Project co-financed by the European Regional Development Fund

Montenegro
Administration for Food Safety, Veterinary and Phytosanitary Affairs

PEFMED outputs
products environmental footprint assessment methodology in food sector: case studies

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WORKSHOP

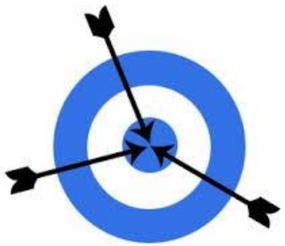
Trajectories of collaboration for better integration of policies on food safety and sustainability in agri food chain

10th June 2022 , Podgorica, Hotel "Hilton»

PEFMED
OVERALL OBJECTIVES

- To foster targeted **systemic ecoinnovation** interventions to green the agrifood supply chain

- Promote the **market uptake** of **eco-innovative production solutions** and maintain the **competitiveness** in the frame of the regional Smart Specialization



Project objectives

- PEFMED has been the **1st** verification in Europe of the PEF standards **within given territorial domains**.

- It **strengths** connection & cooperation between LCA research & ecoinnovation experts and agrofood business organization in MED Countries **by providing a set of technology, organizative & market intelligence drivers.**

- to **guide** a mind-change in traditional agrofood productions model towards PEF-compliant measures

NOW PEFMED PLUS MOVE FORWARD TO SPREAD PEFMED EXPERIENCES IN OTHER COUNTRIES AND AGRIFOOD CLUSTERS!

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THE "PRODUCT ENVIRONMENTAL FOOTPRINT" METHODOLOGY

FROM THE CRADLE TO THE GRAVE

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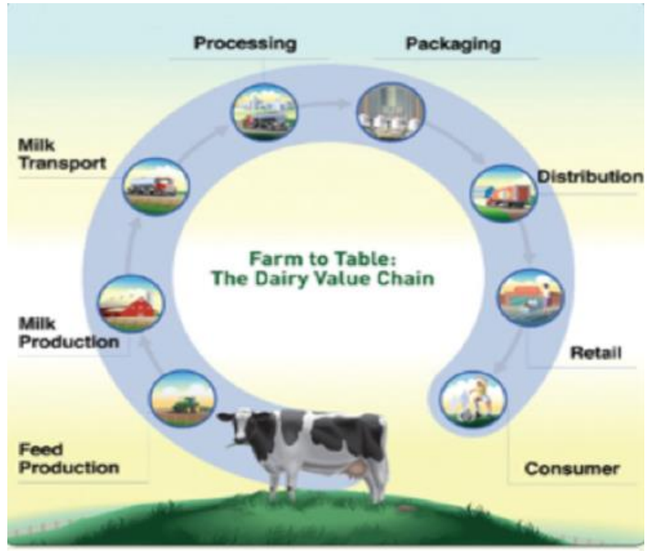
- ✓ The "Product Environmental Footprint" (PEF) **method** is based on evaluating the environmental impact of a product throughout its **life cycle**, from the primary production to domestic consumption and waste treatment (**LCA** method)



http://www.foodsafetymagazine.com

Many different stakeholders along and around the agrofood chains

TAKING INTO ACCOUNT AND MONITORING ALL THE FOOD CHAIN !

REGIONS AND PRODUCTS

Regions: France, Italy, Portugal, Spain, Slovenia and Greece

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- ✓ This method, coupled with environmental and socio-economic aspects, was **tested** in nine agri-food product chains and clusters located in different Mediterranean regions

- ✓ Over 100 companies from nine mediterranean regions have been involved to reduce the environmental footprint

