ecomatters

Bringing PEF labelling into practice: Lessons from the Decorative Paints Certification Pilot

Date: 07 September 2021

Natalia Chebaeva
Max Sonnen
Karthik Ashok Kumar

CEPE
The voice of paint, printing ink and artists' colours in Europe

LCM 2021

PEF Background

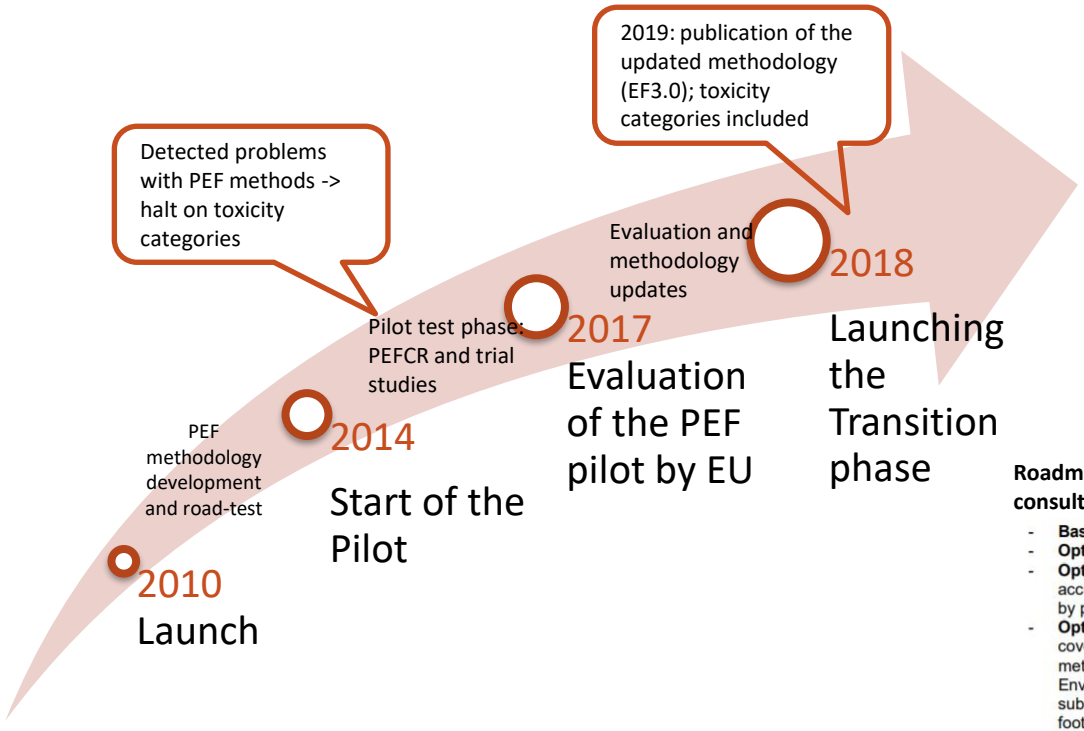
Product Environmental Footprint and Organisation Environmental Footprint project (PEF/OEF) were launched by the European Commission within the “Single Market for Green Products Initiative” in order to standardize the methodology for environmental claims. The goal is to make it easier for companies to put green products on the European market and for consumers to identify them. The PEF methodology is an LCA (Life Cycle Assessment) method designed to be **a standardized way of measuring the environmental performance of a product**.

*“**A company wishing to market its product as green** in several Member State markets **faces a confusing range of choices of methods and initiatives**, and might find it needs to apply several of them in order to prove the product's green credentials. This is turning into a barrier for the circulation of green products in the Single Market.”*

The PEF methodology enables:

- Movement towards a single EU-market for green products
- Elimination of methodological ambiguities
- Identification of true green products

PEF development



- no clear-cut date to finalise the projects,
- nor to the decide on requirements for implementation
- separate developments are occurring within industries
- other standards look into alignment with PEF.

