



»»»»» POSITION PAPER 1

# FOUNDATION EARTH FARM-TO-FORK METHOD: AN OVERVIEW



## Objective

This position paper intends to give a clear and tangible view of the proposed harmonised methodology developed by Foundation Earth to assess and communicate the environmental impact of food and drink products. The statements of this paper are based on the experiences of Foundation Earth Members, Scientific Committee and partner LCA Experts when adapting the 'Product Environmental Footprint' (PEF) method of Life Cycle Analysis (LCA) to utilise primary data from specific supply chains through a targeted development programme.

## Introduction

Ecolabelling is dependent on the implementation of systems which can measure environmental impact. Multiple systems exist to enable this, with the most recognised system used being the European Union's Product Environmental Footprint (PEF). This system defines 16 Impact Categories for assessment, but stops short of defining the exact steps for each calculation, leaving room for interpretation in many instances. This means that PEF assessments carried out by different assessors may not be directly comparable because each assessment may be subtly different.

A significant failing of the PEF system is that analyses produced from the system primarily use standardised databases, and do not include information from the specific supply chain which is being studied. This means that currently PEF only enables different food products to be compared, not similar food products from different supply chains. Consequently, as it stands, the PEF system cannot deliver against the aims of Foundation Earth – namely the identification of methods within individual supply chains which can reduce environmental impact, enabling consumers to choose lower impacting foods within each food type.

Foundation Earth has set out to address this challenge, adapting PEF to utilise primary data from specific supply chains through a targeted development programme. A harmonised methodology has been defined which will be used from February 2023, and will continue to be refined and developed as the science evolves.



## Lines of action to move towards a Harmonised Assessment System

### Definition of the system boundary

LCA systems must have their boundaries defined, for instance from farm to shelf, or farm to fork. In line with the PEF methodology, the harmonised Foundation Earth assessment system will run from ‘farm to fork’ (covering cradle to grave life cycle stages), as opposed to the original Foundation Earth methodology’s ‘Farm to Shelf’ method which was in use from September 2021 to 2023. The new method, named “Foundation Earth Farm to Fork method”, takes into consideration all activities throughout the lifecycle of the product, ranging from the extraction of raw materials, processing, distribution, storage and use, to the disposal or recycling stages.

### Definition of the functional unit

In order to compare individual products, they must share the same Functional Unit (usually either serving size of the product or the weight of the product), and the assessment of each product must have been carried out using the same assessment system.

The Functional Unit for the Foundation Earth PEF-friendly grading system has been agreed as per 1kg of consumed product. This decision was reached because it is difficult to manipulate the weight of a product (as compared to portion size), and secondly because the use of weight is the most widespread Functional Unit in Europe, and as a result is the most likely to be accepted by consumers. Portion size was considered as a Functional Unit but was rejected because of the potential to manipulate the product grade through reducing the recommended portion size.

### Agreement on the impact categories required for the methodology

Currently, 16 Impact Categories are defined for use under the PEF assessment. These are: climate change, ozone depletion, human toxicity (cancer), human toxicity (non-cancer), particular matter, ionising radiation (human health), photochemical ozone formation (human health) acidification, eutrophication (terrestrial), eutrophication (fresh water), eutrophication (marine), ecotoxicity (freshwater), land use, water use, resource use (minerals and metals) and resource use (fossils). Each assessment has an indicator and a unit of measurement.

### Primary data incorporated into PEF

Foundation Earth has therefore engaged in the development of a PEF-friendly LCA assessment system which incorporates as much primary and high-quality data as possible. This development is based on harmonisation work between the existing (non-PEF aligned) Foundation Earth system and the PEF system as defined by the EU, using learnings from the comparison of each of these methods.

### Definition of nodes, stages and impact categories within Foundation Earth PEF LCA

Within the Foundation Earth PEF system, Nodes and Stages have been defined to enable clarity of terminology. Nodes and Stages both refer to individual steps within the production chain. However, they are subtly different. We use the following to define each.

- A **Node** is a fixed step in the supply chain that occurs only at one point within the whole life cycle. Examples are farming, processing and retailing.
- A **Stage** is a non-fixed step in the supply chain. It is similar to a node, but it can occur across more than one node. The most obvious example of a Stage is transport.



- **Impact Categories** across the whole life cycle of the food are areas which are assessed to determine the overall impact of a food product. They occur within both Nodes and Stages. The Impact Categories include:
  - Climate change
  - Ozone depletion
  - Human toxicity, cancer
  - Human toxicity, non-cancer
  - Particulate matter
  - Ionising radiation, human health
  - Photochemical ozone formation, human health
  - Acidification
  - Eutrophication, terrestrial
  - Eutrophication, freshwater
  - Eutrophication, marine
  - Ecotoxicity, freshwater
  - Land use
  - Water use
  - Resource use, minerals and metals
  - Resource use, fossils

### Clearly defined weighting of data

Not all impact categories are equally applicable to the calculation of the impact of a food product on the environment, and as a consequence, each impact factor has been weighted to reflect its importance. The weighting process multiplies the normal results (calculated under each of the scheme components) by a weighting factor which reflects the relative importance of that component (such as healthiness, packaging etc). The weighting influences the overall score (and hence grade), and therefore the reasoning behind each weighting must be clearly explained and justified.

### Improved normalisation process

In the case of the original Foundation Earth methodology, the results have previously been normalised by comparing the findings to a basket of food items commonly on sale in the UK, but under the PEF methodology, normalisation will take place by comparing the result to a much larger group of products. As the number of graded products grows (>1000), normalisation will take place using the whole Foundation Earth database. Foundation Earth believes that the use of a full database to compare products is effective and removes the challenge of regional differences in buying habits, or potential bias in the selection of the basket.



## Appropriate Grading System

Under the new Foundation Earth method, all weightings and transformations which are related to the environmental impact of a food chain will be applied within the methodology itself. Any transformation or weighting (such as nutritional or welfare ratings) could be applied within the grading system developed for the Foundation Earth assessment system.





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