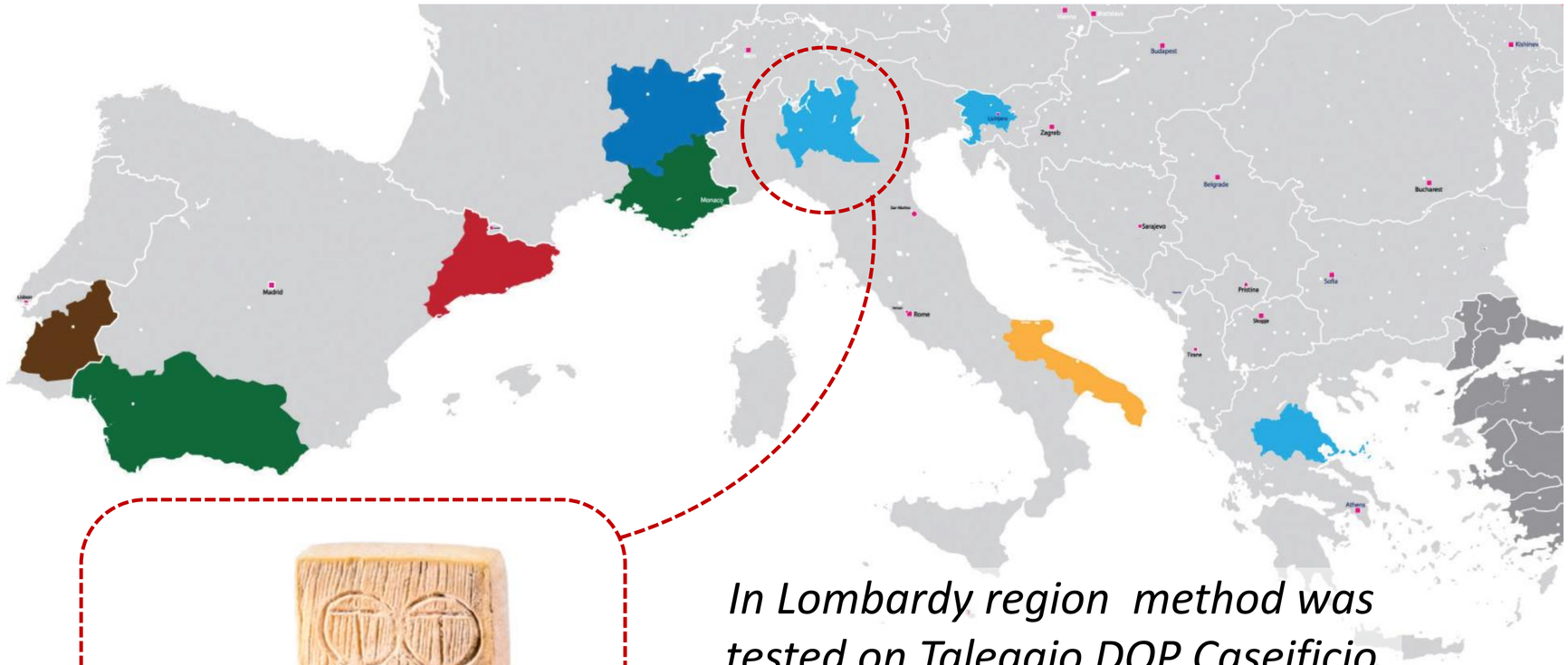
- ✓ **Six** consumer goods: **Olive oil** and **Bottled water** (France), **Wine** (Italy), **Livestock feed** (Portugal), **Cured meats** (Spain) and **Cheese** (in Slovenia, Italy and Greece).

