



European Standardization Organizations

Welcome to this webinar

European standards addressing material efficiency aspects

*We start at
10:00 CET*

Your webinar moderators



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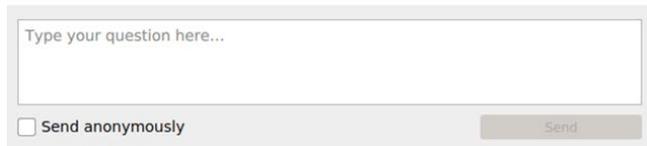


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- ▶ Talk about us on Twitter [#training4standards](#) [@Standards4EU](#)

Your speakers today



Mr. Simon Froggatt

Chairman of CEN-CLC JTC 10

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Convenor CEN-CLC/JTC 10 WG2 & WG5

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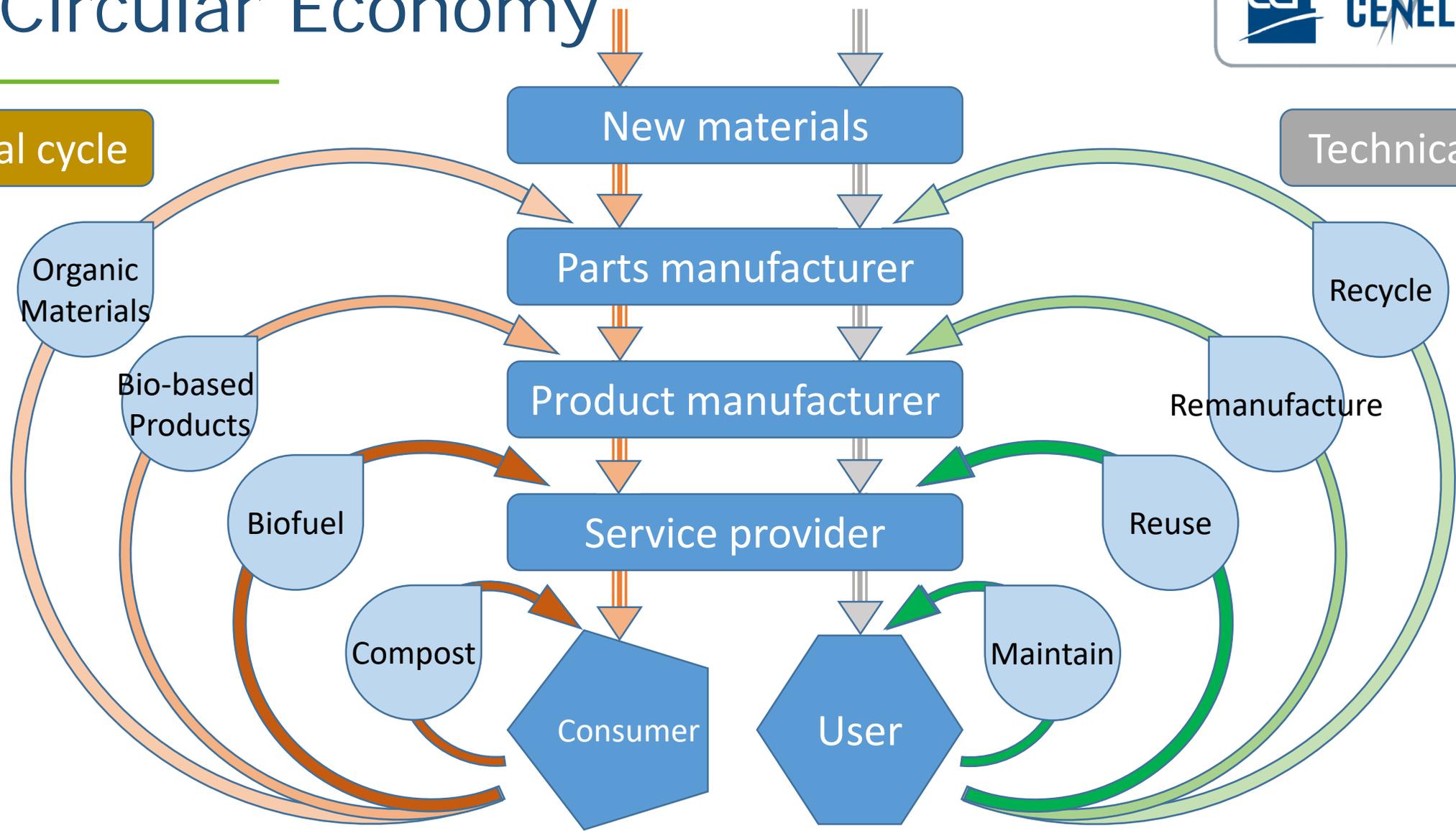


