

Increase livestock farms efficiency to fulfil current gaps in the N, P and C cycles in agricultural systems



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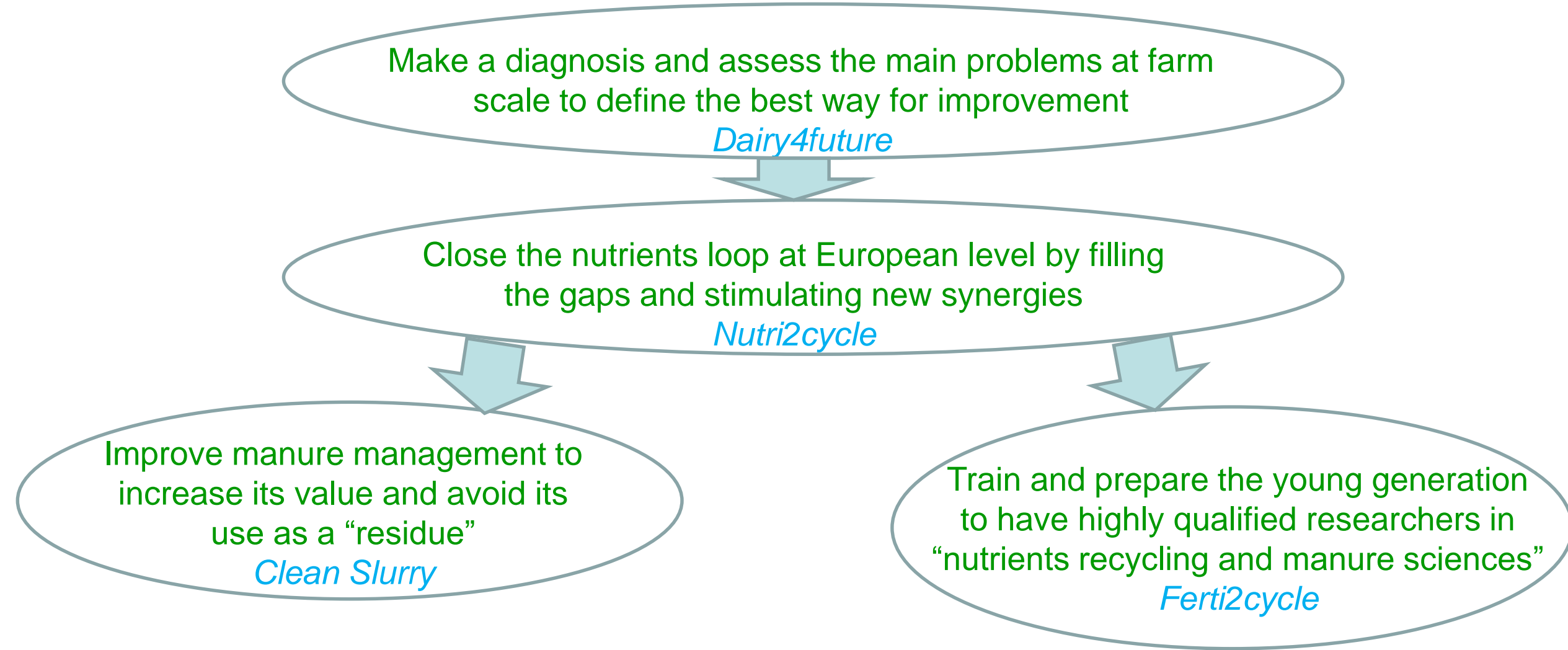
LINKING LANDSCAPE, ENVIRONMENT,
AGRICULTURE AND FOOD

Context

- ❑ Consumers ask for **high quality, cheap and environmental friendly products**.
- ❑ Need to **decrease production costs** (efficient use of natural/available resources) with no impact on meat and dairy **products quality** but minimizing **environmental impacts**.
- ❑ **Economical and environmental sustainability** of livestock farms is a key factor to resist to **pressure and volatility of markets**.
- ❑ Dairy and swine farmers are mostly > 55 years old: **need to modernize the sector** to increase interest from younger farmers.
- ❑ The **increase and specialization** of livestock farms imply some improvements in terms of human resources skills.



