



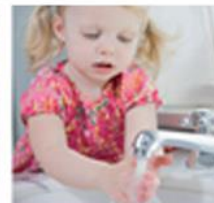
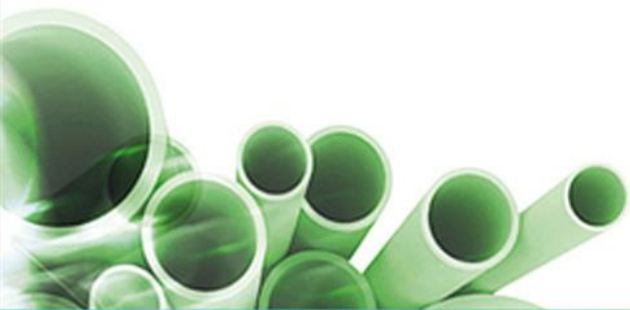
CONSTRUCTION PRODUCTS EUROPE
LET'S BUILD AN EFFICIENT EUROPE

Sustainability Assessment Workshop

4th March 2014

Claudia Topalli

PEF pilot project on hot and cold water supply pipes



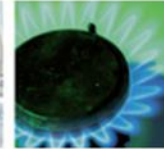
PEF Product Environmental Footprint and TEPPFA Pilot Application

CPE Sustainability Assessment workshop

4 March 2014

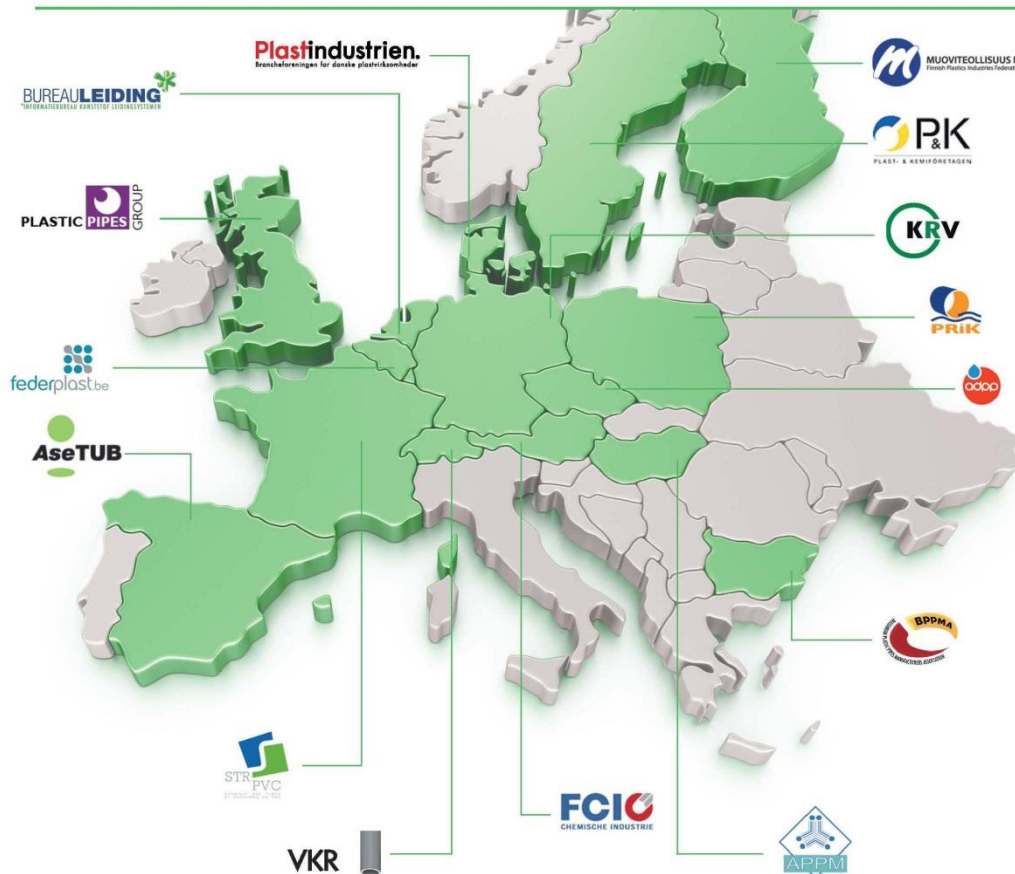
Claudia Topalli

Content



- About TEPPFA
- TEPPFA EPD's
- PEF pilot Application
- Deliverables 1st physical consultation

