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ESNI

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Towards a PEFCR for alternative fertilising products: methodology presentation

Thursday 19 September 2024, Brussels



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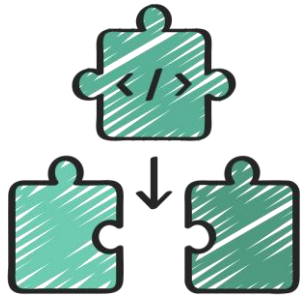


Content

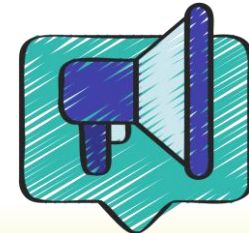
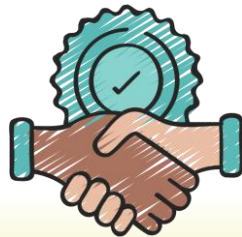


- 1. NOVAFERT: Introduction to the project**
- 2. PEFCR for BBFs proposal and testing**
 - 1. Presentation**
 - 2. Open poll for method improvement**
- 3. Open Discussion**
- 4. Open call for case studies validation**

Project aims



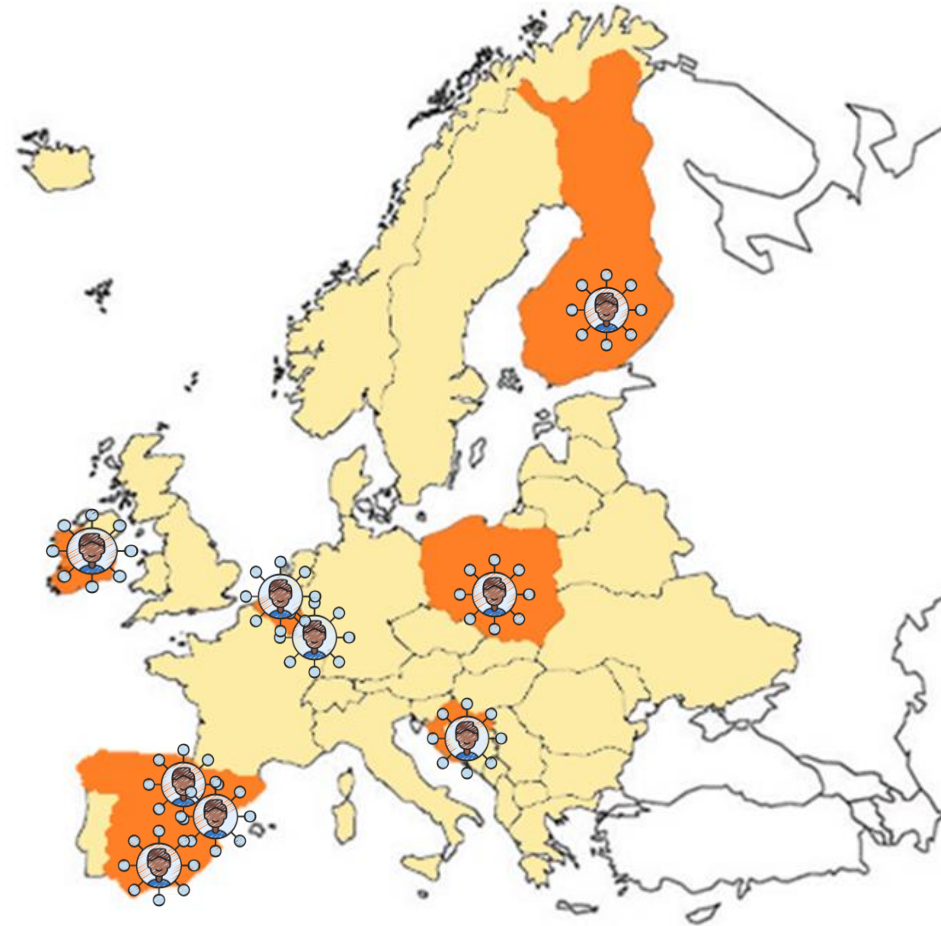
- To demonstrate the **technical, economic, and environmental** feasibility and safe use of a wide portfolio of alternative fertilising products from different waste streams
- To **promote their use** and increase the **awareness** of their benefits