PRODUCTS CHAIN & Test

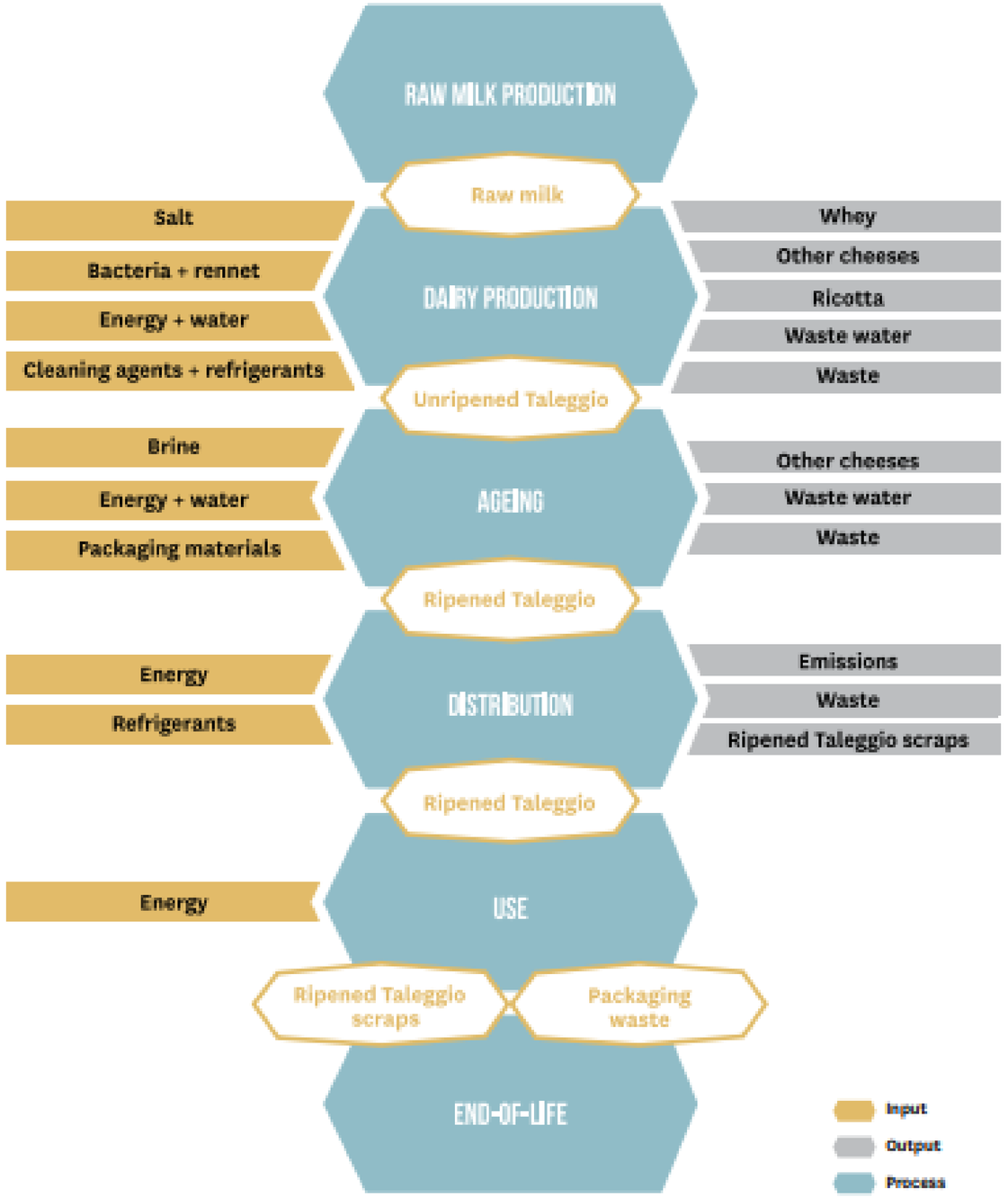
- **Sectors are**: *Olive oil, Packed water, Meat, Wine, Dairy, Feed for food-producing animals*. These products have been already tested by the EC and environmental life-cycle results are available.

- **100 agrofood** companies (estimated value) within these 9 MED systems indirectly involved in the PEFMED method application

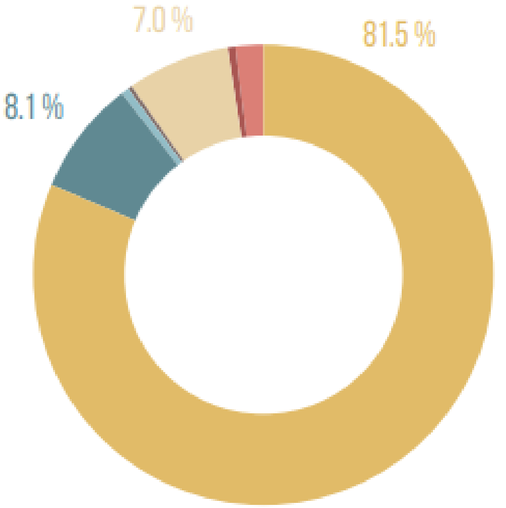
Pilot test phase



In Lombardy region method was tested on Taleggio DOP Caseificio Sangiovanni s.r.l.

