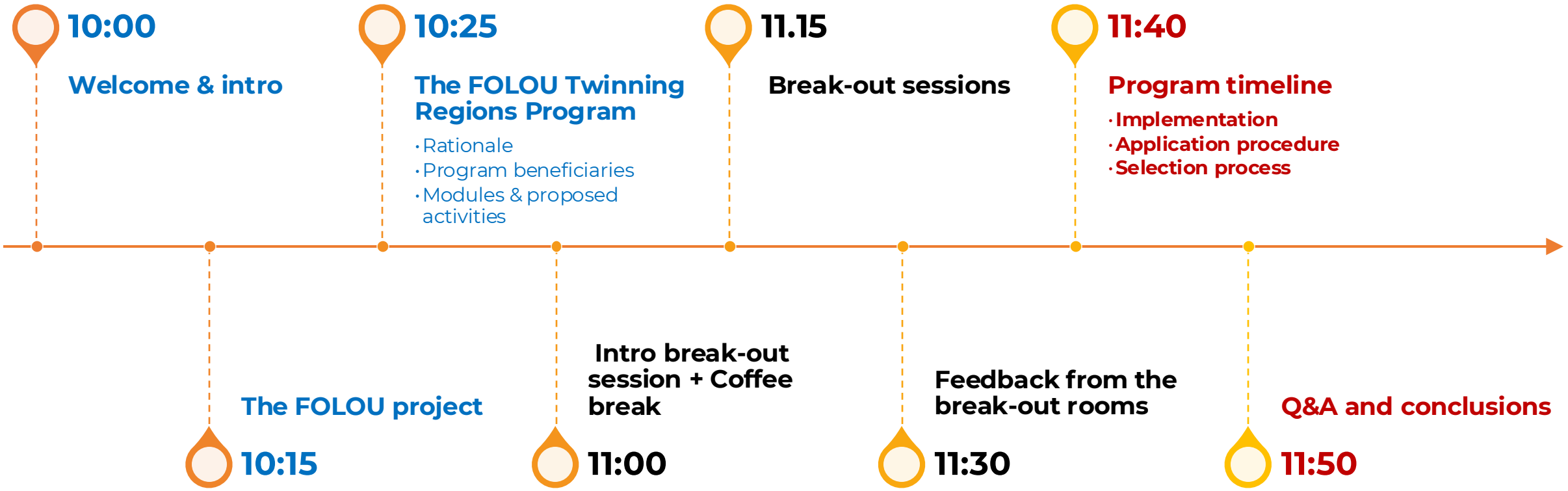
Official launch

The FOLOU Twinning Regions Program

Funded by the European Union

29 October 2024

Agenda


10:00
Welcome & intro
10:25
The FOLOU Twinning Regions Program
• Rationale
• Program beneficiaries
• Modules & proposed activities
11.15
Break-out sessions
11:40
Program timeline
• Implementation
• Application procedure
• Selection process
The FOLOU project
10:15
Intro break-out session + Coffee break
11:00
Feedback from the break-out rooms
11:30
Q&A and conclusions
11:50

Presenters …

Agnese Boccalon, ACR+

Joan Colon, UVIC

Héctor Barco, Espigoladors

Wouter Maes, UGhent

Beray Cayli, ACR+

Anna Sagrera, UVIC

Alice Mauchline, University of Reading

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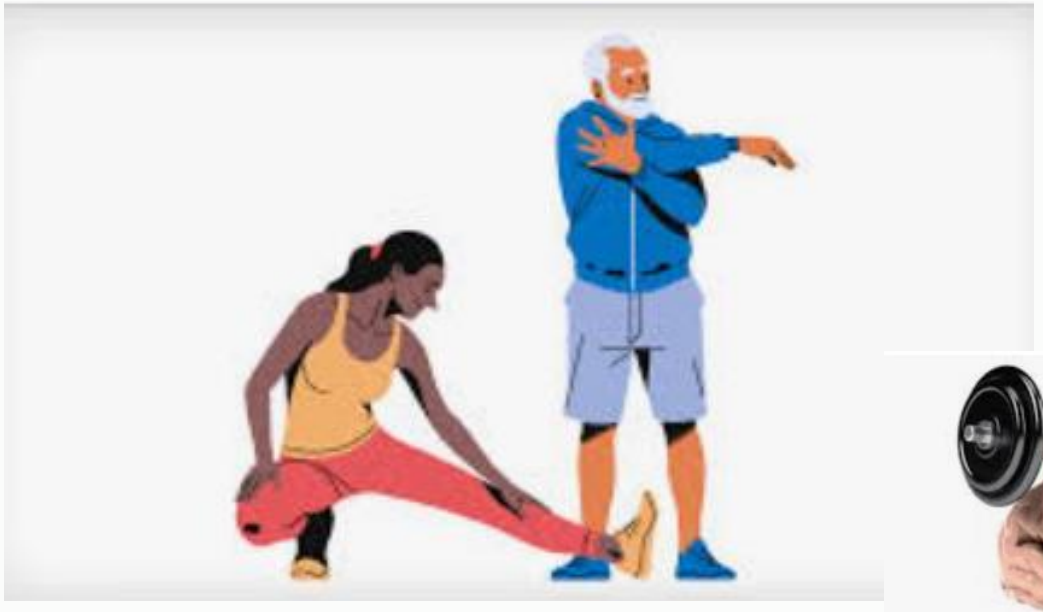
… & behind the scene

Warm-up questions



Beray Cayli, ACR+

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PART 1

The FOLOU project

Joan Colon, UVIC

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State of the art and key challenges

Food losses have negative impacts on society, including contributing to **food insecurity**, depleting the environment, generating **GHG emissions**, creating p**ressure on land and water**, and causing **economic losses**.

Key Challenges

- Exclusion of Food losses in the EU Commission Decision (EU) 2019/1597
- **Complex measurement and estimation** of Food losses in the primary production stage
- **Lack of a common methodology** to measure and estimate food losses at the primary production stage
- **Lack of understanding** of the drivers of food losses
- **Lack of skills** to efficiently implement and adopt solutions
- Transforming food systems (farming, fisheries and aquaculture)for health, sustainability and inclusion

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FOLOU objectives

The main objective of **FOLOU** is to set up all the necessary mechanisms to: (i) **measure and estimate** (robust and harmonized methodology), (ii) **monitor and report** (national and EU food loss registries), and (iii) **assess the magnitude and impact** of food losses. Additionally, FOLOU will also work to assure the appropriate **adoption of the project outcomes** by the key targeted stakeholders: primary producers, retailers, consumers, policy makers and researchers.

FOLOU Specific Objectives

- ✓ **Objective 1.** To provide a robust, harmonized and standardised measurement and estimation methodology for quantifying food losses.
- ✓ **Objective 2.** To develop and validate innovative tools to measure and estimate food losses at the primary production stage.
- ✓ **Objective 3.** To measure and estimate the magnitude of food losses at the primary production stage at Member State level and at EU aggregated level.
- ✓ **Objective 4.** To assess the environmental, economic and social impacts that food losses at the primary production stage have.
- ✓ **Objective 5.** Better understanding of direct and indirect drivers of food losses enabling the development of effective strategies for prevention and reduction.
- ✓ **Objective 6.** To facilitate knowledge transfer and increase capacity building to (i) primary producers, (ii) policy makers and (iii) researchers.
- ✓ **Objective 7.** Well-informed and more effective policy strategies for preventing and reducing food losses and waste across the food system on land and at sea.
- ✓ **Objective 8.** To establish and implement an efficient exploitation, communication and dissemination strategy to reach relevant stakeholders.