- ▶ Circular Economy and Material Efficiency
- ▶ JTC10 and the EN 4555X Standardization Request
- ▶ JTC10 structure and work to date
- ▶ EN 4555X series in detail

The Circular Economy

Biological cycle

Technical cycle

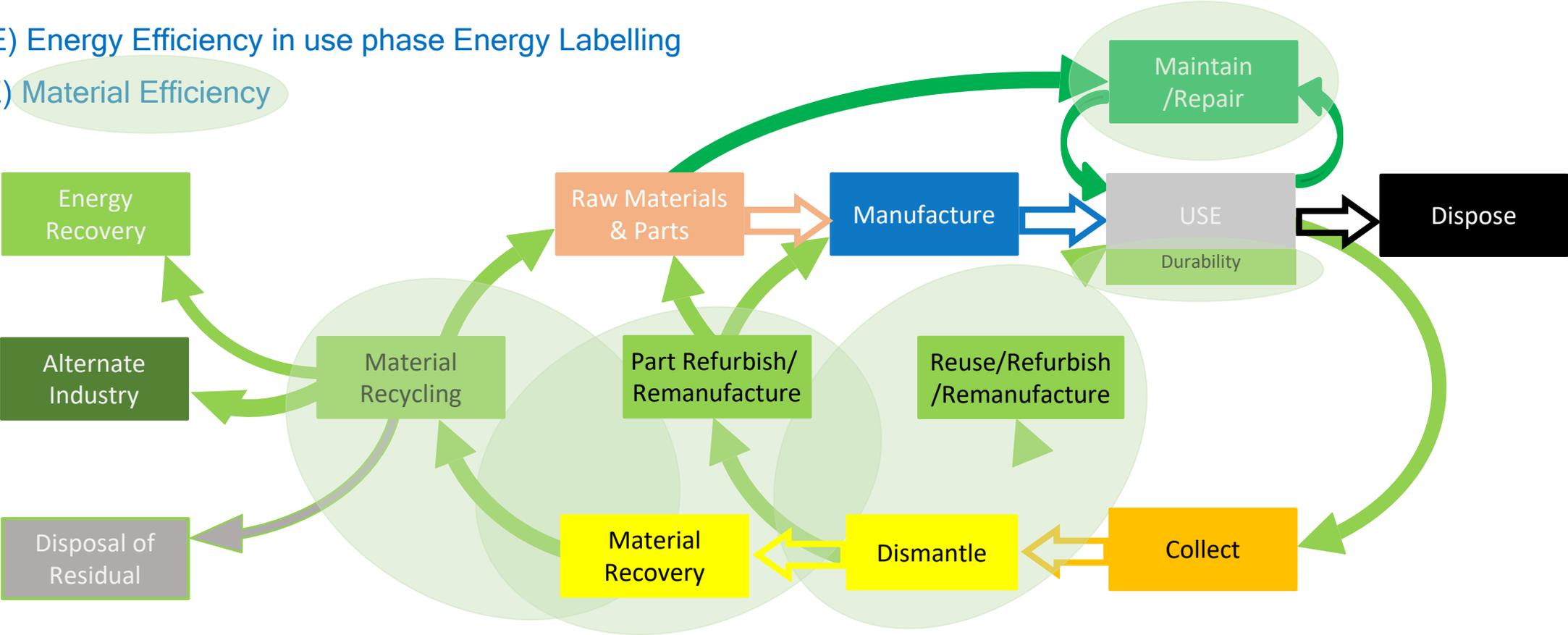


JTC10 – Technical cycle of Circular Economy

- a move towards a Circular Economy.

(E-E) Energy Efficiency in use phase Energy Labelling

(ME) Material Efficiency



Circular Economy and Material Efficiency Internationally, at European level and nationally.

- ISO/TC 323 – Circular Economy
- New Circular Economy Action Plan
- French CE legislation...
- Etc...

Widening of Ecodesign Directive beyond energy-related products.

