

Deliverable B2

PEF report summary



Pilot company description	
Productive field	Collective catering
Number of employees	11500
Turnover/year	560M/2017
Region	ITALY

1. Methodology

The PEF supporting study on the contracted school food service has been carried out by Ecoinnovazione srl (www.ecoinnovazione.it) according to the following Guidance documents, in hierarchical order:

- PEFCR DRAFT of contracted supply service for school meals, Version 1.1 - November 2018. The draft PEFCR has been developed in the framework of the EFFIGE Project;
- Product Environmental Footprint Category Rules Guidance, Version 6.3 – May 2018
- European Commission, – 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”. Annex II – Product Environmental Footprint (PEF) Guide;
- ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines (ISO 2006b);

In addition, the following document has been taken into account for supporting the modelling:

- Product Environmental Footprint Category Rules for olive oil – 3rd draft. Draft version 0.5, 22.09.2016

2. Functional unit and flow chart

The functional unit (FU) is the supply of a daily meal at kindergarten and primary schools for one average user and 200 days, and for an overall number of 652.886 meals.

More in detail, the FU has been defined in terms of:

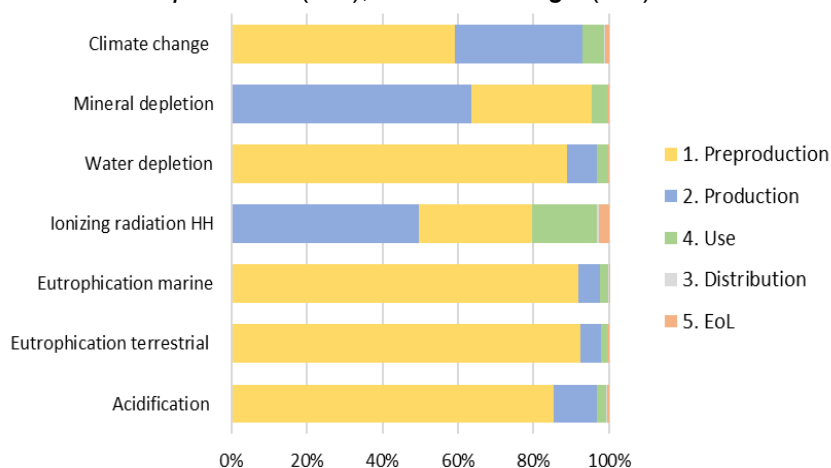
- *What*: To provide school meals
- *How much*: One daily meal
- *How well*: In agreement with:
 - o the recommendations of the Italian Ministry of Health for school catering;
 - o the Green Public Procurement minimum environmental criteria;
 - o Linee guida per una sana alimentazione italiana (Ministero delle Politiche Agricole e forestali, Istituto Nazionale di ricerca per gli alimenti e la nutrizione);
 - o Guidelines on School Catering in Emilia-Romagna Region (Emilia Romagna National Health Service);
 - o Guidelines for managing bodies of canteens in schools, hospitals, companies, and at community level, in order to minimise the food wastage (Italian Ministry of Health)
- *How long*: from September 2017 to June 2018, considering 200 school days

The system boundaries of the study include the following life cycle stages and processes:

Life cycle stage	Processes
Pre-production	Production of packed food Transport to a Distribution Centre (DC) Storage at the DC Transport to the kitchen Production of packaging (primary, secondary, tertiary) Waste and emissions at this stage
Production	Supply of auxiliary materials to the kitchens (production, transport to DC, storage, distribution to kitchens) Meal preparation (electricity, water, gas, refrigerants consumption) Kitchen equipment and infrastructure Cleaning and sanitization of spaces and equipment Waste and emissions at this stage
Distribution	Distribution from kitchen to school canteens
Use	Supply of meal sets (production, transport to DC, storage, distribution to kitchens, washing of reusable tableware) Drinking water supply Waste and emissions at this stage
End of life (EoL)	Treatment of food and non-food waste Wastewater treatment (drinking water and beverages which have not been consumed)

3. Product environmental footprint results

The results of the study have confirmed the identified relevant environmental impact categories of the draft PEFCR, namely: *Water resource depletion* (37%); *Mineral, fossil and renewable resource depletion* (13%); *Terrestrial eutrophication* (11%); *Acidification* (9%); *Ionizing radiation HH* (8%); *Marine eutrophication* (6%); *Climate change* (6%).