National Associations



15 NATIONAL
ASSOCIATION
LOCAL
COMPANY
MEMBERS

+ **11** COMPANY
MEMBERS

teppfa

Company Members

Aliaxis

PIPELIFE

REHAU
Unlimited Polymer Solutions®

uponor

GEBERIT

TeraPlast

wavin

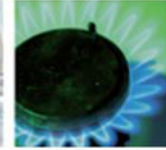
egeplast

**KWH
GROUP**

+GF+

**TESSENDERLO
GROUP**

teppfa
The European Plastic Pipes and Fittings Association
Channelling Performance



- **TEPPFA is strongly promoting and defending the interests of the plastic pipes and fittings industry at European level for building and construction, civils and infrastructure and utilities applications.**
- **TEPPFA members are producing innovative, high quality products in a sustainable way.**

Mission



- **TEPPFA welcomes European plastic pipe systems manufacturers whose products comply with quality standards and who are committed to sustainability**
- **TEPPFA is the voice of the Industry and represents the industry's interests at EU level**
- **TEPPFA supports and promotes National Associations**
- **Teppfa promotes use of plastic piping systems and defends the products of our industry in the market**
- **Quality and environment are the principle flagships of TEPPFA**
- **Communication contributes to a wide awareness of pipes and fittings performance and of our industry commitment**

Applications of plastic pipe systems



Soil, waste

Plumbing,
Hot & Cold water

Water distribution pressure

Drainage, sewage

Detailed environmental impact assessment



Soil and waste applications

- > PP pipe systems
- > PVC pipe systems

Water distribution applications (pressure)

- > PE pipe systems
- > PVC – U pipe systems
- > PVC – O; MRS 31,5 MPa pipe systems
- > PVC – O; MRS 45 MPa pipe systems

Sewage applications (non pressure)

- > PVC sewer solid wall
- > PVC multilayer foam
- > PVC multilayer foam + recyclates pipe system
- > PP structured (twin) wall

Plumbing, Hot & Cold applications

- > PEX solid wall pipe systems
- > Polymer/Al/Polymer ML pipe systems

Background PEF



■ Boosting the Single Market for Green Products

A new legislative package (April 2013)

- Communication
- Recommendation addressed to Member States & private actors

Product Environmental Footprint (PEF)

Organisation Environmental Footprint (OEF)

■ DG Environment

■ What for?

- 'Green Product' definition
- Different methods => costs
- Free movement of green products
- Consumers' trust in green claims

Official Journal
of the European Union

L 124



English edition

Legislation

Volume 56
4 May 2013

Contents

II Non-legislative acts

RECOMMENDATIONS

2013/179/EU

• Commission Recommendation of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations (*)

Price: EUR 2,50

(*) Text with EEA relevance

EN

Annexes which are printed in light type are those relating to day-to-day management of agricultural matters, and are generally valid for a limited period.
The titles of all other acts are printed in bold type and preceded by an asterisk.

Background



- **The PEF & OEF methodologies**

- Developed by the JRC
- Use a life cycle analysis approach
- To be applied to all products & companies

- **Product/sector Category Rules**

- Focus on 3 or 4 most relevant environmental impacts (to be defined by the specific Pilot Projects)
- Focus on the most relevant processes or life cycle stages (to be defined by the specific Pilot Projects)

Background



- **Objective of the pilots:**
Assess effectiveness of methodologies
Develop product & sector specific rules
- **2014: Drafting PEFCR**
- **2015: LCA based on PEFCR's**
- **2016: Communication**
- **2017: external review process**
- **2018: Policy Development**
- **2019: Policy Implementation?!**

But also...

- **Implementation in Ecolabel/GPP?!**

TEPPFA Pilot Update



■ 2 Project proposals:

1. Polymer/Aluminium/Polymer and Copper *-“hot and cold water supply pipes within the building”
2. Polymer/Aluminium/Polymer and PEX -“hot and cold water supply pipes within the building”

■ Selected Project

Polymer/Aluminium/Polymer and PEX

ECI joined officially the project on December 18th → modification of scope

TS

Hot & cold water supply pipes



Project leader



TEPPFA pilot Technical secretariat (TS)



TEPPFA

- Tony Calton – TEPPFA
- Claudia Topalli- TEPPFA –Chair
- Eric Gravier – Aliaxis/TEPPFA

TEPPFA CY Members (Providing data)

- David Harget - Uponor
- Georg Taubert- Geberit
- Horst Stimmelmayer – Rehau
- Jeniffer Hausmann – Wavin
- Oliver Bannert – Pipelife
- Bernd Schuster- Georg Fischer
- Zoran Davidovski – Pipelife