Considering establishing sustainability principles to regulate the following aspects;

- reducing carbon and environmental footprints;
- addressing the presence of hazardous chemicals in products;
- increasing products energy and resource efficiency;
- restricting single-use and countering premature obsolescence;

Considering establishing sustainability principles to regulate the following aspects;

- incentivising product-as-a-service or other models where producers keep the ownership of the product or the responsibility for its performance throughout its lifecycle;
- mobilising the potential of digitalization of product information, including solutions such as digital passports, tagging and watermarks;
- rewarding products based on their different sustainability performance, including by linking high performance levels to incentives.

Considering establishing sustainability principles to regulate the following aspects;

- introducing a ban on the destruction of unsold durable goods;
- improving product **durability, reusability, upgradeability and reparability**;
- increasing **recycled content** in products, while ensuring their performance and safety;
- enabling **remanufacturing** and high-quality **recycling**;

An EU action plan for the Circular Economy (2015)

“...To date, ecodesign requirements have mainly targeted energy efficiency; in the future, issues such as reparability, durability, upgradability, recyclability, or the identification of certain materials or substances will be systematically examined. ...”

“...Ecodesign can also have an important contribution in creating a more circular economy. While **ecodesign measures have so far mainly focused on energy efficiency, ..., the Commission undertook to also explore... durability, reparability, upgradeability, design for disassembly, information, and ease of reuse and recycling...**”

COM (2017) 33 final

Revised **Circular Economy Package (CEP)** published 2.12.15

M/543 “**Material Efficiency**” supporting **CEP** published 17.12.15

JTC10 formed by CEN-CENELEC to address M/543. September 2016

Six Working Groups (WG) formed to cover 10 topics (2016-2020)

- Originally 21 topics, commonalities were identified and topics combined.

9 deliverables – **horizontal ErP Lot-wide guidance documents!**

Three top level European Commission aims;

Extending product lifetime

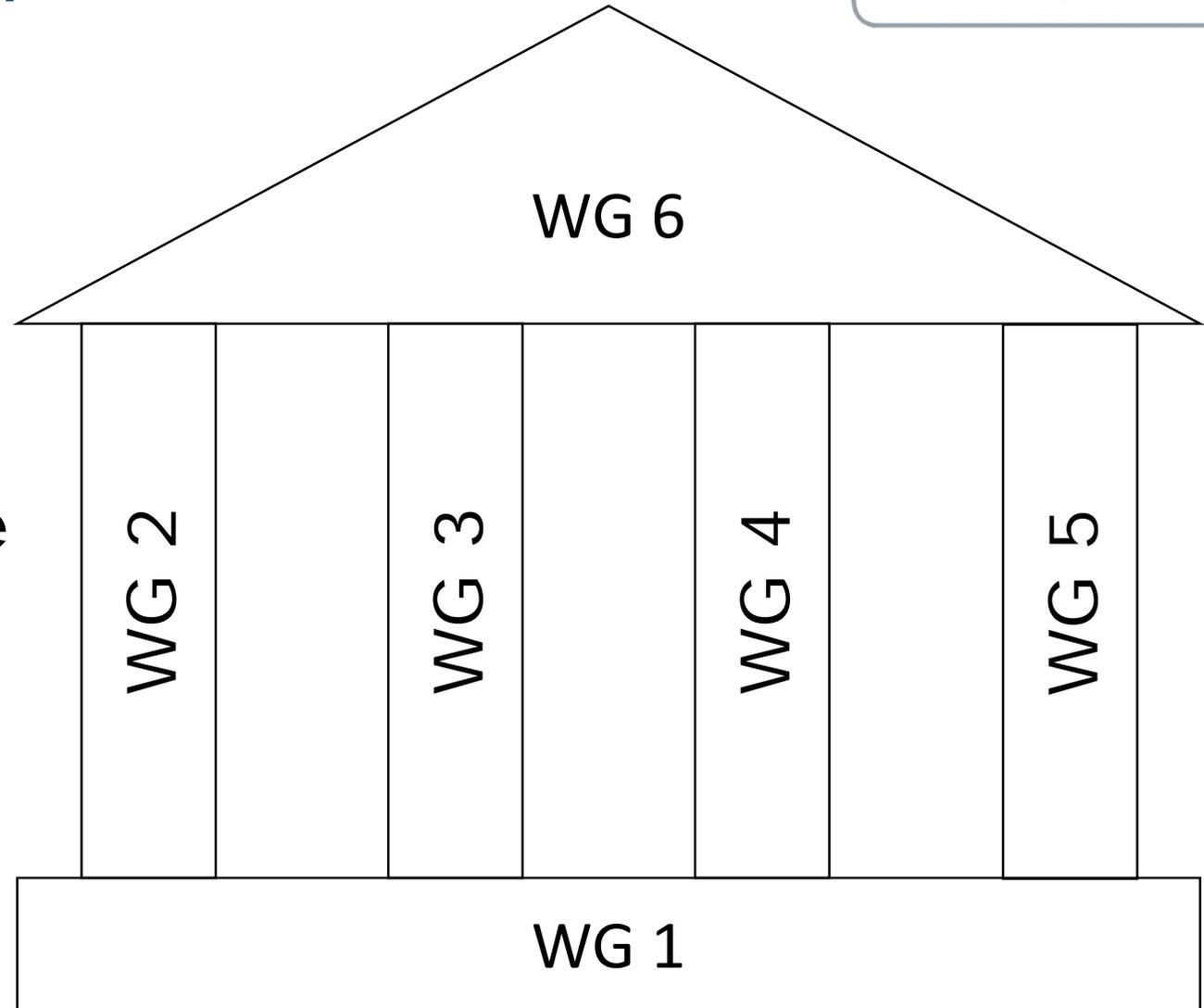
Ability to re-use components or recycle materials from products at end-of-life.