Approach





Project Dairy-4-Future

Interreg Atlantic Area - EAPA_304/2016

*Propagating innovations for more resilient dairy
farming in the Atlantic area
2018-2022*

<https://dairy4future.eu/>

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Objectives of the project

- **From Scotland to Azores**, The Dairy-4-Future project aims to **increase the competitiveness, sustainability and resilience of dairy farms** through the **development of innovative and efficient dairy systems** and **increased cooperation** between R&D stakeholders groups. This project will mainly focus on propagating dairy systems blueprints able to withstand an increased volatility in milk prices and climatic hazards, preserving natural resources and mitigating climate change while offering social performances in line with consumer demands, and better added value.

A strong consortium of 11 partners and 21 associated partners

Project leader: Institut de l'Elevage (France)

- ✓ 11 partners in 7 EU countries
- ✓ 21 associated partners
- ✓ 2 portuguese partners:
 - UTAD (North Portugal)
 - ISA (South Portugal and Açores) supported by Milkpoint Portugal
- ✓ 4 portuguese associated partners



Associação Agrícola da Ilha Terceira

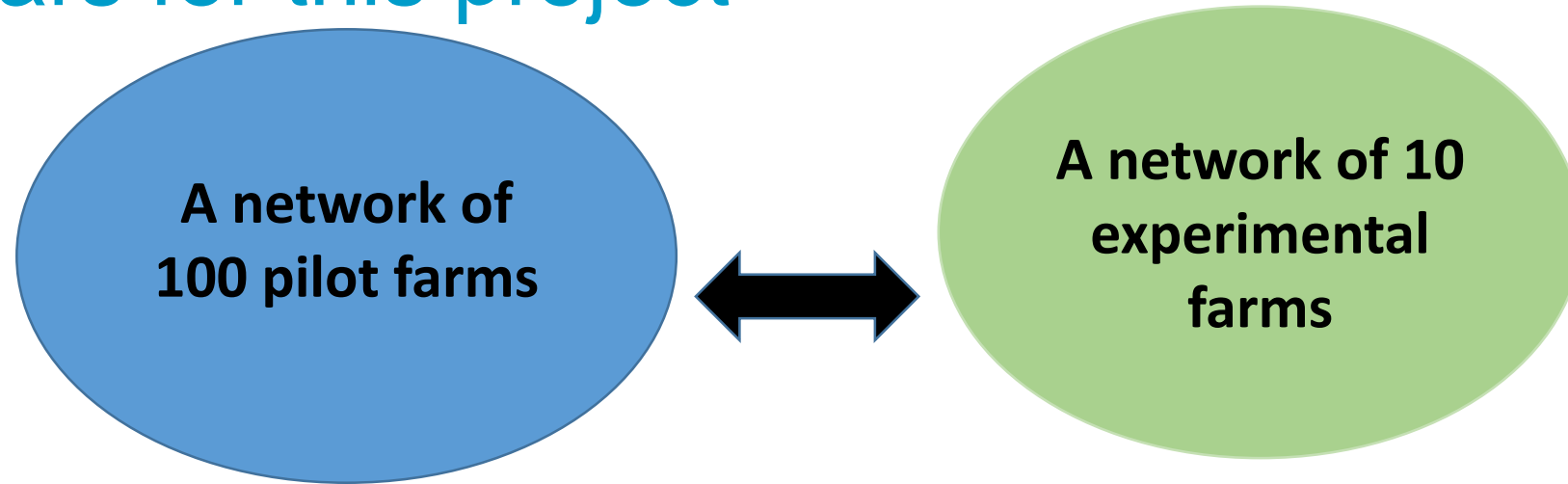


Dairy-4-Future program: operational objectives

- Analyse economic, social and environmental performances of dairy farms to identify innovative and more efficient dairy systems
- **Evaluate ecosystems services offered by dairy production**
- Identify, study and disseminate on success stories in the value chain
- **Share and test innovations and innovative dairy systems**
- Propose recommendations and incentive measures for regional policies
- **Prepare a framework for an increased cooperation between stakeholders**