Roadmap: proposal of a regulation: in Commission adoption (Q2) with public consultation closed

- **Baseline**: No modification to the 2013 Recommendation and no further action.
- **Option 1**: Updating the 2013 Recommendation based on the outcome of the 2013-2018 pilot phase.
- **Option 2**: Establish a voluntary EU legal framework enabling companies to make green claims in accordance with the Environmental Footprint methods, as a complement to existing methods (developed by private or public entities, at national or international level).
- **Option 3**: Establish an EU legal framework requiring companies making claims related to the impacts covered by the Environmental Footprint methods[13] to substantiate them via the Environmental Footprint methods. When Product Environmental Footprint Category Rules (PEFCRs) or Organisation Environmental Footprint Sector Rules (OEFSRs)[14] have been adopted, green claims should be substantiated on that basis, as they are establishing a more detailed calculation of the environmental footprint. When no such rules exist, claims could be substantiated via a study compliant with the PEF/ OEF method.

CEPE PEF Journey

2010: CEPE's Sustainability Taskforce is formed

2012: Publication of the Sustainability Charter: encouraging LC perspective

2013: CEPE joins the Pilot test phase with development of PEFCR for Decorative paints

2015: Screening and supporting studies
EF Datasets

2016: EF datasets
PEF tool v1

2018: PEFCR work finalized, publication of benchmarks for 4 product subcategories

2019: PEF tool v2 and roll out to national associations

2021: Launch of the PEF verification pilot

To use the PEF in practice, CEPE aims to launch a PEF framework to create certified PEF studies and enable its members to use it externally in communications. The outline of the framework is clear, but a number of details need to be worked out, refined and most importantly tested in practice.