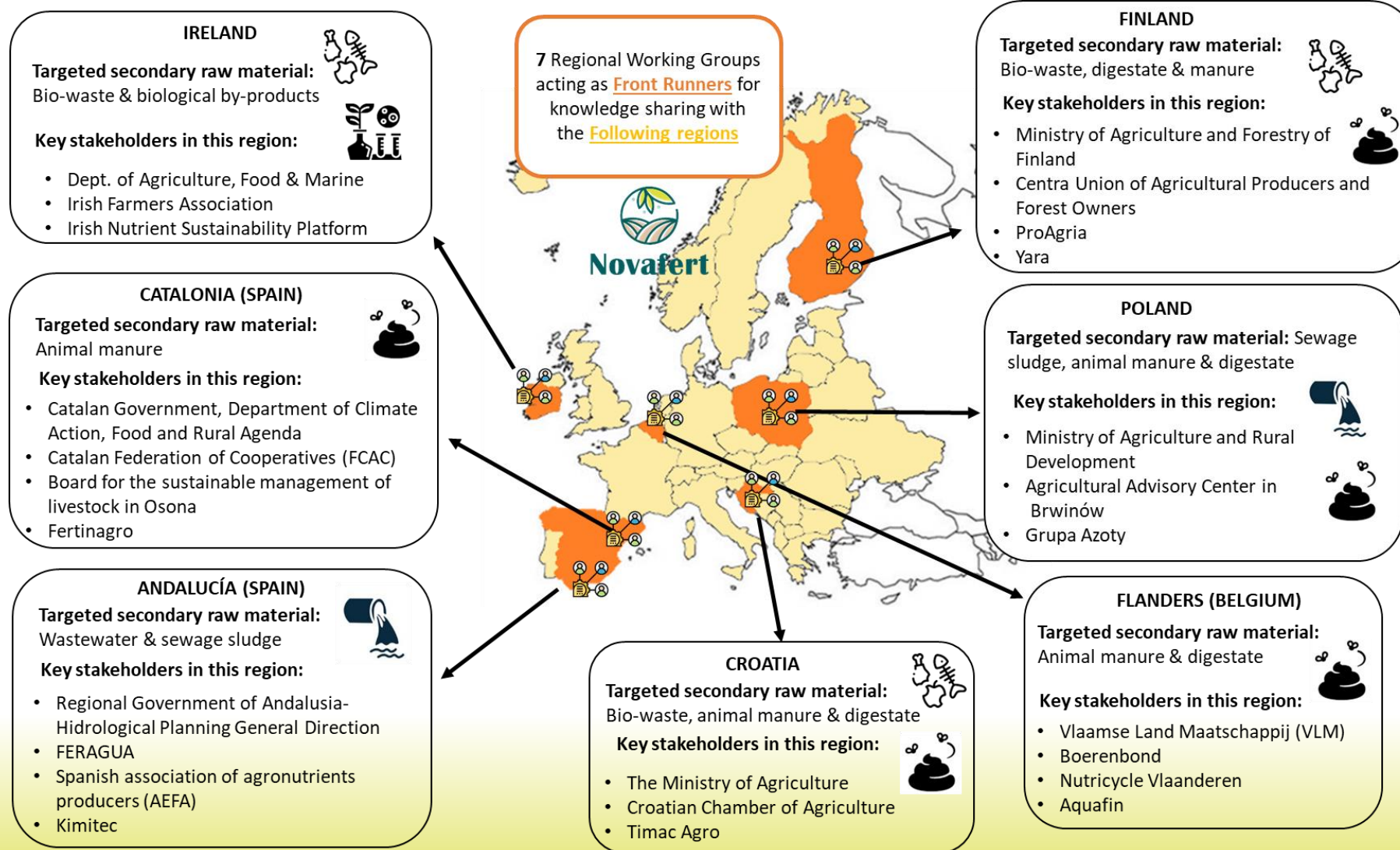
NOVAFERT overview



- ❖ CSA
- ❖ 9 PARTNERS
- ❖ 6 COUNTRIES
- ❖ 2 Million €
- ❖ 36 Months



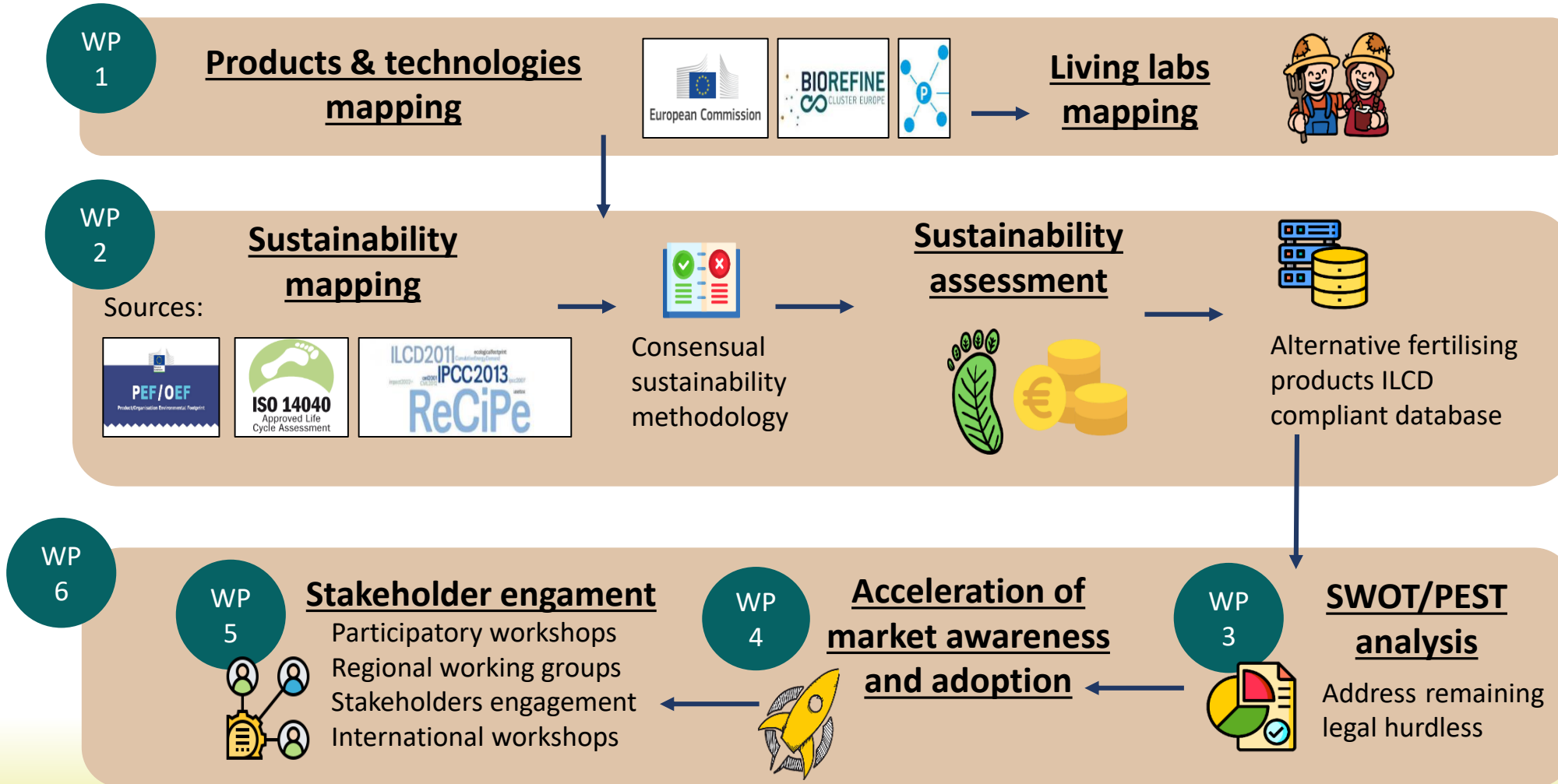
NOVAFERT overview





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NOVAFERT methodology



2.2. WP 2. - Objectives and expected outcomes

1. Develop a **common method for environmental assessment** of alternative fertilising products' production, storage, distribution and application.
2. Demonstration of the **environmental performance** of producing and using alternative **fertilising products** by a common PEF compliant methodology
3. Development of validated **ILCD compliant datasets**

3. Stakeholders' engagement



Interest about NOVAFERT and benefit allocation for companies

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Methodology (1st version)



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**D2.2 – PEF-wise PCR methodology to
implement LCA for the environmental
assessment of alternative fertilizing
products – 1st version (for public
consultancy)**