Two pillars for this project



- Exchanges between groups of farmers
- Pilot farmers invited at Summer symposium in 2020
- Visit of dairy farms at each seminar



CAFRE dairy centre- N. Ireland



Solohead Teagasc- S. Ireland



Kildalton – S. Ireland



Crichton farm- Scotland



Duchy college- Cornwall



Trévarez – Brittany

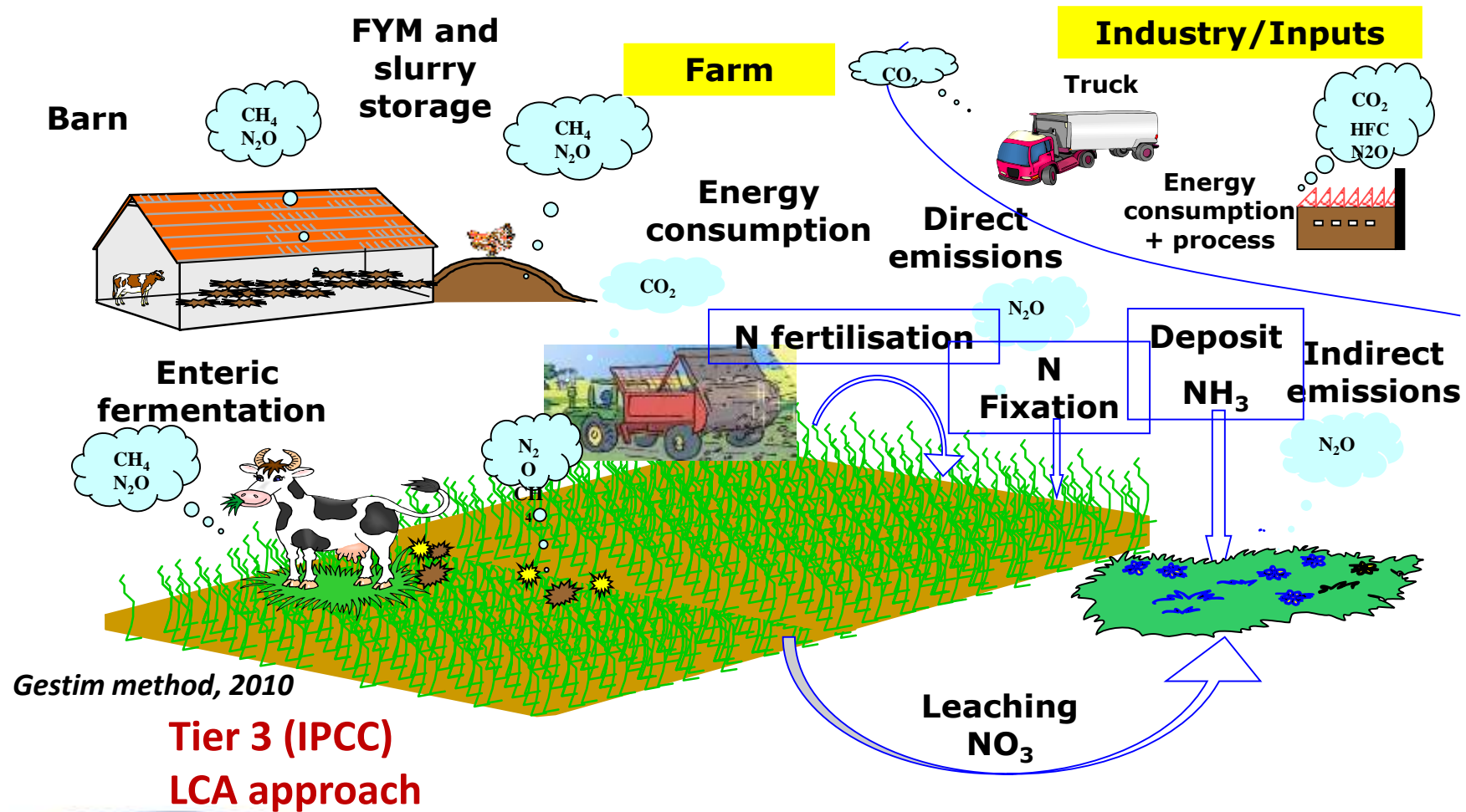


Blanche Maison - Normandie



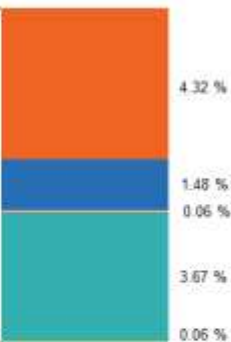
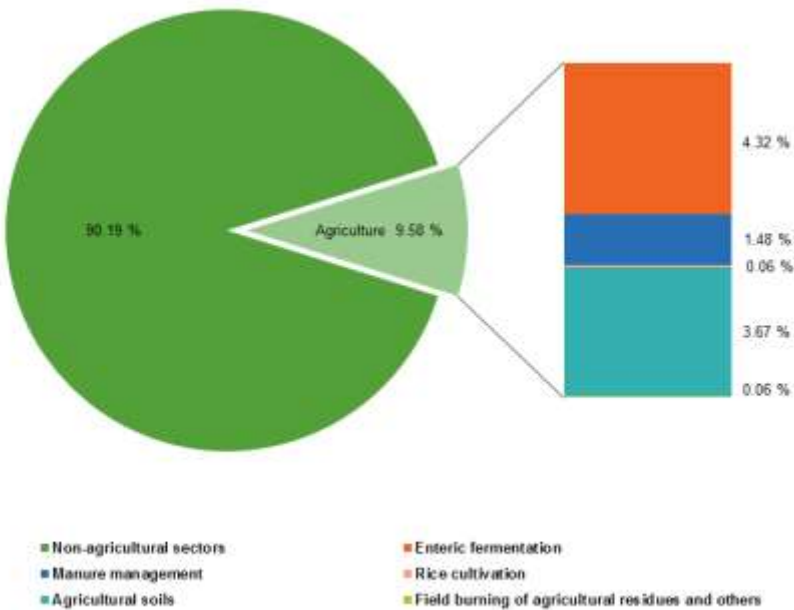
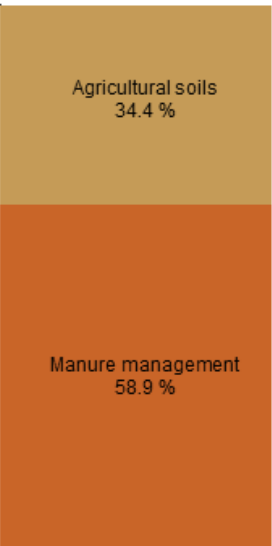
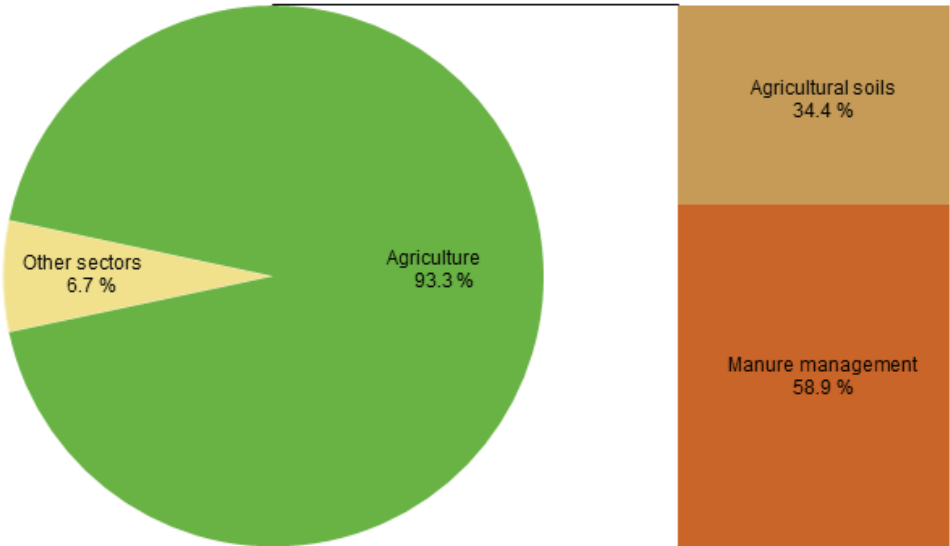
Mabegondo - Galicia