Use of re-used components and/or recycled materials in products

JTC10 Working Groups

1. Terminology
2. Durability
3. Repair, reuse, upgrade
4. Remanufacture
5. Recycling
6. Communication

[Their different scopes](#)



- EN45552 Durability – *published 2020*
- EN45553 Ability to remanufacture ErP – *published 2020*
- EN45554 Ability to Repair, Reuse, Upgrade – *published 2020*
- EN45555 Recyclability, Recoverability – *published 2019*
- EN45556 Reused Components – *published 2019*
- EN45557 Recycled Materials – *published 2020*
- EN45558 Critical Raw Materials – *published 2019*
- EN45559 Information – *published 2019*

[Read more.](#)

One deliverable: CENELEC lead

TR 45550

“Terms and Definitions related to material efficiency”

Final document is a compilation of definitions from published EN’s (Approved FprEN’s)

Positive vote, to be published.

- Eco-design legislation Framework directive Directive 2009/125/EC
- Implementing Regulations;
 - Air conditioners & comfort fans; Air heating & cooling products; Ventilation units
 - Computers; External power supplies; Power transformers
 - Domestic cooking appliances; Household dishwashers; Household tumble driers
 - Household washing machines; Vacuum cleaners
 - Professional refrigerated storage cabinets; Refrigerators & freezers
 - Electric motors; Water pump; Circulators; Industrial fans
 - Lighting products in the domestic & tertiary sectors
 - Local space heaters; Heaters & water heaters; Solid fuel boilers
 - Televisions; Simple set-top boxes
 - Standby and off mode electric power consumption of household, office equipment & network standby