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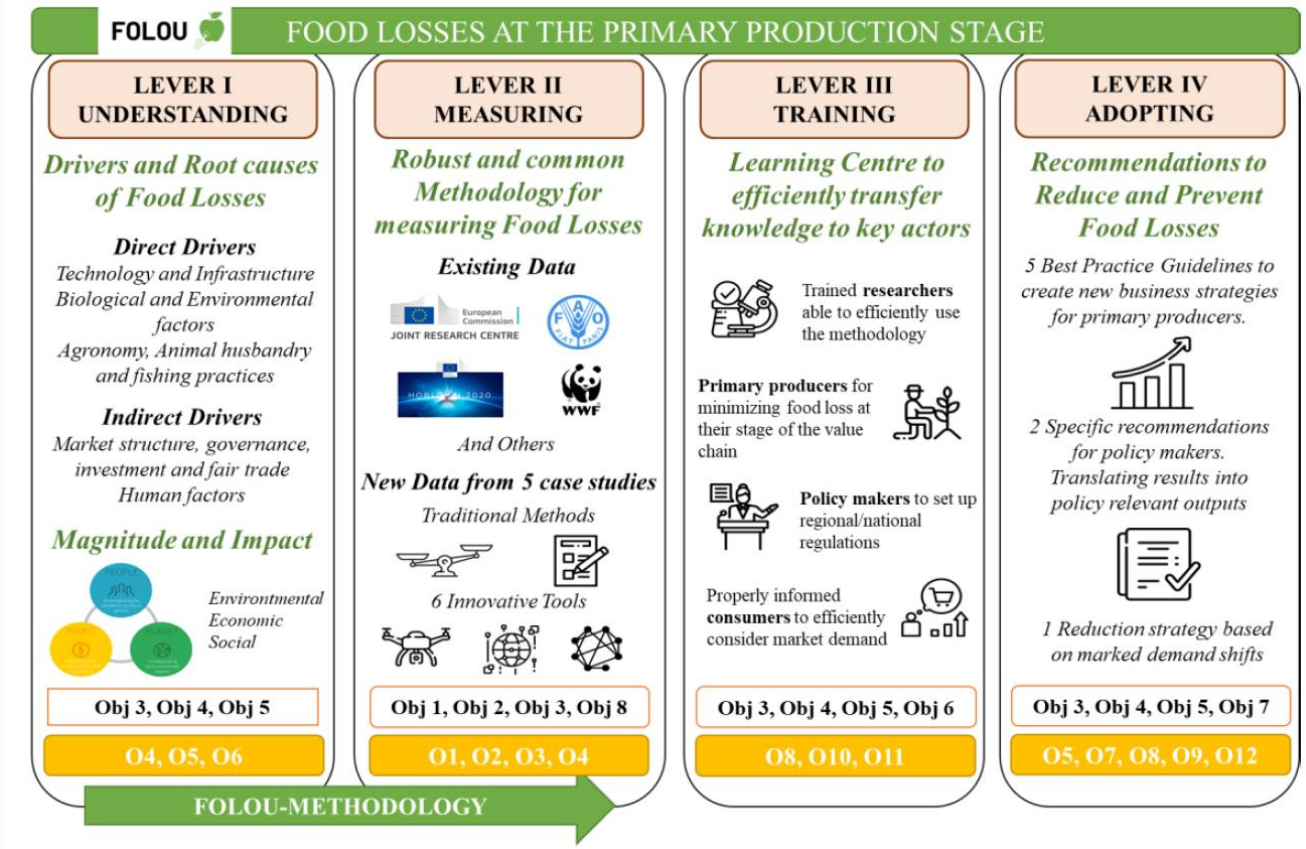
FOLOU Concept & Methodology

FOLOU main goal will be achieved by mainstreaming the adoption of innovative methods and solutions through a methodological approach based on 4 levers of change: **understanding, measuring, training, adopting**



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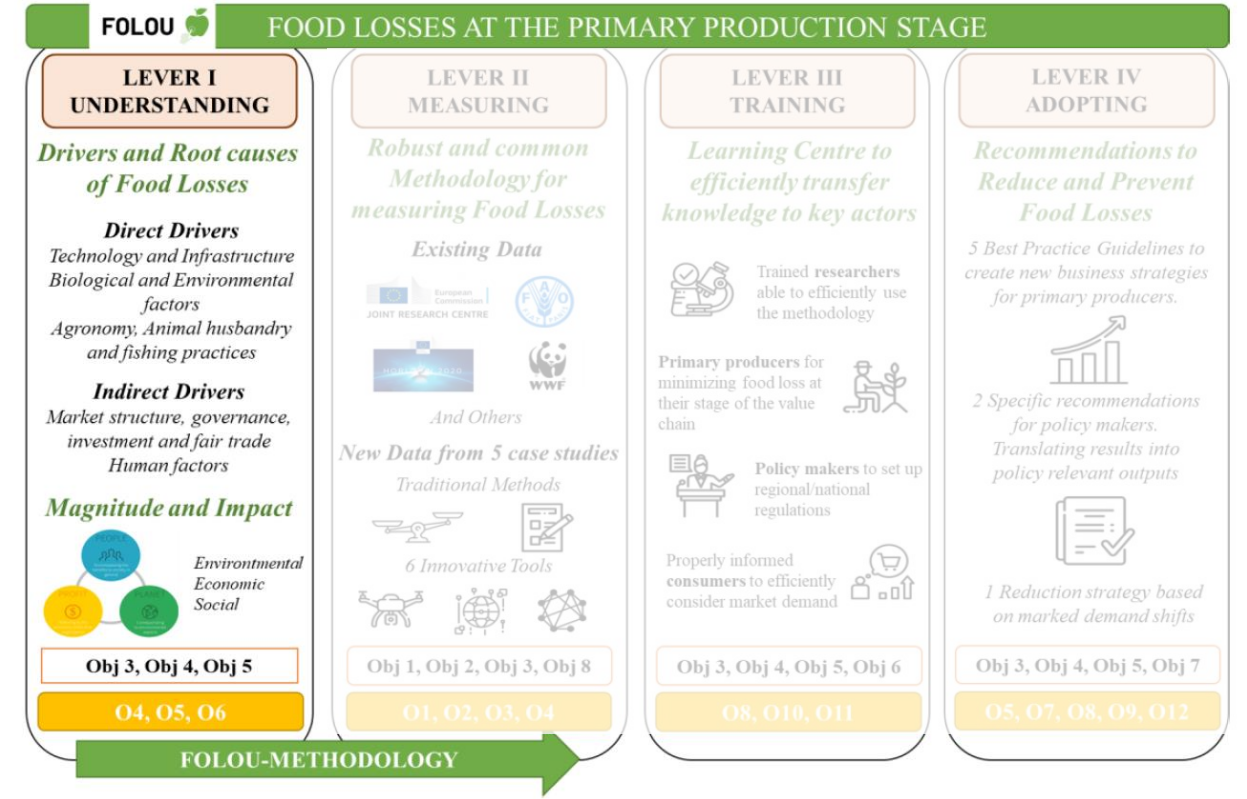

 # Lever I – Understanding *"Any fool can know. The point is to understand – A. Einstein"*

- The FOLOU project aims to understand the bottlenecks and obstacles hampering the transition to a more sustainable, resilient, healthy, and inclusive food system.
- FOLOU aims investigate the **direct and indirect drivers** of food losses in different commodity groups and understand the consequences of such losses.
- The FOLOU **sustainability tool** will be developed to **measure the potential impacts** related to food losses at regional and EU level and identify value chain hot spots to optimize resource allocation. FOLOU aims to include its sustainability tool other EU platforms/resources

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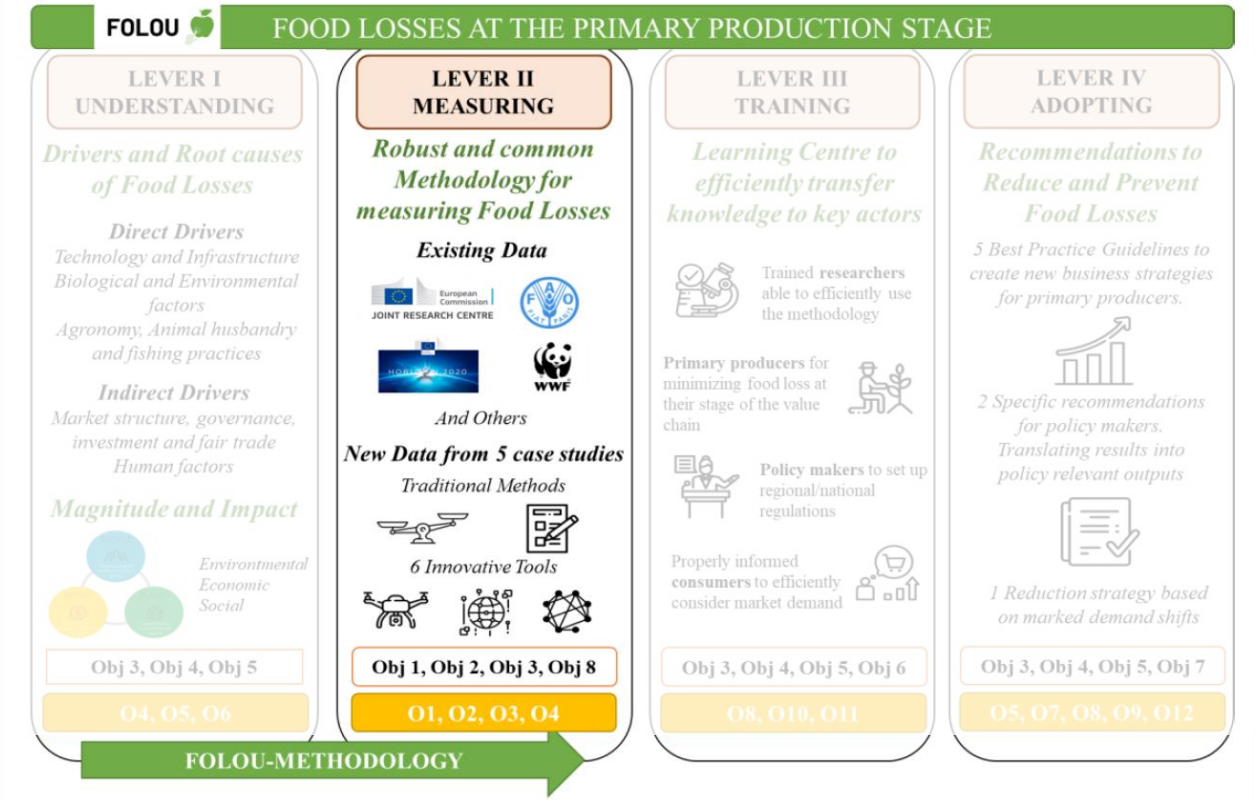