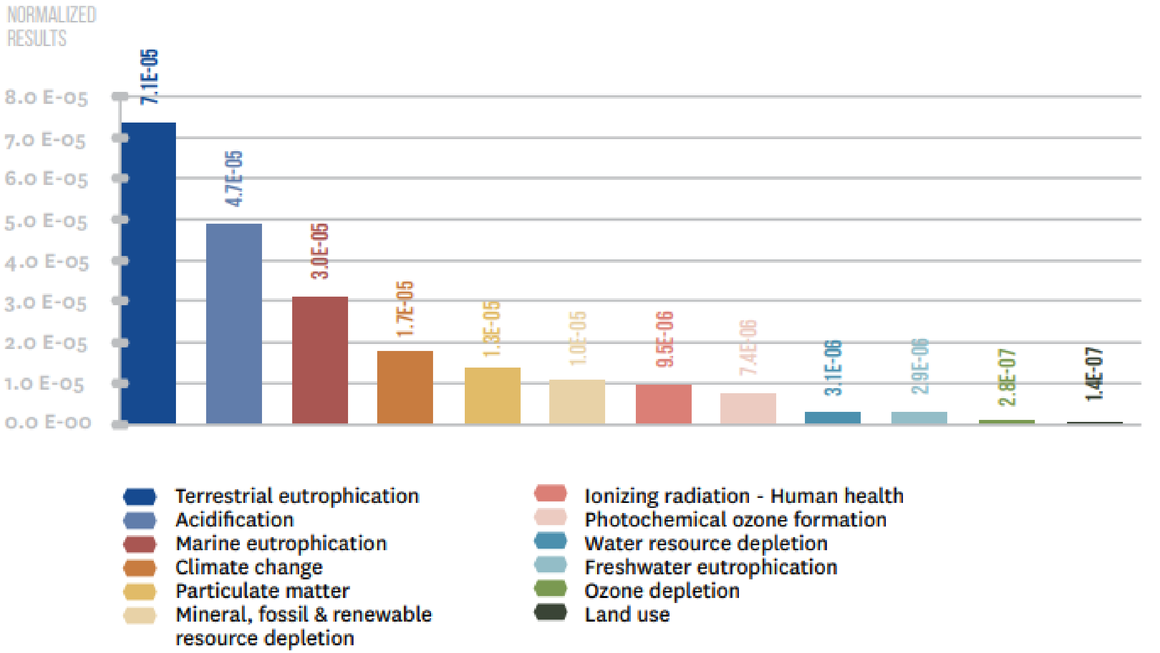


THE MAIN RESULTS OF THE PEF STUDY



The most critical life cycle stage of Taleggio cheese is raw milk production, which accounts for more than 80% of the total environmental impact.

- Raw milk supply
- Dairy processing
- Non-dairy ingredients
- Packaging
- Distribution
- Use
- End-of-Life



Pilot test phase

In Puglia method was tested on Tinaia wine Cantina 2 Palme (Cellino San Marco – BR)

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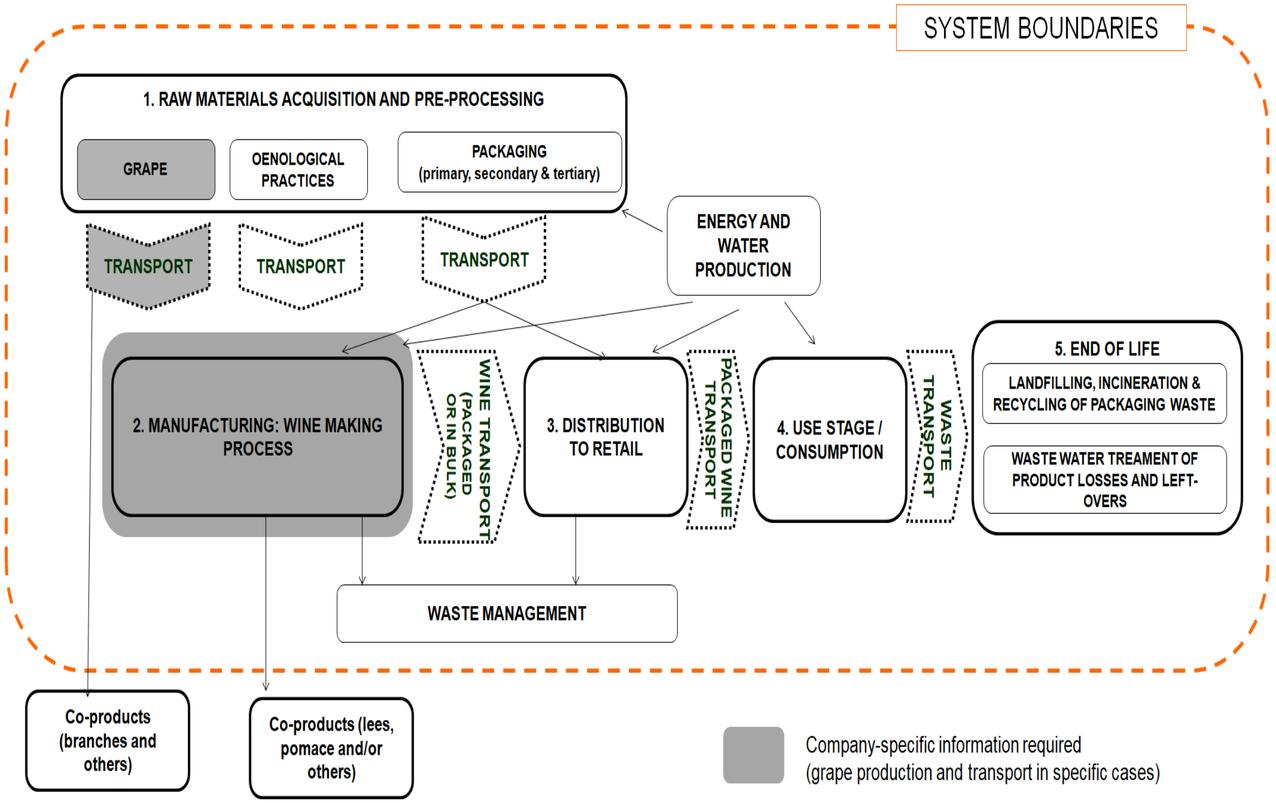
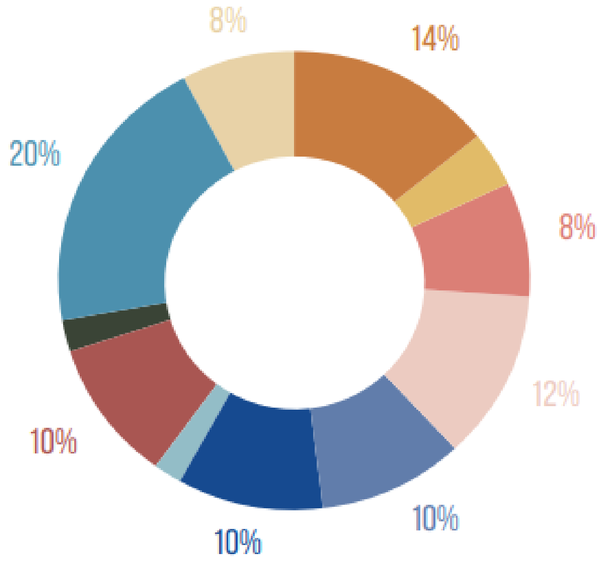
Tinaia wine – System Boundaries and main impact categories