ECI

- Laia Perez Simbor (ECI)
- Nigel Cotton (ECI)
- Stefan Priggemeyer (Wieland)
- Heinrich Rausch (KME)
- Stefan Priggemeyer (Wieland)

Vito

- Carolin Spirinckx
- Karolien Peeters

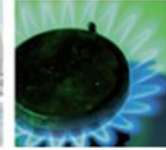
Plastics Europe

- Guy Castelaan
- Arjen Sevenster
- Pierre Van Grambezen- Total

EuPR

- Antonino Furfari

PEF Organizational Structure



- Technical Secretariat (TS)
- PEF Steering Committee (SC)
- Technical Advisory Board
- EF Technical helpdesk
- EF Virtual consultation forum

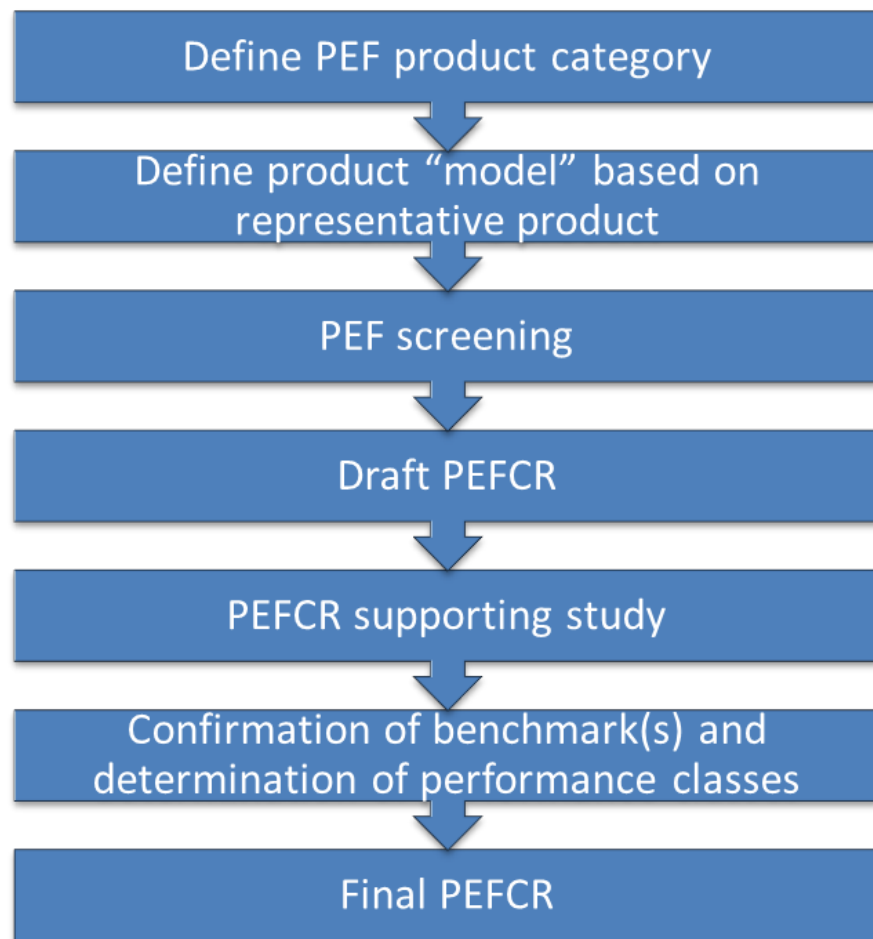
Official timeline for the pilots



Table 2. Reference timing for the development of a PEFCR.

Activity	Reference Timing ¹⁵
Analysis of existing PCRs and scope definition + draft definition of representative product	Preliminary work
1 st physical consultation (scope, draft definition of representative product)	Month 3
Analysis of results for 1 st physical consultation	Month 4
Feedback on 1 st physical consultation	Month 5
<i>Steering Committee: approval of scope and representative product definition</i>	
PEF Screening (impact assessment, interpretation and conclusion, report)	Month 5 to month 8
Draft PEFCRs based on PEF screening	Month 9-10
1st virtual consultation (results PEF screening and draft PEFCRs, additional environmental information)	Month 10
Analysis of comments from 1st virtual consultation	Month 11
Feedback on 1st virtual consultation	Month 12
Second draft of the PEFCR	Month 12-13
2nd physical consultation meeting (second draft PEFCR, including time validity of the PEFCR)	Month 14
Analysis of comments from the 2nd physical consultation	Month 15
Feedback on 2nd physical consultation	Month 16
PEFCR supporting studies	Month 16-19*
2 nd virtual consultation (final PEFCR, benchmark and classes)	Month 20
Analysis of comments from the 2 nd virtual consultation	Month 21
Feedback on 2 nd virtual consultation	Month 22
Review of the final PEFCR	Month 22-23
Analysis of comments from the Review, and Feedback on Review comments	Month 24
Revising final PEFCR + summary of all feedback	Month 25
<i>Steering Committee: approval of final PEFCR</i>	
Release of the final PEFCR	Month 27