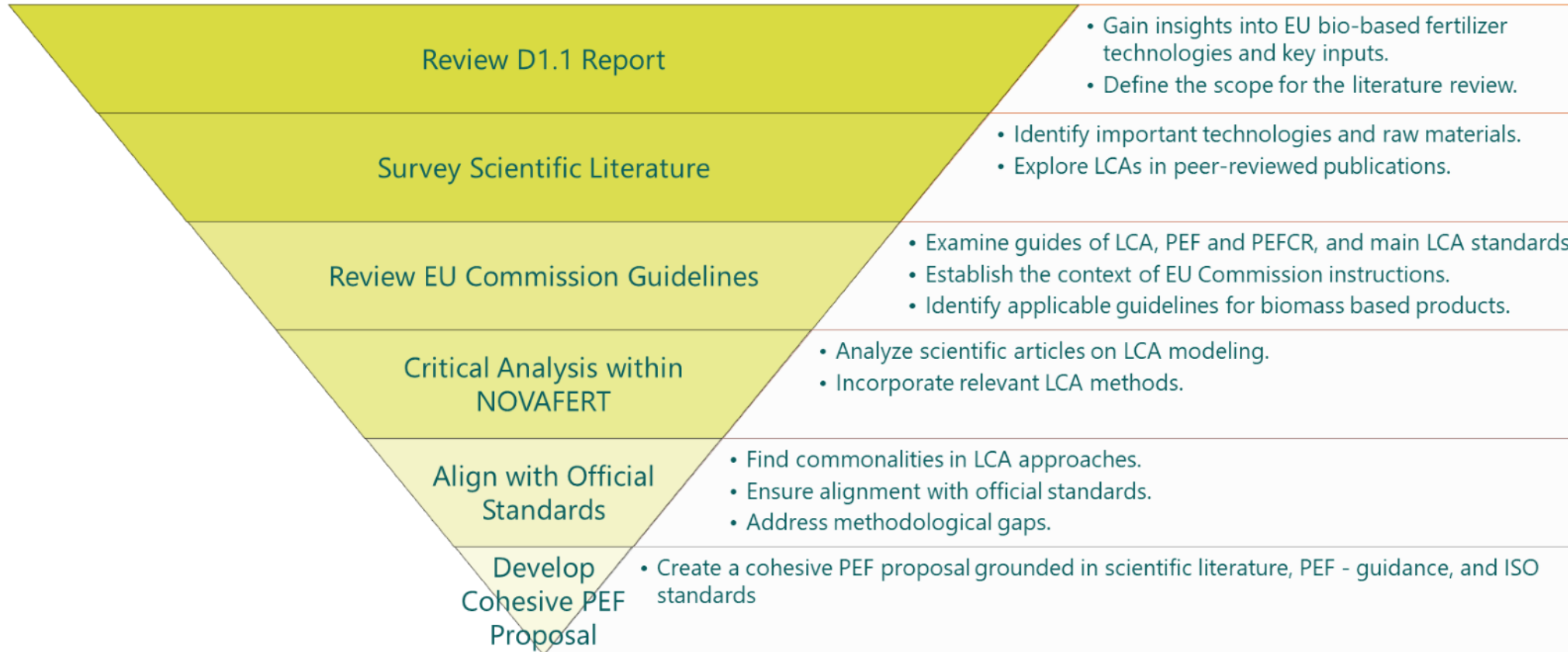
Access to D2.2 with the QR code



Methodology



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2.2. Challenges

Lack of Product-Specific Guidance

- No specific instructions for biofertilizer products in EU Commission guidelines.
- PEF instructions for this complex product group are absent or very general.
- No any other guidelines referring to the BBFs

Impact on LCA Determinations

- Varying approaches in LCA determinations for BBF seen in research literature.
- Lack of precise guidance leads to inconsistency and non-comparability in findings.



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D2.2 – PEF-wise PCR methodology to implement LCA for the environmental assessment of alternative fertilizing products – 1st version (for public consultancy)

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2.2. Challenges



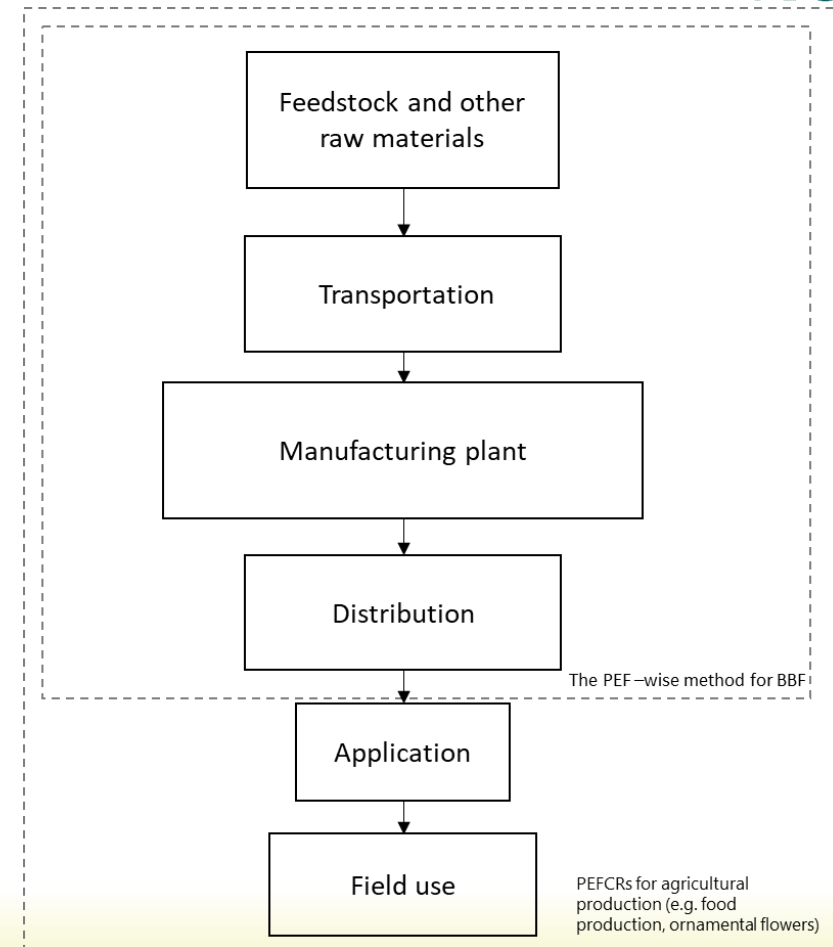
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Integration of BBFs in the PEF framework

- BBFs are an intermediate product
- Most of the impacts can vary on the application conditions.
- Specification, therefore are in the agricultural stage.