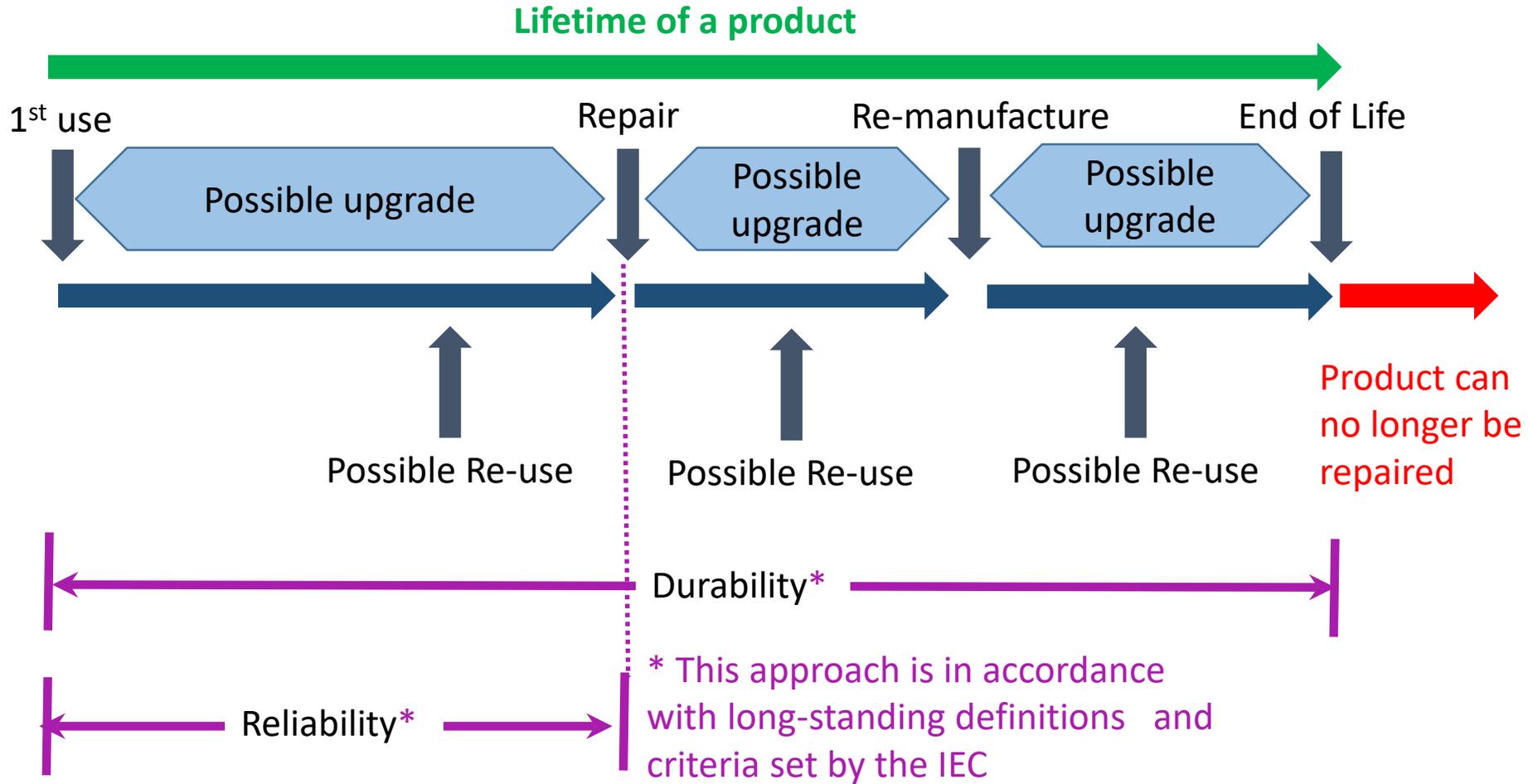
The individual documents in more detail...

“General method for the assessment of the durability of Energy-related Products (ErP)”

Concept: Durability

- a feature of the product to retain the **serviceability** until a marginal condition is approached, with a predetermined system of **maintenance and repair** being used (ISO 11994)
- ability to **perform as required**, under given conditions of use and **maintenance**, until the end of useful life (IEV 192-01-21)
- ability of an item to **perform a required function** under given conditions of use and **maintenance**, until a **limiting state** is reached (ISO 14708-5)

JTC10 – EN 45552 “Durability”



How to use EN 45552;

Key concept: **functions define products**

Environmental/Operating conditions:

- Temperature
- Humidity
- Use-profile
- Maintenance
- Repair
- Refurbishment

↓ **input**
EN 45552

How to use EN 45552;

EN 45552

⇓ **output**

Priority functions/parts:

- Reliability expressed in time/cycles/distance etc.
- Durability expressed in time/cycles/distance etc.

How to use EN 45552;

Product/product group standards need to address the following gaps;

- Define product/product group priority functions/parts.
- Define environmental/operating conditions.
- Describe test methods to assess priority part reliability.
- Define “Limiting states” → Potential “End-of-Life” states

“General method for assessing the ability of an ErP to be remanufactured ”

How to use EN 45553;
Assessment of relevant
product properties:

Product Attribute	Remanufacturing Process Step						
	Inspection	Disassembly	Cleaning	Reprocessing	Reassembly	Testing	Storage
Ease of locating access points and fasteners	X	X			X	X	
Ease of identification and verification	X					X	X
Ease of access	X	X	X	X	X	X	
Ease of disassembly / reassembly		X	X	X	X		X
Wear resistance	X	X	X	X	X	X	X

Product/product group standards need to address the following gaps;

- Identify product specific attributes for the product/product group.
- Assessment/Scoring of relevant parameters need to be product specific.