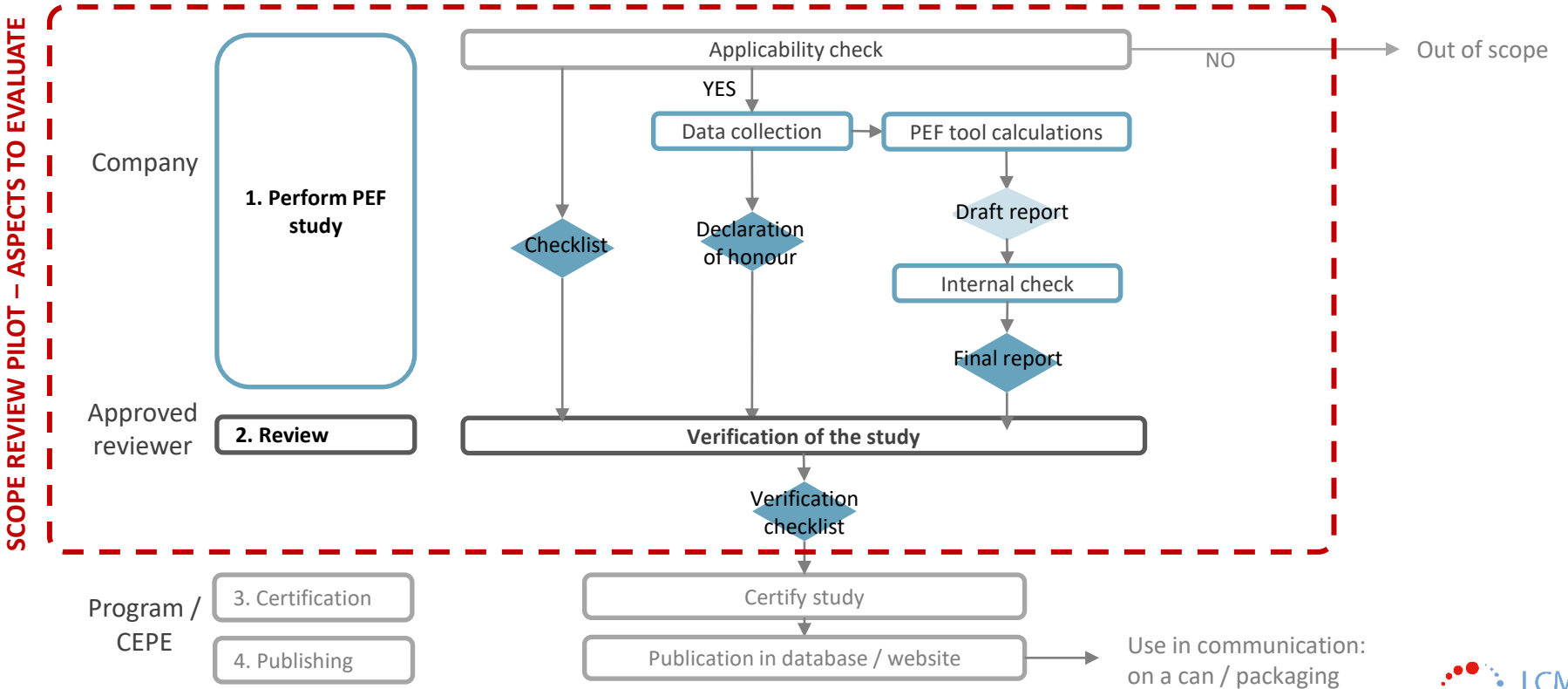
PEF verification Pilot

2020: To move forward with the more rigid labelling and claims, CEPE intends to develop a PEF-based labelling scheme, and launches a PEF Verification Pilot

Aim: **To streamline and test the process of making a certified PEF study for paints that could be used for claims and labelling.**

1. PEF study calculation	2. PEF study review	3. PEF study certification	4. Publishing
Process-ready tool development	Design and test a streamlined process	Design an understandable and cost-effective process *Actual certificate issuing is excluded from the pilot*	*Excluded from the pilot*

Developed framework



Process

Develop the documents and update the tool in line with the pilot	Performs studies for the products	Find and train verifiers	Test the products verification procedure in 2 routes	Perform evaluation: from the position of the company (practitioner) and verifiers
CEPE+EM / TS	TS members	CEPE+EM / TS	One TS member, reviewers	CEPE+EM / TS
• Applicability checklist • Declaration of honour • Report template • Verification protocol • PEF tool update • Evaluation protocol	Each of the TS members would provide a study for each subcategory of paint: • Indoor wall, • Indoor wood, • Outdoor wall Planned 18 studies in total	3 external verifiers 1 internal verifier (not involved in the studies)	Each external verifier reviews all studies of the same paint subcategory. Internal verifier reviews all studies of the own company.	Each TS member and each verifier fill in the evaluation form CEPE+EM perform evaluation aggregation

PEF calculation tool

Applicability Checklist

Please verify the applicability of the tool for the study indicating the answers below

Product scope

The product in scope is included in one of the product categories of the Paints Directive (2004/42/EC of the European Parliament and of the Council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in decorative paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC). matt coatings for interior walls and ceilings glossy coatings for interior walls and ceilings coatings for exterior walls of mineral substrate interior/exterior trim and cladding paints for wood, metal	yes
The CPA (Classification Product by Activity) code for the product in scope is one of the following: C – Manufactured products: C20.3 - Paints, varnishes and similar coatings, printing ink and mastics C20.3.0 - Paints, varnishes and similar coatings, printing ink and mastics F – Constructions and construction works: F43.3.4 - Painting and glazing works	yes
One single product (white or the white base paint) is selected as representative for the entire product group.	yes

Geographical scope

The product in scope is produced and sold/consumed in the European Union + EFTA	Yes

Data and data quality

The commissioner of the study has access and will use company-specific input data covering: Paint density, biocidal content, VOC content, Dry mass, Coverage, Bill of materials (paint formulation), production losses, use of supplies (diesel, electricity, light fuel oil, liquified petroleum gas, natural gas, process water) and production of waste (hazardous, non-hazardous, waste water)	Yes
Data is collected in compliance with the PEFCR and PEF tool requirements	Yes
All data is documented and substantiating documents are available	Yes
The company can perform or has access to product specific test data determined according the guidance in Annex 4 and Annex 5 of the PEFCR	Yes

Execution of the study

The study is executed using the CEPE PEF tool	yes

CEPE PEF Tool v 4.0 Beta 2021

This tool is intended for calculations of Product Environmental Footprints (PEF) of Decorative Paint products. The calculations are performed based on the direct data filled in by the user, including the paint identity, quality, formulation, and technology process. The rest of the data is taken from the average process and performance in the European context. The average data, the datasets, and the calculations' methodology and methods are compliant with the Product Environmental Footprint Category Rules - Decorative Paint, version 1.0, developed by the Technical Secretariat Decorative Paints as a part of the European Commission Initiative "Single market for green products". The study conducted with the tool is not and cannot be claimed to be PEF- or EF- compliant.