Approach



Main environmental impacts

Ammonia emissions



Note: Total GHG emissions do not include LULUCF CO₂ equivalents.

Contribution of agriculture to total GHG emissions (%), EU-28, 2015

Eurostat



Management and valorization of animal manure



Nutri2cycle - Transition towards a more carbon and nutrient efficient agriculture in Europe

Project Nutri2cycle funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No 773682

1-10-2018 to 30-09-2022

www.nutri2cycle.eu

19 partners from 12 EU countries



Nutri2Cycle



Nutri2cycle - Objectives

From farmers to end-users: targeting the whole value chain

Nutri2Cycle will interact with all actors influencing nutrient cycles to:

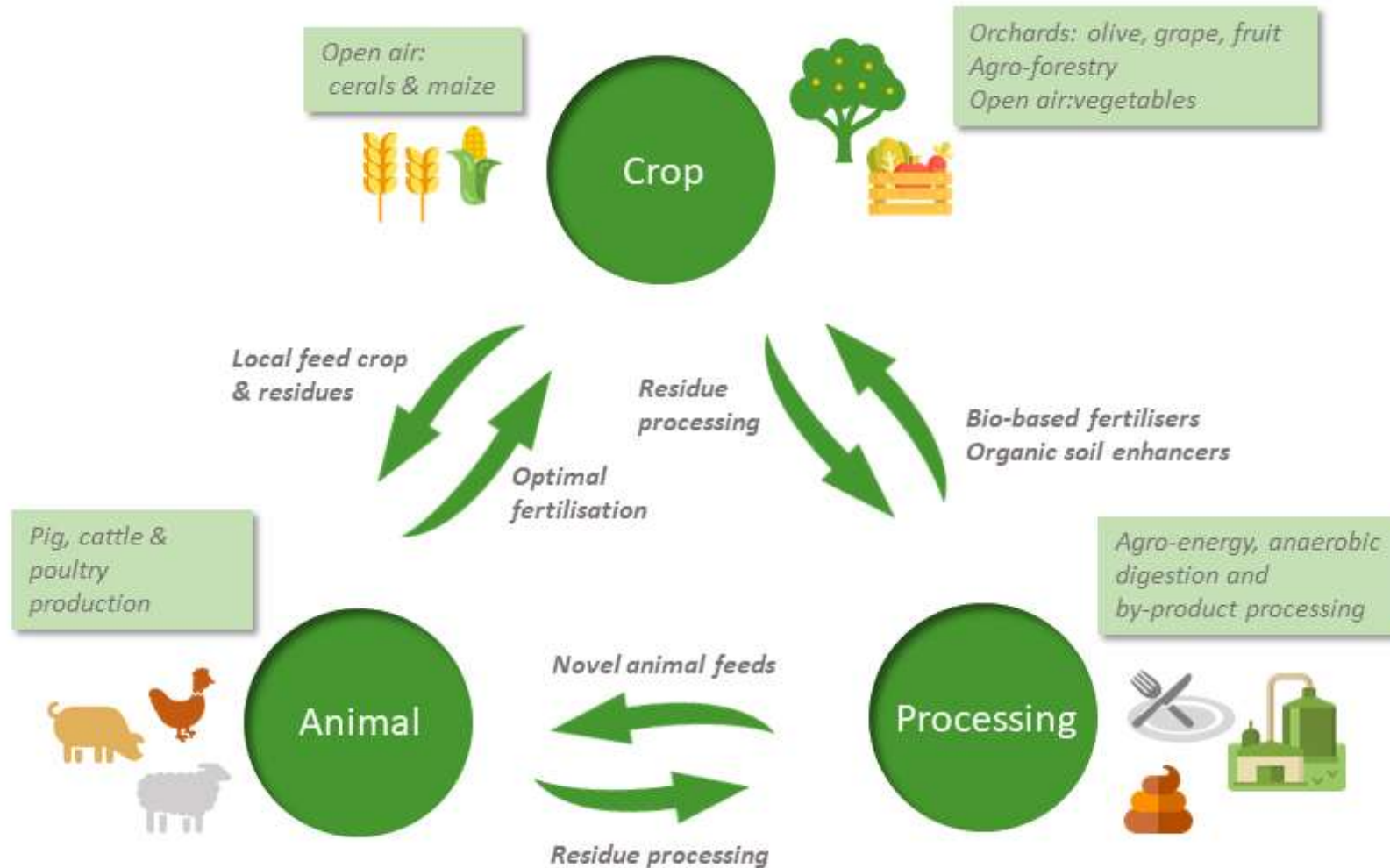
- **Create more efficient and sustainable farm business models for nutrient recovery and recycling.**
- **Spread the results at regional, national and European level throughout a comprehensive network of regional operational groups, National Task Forces and European stakeholders.**
- **Assess how the products obtained through the identified business models can aim for labelling and reach end-users.**
- **Provide scientific support on effective regulatory frameworks to reduce emissions and increase self-reliance of Europe for food, energy and nutrients in the next century.**