The most relevant impact categories are Terrestrial Eutrophication, Acidification, Photochemical ozone formation, Climate Change and Water depletion. Grape production, Distribution, Packaging production and Use account for around 90% of the impact of the complete life cycle. Packaging accounts for around 50% of the 5 most relevant impact categories.

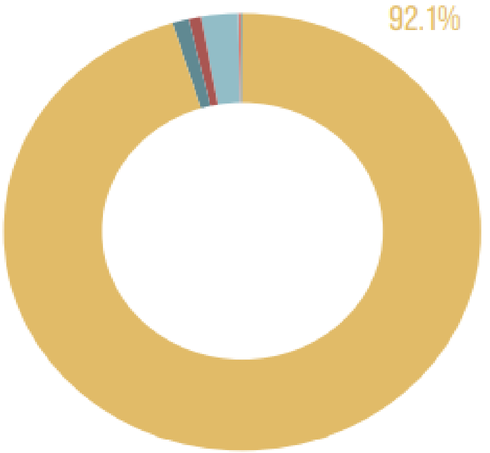
- Water resource depletion
- Mineral, fossil & renewable resource depletion
- Climate change
- Particulate matter
- Ionizing radiation - Human health
- Photochemical ozone formation
- Acidification
- Terrestrial eutrophication
- Freshwater eutrophication
- Marine eutrophication
- Land use