This tool is intended for calculations of Product Environmental Footprints (PEF) of Decorative Paint products. In order to perform the calculations, the tool leads the user through several steps described in more details below. It requires the user to insert multiple datapoints specifying the company's details, product's identity, quality, formulation, and basic inputs and outputs within the manufacturing process. When all the input data is inserted correctly, the PEF results are calculated. Then, the user can include the self-declared explanations for interpreting the results. Based on all inputs, the printable Declaration of honour and LCA Report are generated for submission for review.

A process diagram at the top of each sheet illustrates the progress of the assessment. Blue steps in the diagram are obligatory input for calculations, green steps provide the output results. The user can navigate between the steps by clicking on them in the diagram, or choosing respective tabs at the bottom of the sheet.

The product complies with the basic requirements to adhere to the CEPE PEF EPD framework and to execute a PEF study using the CEPE PEF Tool and supporting elements

Self-validation

Declaration of Honour

4500AB, Rotterdam declares that the information provided within the current PEF study 'Product environmental footprint of Waterborne Indoor wall paint IWALLY' is collected due diligence.

- ☑ The applicability checklist, the CEPE PEF tool and the report have been completed to the maximum extend following the programme rules.
- ☑ All mandatory and optional data is submitted according to the rules described in the Product Environmental Footprint Category Rules - Decorative Paints and its annexes.
- ☑ The provided data is representatative for the product as closely as possible. Data is collected in compliance with the minimum data quality standards:
    - ☑ Company-specific data is measured or calculated, obtained through meter readings, purchase records, utility bills, engineering models, direct monitoring, material/product balances, stoichiometry, or other methods for obtaining data from specific processes in the value chain of the company applying the PEFCR
    - ☑ Data refers to the most recent annual administration period
    - ☑ Data reflect exactly the technology under assessment. When not possible, proxies are selected based on the proxy list of Annex X, or utimately selected and reported based on the best available knowledge of the practitioner.
    - ☑ Parameters 5 and 6 (Coverage and maintenance multiplier) are calculated as described in Annex 4 and 5 of the Product Environmental Footprint Category Rules - Decorative Paints. All product tests are performed following Annex 4 and 5 procedures and the corresponding standardards for each paint category.
    - ☑ Test reports are available and will be presented to the verifier or the programme operator (CEPE) upon request.
- ☑ Data proof is available and will be presented to the programme operator (CEPE) upon request

On behalf of The Best Paint Company

John Doe
the boss
0030 56 01 05
doe@thebestpaint.com
1st Lane 25
4500AB, Rotterdam
the Netherlands

25-2-2021
date

signature

Explanation of the differences

Lorem ipsum dolor sit amet, consectetur adipisici elit, sed eiusmod tempor incidunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquid ex ea commodi consequat. Quis aute iure reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint obcaecat cupiditat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Benchmark: Indoor wall paint

Comparative formulation:	IWALLY	Indoor wall paint	Difference, % of the formulation	Difference, % of the benchmark value	Significance for validation	Self-validation (confirm correcteness of the filled in data)
ALL solvents	31,65	31,65	0	0	not significant	validated
Alcohol solvent	*0,4*	*0,4*	*0*	*0*	*not significant*	
Ester solvent	*0*	*0*	*0*	*NA*	*not significant*	
Ether solvent	*0*	*0*	*0*	*NA*	*not significant*	
Hydrocarbon solvent	*0*	*0*	*0*	*NA*	*not significant*	
Ketone solvent	*0*	*0*	*0*	*NA*	*not significant*	
Water	*31,25*	*31,25*	*0*	*0*	*not significant*	
Solvent other	*0*	*0*	*0*	*NA*	*not significant*	
ALL pigments	10,9	10,9	0	0	not significant	validated
Organic	*0*	*0*	*0*	*NA*	*not significant*	
Inorganic	*10,9*	*10,9*	*0*	*0*	*not significant*	
Pigment other	*0*	*0*	*0*	*NA*	*not significant*	
ALL additives	5,05	5,05	0	0	not significant	validated
Rheology modifier	*0*	*0*	*0*	*NA*	*not significant*	
Drier/Initiator	*0*	*0*	*0*	*NA*	*not significant*	
Corrosion inhibitor	*0*	*0*	*0*	*NA*	*not significant*	
Additives other	*5,05*	*5,05*	*0*	*0*	*not significant*	
ALL binders or resins	21	21	0	0	not significant	validated
By polymerization in water	*21*	*21*	*0*	*0*	*not significant*	
By polymerization in solvent	*0*	*0*	*0*	*NA*	*not significant*	
Polycondensation	*0*	*0*	*0*	*NA*	*not significant*	
Hydraulic binder	*0*	*0*	*0*	*NA*	*not significant*	
Binder co-reactant	*0*	*0*	*0*	*NA*	*not significant*	
Binder other	*0*	*0*	*0*	*NA*	*not significant*	
Modified natural	*0*	*0*	*0*	*NA*	*not significant*	
ALL fillers	31,4	31,4	0	0	not significant	validated
ALL other	0	0	0	NA	not significant	validated
ALL monomers and precursors	0	0	0	NA	not significant	validated
Acrylic acid based	*0*	*0*	*0*	*NA*	*not significant*	
Monomer other	*0*	*0*	*0*	*NA*	*not significant*	