Impact on LCA Determinations

- Definition of the Functional unit
- Integration of recommendation into other PEFCR of final products. E.g. Food sector



2.2. Challenges



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Product classification

3.1. Product classification

According to recommendations by commissions (EC 2021), the Classification of Products by Activity (CPA) codes corresponding to the products in scope shall be listed in the PEFCR.

To be further developed:

The total CPA 20.15 including the CPA codes (Table 1) for the products are not necessarily applied for BBFs since it is based on mineral fertilizers and have strict classification according to nutrient content. **This PEF-wise PCR method therefore suggest to create new specific CPA code or codes for bio-based fertilizers.**

Table 1: CPA codes based on mineral fertilizers

CPA Code	Description
20.15.39	Other nitrogenous fertilisers and mixtures N.E.C.
20.15.39	Other nitrogenous fertilisers and mixtures N.E.C.
20.15.49	Other phosphatic fertilisers
20.15.5	Potassic fertilisers, mineral or chemical
20.15.59	Other potassic fertilisers
20.15.74	Fertilisers containing two nutrients: nitrogen and phosphorus
20.15.75	Fertilisers containing two nutrients: phosphorus and potassium
20.15.8	Animal or vegetable fertilisers N.E.C.

Tentative approach:

- 1) As long as their fertilising properties are quite similar, according to a criteria that may need further elaboration, yes, they all could share the same CPA codes.
- 2) This avoids administrative burden but creates the problem of traceability of the BBFs. But here, like for a blend of other biobased and fossil products that have similar properties or aim to the same function (i.e.: bioethanol with gasoline) it could work. Nevertheless, the traceability and verification of the quantity and type of BBFs vs fossil shall be addressed.



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It should be noted that there is combinations of organic and mineral/fossil-based compounds in BBFs. Although the mineral and fossil-based fertilizers could share the CPA they are excluded from

2.2. Challenges



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Representative products

- Certain BBF product archetypes should be defined so that there is a structure on which to build down to earth and solid specifications. I would orient it more to the origin of the bio product that turns into BBF rather than the shape. If we mix different criteria for creating archetypes of representative products it may become an endless list (shape: *Granular, pelletized, and powdered*; ; type/origin: *Ash, Struvite, Mineral concentrates, Biochar, Digestate and further processed fractions, Compost*)
- *Try to choose a criteria that covers as many BBFs as possible but limited and acknowledging one or two category for “Others”*

To be further developed:

As there is no sufficient market and technical information available yet, this document is not able to present representative products for many different BBFs that are not in the market yet. However, we can present different product categories manufactured using currently available technologies that might be useful for further analyses on "representative product:

- Granular, pelletized, and powdered forms
- Ash
- Struvite
- Mineral concentrates
- Biochar
- Digestate
- Compost
- Other biomass products.

In addition, D1.1. report described the raw material inputs within the EU by country and these raw materials, as such, may also function as BBF. However, **BBF materials that are produced on (or**

2.2. Challenges



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Functional unit- Declared unit

- One main FU: 1 kg of product
- However, 1 kilogram as FU is acknowledged to be limited to the final aim of PEF which is the comparability of fertilizer products and the creation of environmental standards for guiding the decision-making.
- It has to be complemented with other nutrients relevant (>1% mass) (E.g. 1kg N)
- Existing doubts about the form of the N, N-NH₄, N-NO₃, solubility, etc....
- New standards appear in this period.
- They do not resolve this issue.

There is also a need to investigate further develop possibilities for a common FU e.g. investigate whether it possible to develop common FU for all BBF's reflecting the final function of the product e.g. growth of the plant that is cultivated and utilizing BBFs, volume of yield.



EPD draft for fertilizers for 2025

“The declared unit shall be defined as **1000 kg of product** with the packaging (the weight of the packaging is not included in this 1000 kg)”.

PCR (EPD) on fertilizers meant to be published by January 2025

2.2. Challenges



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Other methodological points

- **System boundaries:** how can we make part of the additional information mandatory to be reported? Maybe by integrating section 1 and 2. A clear conciliation is key (scope, cut-off, allocation criteria alignment, etc.).

4.1.3. Criteria for the definition of the status of the nutrient's sources: waste, residual or co-product

The multiple different feedstocks used in BBF manufacturing, and their by-products are separate products with different purposes and physicochemical characteristics. The environmental burdens related to feedstock production and management up to the gate before the biomass feedstock enters the processing phase (manufacturing plant) shall be allocated by using the relative economic value (market price) of feedstock. Economic allocation is commonly used when co-products have very different physical relationships or end use in the market. This is the case also with the production of BBFs.

- **Most relevant impact categories:** could be defined by just pointing to the criteria in Recommendation 2021/2279.
- **Economic allocation:** may incentivise a low environmental burden from i.e.: the use of ash/slag while for other waste/co-products it can have a higher just because of the allocation criteria. I.e.: struvite, biochar, etc. It depends also on the location. We take into consideration the arbitrariness/impact of allocation criteria across the EU due to allocation criteria.



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PEF-wise PCR methodology to assess alternative fertilizing products

Sección 1

PRESENTATION AND ETHICAL CONSIDERATIONS

This questionnaire is part of the NOVAFERT project, carried out + INFO.
The aim is to get more knowledge on the topic and improve the Product Category Rules for BBFs based on input from stakeholders. We would like you to give your views, practical experience and knowledge as an expert on the topic.
Thank you for your participation!

1. Your answer will be considered to the development of the PEF-wise PCR methodology to implement LCA for the environmental assessment of alternative fertilizing products. Do you



[Forms survey about BBFs PEFCR methodological aspects \(D 2.2.\)](#)

PEF-wise PCR methodology to assess alternative fertilizing products - Guardado

Vista previa Recopilar respuestas

3. Could bio-based fertilizers share the same codes than the mineral and fossil-based fertilizers?

Yes

No

Only for some parts

4. Please, specify which ones **could be shared**

20.15.39 Other nitrogenous fertilisers and mixtures N.E.C.

20.15.49 Other phosphatic fertilisers

20.15.5 Potassic fertilisers, mineral or chemical

Validation with case studies



- Goal: to validate the methodology with 24 case-studies
- Creation of the ILCD compliant database
- Representativeness of different nutrient sources (waste streams/co-products)
- We have already 4 companies in Spain but we need representativeness across Europe

Update NOVAFERT's proposed methodology and LCI data according to the EF 4.0 ongoing updates (LCIA and data requisites!) and may leave flexibility enough for its full implementation

2.2. Challenges: LCI data collection and management

Stakeholders engagement



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- Develop a robust and high-quality Life Cycle Inventory (LCI)
- Production and application LCI will be prepared once the LCI are validated to comply with the ILCD standard, and its data quality rules. XML or Json datasets will be created to be shared in the EPLCA platform.