 # Lever II – Measuring *"One accurate measurement is worth a thousand expert opinions – G. Hopper"*

- FOLOU aims to develop **a harmonized measurement and estimation methodology** for food losses at the primary sector.
- FOLOU will develop, test, and validate **six innovative tools to measure and estimate food loss**.
- FOLOU will **estimate and quantify food losses at the regional and EU level** for various commodities and at an aggregated level, relying on existing data as well as from data generated during the project.
- The results from FOLOU will be compared and combined with existing data to determine how current data deviates from project data, with the aim of improving statistical accuracy.

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FOLOU Concept & Methodology

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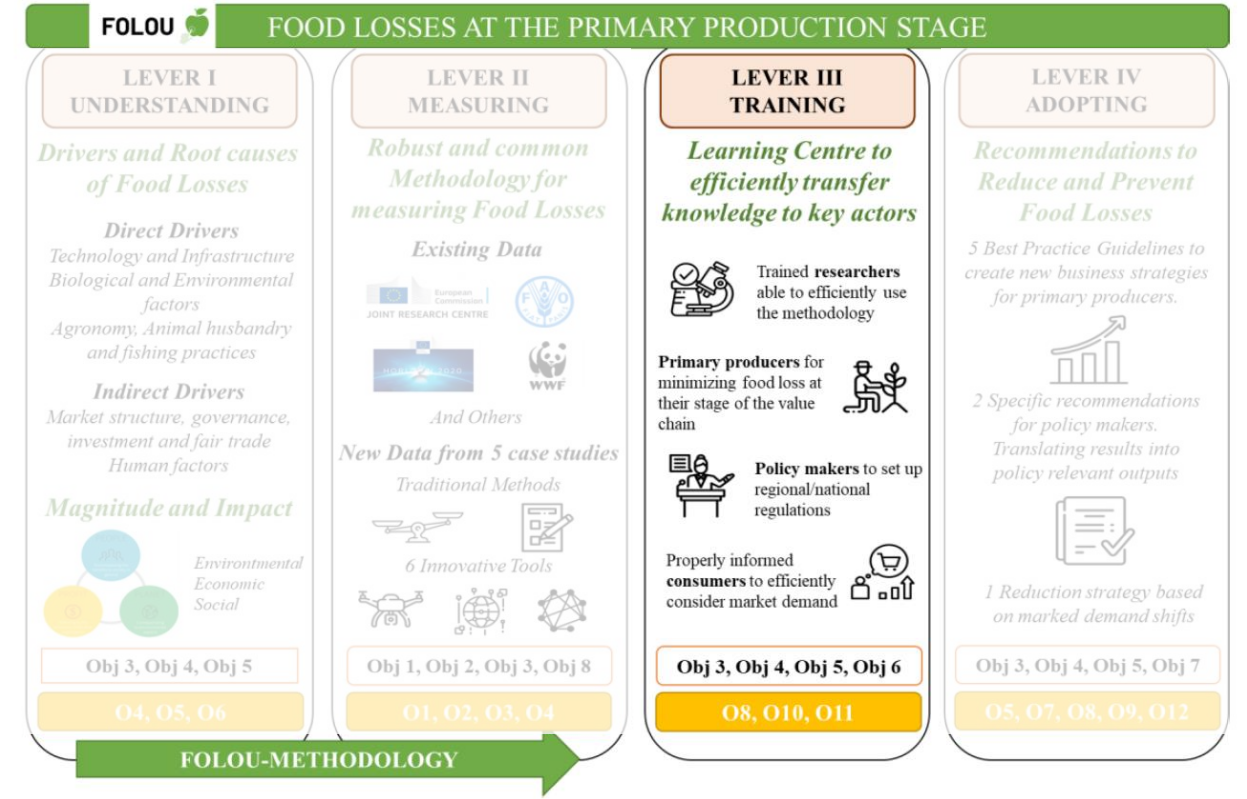

 # Lever III – Training *"Tell me and I forget, teach me and I may remember, involve me and I learn." – B. Franklin"*

- FOLOU aims **to train researchers, policy makers/public administrations, farmers and primary producers** to improve their skills.
- The project will **establish a Learning Centre** to assess competencies and training needs, stimulate professional development, and offer specialized training on FOLOU concepts for each stakeholder group.
- The Learning Centre will use the **EIT Food Competency Framework** as the foundation for the capacity building component of the project.

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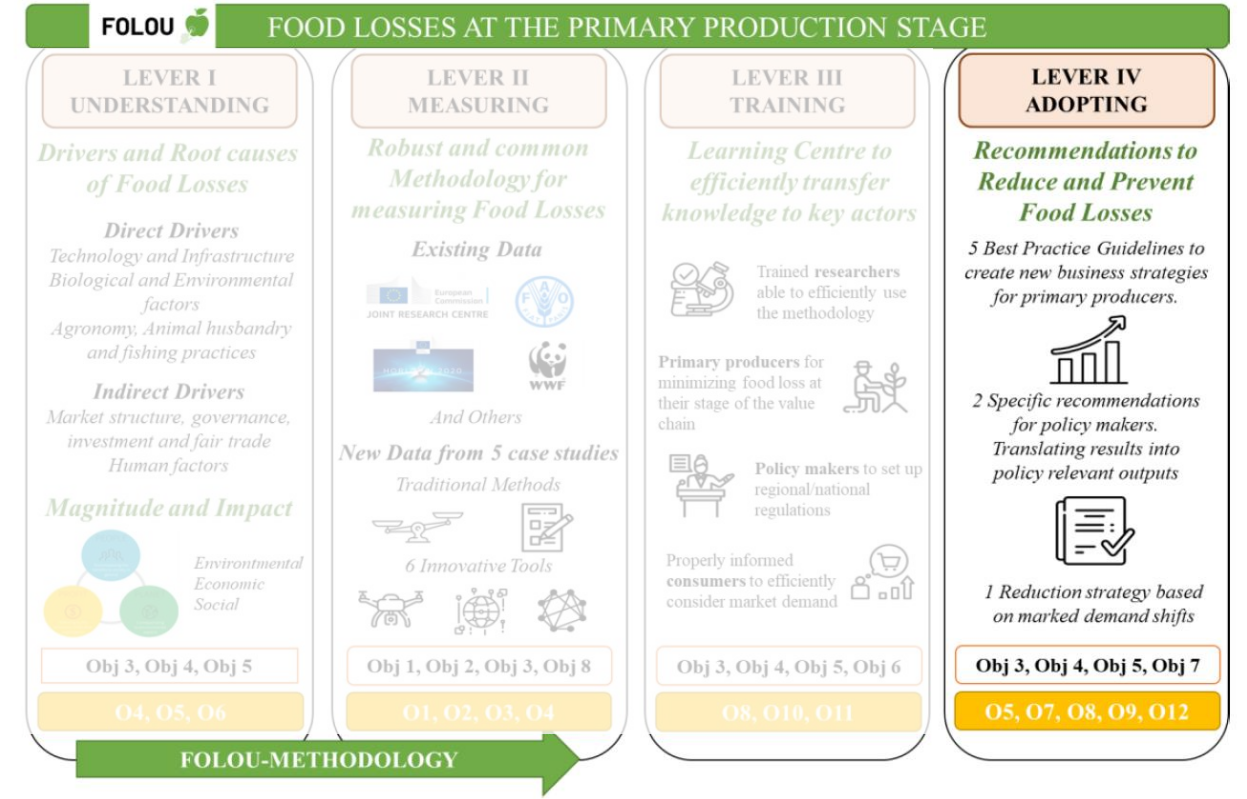
FOLOU Concept & Methodology

FOLOU main goal will be achieved by mainstreaming the adoption of innovative methods and solutions through a methodological approach based on 4 levers of change: **understanding, measuring, training, adopting**



 # Lever IV – Adopting *"The best way to predict the future is to invent it" – A. Kay*

- The FOLOU project aims to reduce food losses in the primary sector by building capacity among stakeholders and **implementing suitable governance strategies**.
- The project will prepare "**recommendation documents**" for key stakeholders, such as policy makers and primary producers, and disseminate results through national stakeholder workshops.
- FOLOU will engage with key players and policymakers in a **twinning programme and advocacy activities** to promote effective governance instruments and funding schemes.

