The Brewers of Europe
Product Environmental footprinting (PEF)

ELC Sustainability Forum
11 June 2015
The Brewers of Europe

- Founded in 1958
- 29 National Brewers’ Associations, from the EU, Switzerland, Norway and Turkey
- A Board with an equal balance between major and non-major brewers
- Promoting moderate beer consumption and defending the interests of the 5000 breweries in Europe
- Sharing best practises and being informed, heard, understood and supported by EU decision makers
The Brewers of Europe
Vision & Mission

**Vision:**
Teamed up to shape a beer-friendly, smart and prosperous EU business environment

**Mission:**
Equip Europe’s brewers with the tools to freely, cost-effectively and responsibly brew and market beer
Beer in Europe *

- Around 40,000 different beers and 100 different beer styles
- 356 million hectolitres of beer consumed in 2012 in the EU
- 30l to 150l per capita consumption with shift to home consumption
- 25% of global beer production
- Over €50 billion in value added to the EU economy and €50 billion in taxes contributed to EU government coffers
- Affected by regulations in: food law, industry, agriculture, (public) health, consumers, transport, environment, trade, taxation, customs, media, competition etc.

* Data from Ernst & Young 2014
2 million EU Jobs attributable to Beer

- 125,000 jobs in breweries
- 119,000 in wholesale / retail
- 315,000 in the supply chain
- 1.4 million in the HoReCa sector
- Supporting the EU’s Growth Strategy
- Helping the EU in one of its key priorities - tackling youth unemployment

*Data from Ernst & Young 2014*
Key work areas and focuses themes

- Safety
- Ingredients
- Environment
- Economy
- Impact
- Health
- Responsibility
- Marketing
- Tax
- Trade
Beer Integrity

• **Ingredients**
  - Safeguarding the permitted use of inputs and outputs (beer + secondary stream materials such as brewers’ grains and brewers’ yeast)
  - Ensuring labelling adds value to the consumer whilst not jeopardising the image of beer
  - Minimizing the burden for operators

• **Beer Safety**
  - Striving to protect the quality, integrity and safety of beer and brewing,
  - Safeguarding the image of the product whilst avoiding unnecessary restrictions and costs

• **Environment**
  - Advising on environmental issues, albeit dealing with the non-competitive angels of the issue
  - Monitoring environmental performance of sector
  - Water agenda! - water library tool
  - Growing importance!
Deliverables - Integrity

- Monitoring
- Data collection
- Coordination of value chain
- Consultations with regulators
- Guidance Notes
- Holding Statements
The Brewers of Europe commitment on PEF

- Background to PEF pilots
- EC Objectives
- The Brewers of Europe’s reasons to join
- Overall timeline
- Technical Secretariat
- Process stages
- Definition of scope
- System boundaries
- Definition of representative product
- Screening: objectives and methodology
- Screening: data and model quality
- Data and assumptions: virtual beer
- Opportunities for ELC members
A lot of environmental labels and schemes but no harmonized approach

WHY?

More than 400 environmental labels in the world
- Only for GHGs, 80 leading reporting methods and initiatives

Issues:
- What is green?
- How do I prove that my product or company is green?
- If I choose one approach, will it be accepted by everyone?
- Do I have to prove I'm green in different ways to different clients?
- Will consumers and business partners understand my claim?
- Does green mean more expensive?
EC Objectives of PEF Pilots

- To set up and validate the process of the development of product group-specific rules (Product Environmental Footprint Category Rules - PEFCRs), including the development of performance benchmarks.

- To test different compliance and verification systems, in order to set up and validate proportionate, effective and efficient compliance and verification systems.

- To test different business-to-business and business-to-consumer communication vehicles for Product Environmental Footprint information in collaboration with stakeholders.

- The pilot will be used to inform potential future policy and regulation as it relates to product environmental impact assessments, verification systems, declaration activities, as well as communication methods.
EC Objectives of PEF Pilots
(Easy to read/understand version)

• Determine rules for environmental footprinting across different product categories.

• Test if it is possible to verify the results

• Test if it is possible to make meaningful communication about results.

• Make European legislation about environmental impact/performance on product level.
The Brewers of Europe has joined the PEF pilot to positively and actively influence the methodology development

Our objectives:

• Is to influence methodological development concerning Product Environmental Footprinting (PEF), which longer term may lead to policy development around environmental labelling, environmental taxation, and environmental minimum standards for beer.