Paint chosen for the analysis (defined at Step 1)

OWALL

PAINT DETAILS

Name	OWALL	
Product number	Ou wall	
Representative product	Outdoor wall paint	
Quality category	Quality 2	
Paint frequency	5,00	#/lifetime
Coverage	0,186	kg/m²
Production site	EU-28+3	
Paint needed during lifetime, including leftovers (Reference flow)	1,04	kg/m²

KEY INDICATORS

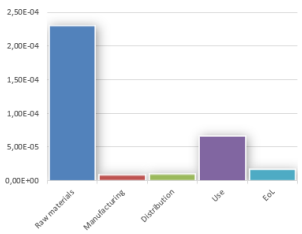
		Per lifetime		Per liter	
Climate Change	Cradle to gate	2,72	kgCO2-eq/m²	3,32	kgCO2-eq/l
	Downstream	1,59	kgCO2-eq/m²	1,94	kgCO2-eq/l
	Total	**4,31**	**kgCO2-eq/m²**	**5,26**	**kgCO2-eq/l**
PEF score	Cradle to gate	2,39E-04	Normalized/m²	2,91E-04	Normalized/l
	Downstream	9,20E-05	Normalized/m²	1,12E-04	Normalized/l
	Total PEF Score	**3,31E-04**	**Normalized/m²**	**4,04E-04**	**Normalized/l**

IMPACT CATEGORIES HOTSPOTS

Impact category	Weighted	Benchmark value
Acidification	2,57E-05	2,57E-05
Climate change	1,12E-04	1,12E-04
Ecotoxicity, freshwater	3,11E-05	3,11E-05
Eutrophication, freshwater	3,91E-06	3,91E-06
Eutrophication, marine	4,93E-06	4,93E-06
Eutrophication, terrestrial	7,04E-06	7,04E-06
Human toxicity, cancer	1,81E-06	1,81E-06
Human toxicity, non cancer	5,82E-06	5,82E-06
Ionizing radiation HH	1,08E-06	1,08E-06
Land use	6,40E-07	6,40E-07
Ozone depletion	4,84E-08	4,84E-08
Particulate matter	2,86E-05	2,86E-05
Photochemical ozone formation HH	1,40E-05	1,40E-05
Resource use, minerals and metals	1,44E-05	1,44E-05
Resource use, fossils	7,13E-05	7,13E-05
Water use	8,12E-06	8,12E-06

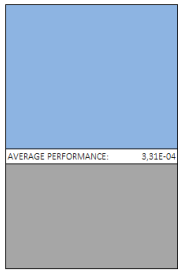
The table shows the weighed environmental impacts of paint over its lifetime, according to the set of impact categories adopted by the PEFCR Decorative Paint v.1. The weighted values are also used to identify the

PEF SCORE BY LIFE CYCLE STAGE per lifetime



The graph above illustrates weighted environmental footprint of the product per lifetime divided into five life cycle stages:

PERFORMANCE



Performance class reflects the product overall performance according to the adopted scale

CEPE The voice of paint, printing ink and artists' colours in Europe

Product Environmental Footprint Report
Decorative Paint

May contain confidential information. Do not circulate without permission

Commissioner:	The Best Paint Company
Product:	outdoor wall paint OWALL
Date of issue of the report:	04/08/2021
Responsible company representative:	John Doe 0030 56 01 05 doe@thebestpaint.com

The calculations are performed using the tool developed in frames of CEPE PEF verification pilot project. As such, LCA practice is divided between the tool developers (Ecomatters B.V.) and the representative of the commissioner responsible for filling in the input data.

