HIGHLIGHTS IN CIRCULAR ECONOMY STANDARDIZATION

CEN-CLC SABE CE-TG WORKSHOP 1 – 25TH FEB 2022 - VIRTUAL

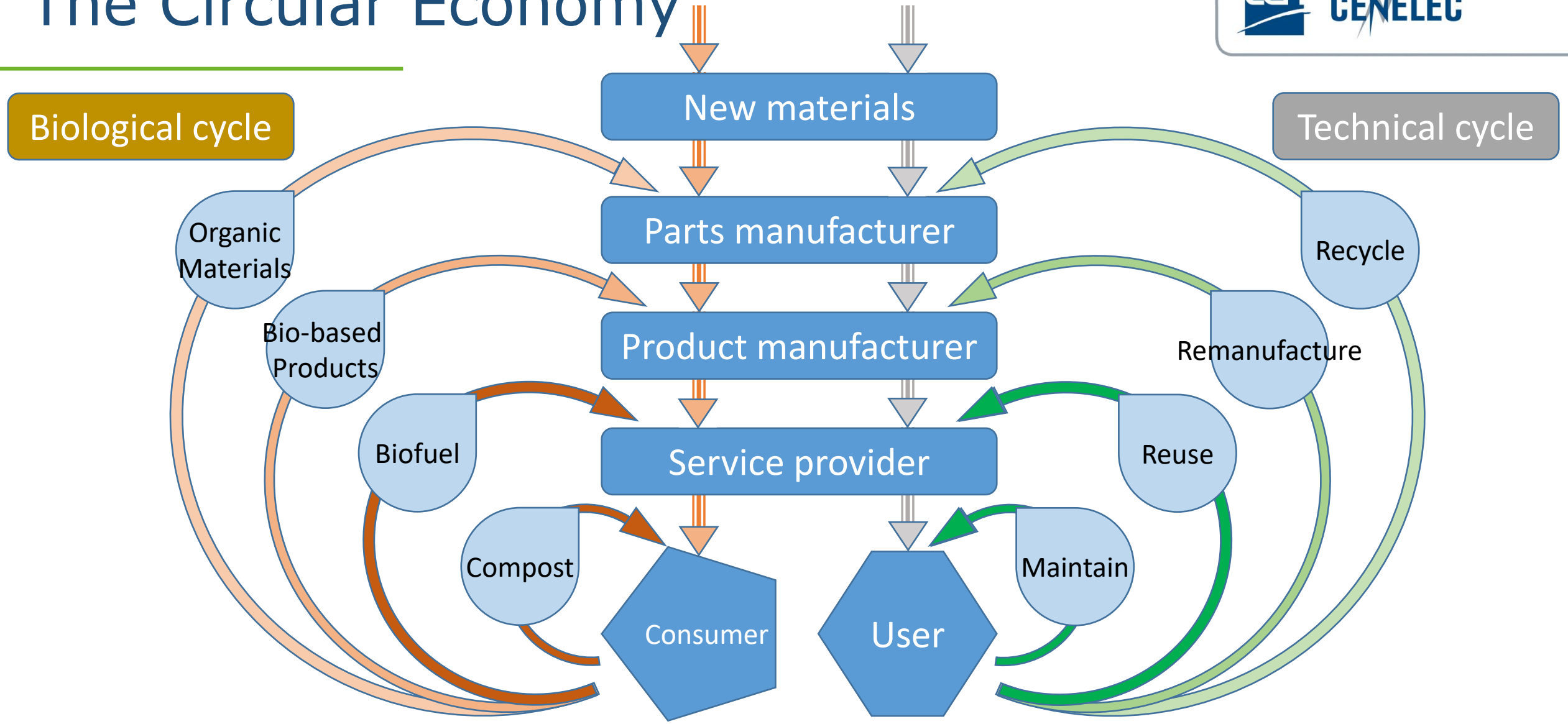
CEN-CENELEC JTC 10 – MATERIAL EFFICIENCY

SIMON FROGGATT, CHAIR OF JTC10

Content

- Circular Economy and Material Efficiency
- JTC10 history and the M/543 Standardization Request
- JTC10 structure and work to date
- JTC10 work in progress
- JTC10 best practice
- EN 4555X series over view.