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FOLOU Ouputs

- ✓ O1 - **1 Methodology** for measuring and estimating Food Losses for the five main commodity category groups.
- ✓ O2 - **1 Roadmap** for FL methodology standardization
- ✓ O3 - **6 validated innovative tools** for quantification of Food Losses at primary production stage.
- ✓ O4 - National **Food Losses Registry** (N-FLR) and European Food Losses Registry (E-FLR)
- ✓ O5 - FOLOU **Sustainability Tool**
- ✓ O6 - Standard research protocol for the **data collection** of the food loss drivers
- ✓ O7 - **1 reduction strategy** based on market demand shifts
- ✓ O8 - **5 best practice guidelines** to reduce food losses (one for each commodity group)
- ✓ O9 - **2 Policy briefs** (national registries, methodology adoption
- ✓ O10 - **Food Losses repository**
- ✓ O11 - **5 specific training packages** for key stakeholders
- ✓ O12 - **Twinning programme**

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PART 1

The FOLOU Twinning Regions Program

Rationale
Beneficiaries
Modules' overview

Agnese Boccalon, ACR+

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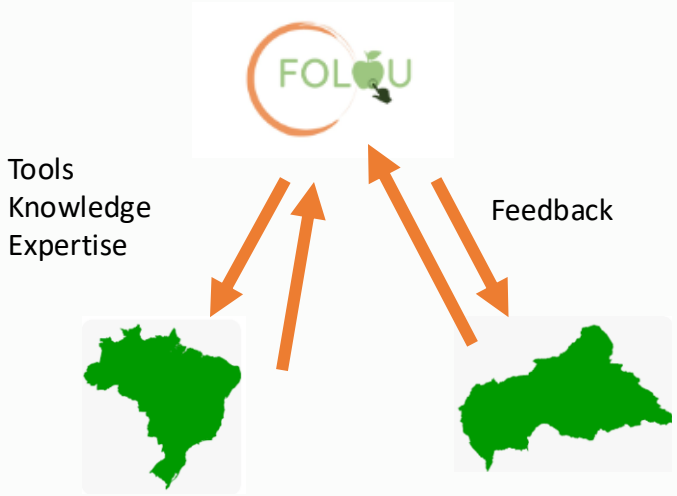
The FOLOU Twinning Regions Program: principles

A collaborative initiative to **VALIDATE** and **APPLY** the methodology for FL quantification and accounting, and to **TEST** the IT-based monitoring technologies developed by the FOLOU partners.

The program provides **technical support** to quantify food losses, while providing opportunities for peer lerning and knowledge sharing.

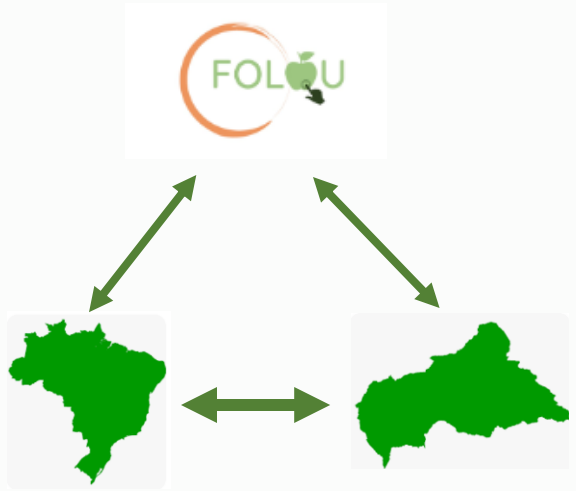
22-month program [February 2025 – October 2026] | 5-10 EU Regions (NUTS-1 and NUTS-2 level)

Mutual cooperation



Multi-actor regional collaborative effort

Peer-learning, knowledge transfer and knowledge sharing



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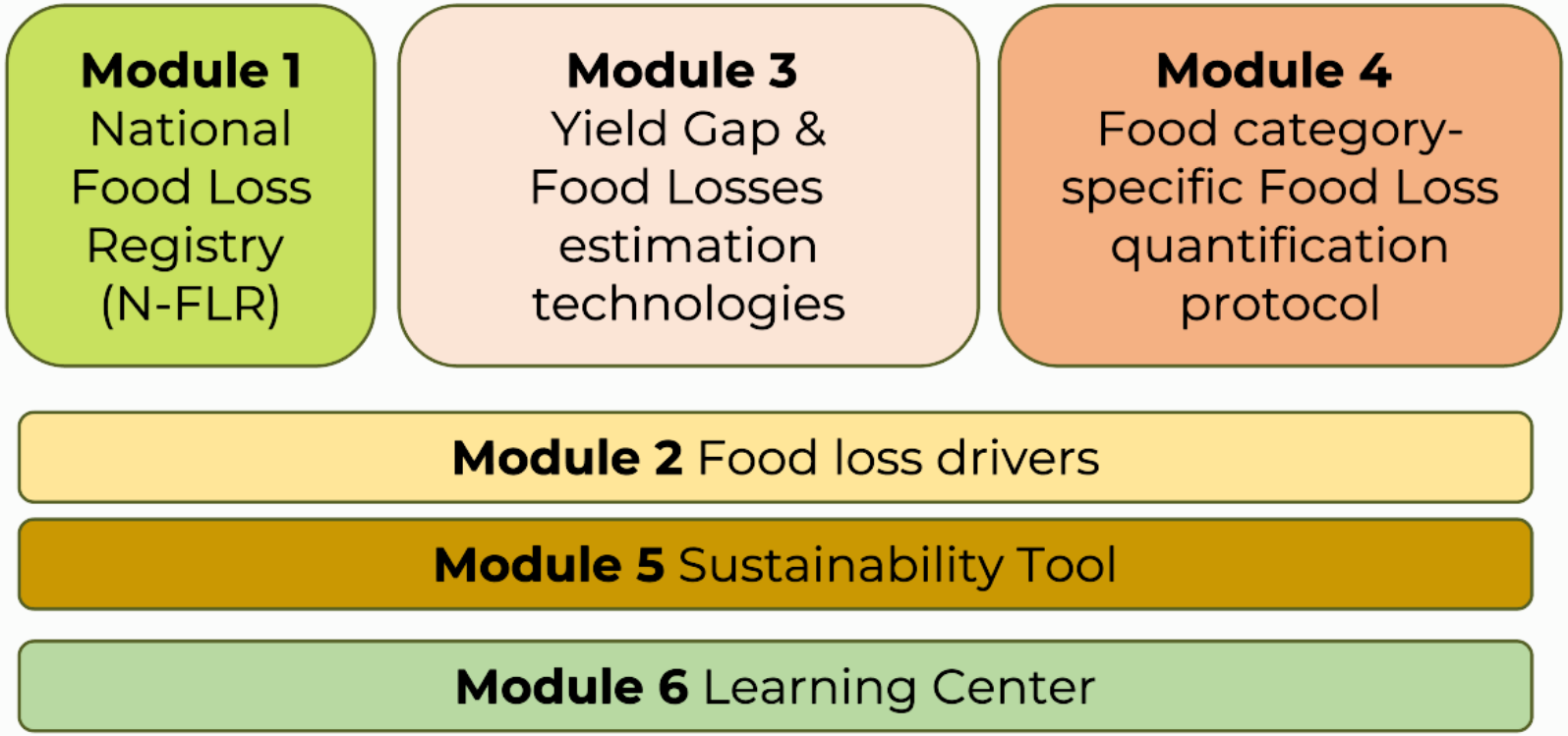
The FOLOU Twinning Regions Program: the modules



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The FOLOU Twinning Regions Program: food categories and production systems

	CONVENTIONAL AGRICULTURE	ORGANIC AGRICULTURE	AGRO-ECOLOGY
Use of chemical inputs	√		
Use of GMOs	√		
Sustainable Land management		√	√
Crop rotation	(√)	√	√
People-centred approach		(√)	√
Social equity aspects			√