Regarding the life cycle stages, the pre-production – which entails the production of the packed food, transport to a Distribution centre, transport to the kitchens, waste and emissions occurring at this stage – is the most relevant ones, in all the relevant impact categories, with a contribution in the range 30%-90%.

The production phase also affects significantly most of the relevant impact categories, with contributions from 34% to 64%, and - in addition to the PEFCR findings – **also the use phase is a relevant one**. As far as the *processes* are concerned, **the most relevant ones** are represented by the **packed food production**, the **consumption of electricity and thermal energy** into the kitchen, and by the **dishwasher consumption** during the use phase.

Breaking further down the packed food at the level of food category, the most relevant processes are reported in red in the table below:

	Products	Acidification [Mole of H ⁺ eq.]	Climate change [kg CO ₂ eq.]	Eutrophication marine [kg N eq.]	Eutrophication terrestrial [Mole of N eq.]	Ionizing radiation [kBq U235 eq.]	Resource depletion water [m ³ eq.]	Resource depl. [kg Sb eq.]
Pre-production	beverage	0,28%	1,33%	0,21%	0,22%	3,76%	1,25%	0,14%
	bread	1,29%	0,89%	3,11%	1,46%	0,48%	0,21%	0,02%
	cereal	4,04%	4,12%	8,67%	4,08%	2,20%	4,16%	0,62%
	condiment	3,38%	4,80%	2,45%	3,15%	0,78%	57,01%	12,51%
	dairy	22,78%	10,46%	20,40%	27,18%	1,32%	0,29%	0,05%
	fruit	2,00%	2,62%	1,71%	1,40%	1,26%	10,95%	4,31%
	legumes	3,02%	0,75%	4,87%	3,60%	0,17%	0,02%	0,01%
	meat	36,82%	18,65%	36,78%	43,80%	3,63%	8,63%	0,17%
	vegetable production	2,09%	1,66%	6,57%	2,28%	1,64%	3,60%	3,02%
	Food pack	2,18%	3,94%	3,15%	1,12%	7,38%	0,82%	5,42%
Production	Tran.CEDI	0,80%	5,36%	0,68%	0,74%	2,80%	0,06%	2,94%
	Auxiliary prod+stor	3,61%	4,07%	1,17%	1,18%	3,05%	0,45%	1,14%
	electricity	1,33%	7,03%	1,01%	0,96%	20,48%	4,74%	0,55%
	heat	1,04%	14,77%	1,05%	1,16%	0,21%	0,07%	0,08%
	equip	5,31%	6,33%	2,50%	2,51%	21,40%	1,08%	55,21%
	infrastr.	2,43%	1,63%	0,80%	0,72%	2,15%	0,18%	5,57%
	EoL pack 1	0,49%	0,20%	0,25%	0,24%	3,25%	0,47%	0,51%
Use	Meal sets prod+tran+stor	1,17%	1,78%	0,75%	0,64%	5,54%	0,53%	1,71%
	Dishwasher use	0,68%	2,86%	1,21%	0,50%	8,54%	2,24%	0,45%

Overall, the meat production stands out as a key process, followed by dairy products, and cereals. The results on condiments should be taken with caution, as the environmental profile of olive oil production (which is the most relevant ones among the condiments) has been taken from the draft PEFCR on olive oil, which has not been approved yet. This level of detail in the interpretation of the pre-production phase was considered more useful to support future improvement actions on the menu design and on the management of the product supply.

Overall, the results of the supporting study confirmed the findings of the draft PEFCR, with the exception of the *use phase*, which has been found to be a relevant process. In addition, the study confirmed also that the default values for the main processes in the PEFCR are sufficiently conservative, an aspect that allows to highlight the company specific efforts and value in collecting and using primary data for the processes that are either under full and partial control. Suggestions for further improving the PEFCR have been identified, which include (but are not limited to) the following aspects:

- Increasing the granularity of the basket of food products, building upon the data available from the PEFCR developed during the PEF pilots and available in other secondary sources;
- Extending the list of materials for the primary packaging of food, which has been found to be a relevant process;
- Revise the level of granularity at which the most relevant processes should be identified and analysed.

Finally, the study allowed to identify the main hot spots of the service analysed, which represent the starting point for defining future improvement scenarios, namely: i) efficiency measures during the use phase, related to the type of meal seats used; ii) measures to reduce the food wastage during the use phase, which in turn will affect the food production processes upstream.