The Circular Economy



New Circular Economy Action Plan

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;

New Circular Economy Action Plan

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**;

JTC10 brief history

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 – **6 horizontal ErP Lot-wide guidance documents**!
- Seventh WG added in 2021/22 to cover Circular Ready Design

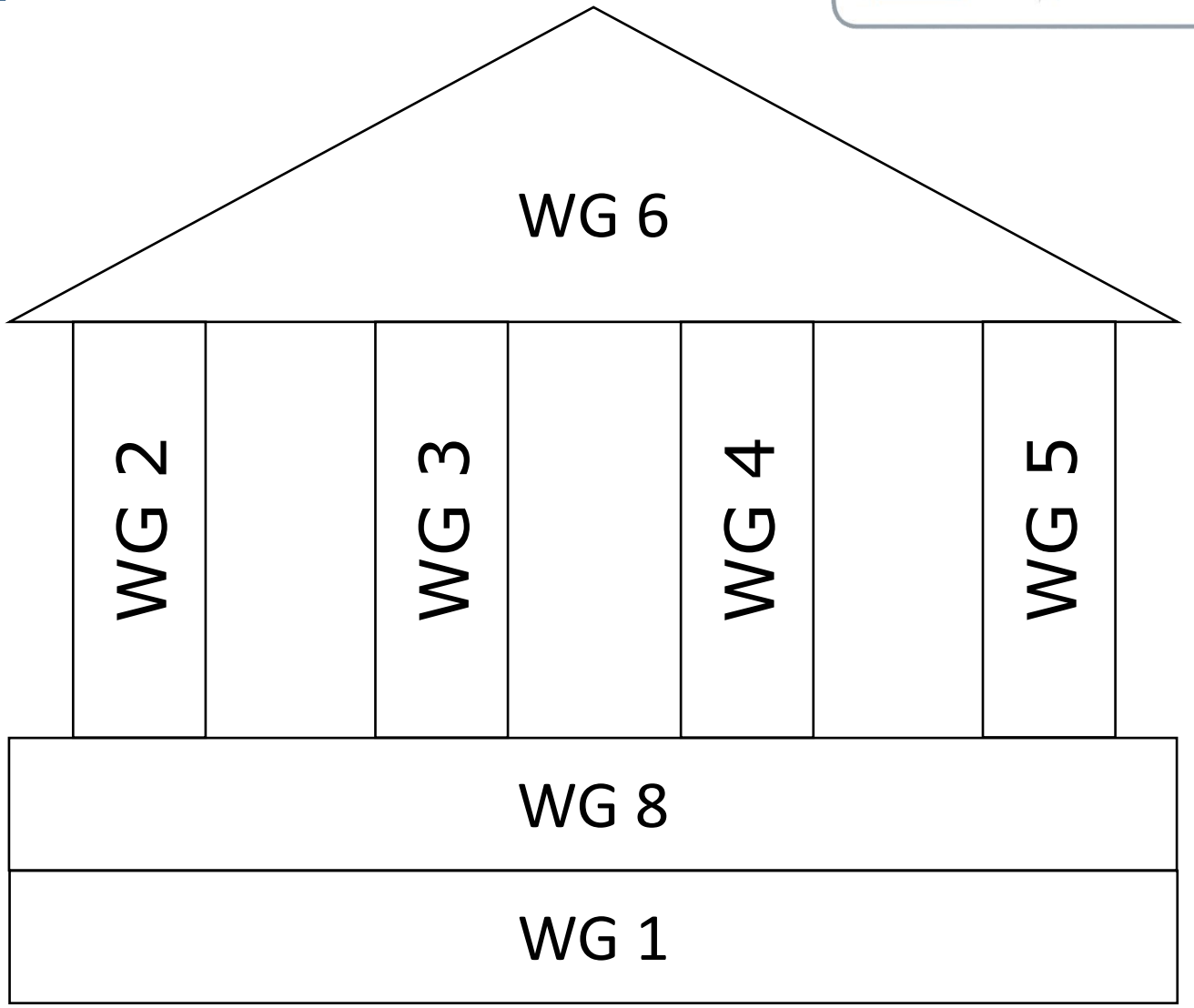
Three top level European Commission aims;

- 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
8. Circular ready Design

[Their different scopes]



JTC10 Document Status

- 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*

Read more.