Our target:

- Baseline: the most extended practice. I.e.: pig slurry direct application
- High TRLs (>7) are recommended. Nonetheless, some pilots are of interest.

The result of the database:

- 6 waste streams · (1 baseline+3 prod.)= 24 prod. value chains = (24 prod. NOVAFERT+ 24 prod. FERPLAY)*reg. inventories
- Baseline allows the quantification of the trade-offs of further processing.

XML

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Case studies: Open Call!!!



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- We are looking candidates for the LCA.
- Have you done an LCA but you do not know how comparable are your results?
- Do you have data about a BBF and you do not know how to do an LCA?
- Are you a company?
- Or are you another research project?
- Confidentiality guarantee (anonymous, data agregation)



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beta.sustainability@uvic.cat

2.3 Case study 1

- **Objective:** production of high-quality tailor-made fertilizers (TMF) pellets, for woody crops such as vineyards and apples instead of compost.
- **Product:** bio-based fertilizer made of cow manure, saw dust, bark and different proportions of biochar to optimise NPK while offering good specific surface, nutrient release time while optimising costs.
- **Annual production** \approx 2537 tonnes of Compost/ \approx 1202 tonnes per year of TMF

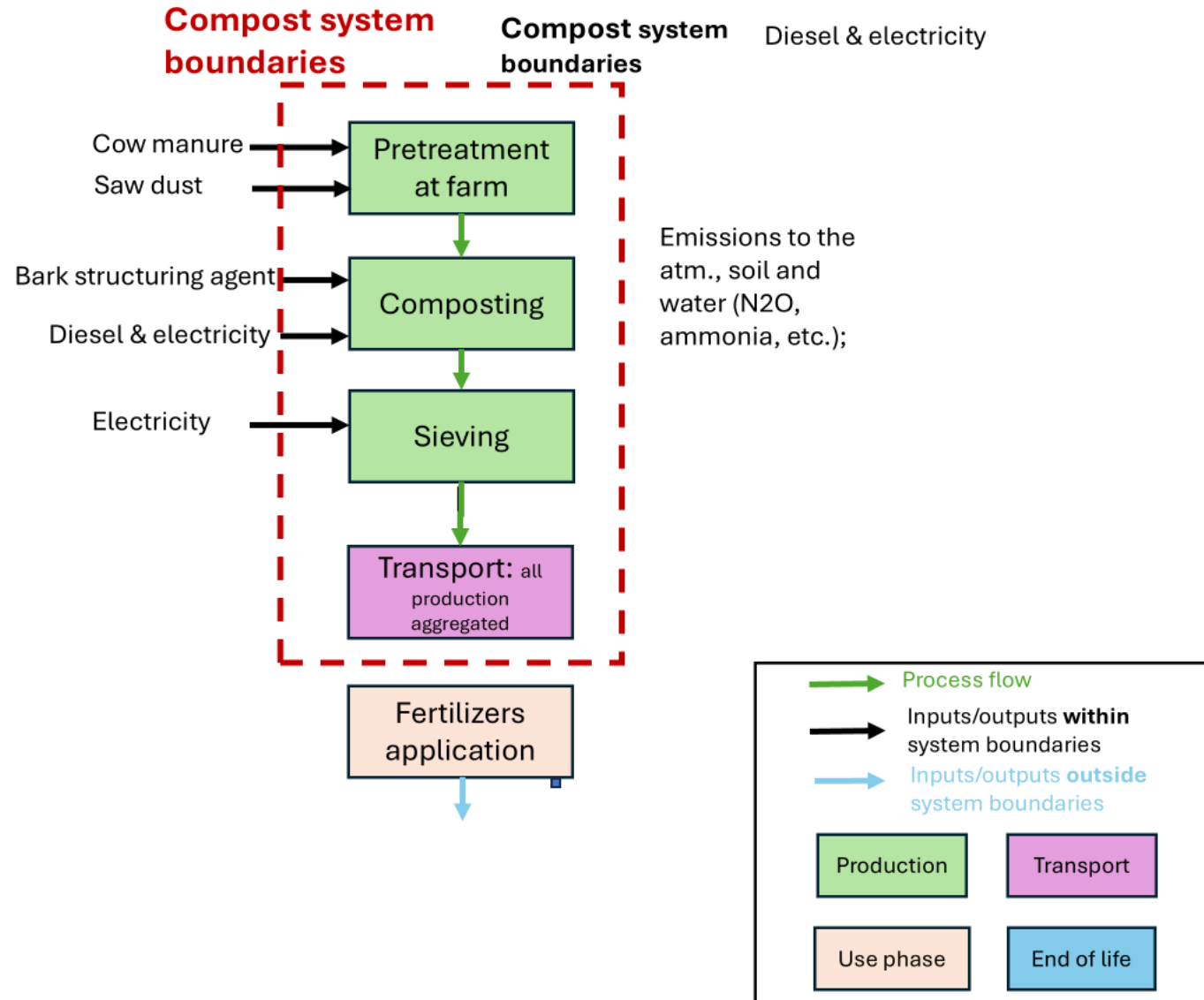
	Compost (T/yr)	TMF (T/yr)	Compost (%)	TMF (%)	N15-P15-K15 (%)
N	25	50	2.08%	4.16%	15.00%
P	1.2	2.5	0.10%	0.21%	15.00%
K	8	10.8	0.67%	0.90%	15.00%