Nutri2Cycle



Nutri2cycle - approach



- Identifying the most efficient types of farm systems in Europe using a common methodology.
- Defining indicators to monitor and demonstrate the environmental advantages of more efficient, closed nutrient loops in a comprehensive way.
- Establishing innovative business cases at pilot scale (12-16 pilots) that will act as a light-house example for effective out-scaling.

Cleanslurry - Animal slurry hygienization for use in industrial horticulture.

Cleanslurry

PTDC/ASP-SOL/28769/2017

1-10-2018 to 30-09-2021

FCT Fundação
para a Ciência
e a Tecnologia



CleanSlurry: the project in one minute

- ✓ Simple and low cost solution for animal slurry (AS) hygienization will be developed;
- ✓ New treatment do not generate any new waste and improve the fertilizer value of AS;
- ✓ It might promote some new potential utilizations, like new fertilizers for industrial horticulture;
- ✓ Solutions for odor and ammonia emissions control will be optimized with the set-up of a biofilter using raw materials.
- ✓ The sub-product resulting from biofilters will then be reused as soil amendments.
- ✓ The efficiency and impacts (environmental and economic) of these new agricultural practices will be assessed.



CleanSlurry: the project in one minute

- ✓ Our approach will be based on 3 pillars:
- ✓ a) Hygienization of AS by acidification and by alkalization, including acid scrubber or biofilter to control gaseous emissions.
- ✓ b) Soil application of treated AS and subproducts from the biofilter as organic fertilizers in industrial horticulture and assessment of impacts on the N, P and C dynamics.
- ✓ c) Evaluation of the economical sustainability of the management chain.



Ferticycle: New bio-based fertilisers from organic waste upcycling

✓ **Horizon 2020 - Marie Skłodowska-Curie Innovative Training Networks**

✓ **2020-2024**

- ❑ **Need of techniques for increasing substitution of synthetic with waste-derived nutrients formulated into high-quality, bio-based fertilisers.**
- ❑ **It requires research into new processing, application and assessment and more innovative and entrepreneurial scientists capable of meeting these future needs.**
- ❑ **The objective of FertiCycle is to train 15 early stage researchers (ESR) to develop new processes for production of bio-based fertilisers, recycling wasted resources and to estimate the market potential and sustainability challenges of their production and use**



Thanks for the attention

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