the desired fuel characteristics (BAT 118 of 2006 WT BREF).

In the revised WT BREF (2018), despite increased awareness around these issues, there is no significant improvement of the shortcomings outlined above. Furthermore, BAT conclusions supposed to improve waste treatment efficiency, such as techniques improving the knowledge on waste in (pre-acceptance and monitoring procedures), on waste out and on having traceability systems in place, have regrettable been weakened. A BAT conclusion on developing an approach for specifically improving waste treatment efficiency using reporting indicators and a monitoring system has been fully deleted.

[23] Waste Treatment | Eippcb (europa.eu)

● Rue des Deux Églises 14-16, 1000 Brussels, Belgium ● ☏ +32 228 91090 ● eeb@eeb.org ● www.eeb.org