Compost system boundaries



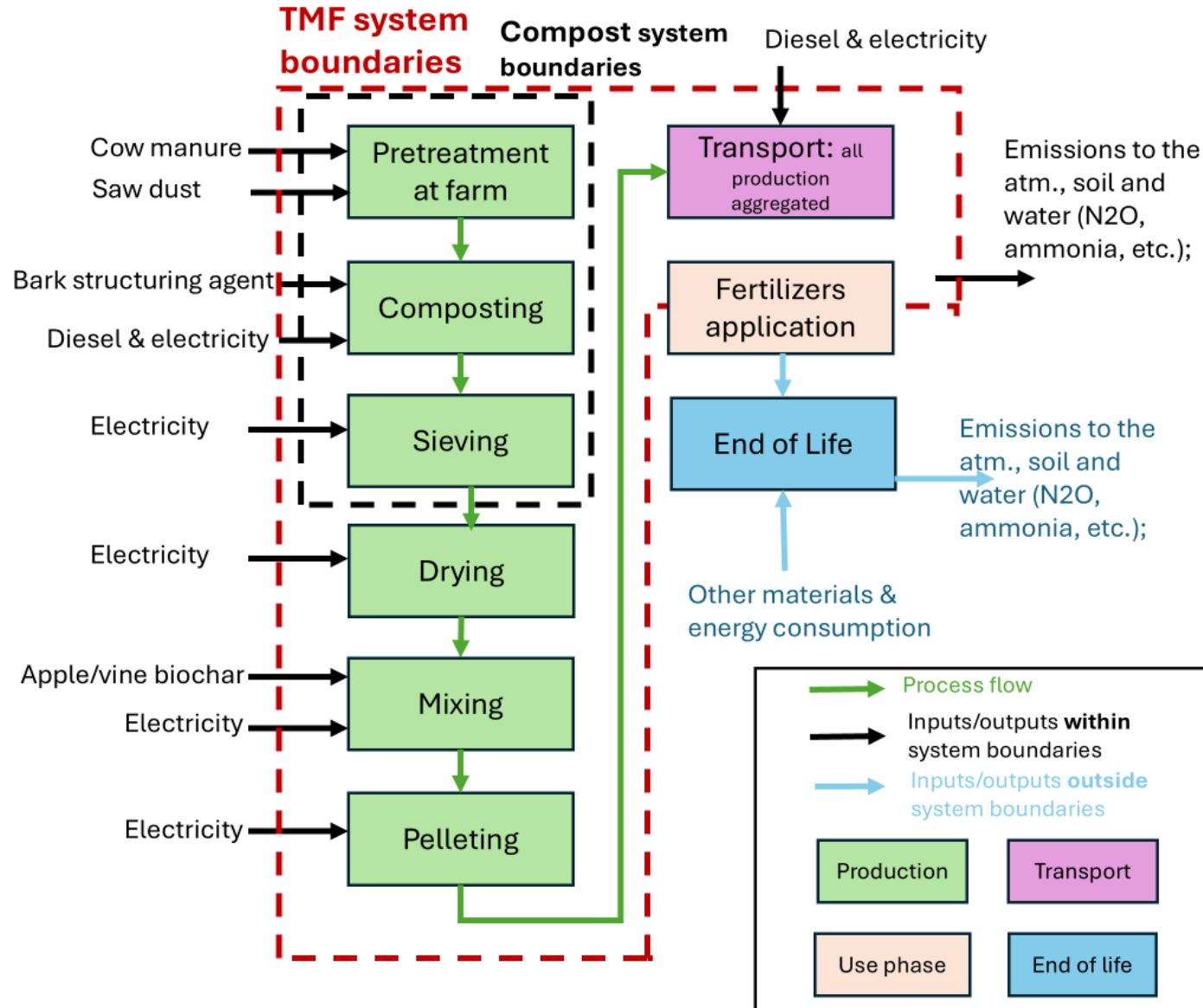
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Taylor made fertiliser: System boundaries



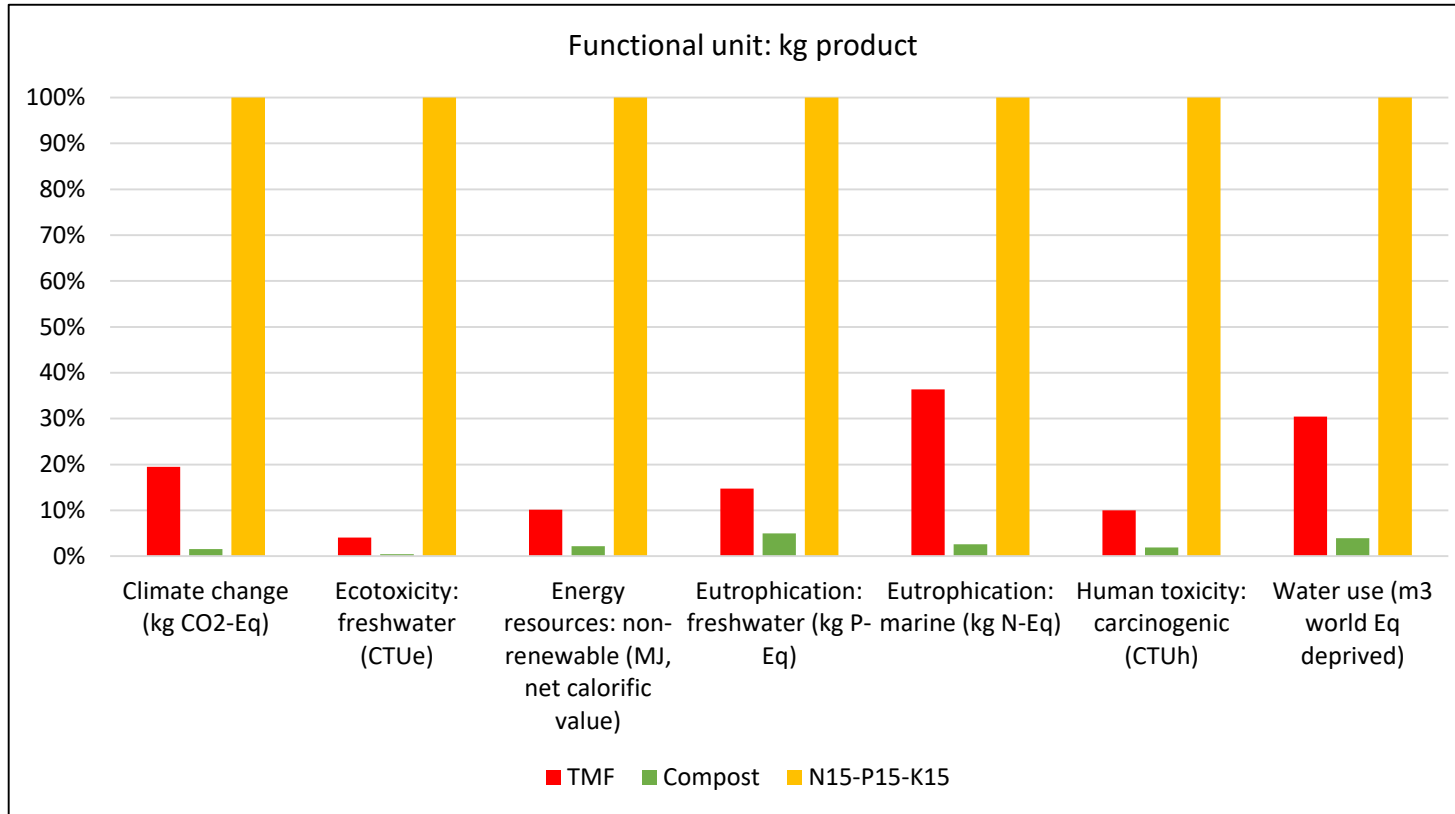
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Results FU: 1 kg of product