JTC10 Document Status

- EN45558 Critical Raw Materials – *published 2019*

EN45558 may be directly applied.

- EN45559 Information – *published 2019*

EN45559 is intended as guidance but is applied in the rest of the EN4555X series to ensure consistency.

- TR45550 Terms and Definitions – *published 2020*

Read more.

JTC10 – Material Efficiency product scope.

- 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

CEN-CLC JTC 10 - On-going work

JTC10 – On-going work

JTC10 and the WG's – Document revision.

Post publication – consideration of comments.

Within the positive Formal Votes some Technical comments were supplied.

JTC10 collected these to consider at the next revision.

Decision taken not to revise in the short term to give new users of the document certainty in them.

"Grey" areas requiring clarification are being addressed initially via TR's.

JTC10 – On-going work

WG6 “Communication” - Harmonization work.

EN 45558:2020

“**Critical Raw Materials**”

“Z” annex being added to cover Servers and Data Storage based on SR.

Other “Z” annexes are expected to cover further SR’s in the future.

JTC10 – On-going work

General work supporting EN 4555X series.

EN 45555:2019 and EN 45557:2020

Circular Plastic Alliance meeting;

SRAHG Plastics recycling and recycled plastic.

- Attended by WG5 convenor to support feedback.
- Emphasis of correct use of guidance documents.
- Offer of future support from JTC10 to specific TC's.

JTC10 – On-going work

Trying to get feedback on the series of standards supporting the WG's in improving EN 4555X series.

"TC350 approach"

CEN-CENELEC informed TC's that any work applying standards document created by TC350 need to be cross checked by TC350.

- Similar approach to be requested for JTC10.
- Support and feedback to applying TC.
- Information for improving JTC10's standards.

JTC10 – “Best Practice”

What helped JTC10 achieve its goals…

- Close communication with the EC both before publication and after work had started.
  - EC also has targets to achieve, understanding this and keeping them involved and informed helps build a working relationship.
- Diverse experienced team of experts from across all industries.
  - This helped to achieve a balanced view with such a wide topic.
- Inclusion of experts independent from industry.
  - Non-industry experts give an alternative view to a problem.
  - They can also help in finding alternative solutions.

JTC10 – "Best Practice"

What helped JTC10 achieve its goals…

- Representatives from Joint Research Centre directly involved in the work and using the initial JTC10 work to move more specific, focused topics forwards.
  - Another alternative view, with a huge knowledge base.
  - Two way street between JTC, its WGs and EC.
- Production of generic standards, generally applicable which allow specific application by product/product group TC's.
  - Prescriptive EN's covering the whole of ErP would probably have been almost impossible. Too many conflicting needs for different industries.
  - Generic, horizontal approach ensures common terms, views and approaches without restricting too much.

The individual documents in more detail…

Full detail and talk through;
CEN-CLC Material Efficiency Webinar 1st Dec 2020;
https://www.youtube.com/watch?v=2BwNQSIbuW4

JTC10 – EN 45552 "Durability"

"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

JTC10 – EN 45552 "Durability"

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.

JTC10 – EN 45552 "Durability"

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

JTC10 – EN 45553 "Remanufacture"

"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

JTC10 – EN 45553 “Remanufacture”

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.

JTC10 – EN 45554 "Repair"

"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

JTC10 – EN 45554 “Repair”

Concept: Repair

Criteria considered include:

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

JTC10 – EN 45554 “Repair”

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?

JTC10 – EN 45555 "Recyclability"

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

Concept Recyclability:

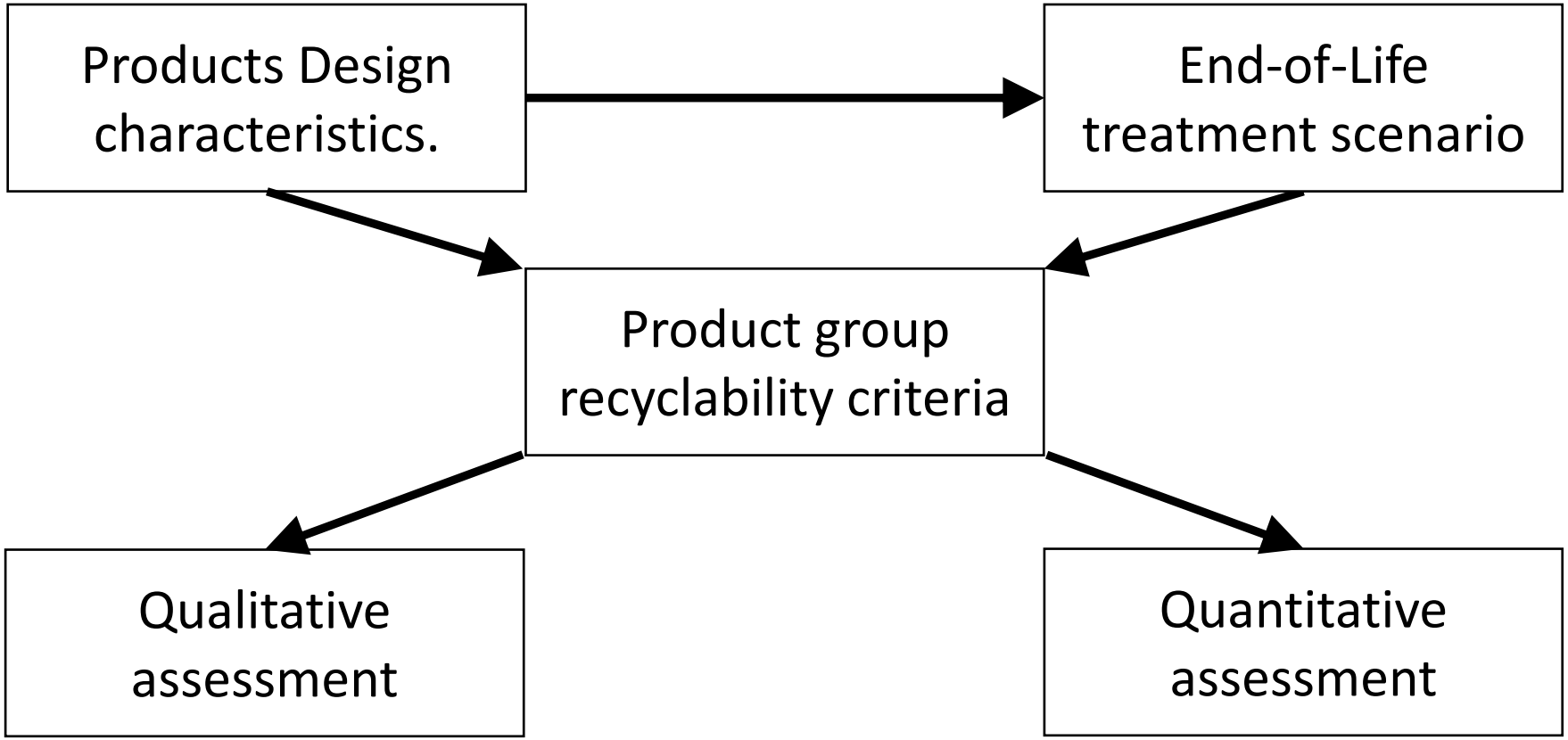
Toolbox / Multi-stage approach

1. Qualitative
2. Quantitative

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

JTC10 – EN 45555 "Recyclability"

How to use EN 45555;



JTC10 – EN 45555 "Recyclability"

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.

JTC10 – EN 45556 "Reused components"

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

Calculations in EN 45556;

Mass based:

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

Number of components based:

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

JTC10 – EN 45556 "Reused components"

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.

JTC10 – EN 45557 "Recycled content"

"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 reincoroprated 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 saem or different physical location.

JTC10 – EN 45557 "Recycled content"

"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..

JTC10 – EN 45557 "Recycled content"

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

JTC10 – EN 45558 "CRM"

"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.

JTC10 – EN 45558 "CRM"

Product/product group standards are not necessary

– EN 45558 can be directly applied.

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

- EN 45558 is being harmonized

JTC10 – EN 45559 "Information"

"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.

JTC10 – EN 45559 "Information"

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.

Q&A…?