Page 1

Verification

Verification protocol for verification pilot

April 2021

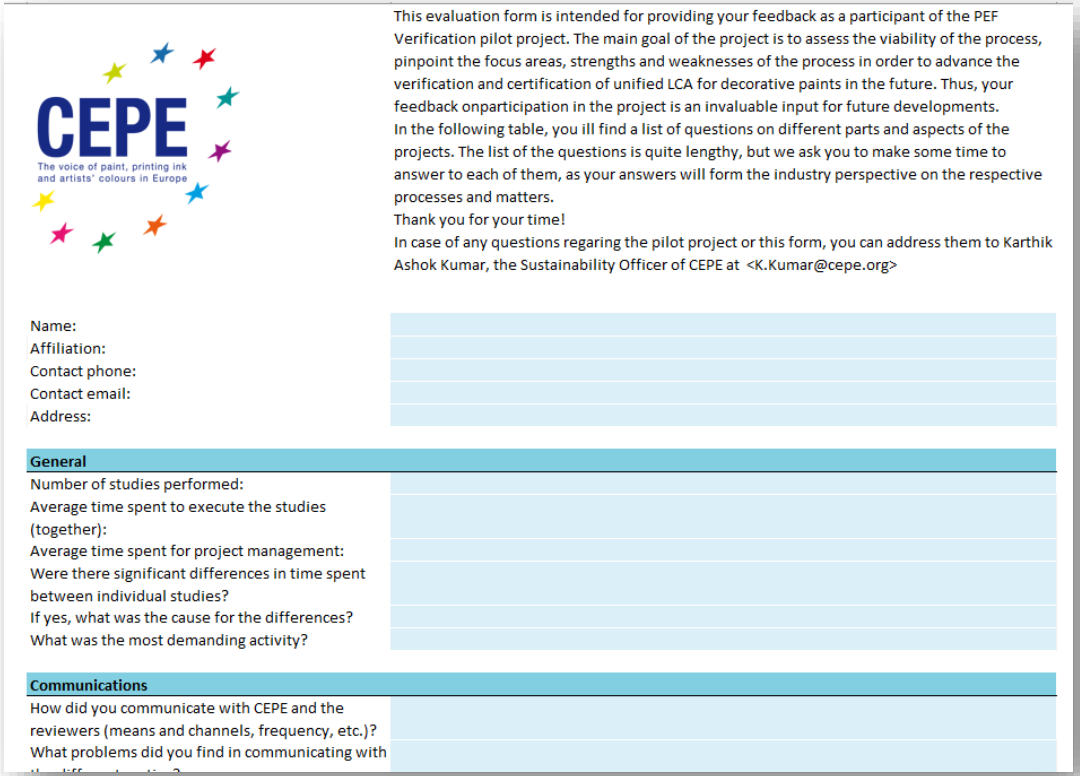
VERIFICATION CHECK-LIST

The verification check-list (review template) shall be filled in by the lead verifier of the study. The verifier shall confirm that all the elements of the study are submitted and correct; that the report sections and items are included, correct and complete; and that the differences validated in the self-declaration are plausible and sufficiently justified.
Comments on each element or reporting item can be added to the check-list. General comments can be added in the comment box below.

Study validation	Included		Compliance	Comments
Declaration of honour				
Applicability checklist				
Report				
Data validation (Annex D report)				
Report completeness	**Included**	**Page / Annex**	**Compliance**	
Summary		2		
General information about the product		2		
(sub)category to which the product belongs		2		
General information about the company		3		
Scope of the study		3		
Diagram with system boundary and indication of the situation according to DNM		3		
List and description of processes included in the system boundaries		4		
List of co-products, by-products and waste		4		
Identification of most relevant impact categories		1 + Annex B		
Identification of most relevant life cycle stages		1 + Annex B		