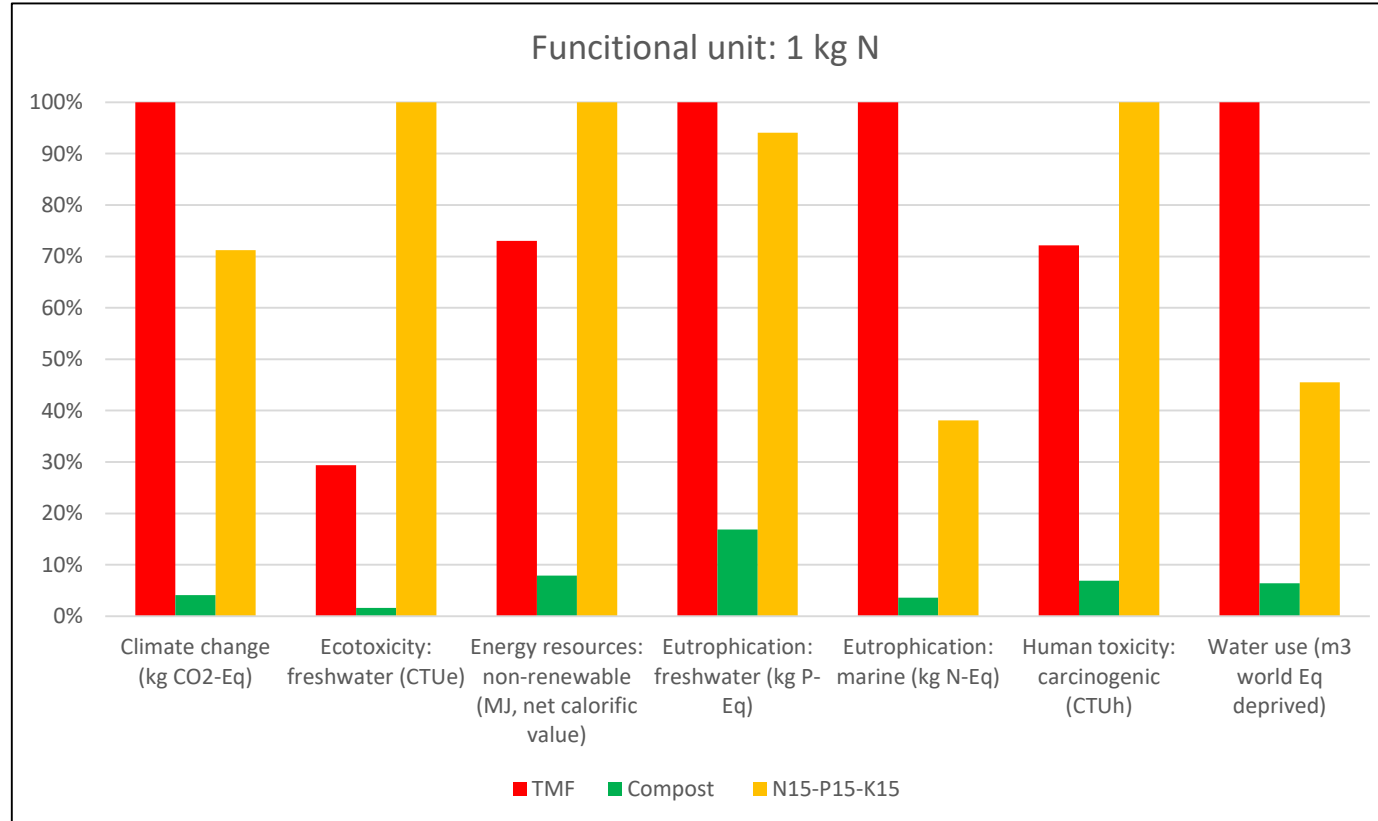
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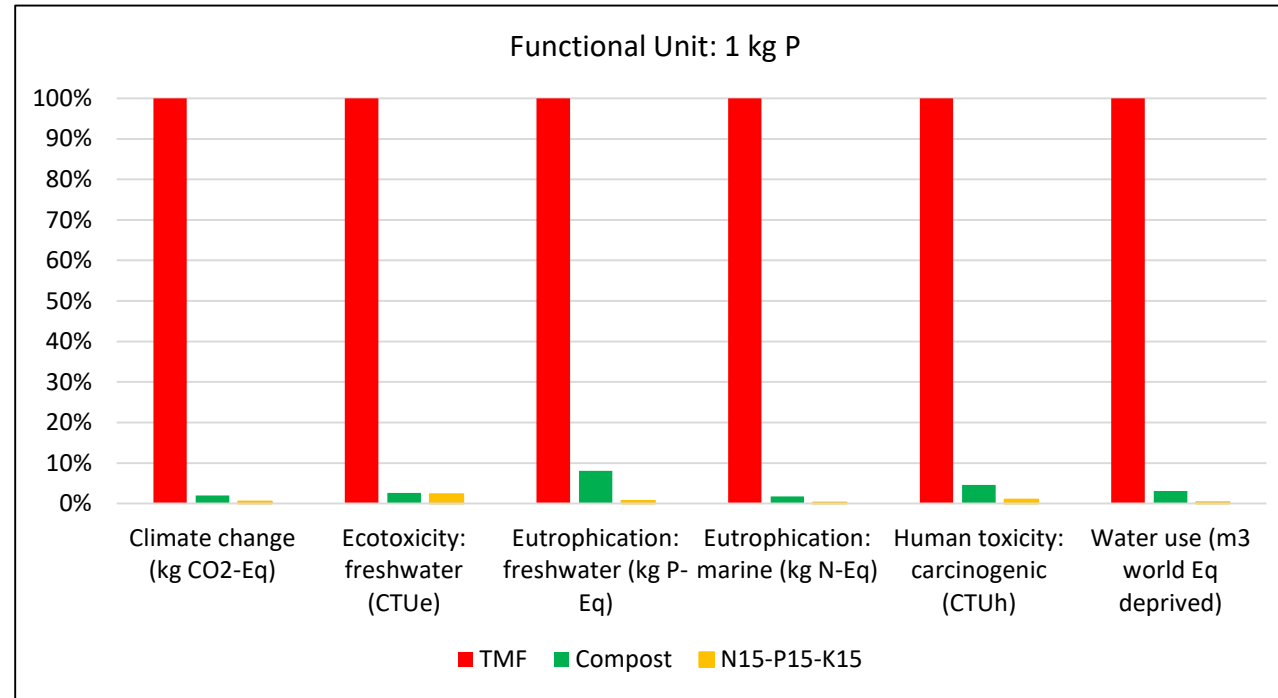
Results FU: 1 kg of N