• To be sure that future PEF methodologies developed are acceptable and practical to use for the entire beer industry. (Both big and small brewers)

• To position the brewing industry and Brewers of Europe as a proactive, ambitious, environmental concerned industry and association, which are willing to invest in a methodological development, in order to ensure, that our consumer in the future will get an objective and correct information about the environmental impacts from our products.
Overall Pilot Timeline

- Pilots are expected to run from June 2014 to end of 2016.
- In 2017, the EC is planning to evaluate the results of the pilot test.
- Policy discussions are expected to start in 2018.
- First legislative implications are expected to take place in 2019-2020.
The Technical Secretariat is the main driver of each PEF pilot
Beer pilot Technical Secretariat (TS)

TS Members
(per. 23.09.2014)

Consultants

More??
High level Road map

1. i. Analysis of existing PCRs and scope definition
   ii. Draft definition of representative product

2. i. PEF Screening based on the RP
   ii. Draft PEFCRs based on PEF screening

3. i. PEFCR supporting studies (min 3)
   ii. Review of PEFCR’s

Final PEFCR for Beer

Review and physical public consultation

We are here
**Definition of scope**

CPA/NACE code = C11.0.5 - Manufacture of beer

This class includes:

- Manufacture of malt liquors, such as beer, ale, porter and stout.
- Manufacture of low alcohol or non-alcoholic beer.

**Unit of analysis**

What: A refreshing beer consumed in a social setting.
How much: One hectolitre of beer (1hl; equal to 100l).
How long: Until the weighted average expiry date.
How well: Served at the weighted average serve temperature.

For communication purposes the results can be translated to stock keeping units (SKUs).
System boundaries

Upstream
- Cultivation (barley, hops etc.)
- Raw material processing (e.g. malting)

Brewery operations
- Brewing
- Filling and packing

Downstream
- Distribution
- Retail and beverage consumption (e.g. cooling)
- Packaging disposal (e.g. landflling, incineration)

Reuse and recycling
- Packaging and material production
- Co-products for feed/fuel use (straw, brewers' grains etc.)
Fertilizer production and application, manure application, fuel production and combustion, water consumption for irrigation, pesticide application and transport to raw material processing will be taken into account in the cultivation stage.

For example malting barley, additives production. This includes energy consumption, water consumption, the application of auxiliary materials and transport to the brewery.

The brewing process and the filling and packing are part of the brewery operations. The brewing process includes all processes at the production sites for brewing of beer, including water consumption and energy consumption.
Filling and packing includes all activities for packaging material production, generated at the packaging suppliers, like raw materials, recycled materials and energy consumption, as well as the energy consumption for filling and packing.

When the packaging has been filled, the beer is distributed to the retail and consumption phase. Distribution will take into account distances travelled via truck, train, barge ship, ocean ship or airplane, as well as loading capacity of the transport modalities, load factor and return trips.

The consumption phase includes energy consumption for cooling and the refilling of lost refrigerants. Cooling can be home cooling, cooling via draught beer installations or cooling in fridges in bars and restaurants. The production and maintenance of the cooling equipment will also be investigated.

After consumption the packaging is refilled, recycled or disposed via either landfilling or incineration. Energy and water consumption as well as cleaning agents for the cleaning of refilled packaging will be accounted for. The trip rate will be determined during the screening phase, based on data from different breweries. Energy recovery during incineration of materials will also be accounted for.
For the determination of the representative product a **virtual beer** is created:

1. Beer types sold in Europe
2. Recipes of the beer types

**Bill of materials for virtual beer**

The virtual beer is packed in the European average packaging mix, to come to 1 functional benchmark.
The objective of the PEF screening is to pre-identify the following key information:

- Most relevant life cycle stages and processes;
- Preliminary indication about the most relevant life cycle impact categories (e.g. carbon footprint);
- Preliminary indication about the definition of the benchmark for the product category in scope.

Life cycle can be modelled with literature data so primary data is not needed but data gaps exists for many processes of the virtual beer (e.g. speciality food ingredients).

- Used LCA software is SimaPro
- Used LCIA is ILCD V1.04
Screening: data and model quality

- Minimum “fair” quality data rating is required for data contributing to at least 90% of the impact estimated for impact category, as assessed via a qualitative expert judgement.

- Improvement of the accuracy and representativeness of the model by using an iterative approach with the TS and stakeholders.