“General methods for the assessment of the ability to repair, reuse and upgrade energy-related products”

Concept: Repair

Priority Parts needs to be identified using the assessment procedure outlined in EN 45552

Toolbox approach; Product-related criteria
Service-related criteria

Concept: Repair

Criteria considered include:

- Disassembly sequence
- Fasteners
- Tools
- Working environment
- Skill level
- Diagnostic support and interface
- Spare parts availability
- Information availability

Concept: Repair

Example tools:

Table A.2 — Process classification by necessary tools

Category Description	Class
Feasible with: <ul style="list-style-type: none">— the use of no tool, or— a tool or set of tools that is supplied with the product or spare part, or— basic tools as listed in Table A.3	A
Feasible with product group specific tools	B
Feasible with other commercially available tools	C
Feasible with proprietary tools	D
Not feasible with any existing tool	E

Product/product group standards need to address the following;

- Which priority parts to consider?
- Which criteria are relevant?
- Are all classes in a criterion relevant?

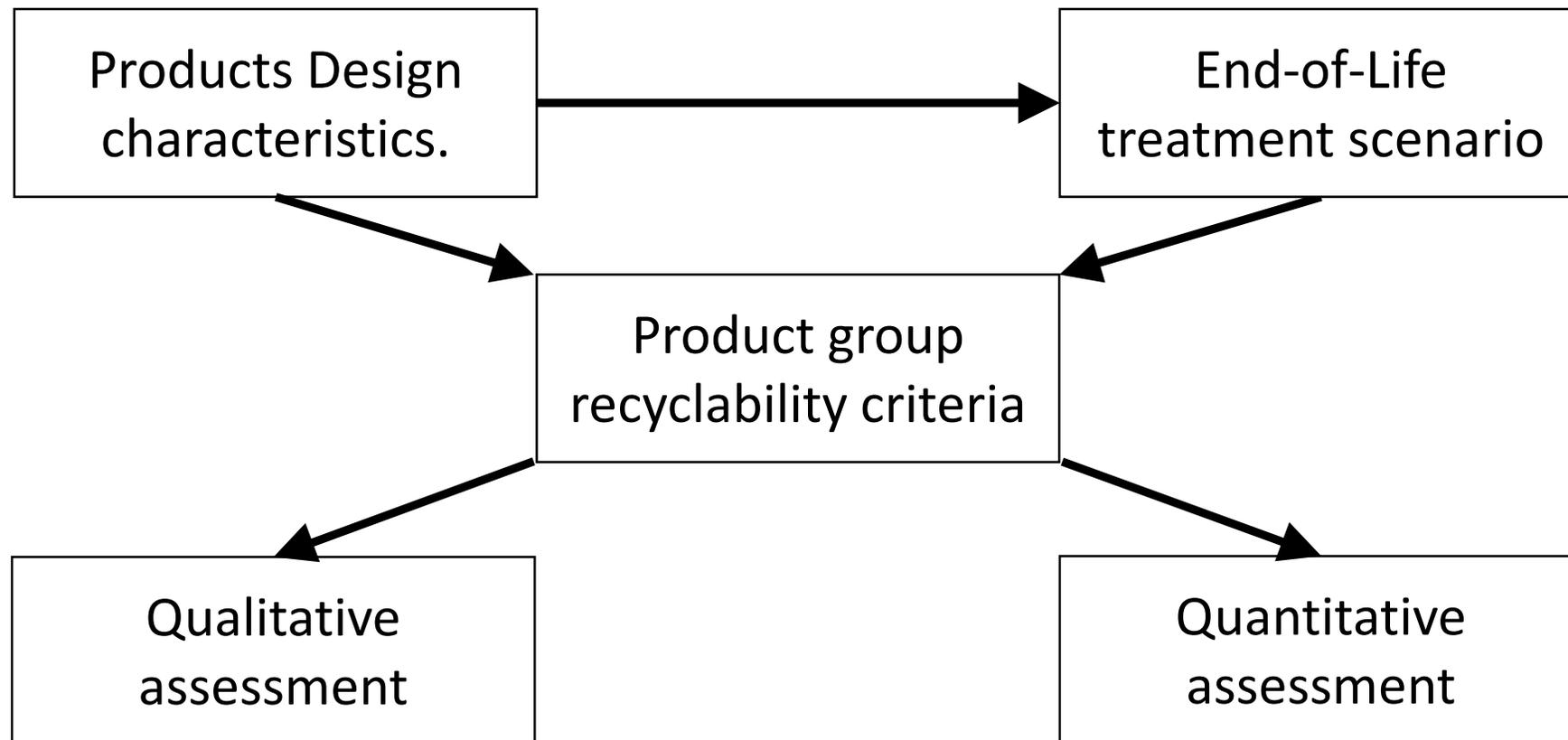
“General methods for assessing the recyclability and recoverability of energy-related products”