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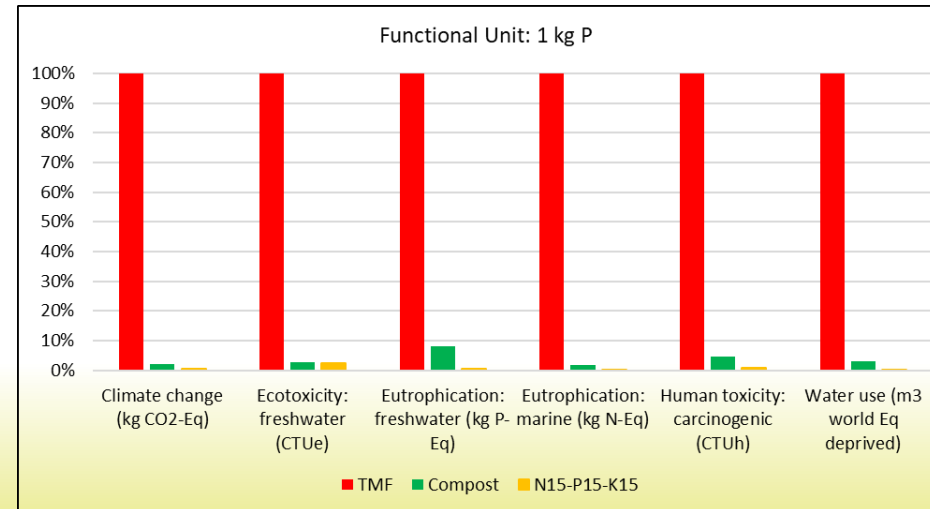
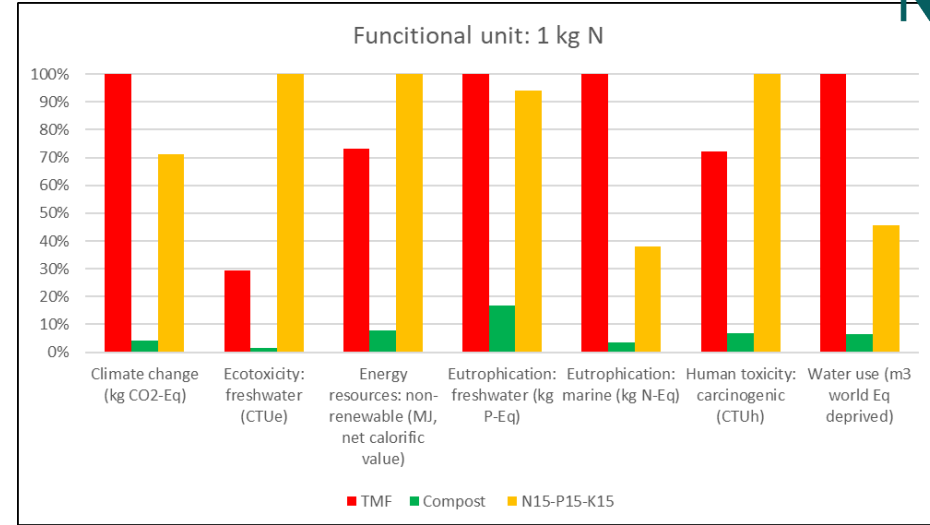
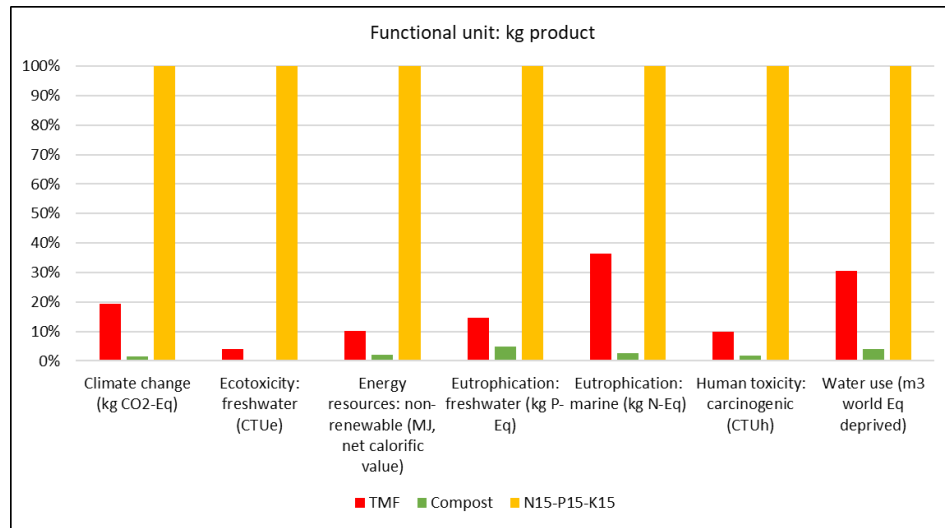
Results FU: 1 kg of N



Now, what?



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Case studies: Open Call!!!



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Thank you for your attention



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[Access to PEF proposal
and polls \(D 2.2.\)](#)



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