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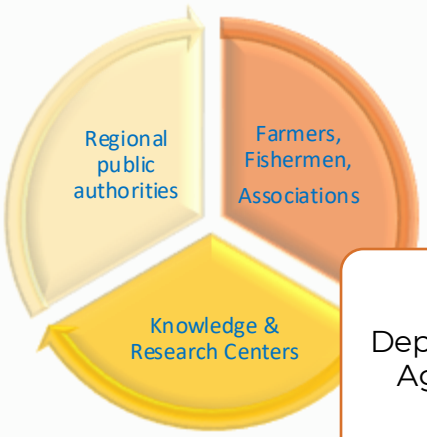
The FOLOU Twinning Regions Program: actors



Department of Waste

Department of Environment

Department of Agriculture

Regional public authorities

Chamber of Agriculture

Agri-food clusters

Farm advisers & public extension services

Farmers' cooperatives

Public agricultural advisory services

Producers' organizations

Farmers, fishers & their associations

Regional Chambers of Agriculture

Agriculture schools (agronomy schools)

Universities in the regions

Innovation Support agents

Research institutes

Research centres & universities

Agri-food LLs

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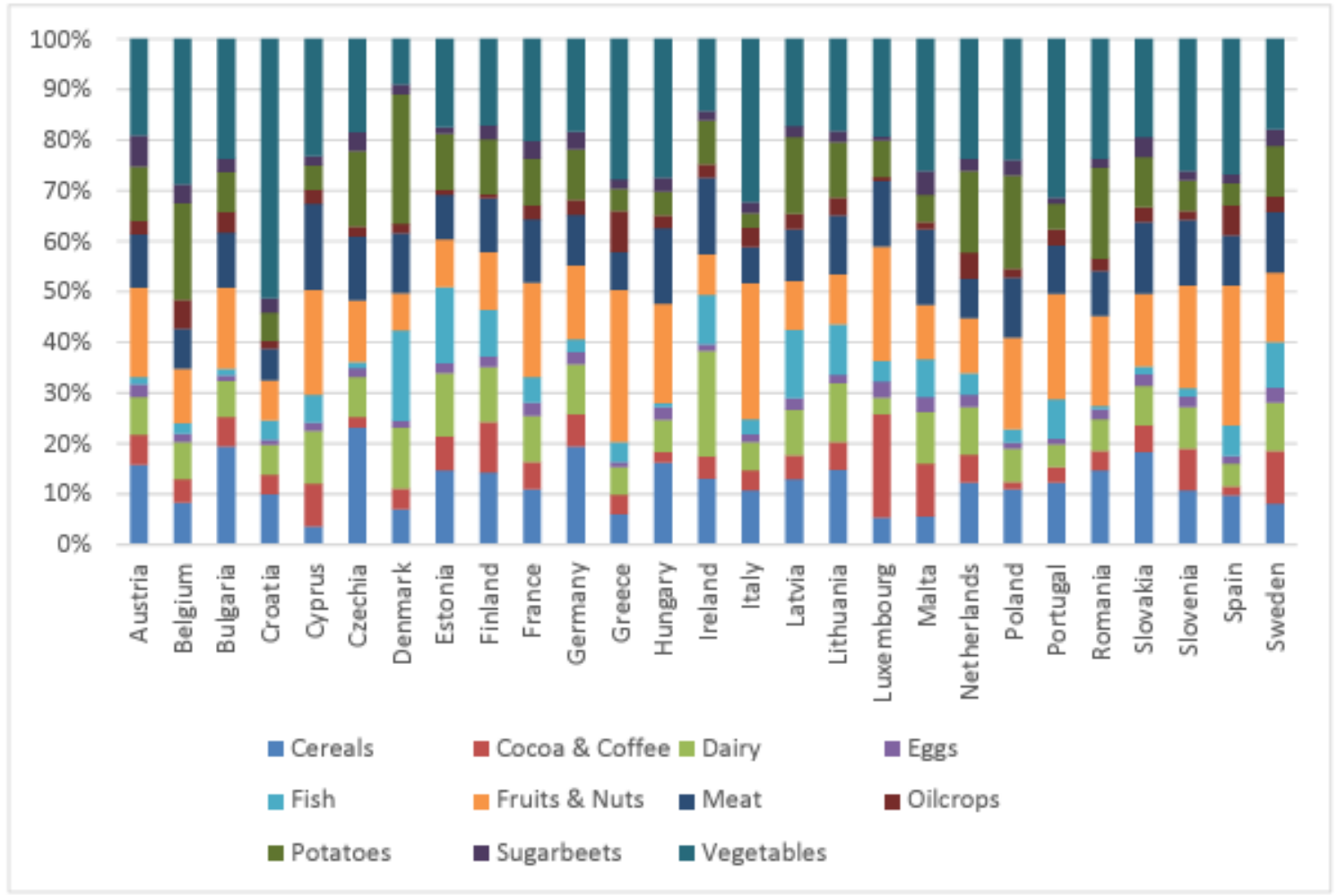
Why the FOLOU Twinning Regions Program?

Contribution of food groups to total FW



De Laurentiis, V., Biganzoli, F., Valenzano, A., Caldeira, C. and Sala, S., ***Building a balancing system for food waste accounting at national level - Model updates version 2.0***, Publications Office of the European Union, Luxembourg, 2023

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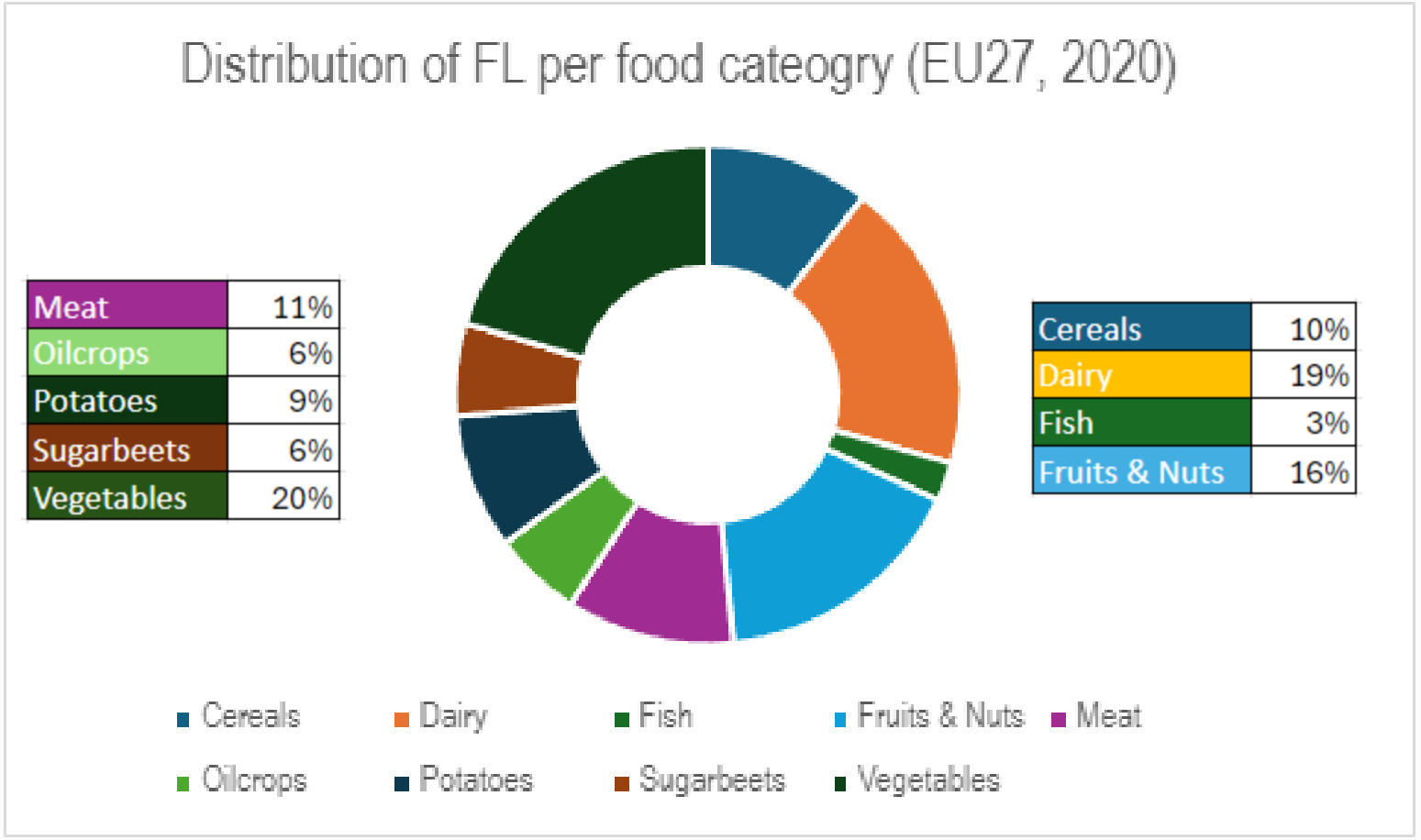
Food Loss among food categories



Personal elaboration based on: De Laurentiis, V., Biganzoli, F., Valenzano, A., Caldeira, C. and Sala, S., Building a balancing system for food waste accounting at national level - Model updates version 2.0, Publications Office of the European Union, Luxembourg, 2023

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Why the FOLOU Twinning Regions Program?