Moulin Rossi

EXTRA VIRGIN OLIVE OIL

IN A GLASS OR BAG-IN-BOX CONTAINER

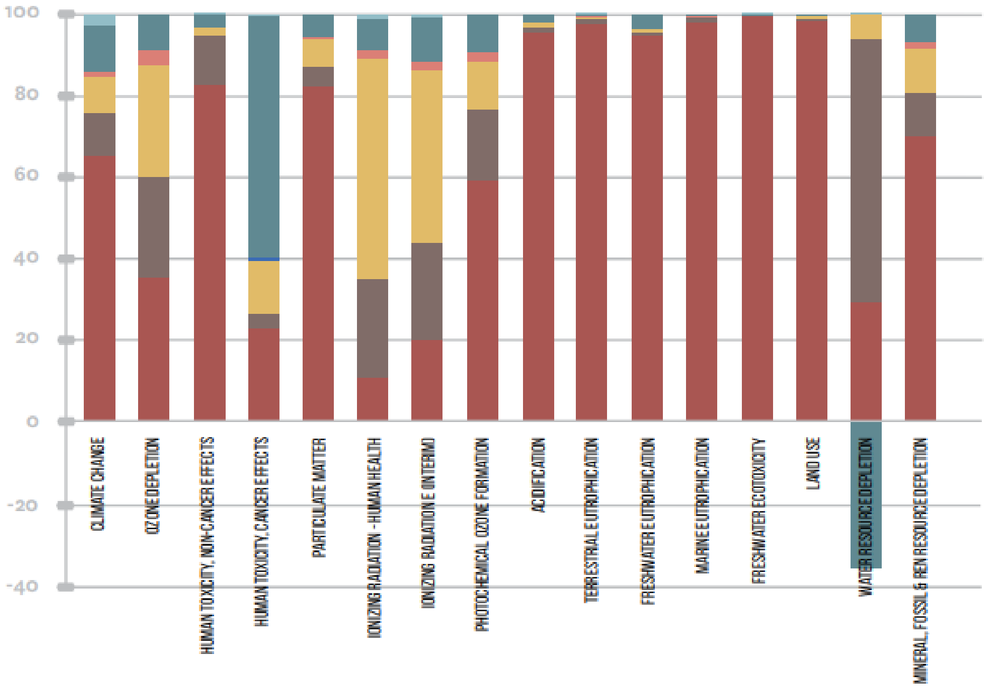
THE MAIN RESULTS OF THE PEF STUDY



The most critical life cycle stage of olive oil in glass container is Cultivation of Moulin Rossi olives, which accounts for more than 90% of the total environmental impact.

- **Processing (for 1 kg of olives)**
- **Glass container 75 cl**
- **Cap**
- **Distribution of olive oil**
- **Cardboard**
- **Cultivation of Moulin Rossi olives**

NORMALIZED RESULTS



The stages which impact the environment the most are Cultivar and Packaging, depending on the impact category.

The most significant process of olive cultivation, which accounts for more than 80% of global impact is pomace fertilization.

- Carboard bottle boxes
- Bottle caps
- Olive oil in glass container distribution
- 75 cL glass containers
- Processing 1 kg of olives
- Moulin Rossi olives cultivation
- 1L of olive oil bottled in 75 cL Rossi bottle

PEFMED “TOOLS”

Socio–Economic Indicator Guide

consists of a set of **14** Key Performance Indicators (KPIs) and **36** questions to test the applicability of the new EU Product Environmental Footprint method (PEF) and It is useful for companies to identify where and how to improve on their supply chain

PEF Tool

designed for 3 products: olive oil, packed water and wine to allow a simplified **qualitative** and **quantitative** assessment of each sector, from their production to their end of life.

INFOSHEETS

INFOSHEETS a list of potential eco-innovative solutions with over 60 good practices and solutions for greening Agrofood sector.

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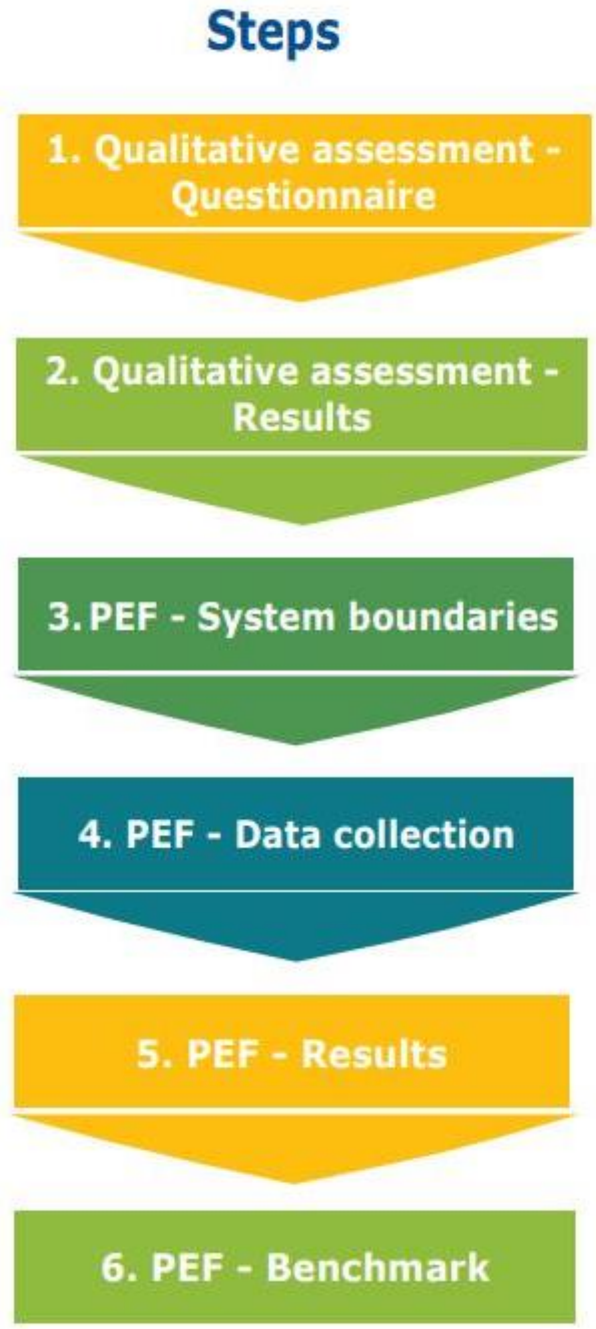
Innovative Product Environmental Footprint (PEF) tool