- Generic data can be replaced with specific data and other more representative (specific) databases along the process.
## Data and assumptions: virtual beer

<table>
<thead>
<tr>
<th>Additives</th>
<th>Kg/hl beer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Miscellaneous</strong></td>
<td></td>
</tr>
<tr>
<td>Ascorbic acid/ascorbate</td>
<td>0.004</td>
</tr>
<tr>
<td>Benzoic acid/benzoates</td>
<td>0.02</td>
</tr>
<tr>
<td>Caramel</td>
<td>0.7</td>
</tr>
<tr>
<td>Citric acid</td>
<td>0.002</td>
</tr>
<tr>
<td>Gumarabic</td>
<td>0.001</td>
</tr>
<tr>
<td>Sulphites</td>
<td>0.03</td>
</tr>
<tr>
<td>Lactic acid</td>
<td>0.035</td>
</tr>
<tr>
<td>Lysozyme</td>
<td>0.008</td>
</tr>
<tr>
<td>Propane-1,2-diol alginate</td>
<td>0.01</td>
</tr>
<tr>
<td>Sorbic acid/sorbates</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Sweeteners</strong></td>
<td></td>
</tr>
<tr>
<td>Acesulfame K</td>
<td>0.04</td>
</tr>
<tr>
<td>Aspartame</td>
<td>0.06</td>
</tr>
<tr>
<td>Aspartame/acesulfame k salt</td>
<td>0.04</td>
</tr>
<tr>
<td>Neohesperidine DC</td>
<td>0.00</td>
</tr>
<tr>
<td>Neotame</td>
<td>0.00</td>
</tr>
<tr>
<td>Saccharin</td>
<td>0.01</td>
</tr>
<tr>
<td>Steviol</td>
<td>0.01</td>
</tr>
<tr>
<td>Sucralose</td>
<td>0.03</td>
</tr>
</tbody>
</table>

### Processing aids

<table>
<thead>
<tr>
<th>Kg/hl beer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yeast</strong></td>
<td>0.163</td>
</tr>
<tr>
<td><strong>Enzymes</strong></td>
<td></td>
</tr>
<tr>
<td>Cytolytic enzyme blends</td>
<td>0.001</td>
</tr>
<tr>
<td>Amylolytic blends</td>
<td>0.004</td>
</tr>
<tr>
<td><strong>Proteases</strong></td>
<td></td>
</tr>
<tr>
<td>Fermentation blends</td>
<td>0.005</td>
</tr>
<tr>
<td>Acetolactatecarboxylase</td>
<td>0.002</td>
</tr>
<tr>
<td>Proline-specific endoprotease</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Filter aids</strong></td>
<td></td>
</tr>
<tr>
<td>Diatomaceous earth (calcined)</td>
<td>0.066</td>
</tr>
<tr>
<td>Diatomaceous earth (uncalcined)</td>
<td>0</td>
</tr>
<tr>
<td>Diatomaceous earth (flux calcined)</td>
<td>0.01</td>
</tr>
<tr>
<td>Perlite</td>
<td>0.019</td>
</tr>
<tr>
<td>Filter sheets</td>
<td>0.003</td>
</tr>
<tr>
<td><strong>Cartridge filters</strong></td>
<td></td>
</tr>
<tr>
<td>Cellulose fibres</td>
<td>0.005</td>
</tr>
<tr>
<td>PVP</td>
<td>0.002</td>
</tr>
<tr>
<td>PVPP</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Silica hydrogel</strong></td>
<td></td>
</tr>
<tr>
<td>Silica xerogel</td>
<td>0.001</td>
</tr>
<tr>
<td>Bentonite</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Antifoam</strong></td>
<td></td>
</tr>
<tr>
<td>Dimethylpolysiloxane</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Fining agents</strong></td>
<td></td>
</tr>
<tr>
<td>Tannic acid</td>
<td>0.001</td>
</tr>
<tr>
<td>Isinglass</td>
<td>0.006</td>
</tr>
<tr>
<td>Polysaccharide auxiliary finings</td>
<td>0.001</td>
</tr>
<tr>
<td>Polysilicate auxiliary finings</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Silica sol</strong></td>
<td>0.006</td>
</tr>
<tr>
<td>Carrageenan</td>
<td>0.002</td>
</tr>
</tbody>
</table>

### Other inputs in the brewing process

<table>
<thead>
<tr>
<th>Kg/hl beer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brewing salts and pH regulators</strong></td>
<td></td>
</tr>
<tr>
<td>Calcium chloride</td>
<td></td>
</tr>
<tr>
<td>Calcium sulphate</td>
<td></td>
</tr>
<tr>
<td>Calcium hydroxide</td>
<td></td>
</tr>
<tr>
<td>Citric acid</td>
<td></td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td></td>
</tr>
<tr>
<td>Phosphoric acid</td>
<td></td>
</tr>
<tr>
<td>Potassium hydroxide</td>
<td></td>
</tr>
<tr>
<td>Sodium carbonate</td>
<td></td>
</tr>
<tr>
<td>Sulphuric acid</td>
<td></td>
</tr>
<tr>
<td><strong>Yeast foods</strong></td>
<td></td>
</tr>
<tr>
<td>Yeast foods</td>
<td>0.0001</td>
</tr>
<tr>
<td>Zinc chloride/sulphate</td>
<td>0.000007</td>
</tr>
<tr>
<td><strong>Cleansers</strong></td>
<td></td>
</tr>
<tr>
<td>Nitric acid</td>
<td>0.205</td>
</tr>
<tr>
<td>Peracetic acid</td>
<td></td>
</tr>
<tr>
<td>Phosphoric acid</td>
<td></td>
</tr>
<tr>
<td>Quaternary ammonium compounds</td>
<td>0.0001</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>2.367</td>
</tr>
<tr>
<td>Sodium hypochlorite</td>
<td>0.00001</td>
</tr>
<tr>
<td>Sulphamic acid</td>
<td>0.00001</td>
</tr>
<tr>
<td>Sulphuric acid</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

---

The Voice of the European Brewing Sector
Opportunities for brewers?