1° challenge: **MEASURING**

Figure 1 Visual representation of the calculation procedure to derive the amount of each crop produced for food, and th related food waste, animal feed, food losses and other by-products. Adapted from De Laurentiis et al. (2021)

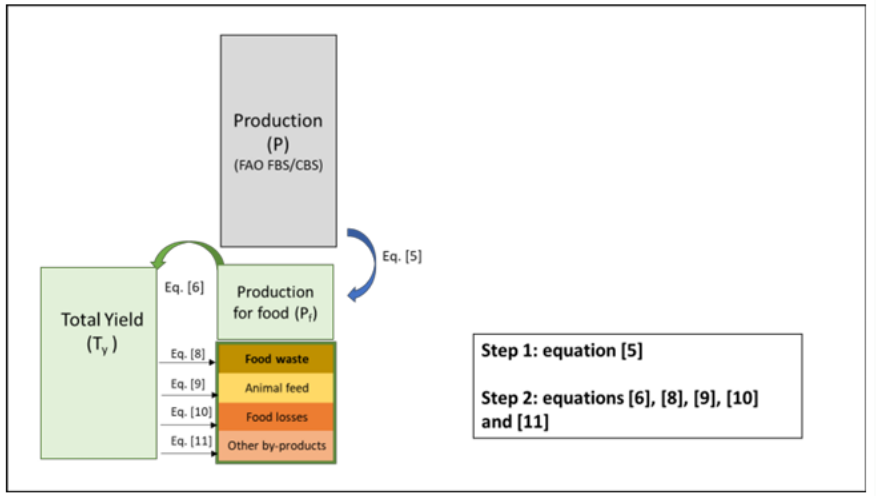
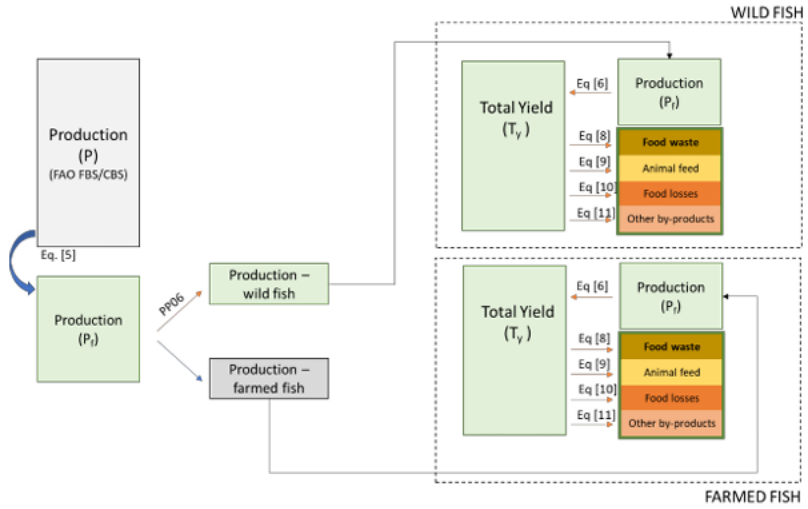


Figure 2. Visual representation of the calculation procedure to derive the amount of fish produced for food, and the related food waste, animal feed, food losses and other by-products. Adapted from De Laurentiis et al. (2021)



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Why FOLOU, why a Twinning Regions Program?

1° challenge: **MEASURING**

Food waste and food waste prevention by NACE Rev. 2 activity - tonnes of fresh mass

Online data code: env_wasfw DOI: 10.2908/env_wasfw last update: 27/09/2024 11:00 view: DEFAULT

Source of data: Eurostat

Food waste and food waste prevention by NACE Rev. 2 activity - tonnes of fresh mass
(online data code: env_wasfw)
Source of data: Eurostat

Table | Line | Bar | Map

GEO	NACE_R2 Primary production of fo...
European Union - 27 countries (from 2020)	10 (s)
Belgium	3
Bulgaria	10
Czechia	1
Denmark	20
Germany	2
Estonia	16
Ireland	10
Greece	:
Spain	:
France	17 (e)
Croatia	10 (e)
Italy	11 (d)

Eurostat 2022 Food Waste data (kg/capita)

Country	Population	Reported value (kg/capita)	Reported value (kg/capita)
EU-27	446.7 M	10 (average)	12
Greece	10.3 M	:	35 (e)
Spain	47.9 M	:	18 (e)
Lithuania	2.8 M	:	29 (e)
Slovenia	2.1 M	0	-
HU, AT. D, CZ		**1**	**2**
FI, SW, HR, PT, FR	97.6 (22%)	(e)	
IT	58 M	(d)	12
Iceland	**0.4 M**	**76**	

Special value:
(:) not available

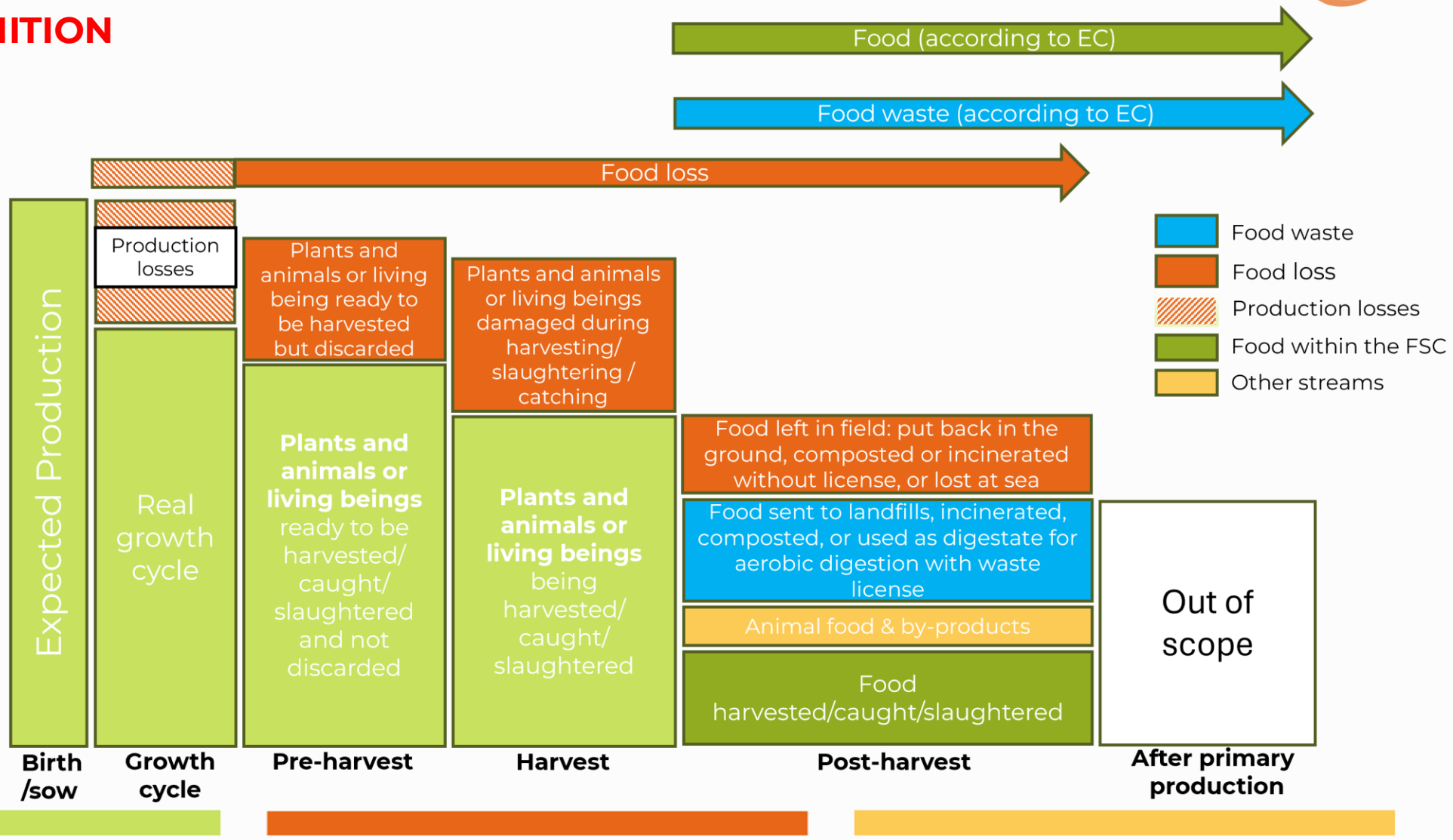
Available flags:
(e) estimated
(d) definition differs (see metadata)
(s) Eurostat estimate

Why the FOLOU Twinning Regions Program?

