LIFE TTGG project

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POLITECNICO
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SUMMARY

1. Introduction to LIFE TTGG
2. Outcomes: benchmarks and software
3. Recommendations to improve PEFCR for Dairy Products

1. Introduction to LIFE TTGG

Partnership and budget

- ✓ **BUDGET**: 2 148 987 € (UE contribution 1 270 869 € - 59%)
- ✓ **DURATION**: 4 years + 12 months of extension (July 2017 – June 2022)
- ✓ **COORDINATOR**: Energy Department - Politecnico di Milano

RESEARCH INSTITUTES

POLITECNICO MILANO 1863

UNIVERSITÀ CATTOLICA del Sacro Cuore

OTHER PARTNERS

GRANA PADANO

Cniel Centre national interprofessionnel de l'économie laitière

oriGIn

ENERSEM

QUALIVITA

Scope and goal

- ✓ **SCOPE**: develop a ***software to assess and reduce the environmental impacts*** in the supply chain of 2 european semi-hard PDO cheeses: Comté and Grana Padano

- ✓ **METHOD:** apply ***PEF method, PEFCR for Dairy Products and EF 2.0 database*** on 19 environmental impact categories, on a ***life cycle approach***

- ✓ **GOAL**: ***optimize the environmental and economic performances*** of companies involved in the project and ***increase the environmental awareness*** of stakeholders and consumers

Overview of supply chain of Grana Padano PDO

A ***representative sample*** of companies (in each stage of production) has been selected to analyse the supply chain of Grana Padano PDO, according to geographical, technological and productive features.

Primary data have been collected related to years 2016 and 2017.

68 farms

- ✓ Po Valley
- ✓ Mountain

19 dairies

- ✓ Large dairies (>115 000 wheels)
- ✓ Intermediate-little dairies (<115 000 wheels)

18 packagers

- ✓ 134 packagings
- ✓ 5 solutions of packaging

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2. Outcomes: benchmarks and software

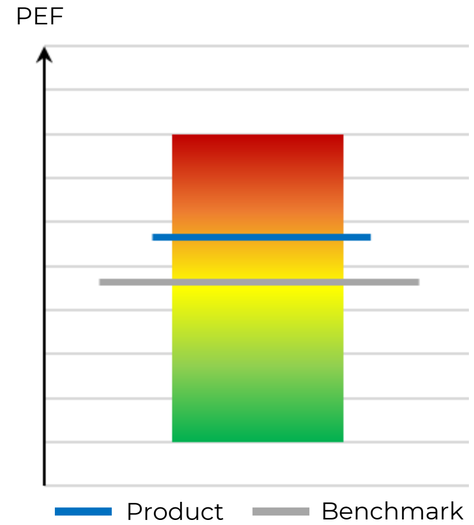
Validation of Grana Padano PDO datasets

✓ Representative datasets of Grana Padano PDO have been certified with “ILCD entry level” requirements by an external independent auditor:

- ***3 datasets for farm*** [Po Valley; mountain; average]
- ***3 datasets for dairy*** [large; intermediate-little; average]
- ***1 dataset for packaging*** [average of 5 solutions of packaging]

+

- ***1 average dataset of supply chain***



✓ Datasets have been used to estimate the ***benchmarks of environmental impacts for the comparisons in the software*** of companies’ products with the average reference product

