PEF PILOT - Experiences and reflections on process and methodology

With insights from Hot & Cold water distribution piping systems pilot

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CONTENTS

- VITO’s role in PEF pilot: LCA consultant
- PEF pilot on piping systems - brief description
- Topics selected from 3 years of PEF pilot
  - Technical challenges and solutions
  - Impacts on business implementation
25 YEARS OF EXPERIENCE     / OVER 700 EMPLOYEES

VITO - AREAS OF EXPERTISE

Energy     Materials     Chemistry

Health     Land use
**VITO PARTICIPATION - 3 PEF PILOTS**

**Piping systems**
- Preparatory phase
- 3 screening studies (Copper, Multilayer, PEX)
- 1 supporting study (PEX)
- PEFCR

**Thermal insulation**
- 2 screening studies (Stonewool and Glasswool)
- 4 supporting studies (Stone wool, Glass wool, PUR, XPS)
- 1 verification process

**Metal sheets**
- 1 supporting study (Steel sheets)
- 1 verification process
EXAMPLES FROM PEF PILOT ON PIPING SYSTEMS

Technical Secretariat

Plastic Pipe & Fittings Manufacturers (& Project Leader)

Copper Raw Material Suppliers and Pipe & Fitting Manufacturers

Plastic Raw Materials Suppliers

Plastic Recycling Industry

LCA Consultants
TEPPFA

Operates out of 27 offices* across the globe

Covers over 80% of the market for hot and cold water piping systems

Copper Alliance™

Operates out of 27 offices* across the globe
HOT AND COLD WATER SUPPLY PIPES WITHIN THE BUILDING

FUNCTIONAL UNIT

- Piping system for the pressure supply and transport of hot and cold drinking water
- from the entrance of a well-defined apartment building to the tap
- supplying 5 storey apartment building with one apartment (100 m² each) per floor plus cellar (as defined in EN 806)
- with a design life time of 50 years.

COMPONENTS:
- Pipes
- Fittings
- Compression rings
- Clamps

• Copper
• ML
• PEX
TOPICS SELECTED FROM 3 YEARS OF PEF PILOT

Technical challenges and solutions

- Software
- Data availability
- Methodology related

Impacts on business implementation

- Resources related accessibility
- Distribution of information in space
- Prioritization from business perspective
Software: SimaPro vs GaBi

- **Functionalities**
  - SimaPro - link between LCS, processes and flows
  - GaBi: level of aggregation of the datasets and limited possibility to adapt the datasets

- **Necessity to use multiple databases** - inconsistent approach
  - Ecoinvent 2.0 and 3.0
  - ELCD
  - GaBi

- **Interoperability between different software’s**
  - Conversion from one software to another - highly problematic and resource intensive - e.i. copper, copper alloy, steel
  - Implementation both in GaBi and in Simapro, delivered different results - e.i. HDPE granulate
TECHNICAL CHALLENGES AND SOLUTIONS

Data availability -> Access to free high quality secondary data

- **Availability of robust and representative data for specific materials and semi-finished products -> key issue**
  - suitable datasets not always available: e.i - copper alloy
  - identification of proxies:
    - PVDF (polyvinylidenfluoride) - modelled with Polyvinylfluoride dataset
    - PPSU (polymer) - modelled with PPS dataset
  - Confidentiality related limitation

- **PEF compliance of the datasets**

- **Appropriateness in the application of the EoL formula**

- **Incomplete documentation of the datasets**

To be addressed by the datasets purchased by the Commission
TECHNICAL CHALLENGES AND SOLUTIONS

*Methodology related - general and cases by case*

- **Some impact categories** are not reliable enough to be used for communication purposes

- **Normalisation and weighting** - not widely accepted

- **Classes of performances** - might not be applicable to all product types

- **Data quality rating** - not straight forward due to incomplete info in background reports

- Evolution: EoL formula > Circular economy formula

- **Overlap with other already existing norms** - duplication of requirements

Work in progress...
Ressource related accessibility

- LCA methodology used now mainly by large companies
- Efforts to make it accessible to SMEs - Specific knowledge requires resources

Distribution of information on LCA/EPD/PEF at European level

- Applied almost exclusively in Western Europe
- For many multi-nationals EPDs/PEFs are not a priority in their subsidiaries in Eastern Europe

Prioritization from business perspective

- Business representatives, especially SMEs are struggling with several new requirements in their sector like REACH and CE-marking. EPDs are not high on their agenda
- Not all producers see the need to invest in an EPD. PEF is yet far away
CONCLUSIONS

- Testing of the method helped alignments on different levels - software, data, rules
- Solutions were found or are on the way for many identified problems
- How long can we expect to take for the open issues to be addressed, so as the PEF approach to become solid?
- What is necessary to be done to ensure the adoption on a large scale of PEF/OEF as main communication mean of environmental information?
Thank you for your attention!

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