**Brewers of Europe Press release: 15 May 2014:**

The Brewers of Europe is delighted that Beer has been selected as a pilot for the European Commission’s Product Environmental Footprint (PEF) project. The initiative, aimed at analysing the opportunity for the development of a **systematic methodology for calculating the environmental footprint** of food products, will help brewers to continue their pioneering work in the field of product sustainability.

“Having been chosen as the privileged partner of the Commission for a beer pilot, The Brewers of Europe wishes to participate in exploring a new, robust methodology to measure environmental impact,” said Pierre-Olivier Bergeron, Secretary-General of The Brewers of Europe. **“The brewing sector is consistently looking for novel and innovative ways to reduce its environmental footprint and we greatly look forward to helping Europe achieve its core objectives in the field of product sustainability.”**

The Food and Drink PEF initiative provides a landmark opportunity to explore and enhance the efficiency and accuracy of measuring environmental impact. A comprehensive life-cycle approach should allow for greater resource efficiency gains and synergies throughout the whole value chain, to the benefit of consumers and the planet alike.

“Brewers already work together with other drinks producers, through the Beverage Industry Environmental Roundtable (BIER), to advance environmental sustainability in the beverage sector. Our leading role in the PEF project is a useful opportunity to continue promoting sustainable production and consumption of beer, whilst also providing key learnings for other beverages too,” continued Mr Bergeron. “Our participation in the scheme is aligned with our wider efforts to increase the sustainability of beer in Europe and should enable us to play a central role in exploring a robust framework for reducing the sector’s environmental impact throughout the whole value chain.”

“It should also allow our sector to advance the environmental savings we have already achieved, as evidenced in [The Brewers of Europe Environmental Report](https://www.biereurope.org/uploads/1291103675-2014-05-15-The-Bioeval-Report-2014.pdf), [our online sustainable water management library](https://www.biereurope.org/sustainable-water-management) and the [Worldwide Energy and Water Efficiency Benchmark](https://www.biereurope.org/sustainable-water-management).”

Already following a period of intense reductions, in the 2 years up to 2010, an average 4.5% less water was used, and 3.8% less energy and 7.1% less CO2 emissions generated, for the production of each litre of beer. Brewers’ grains, a secondary product produced during the brewing process, are also used in bread, yeast extract, paper, bricks and animal feed, with enough grains produced annually to feed up to 2.4 million cattle.

The Brewers look forward to cooperating with the Commission, including through other PEF pilots in related fields such as agriculture and packaging in the quest for a more sustainable and efficient Europe.

- Level playing field, agreed method, data transparency, no false claims
- Understand the life cycle of beer in full (all environmental impacts)
- Alignment on ”hot spots”, where it really matters
- A Product environmental footprint tool for all brewers
Role of specialty food ingredients for resource efficiency in the food chain

Specialty food ingredients provide tools and solutions to improve resource efficiency along the whole of the food value chain, due to their effective impact during food processing and food storage.

- Specialty Food Ingredients Industries
  - Improve resource efficiency along the food chain by...
- Farmers, Traders
- Food Industry
  - ...improving food manufacturing process efficiency
- Primary Food Processors
  - ...enabling the use of all parts of raw materials
- Retailers
  - ...reducing food waste
- Consumers

Staple Ingredients
  - flour, starch, rice, sugar, oils, coffee, cocoa, meat, milk, eggs etc.
Specialty food ingredients are “sustainability enablers” throughout the food chain, from raw materials to processed foods.

- Improve resource efficiency by continuously innovating & by using all valuable components of raw materials.
- Help make processing of foods more efficient, thus limiting the quantity of raw materials required for production and resulting in energy saving, thus reduction of GHG.
- Improve resource efficiency by reducing downstream losses.
- Are produced with a view to reducing their environmental impact.
Opportunities for ELC Members

• Specialty food ingredients are relevant from an environmental perspective

• Full life cycle is relevant

• Specialty food ingredients can help to make life cycle of beer more sustainable

• Provided that
  – Data gaps are solved
  – Fact based evidence is available