2° challenge: **DEFINITION**

"Food loss is any harvest-mature plant, animal or living being (including inedible parts) that is not successfully harvested, as well as food removed from the supply chain during post-harvest phase that does not become animal feed, by-product or food waste."

The boundary conditions that apply to this definition are illustrated in this figure:



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Why the FOLOU Twinning Regions Program?

3° challenge: **INNOVATIONS & DIGITAL TRANSITION**

European Commission | English

Shaping Europe's digital future

Home | Policies | Activities | News | Library | Funding | Calendar | Consultations | AI Office

Home > Policies > The Digitalisation of the European Agricultural Sector

The Digitalisation of the European Agricultural Sector

MFF: Digital transformation in agriculture

Horizon Europe

Digital R&I in agriculture

- Developing digital solutions enabling achievement of key challenges in agriculture
- Increasing cost-effectiveness of digital solutions
- Developing technical solutions facilitating trust in data sharing

DIGITAL programme

Digital capacity & deployment in agriculture

- Common European agricultural data space
- AI testing and experiemental facilities
- Digital Innovation Hubs
- Investing in skills

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Module 4:
The Food Loss quantification protocol

Héctor Barco,
Espigoladors

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Module 4: Quantification methodology

"What gets measured gets managed"

Module 4: Quantification methodology

- ✓ 1. Why to measure?

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Module 4: Quantification methodology

✓ 1. Why measure?

Public administration

Farmer

Researcher

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Module 4: Quantification methodology

- ✓ 1. Why measure?
- ✓ 2. What to measure?

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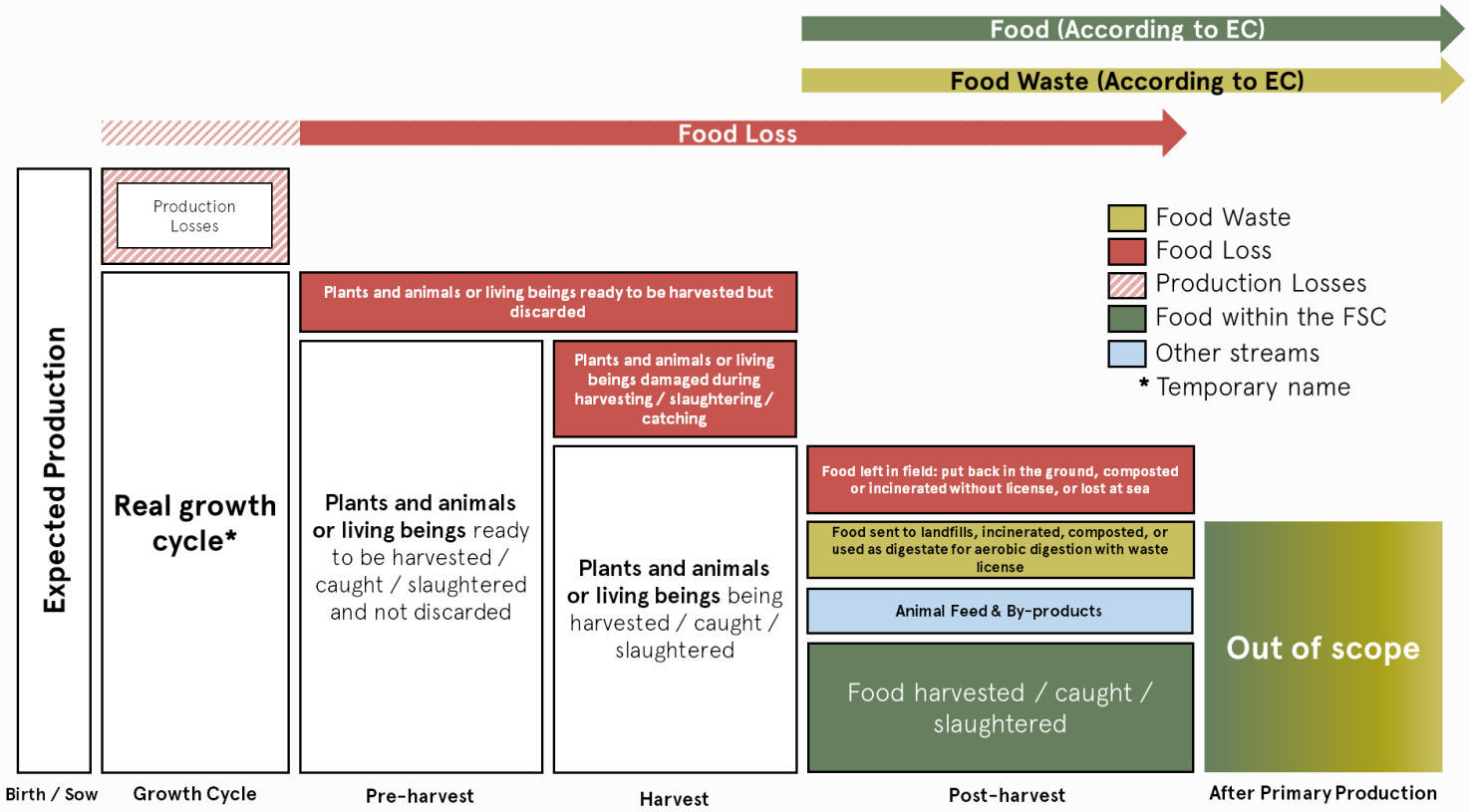
Module 4: Quantification methodology

✓ 2. What to measure?



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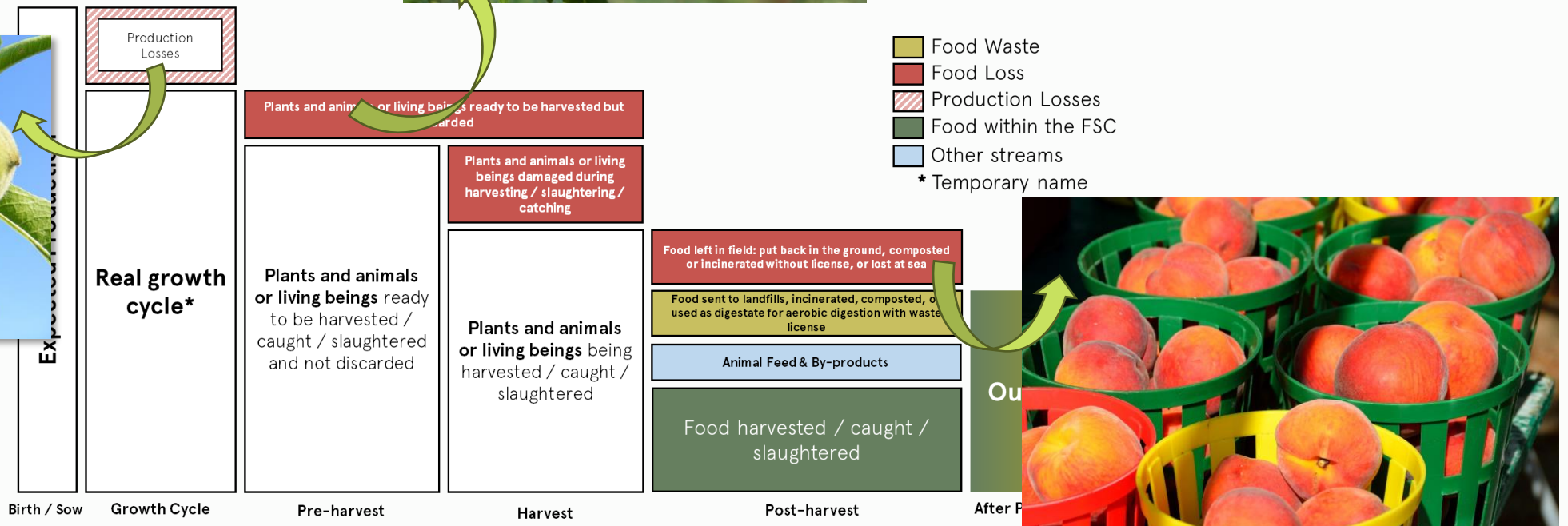
Module 4: Quantification methodology

✓ 2. What to measure?