The process of creating a PEFCR



+ preliminary work, overview of existing EPD's

- LCA

The PEF screening identifies the following information:

- Most relevant life cycle stages
- Most relevant processes
- Most relevant environmental impacts
- Indication of Benchmark

Provides information and confirmation on :

- PEFCR implementability,
- The most relevant environmental impacts,
- Most relevant life cycle stages
- Most relevant processes
- Data requirements
- Verification requirements

At this stage the final benchmark(s) for the product category is defined and classes of performance are identified (if relevant and appropriate)

Consultation & approvals procedure



Between each phase there is a consultation to assure transparency

- Technical secretariat draft document (ex draft definition scope and representative product)
(Documents on-line 1 month before physical consultation)



- Stakeholders meeting → Comments to be included



- Technical secretariat final document



- Technical advisory board Comments



- Steering committee -> APPROVAL

Deliverables 1st physical consultation



- Compiled overview of existing PCRs
- Overview highlighting possible core conflicts between existing PCRs and PEF guides
- Description of the scope
- Description of the representative product
- Model for the PEF screening study

Existing PCR_s and EPD_s

Hot and cold water supply pipes



- **Compiled overview of existing PCR_s**
 - IBU PCR
 - PCR library - PCR from the international EPD® system
 - CEN TC 350 - EN 15804
- **Overview highlighting possible core conflicts between existing PCR_s and PEF guides**
- **Conclusion analysis of available PCR_s**
 - The search did not reveal a PCR which is overall compliant with the PEF requirements. TS will move forward to develop its own PEFCR.
 - During the process of developing the PEFCR on hot and cold water supply piping systems in the building, the existing PCR_s will be consulted *and if suitable parts* from the existing PCR_s compliant with the PEF guide are available, *those will be used for drafting of this PEFCR.*
- **Available LCAs and EDDs**
 - TEPPFA EPDS
 - INIES EPDs
 - IBU EPDs
 - PPFA LCA

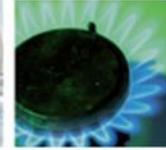
Differences CEN TC 350 - EN 15804 & PEF



PEF	EN 15804	Comments
Global warming, kg CO2 eq	Global warming, kg CO2 eq	identical
Ozone depletion, kg CFC eq	Ozone depletion, kg CFC eq	identical
Acidification, mol H+ eq	Acidification, kg SO2 eq	different unit and thus model (+ characterisation)
Eutrophication terrestrial, mol N eq	Eutrophication, kg (PO4)3- eq	different unit and thus model (+ characterisation)
Eutrophication freshwater, kg P eq		not included in EN 15804
Eutrophication marine, kg N eq		not included in EN 15804
Photochemical ozone creation, kg NMVOC eq	Photochemical ozone creation, kg ethene eq	different unit and thus model (+ characterisation)
Abiotic, non fossil, kg Sb eq	Depletion of abiotic resources, non fossil, kg Sb eq (characterisation factors shall be taken from CML)	identical
Abiotic, fossil, kg Sb eq	Depletion of abiotic resources, fossil, MJ net calorific value (characterisation factors shall be taken from CML)	EN 15804:CML is mentioned to be used for characterisation factors, but CML expresses it in Sb eq
Ecotoxicity, CTUe		not included in EN 15804
Human Toxicity - cancer effects, CTUh		not included in EN 15804
Human Toxicity – non-cancer effects, CTUh		not included in EN 15804
Particulate Matter/Respiratory Inorganics, kg PM2.5 eq		not included in EN 15804
Ionising Radiation – human health effects, U235 eq		not included in EN 15804
Resource Depletion – water, m3 water use		not included in EN 15804
Land Transformation, % or Mg/ha		not included in EN 15804

	identical (category and unit/method)
	identical category but different unit/method
	included in PEF, not included in EN 15804