Concept Recyclability:

Toolbox / Multi-stage approach

1. Qualitative
 2. Quantitative
- Simplified assessment:
Does not include efficiencies of different treatment steps.
 - Detailed assessment:
Takes efficiencies of different treatment steps into account.

How to use EN 45555;



How to use EN 45555;

Product/product group standards need to address the following gaps;

- What does the End-of-Life scenario look like?
 - Relevant (product) design characteristics?
 - Qualitative or quantitative scenario?
- Product/product group standards need to be created.

“General method for assessing the proportion of reused components in energy-related products”

Calculations in EN 45556;

Mass based:

$$R_{co} = \left(\frac{\sum_i m_{rei}}{m_{tot}} \right) \times 100\%$$

Number of components based:

$$R_{co} = \left(\frac{\sum_i n_{rei}}{n_{tot}} \right) \times 100\%$$

How to use EN 45556;

Product/product group standards need to address the following gaps;

- Calculation method needs to be chosen.
- Product/product group standards need to be created.

“General method for assessing the proportion of recycled material content in energy-related products”

Terms;

3.1.1.3 pre-consumer material

material diverted from the waste generated during a manufacturing process excluding reutilization of materials such as rework, regrind or scrap generated in a process and being reincorporated in the same process that generated it

Note 1 to entry: Same process means the same manufacturing operation for the same type of product in the same or different physical location.

“General method for assessing the proportion of recycled material content in energy-related products”

Terms;

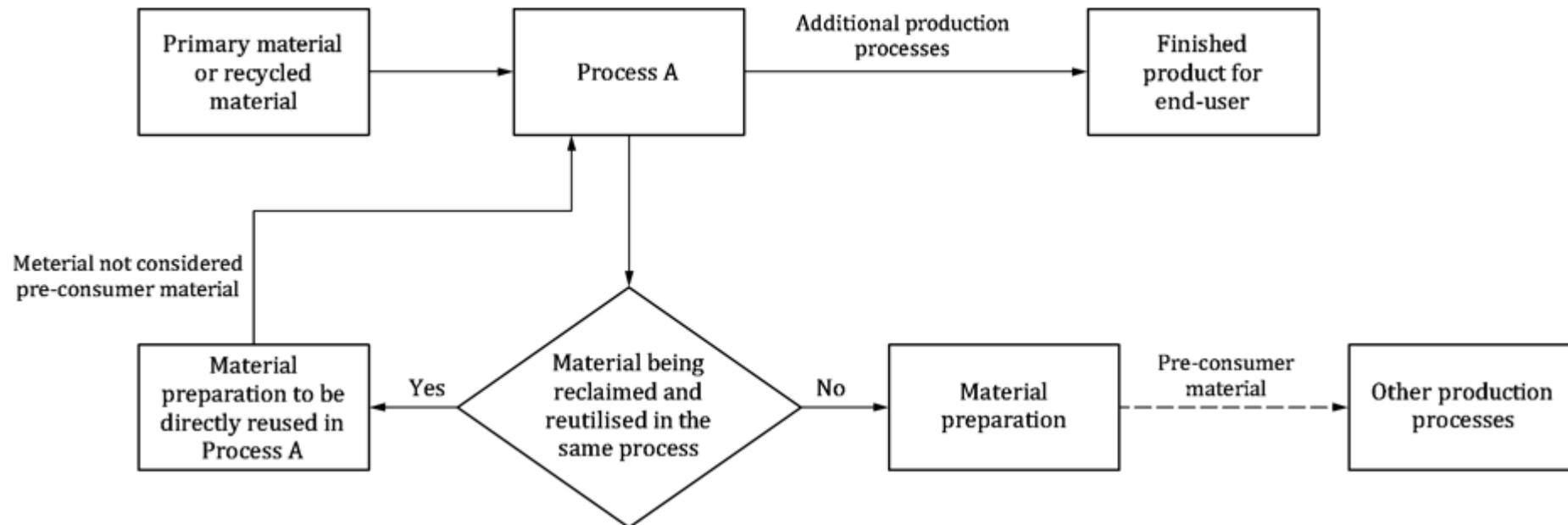
3.1.1.4 post-consumer material

material recovered from the waste generated by households or by commercial, industrial and institutional facilities in their role as end-users of a finished product

Note 1 to entry: This includes returns of products, or parts thereof, from the distribution of finished products for end-users..