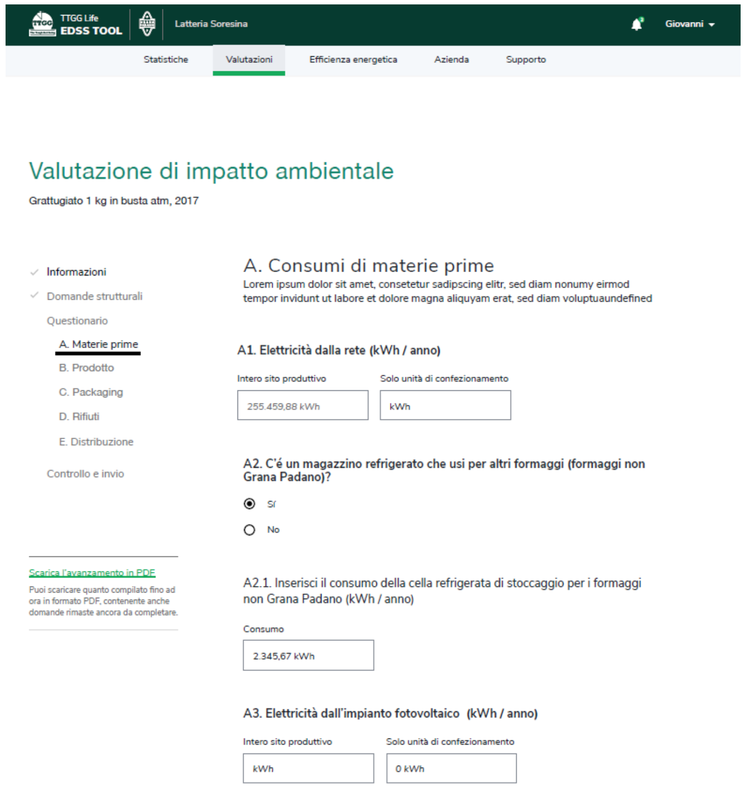
Purpose and advantages of software

✓ **PURPOSE**: ***assess and reduce the environmental impacts*** of semi-hard PDO cheeses (in each stage of supply chain: farm, dairy and packaging)

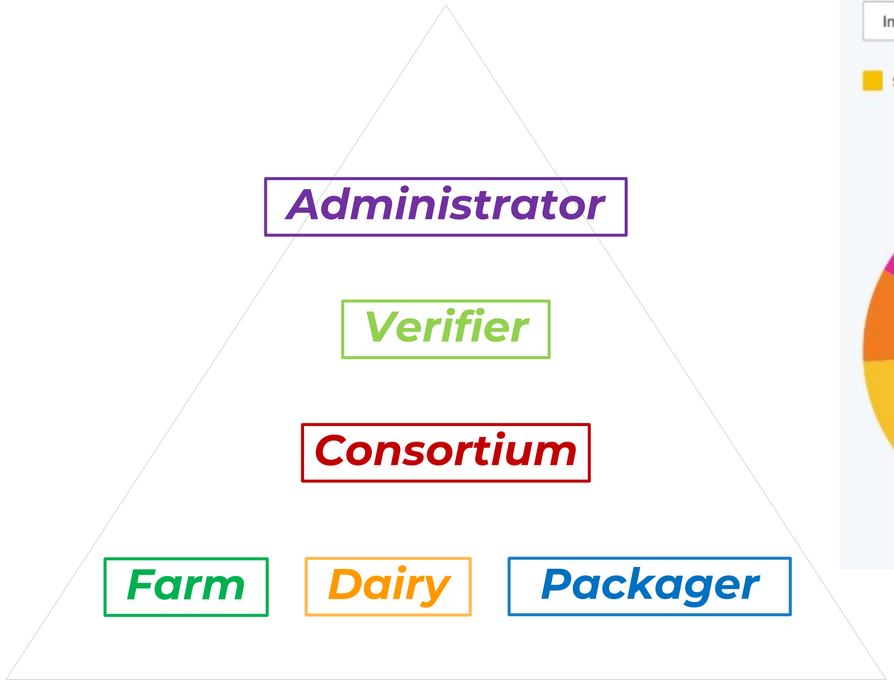
✓ **ADVANTAGES**:

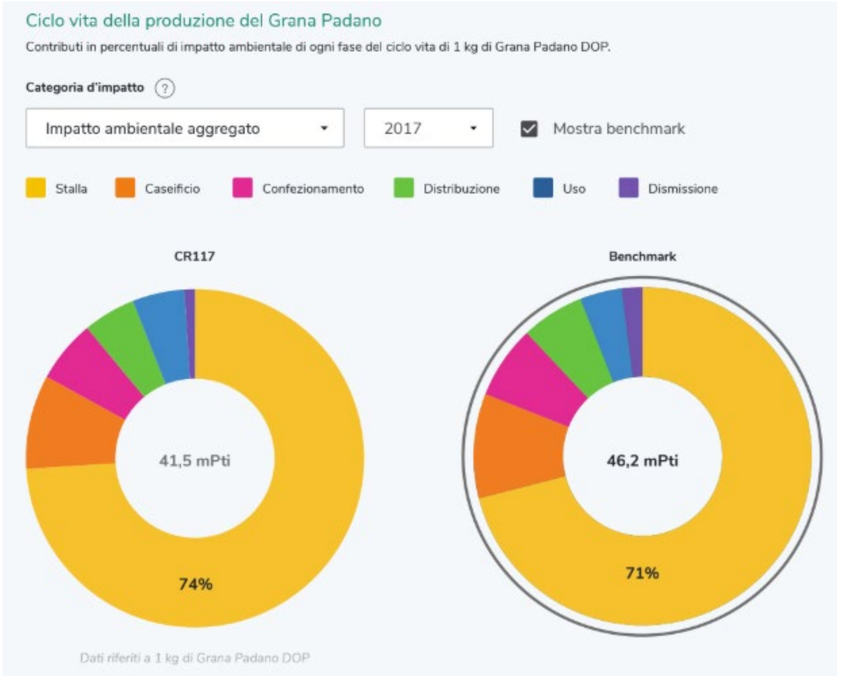
- ***Compare product's consumptions to average consumptions*** (KPIs) in the same stage of production *(e.g. MJ of heat per kg of cheese produced in dairy)*
- ***Compare PEF with benchmark and suggest tailored actions to reduce environmental impacts*** in a company
- ***Support the decisions-making process of Consortium to achieve environmental sustainability***
- Carry out PEF studies at ***lower costs***, in ***short time*** and ***without having any technical competence***
- Generate ***PEF compliant*** downloadable reports, useful for ***communication B2B and B2C***

Users of software



Hierarchical order





✓***User-friendly software: graphical interfaces tested with end users*** *(November 2019 – Soresina)*

3. Recommendations to improve PEFCR for Dairy Products

Recommendations to improve PEFCR for Dairy Products

✓ ***Approach for water in <u>farm</u>***

- Uncertain estimation of water consumption *(no guidelines for drinking water and irrigation water derived from secondary data)*
- Italian water characterization factor is not representative of milk production area of Grana Padano PDO *(EF factor IT: 44.9 vs 1.5 for Grana Padano PDO area)*

✓ ***Lack of technical rules to subdivide consumptions in <u>dairy</u>***

- Difficulty to handle multi-products transformation *(e.g. milk, butter, ricotta, mozzarella, semi-hard cheeses…)* and many possible roles *(dairy, ripener and/or packager)* at the same time
- Technological complexity: CHP *(combined heat and power plant)* and reverse osmosis systems for whey concentration

Recommendations to improve PEFCR for Dairy Products

✓ ***Low availability of representative EF datasets***

- EF datasets for feeds in farm are limited: silage production is missing *(Grana Padano PDO farms are silage-based feed system)* and many feeds are proxies from non-IT countries
- EF dataset *"Cow's milk, on-farm, mixed system, per kg FPCM (IT)"* is not representative for an Italian farm *[based on typical UK farm model with 92% of grassland, extensive livestock farming, pasture-based manure management, without technical agricultural inputs (seeds, chemical fertilizers, pesticides), without irrigation and at low milk yield]*. This dataset is not exploitable since the farm stage is responsible for 90% of environmental impacts of supply chain
- EF datasets for primary packaging materials in packaging stage are limited *(the only available and suitable for Grana Padano PDO is PE/EVOH/PE multilayer)*

Future steps of LIFE TTGG project

✓***Make the software works operatively*** and ***validate it as PEF compliant***

✓***Conduct tests with end users*** on a functioning prototype and ***launch the final version*** of the software for Grana Padano and Comté Consortia

✓The working group of LIFE TTGG is oriented to apply as ***external reviewer in the draft of 2nd version of PEFCR for Dairy Products***

Thank you

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www.lifettgg.eu

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