Definition of scope of the PEFCR



- **Definition of product category**
 - Product group
 - Product name
 - Product description
- **Description of the considered building system (5 storey apartment building plus cellar)**
- **Identification of the product category by product standards**
- **Product classification by means of NACE/CPA codes**
- **Representativeness of the PEFCR/Products not covered by the PEFCR**
- **Unit of analysis and reference flow**
- **Technical performance of the hot and cold water piping systems in the building**

Definition of product category

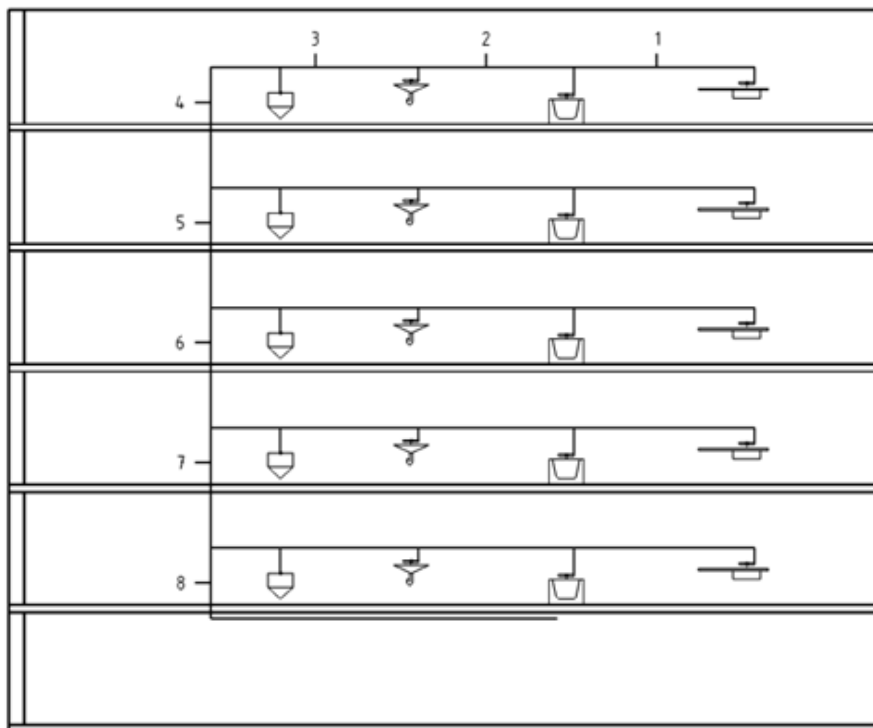


■ Product Group:

- The proposed PEFCR should be used for all kind of pipe systems for hot and cold water distribution in the building. The screening focusses on PEX, Polymer/Al/Polymer and copper pipe systems.

■ Product Name

- 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, by means of a hot and cold drinking water piping system installation supplying a house as defined in EN 806 (5 storey apartment building with one apartment (100 m² each) per floor plus cellar), with a design life time of 50 years.



Design of a hot and cold drinking water supply system for a 5 storey apartment building according to the EN 806-3,