- PEF Tool was designed for 3 products: olive oil, packed water and wine.
- The tool allowed a simplified **qualitative** and **quantitative** assessment of each sector, from their production to their end of life.
- This **easy to use** tool helped assessing the product life cycle hotspots, e.g. in terms of most critical phases, processes, impact categories, and improvement potentials.



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Economic and Social Key Performance Indicators (KPIs)

- Designed for the product groups of the 9 MED agrifood regional systems (clusters & supply chains) involved in the project.
- The tool consists of a set of **14** Economic and Social Key Performance Indicators (KPIs) and 36 questions to test the applicability of the new EU Product Environmental Footprint method (PEF).
- It also useful for companies to identify where and how to improve on their supply chain
- **Socio – Economic Indicator Tool and Guide** are available here.

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The indicators include

- ✓ human rights
- ✓ working conditions, health and safety
- ✓ cultural heritage
- ✓ governance
- ✓ socio-economic territorial impacts.

SE-KPIs TOOL IMPLEMENTATION

- The results of applying SE-KPIs tool reflect the company's progress in this field, and indicate the sustainability of its supply chain in **socio-economic terms**.
- Using this method on a yearly basis allows companies **to track progress** on specific KPIs, and identify areas for improvement. Users can choose to focus their resources on all KPIs, or select those that most interest them.
- More on SE-KPIs Tool available here.

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INFO-SHEETS TOOL

Description of **Innovative** solutions

(**technological / management / tools**)

effective to be used by companies

for improving the environmental footprint of agrifood value chains

✓Target Group(s): **SMEs**

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INFO-SHEETS CATALOGUE

✓ *51* Info-sheets related to 6 Specific Thematic Areas

- ***Water***
- ***Waste***
- ***Packaging***
- ***Resource efficiency***
- ***Eco-labeling***
- ***Socio economic***

✓ *10* Cross-cutting Info-sheets

- ***Other***

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INFO-SHEETS TOOL

Waste

Interreg Mediterranean PEFMED

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Reset logo

FERPODE: PRODUCTION OF HIGH QUALITY ORGANIC FERTILISER FROM POULTRY DEJECTION

Category

☐ water ☐ energy ☐ land use ☐ waste ☐ transport ☐ resource efficiency ☐ packaging

☐ socio-economic ☐ eco-labeling ☐ other (specify)

Target

Primary production (livestock, agriculture)

Stage of development

☐ already on the market ☐ development phase – laboratory tested ☐ available for demonstration – field tested

☐ other (specify) ready for pilot production

Description

This technology turns poultry dejection (manure) into an innovative high quality organic fertilizer, for (partial) mineral fertilizer substitution. It is a product rich in organic matter, with macro- and micro-nutrients and with slow-release nitrogen component.
The technique foresees a treatment of poultry dejection, in particular laying hens manure (LHM), directly in poultry farm with a vegetable complex enzymatic blend, extracted from vegetables (flowers, plants, seeds and fruits). The acronym of this preparation is AVE: active vegetable extracts and it has been developed and patented by Amek scrl, in Italy (Patent EP1314710 "A process of maturing and stabilizing biomasses under reduction of smelling emissions"). In this way poultry dejection doesn't become a waste. Process is static: AVE's inoculation takes place at the beginning of maturation in a static pile/heap and storage going on for 90 - 120 days. The LHM has to undergo a process of ripening and biostabilisation. The treatment has a positive influence on the salinity values in the ripen poultry manure (PM). Moreover, the product (AVE-PM fertilizer) shows a slow nitrogen release: indeed the nitrogen combines an ammoniac based component, with prompt release, with another component having a scheduled release.