Page 1

Evaluation framework



This evaluation form is intended for providing your feedback as a participant of the PEF Verification pilot project. The main goal of the project is to assess the viability of the process, pinpoint the focus areas, strengths and weaknesses of the process in order to advance the verification and certification of unified LCA for decorative paints in the future. Thus, your feedback onparticipation in the project is an invaluable input for future developments.
In the following table, you ill find a list of questions on different parts and aspects of the projects. The list of the questions is quite lengthy, but we ask you to make some time to answer to each of them, as your answers will form the industry perspective on the respective processes and matters.
Thank you for your time!
In case of any questions regaring the pilot project or this form, you can address them to Karthik Ashok Kumar, the Sustainability Officer of CEPE at <K.Kumar@cepe.org>

Name:	
Affiliation:	
Contact phone:	
Contact email:	
Address:	

General	
Number of studies performed:	
Average time spent to execute the studies (together):	
Average time spent for project management:	
Were there significant differences in time spent between individual studies?	
If yes, what was the cause for the differences?	
What was the most demanding activity?	

Communications	
How did you communicate with CEPE and the reviewers (means and channels, frequency, etc.)?	
What problems did you find in communicating with	

Evaluation forms for practitioners and verifiers.

Topics:

1. Time spent
2. Communication streams
3. Trainings
4. Tools
5. Procedures and documents validity
6. Outcomes of the review (for reviewers)

Results: General

- The project was welcomed by both the industry representatives and the reviewers, and received rather favourable feedback from both sides.
- Total 15 studies were performed and underwent the review procedure.
- Constructive feedback/input for the methodological aspects of the framework and industry's PEF work in general

Results: Procedure

- Time spent for studies is 5-13 hours, with the most demanding part being product-specific (formulation, tests). Time spent for review is 1-3 hours, with a very steep learning curve, after which the time spent does not vary.
- Established communication flows seem appropriate for the project, with request for building a community.
- Constructive identification of the technical glitches in the project
- The optimistic timeline faced challenges

Results: Validity

Drafts of the tool and the documents were successful for the scope of the pilot.

The participants voice:

- Applicability checklist and Declaration of honour are found to be valid tools to streamline the PEF verification process
- Generated reports found to be sufficient in scope
- Pre-validation of the tool is found to be essential for the success

Feedback: challenges and solutions

Main challenges found:

- Formulations reporting (translation to available substances, unification) are found to be the most challenging for the studies implementation.
- Explanations of performance, including deviations from the benchmarks are found to be the weakest point for verification.

  Studies performed within the pilot are marked as not verified due to the lack of explanations by half of the reviewers.

Crucial points for success of the roll-out:

- More extensive training for practitioners on LCA of paints, PEFCR, and the tools use
- Expanded communication packages for verifiers: on the tool and full verification procedure
- It is strongly recommended to introduce internal pre-verification.

Lessons for the PEFCR and PEF

- PEF-based certification is possible and welcomed by the industry
- The developed streamlined verification and certification is considered valid for the PEF-based labelling purposes
- Streamlining is a valid way to move forward with the rigid PEF-based label, however the challenge is in keeping the study PEF compliant as for DQR
- Running a programme requires technical tools development and solid training
- Characteristically for a streamlined programme, pre-validation of the tool is essential for success
- There are many methodological gaps that needs to be filled to proceed with certification and labelling
- The Pilot project is a great fine-tuner when moving forward with the roll-out methodologically and technically

Recommendations for experience transfer

- Wide engagement of the industry (TS) into project activities planning
- Running the test product studies with the companies familiar with PEF due to previous work: feedback allowed to check not only what works in the process, but to indicate methodological gaps
- Elaborate trainings for verifiers
- Central coordination of the communication streams
- Go forward with the (solid) drafts of the documents and tools to be more flexible with adjustments based on the feedback

Conclusion

- CEPE PEF journey moves forward, with the potential of bringing the first PEF-based label to the consumers.
- **(Reviewed) PEF studies do not need to be very time consuming**

IT WORKS!

Contacts

Natalia Chebaeva
Sustainability Consultant
Ecomatters B.V.
natalia.chebaeva@ecomatters.nl

Max Sonnen
Managing Director
Ecomatters B.V.
max.sonnen@ecomatters.nl

Karthik Ashok Kumar
Sustainability Officer
CEPE
k.kumar@cepe.org