Definition of product category

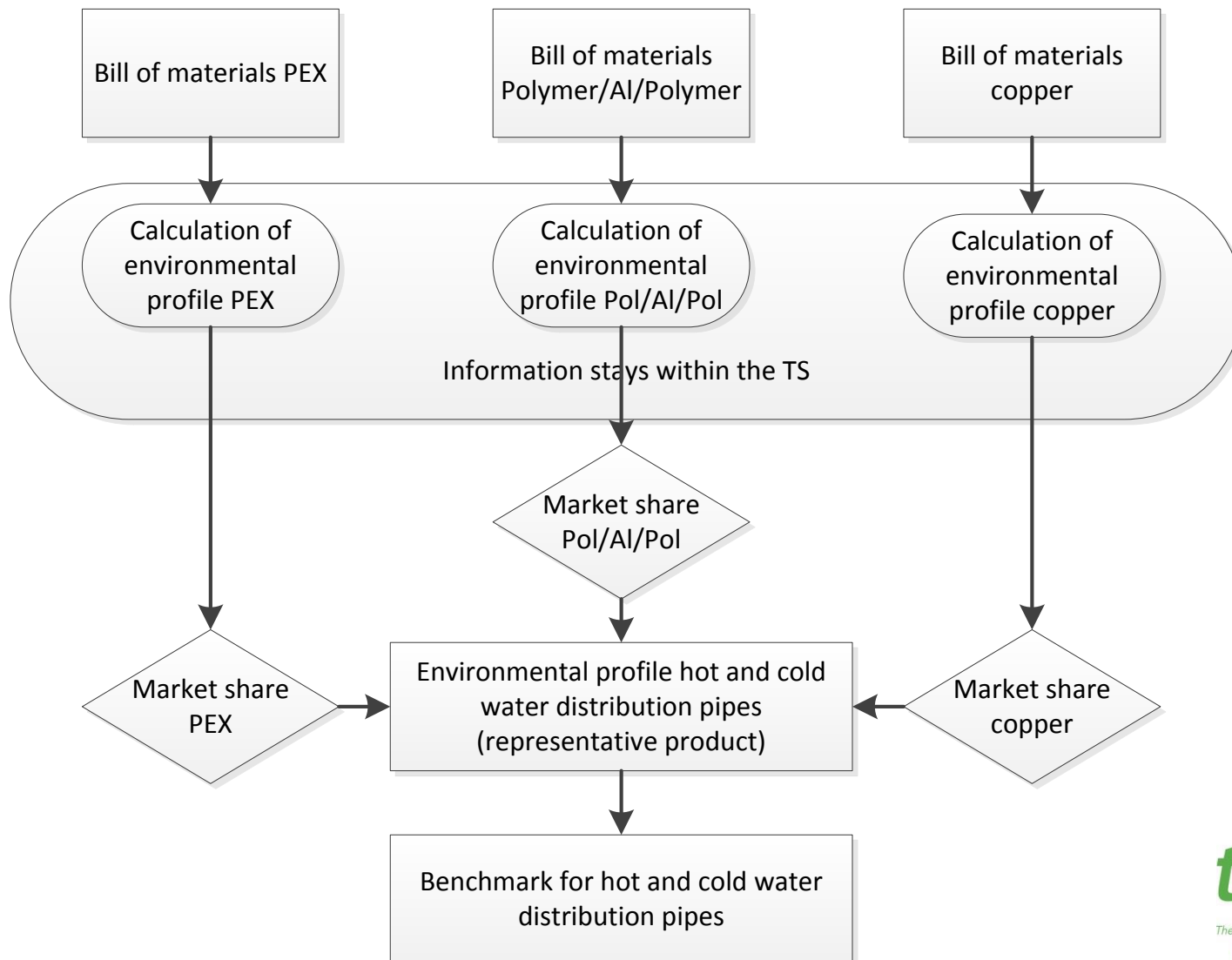


Definition of representative product and description of the model for the PEF screening study



- **Real or virtual product**
 - Representative product TS choice
- **Flow diagram covering the complete life cycle**
 - Life cycle stages PEX pipe system (cradle-to-gate)
 - Life cycle stages Polymer/aluminium/polymer pipe system (cradle-to-gate)
 - Life cycle stages Copper pipe system
 - Life cycle tree gate-to-grave
- **Bill of materials (BOM)**
 - Assumptions related to transportation scenario
 - Assumptions related to use scenario
 - Assumptions related to End of Life (if relevant)
 - Proposed end-of-life scenario PEX and polymer/Al/polymer piping systems
 - Proposed end-of-life scenario copper piping system 48

Representative product



Proposed end-of-life scenario



Lindner (2011) performed under the authority of the European Council of Vinyl Manufacturers a study on the actual end-of-life treatment of plastics from the building and construction sector. For the year 2010 and in the EU 27 +2 geographic region, 20% of plastic waste is recycled, 36.2% incinerated with energy recovery and 43.8 % is landfilled. The PEX and Polymer/Al/Polymer parts of the system cannot be recycled. Only the metal parts will go to recycling. Those have a weight of almost 10% of the complete system (will be calculated exactly based on the bill of materials). The other 10% in the above mentioned study which goes to recycling has been split over the other two treatment options (weighted):

PEX and polymer/Al/polymer piping systems

- **Mechanical recycling: 10% (metal part)**
- **Incineration with energy recovery: 40.7%**
- **Landfill: 49.3%**

Copper

- **100% recycling**

Wiki Page



<https://webgate.ec.europa.eu/fpfis/wikis/display/EUENVFP/Stakeholder+workspace%3A+PEF+CR+pilot+Hot+and+cold+water+supply+pipes>

For More info on how to register: <http://teppfa.eu/>

Claudia Topalli
TEPPFA aisbl
Avenue de Cortenbergh 71
B - 1000 Brussels
Tel : +32-2-736.24.06
www.teppfa.eu