Reset images

Impact on environmental aspects

- Sustainable manufacturing process: there is low energy input and it doesn't need water.
- Matter recovery, waste prevention, low environmental impact.
- Partial replacement of chemical fertilizers with natural products
- The use of special poultry manures (AVE-PM) gives no problems of plants' and soil's contamination due to heavy metals (cadmium and lead).
- Reduction of salinity, environmental impact and greenhouse gas emissions (GHG)
- Water saving in agriculture.

Impact on socio-economic aspects

- Upkeep of soil fertility and quality improvement in crop production.
- AVE-PM fertilizer releases the nitrogen to the soil very slowly and for this reason is more efficient than the normal poultry manures available on the market.
- AVE-PM does not exhibits phyto-toxicity and soil high salinity in case of overdose or inappropriate use, as it can happen with not processed manure or actual commercial products.
- Increase in soil water retention, and consequent water and energy saving.
- Improved sanitary conditions. Indeed, The dejection treatment allows hygienization, reduction of viable phatogens, minimizing risks

Main advantages

- A new cheap and high quality organic fertilizer by using poultry dejection and vegetable extracts with Nitrogen slowly released and a higher environmental respect.
- Cost savings in fertilizer provision and waste (poultry dejection) disposal
- Cost savings in water for agriculture
- Increase in the competitiveness
- Reduction of the environmental impact.

FERPODE ORGANIC FERTILIZER

Reset image

Main requirements for implementation

No special requirements, except the space dedicated to the material (poultry dejection) to be treated. The described technology is easy to use, applicable under various climatic conditions and to any agricultural reality, also in Developing Countries. Poultry dejections can be transformed also directly on farm.

Scale-up

Each farm can transform its poultry dejections. AVE-PM is a product good also for professionals (large soil extensions or horticulture).

Sources

European FERPODE Project: https://ec.europa.eu/environment/eco-innovation/projects/en/projects/ferpode

The technology is patented by Amek scrl in Italy (Patent EP1314710 "A process of maturing and stabilizing biomasses under reduction of smelling emissions"): http://pilot-abp.eu/en/project/consortium/amek

Contact

Alice Dall'Ara – ENEA - Territorial and Production Systems Sustainability Department – alice.dallara@enea.it - Via Ravegnana 186, Faenza (RA) – Italy

Description of **Innovative** solutions to be used by companies for improving the environmental footprint of agrifood value chains

Source: https://www.pefmed-wiki.eu/infosheets

Replicability potential

Companies can use the tools and the PEFMED experience to perform a preliminary assessment on environmental and socio-economic aspects of their entire production chain

- ✓ The drivers are the same everywhere and all companies are interested to save money, increase resource use efficiency and stay competitive on the market
- ✓ There are **no** “borders” for their application also if **some adaptation** could be necessary

- ✓ They are **not specific** for a region or a country and can be applied to other productive systems.
- ✓ The info sheets are “universal” and inform companies about opportunities for becoming more sustainable.

PEFMED results

Goals achieved

1

Definition of a PEFMED mixed method (PEF requirements+ environmental /socio economic territory based indicators)

2

LCA- based stress tests reports delivered for the pilot agrofood productive systems.

3

Development of territory-based PEF self-assessment diagnosis tools (in all partners languages + EN)

4

National roadmaps for environmental footprint sustainability in MED productions

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LESSON LEARNED

- Each Country involved has a different «**awareness**» about the environmental performances related to food production and consumption
  - *Agrifood sectors have a **different perception** on eco-labelling, strictly connected to market condition, regulatory framework and consumer trends*
- Smaller agrifood companies show higher **difficulties** than the bigger ones to comply with the P.E.F procedures and cost
  - *Agrifood sector, as a whole, needs a massive campaign of **capacity building** to increase the skills of their workforce and be ready to meet the challenges represented by the future environmental labelling schemes*

Agrifood goes green !

Thank you!

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