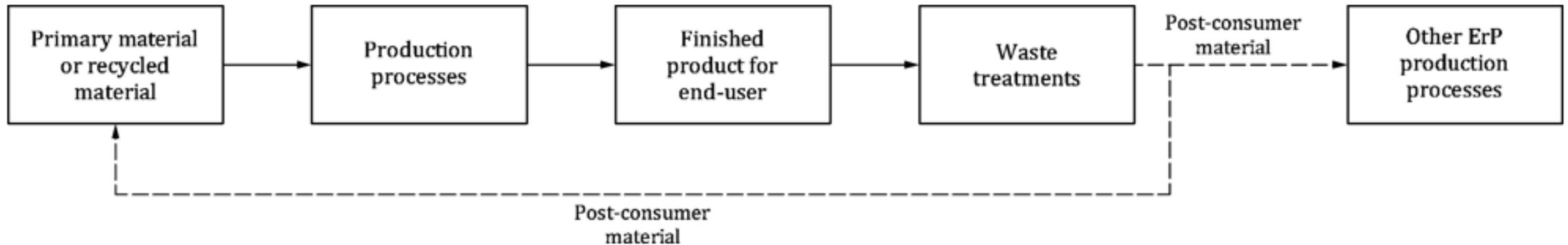
Concept Recycled content: “pre-consumer material”

When does recycled content count as recycled content?



Concept Recycled content:
“post-consumer material”;

When does recycled content count as recycled content?



Pre-consumer material calculation in EN 45557;

$$R_{pre} = \left(\frac{\sum_k m_{tot,k} \times r_{pre,k}}{\sum_k m_{tot,k}} \right) \times 100\%$$

Where

- R_{pre} is the pre-consumer materials content of the part/parts or the ErP;
- $r_{pre,k}$ is the pre-consumer materials content of the k^{th} material or part expressed as a percentage;
- $m_{tot,k}$ is the mass of the k^{th} material or part;

Product/product group standards need to address the following gaps;

- Definition of “same process”
- Material clustering & unspecified material (clause 5.2)
- Traceability/Chain of Custody

“General method to declare the use of critical raw materials (CRM) in energy-related products”

Concept declaration of CRM;

- Material declaration following EN IEC 62474.
- Regulated / non-regulated CRMs.
- Location of CRM in the product.
- Amount of substance/substance group.
- Threshold amounts with declaration requirement?
- CRM list defined and updated regularly by EC.

Product/product group standards need to address the following;

- No gaps – considered to be directly applicable.

However reporting thresholds for Critical Raw Materials need to be defined by either product standard or legislation (if non-voluntary).

“Methods for providing information relating to material efficiency aspects of energy-related products”

Concept Information;

- Provide consistent Material Efficiency information across EN 4555X group of standards.
- Communication strategy:
 - Considering intended audience and data sensitivity
- Means of communication/media.
- Communication and possible aspect aggregation.

Product/product group standards need to address the following;

- No gaps!

Directly applicable dependent on EN 4555x documents.

- Matrix (material efficiency aspects vs audience) could be set by legislation.

- ▶ Product/Product group TCs need to produce relevant European standards (ENs).
- ▶ JTC10 and the Working Groups will answer Questions.
- ▶ Help/Assistance is on offer from JTC10 and the specific WG.
- ▶ Feedback on the EN 4555X series is welcome.
- ▶ Any question related to the Webinar will be answered on the website after the meeting if they are not addressed now.
- ▶ If there are a significant number of areas needing clarification a follow-up Webinar will be considered.

Question time

▶ Use the Q&A panel to submit your questions



Type your question here...

Send anonymously

Send



European Standardization Organizations

Thank you for your participation!

Next webinar

2020-12-10 - [Annual training session for newly appointed CEN & CENELEC Technical Body Officers](#)