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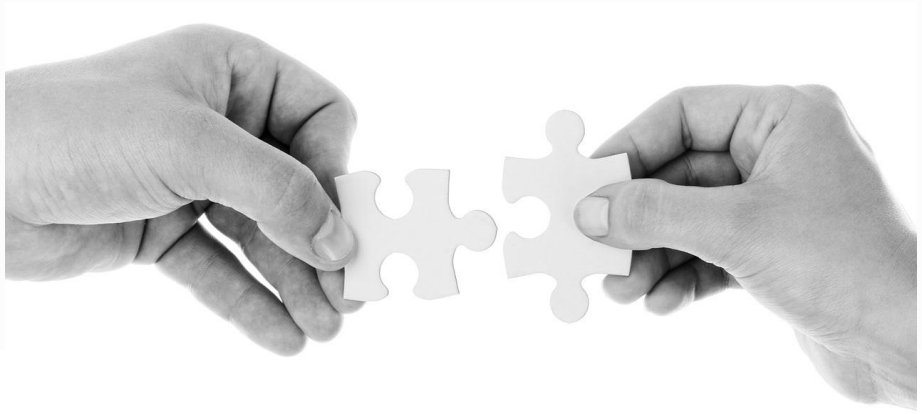
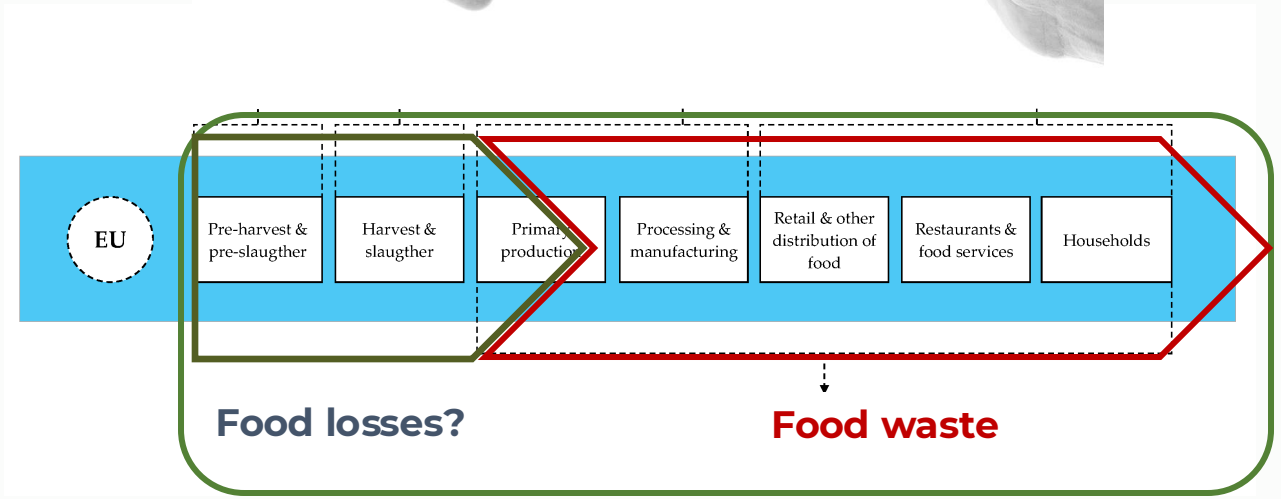
Module 4: Quantification methodology

✓ 2. What to measure?





Current quantification processes

Desired Quantification processes

Image source: Leverenz, D.; Schneider, F.; Schmidt, T.; Hafner, G.; Nevárez, Z.; Kranert, M. Food waste generation in Germany in the scope of European legal requirements for monitoring and reporting. Sustain. 2021, 13, doi:10.3390/su13126616

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Module 4: Quantification methodology

- ✓ 1. Why measure?
- ✓ 2. What to measure?
- ✓ 3. Where to measure?

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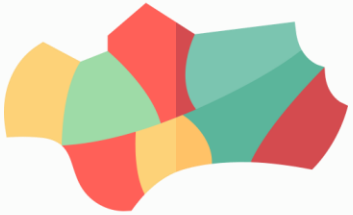
Module 4: Quantification methodology

✓ 3. Where to measure?

Plots/farms



Regions

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Module 4: Quantification methodology

- ✓ 1. Why measure?
- ✓ 2. What to measure?
- ✓ 3. Where to measure?
- ✓ 4. How to measure?

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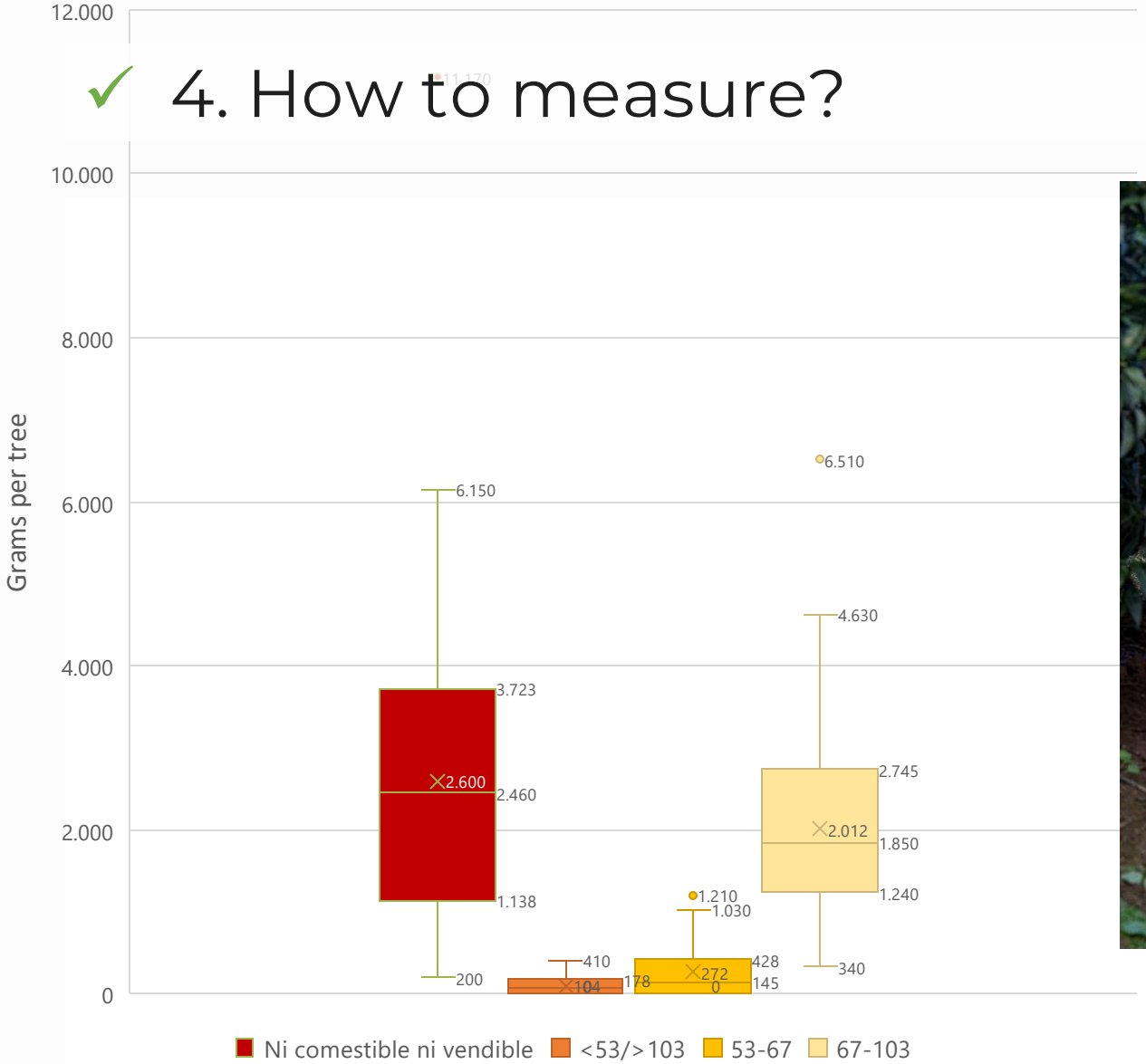
Module 4: Quantification methodology

- ✓ 4. How to measure?

Module 4: Quantification methodology

✓ 4. How to measure?



Quantification of harvest losses in Plot 2, orange trees

Source: Zitroladors project. WWF & Espigoladors

Module 4: Quantification methodology

The reduction of food losses and waste should be seen as an opportunity for improvement in the productive sector and the entire region

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Module 3:
Food Loss quantification and estimation technologies

Wouter Maes,
UGhent

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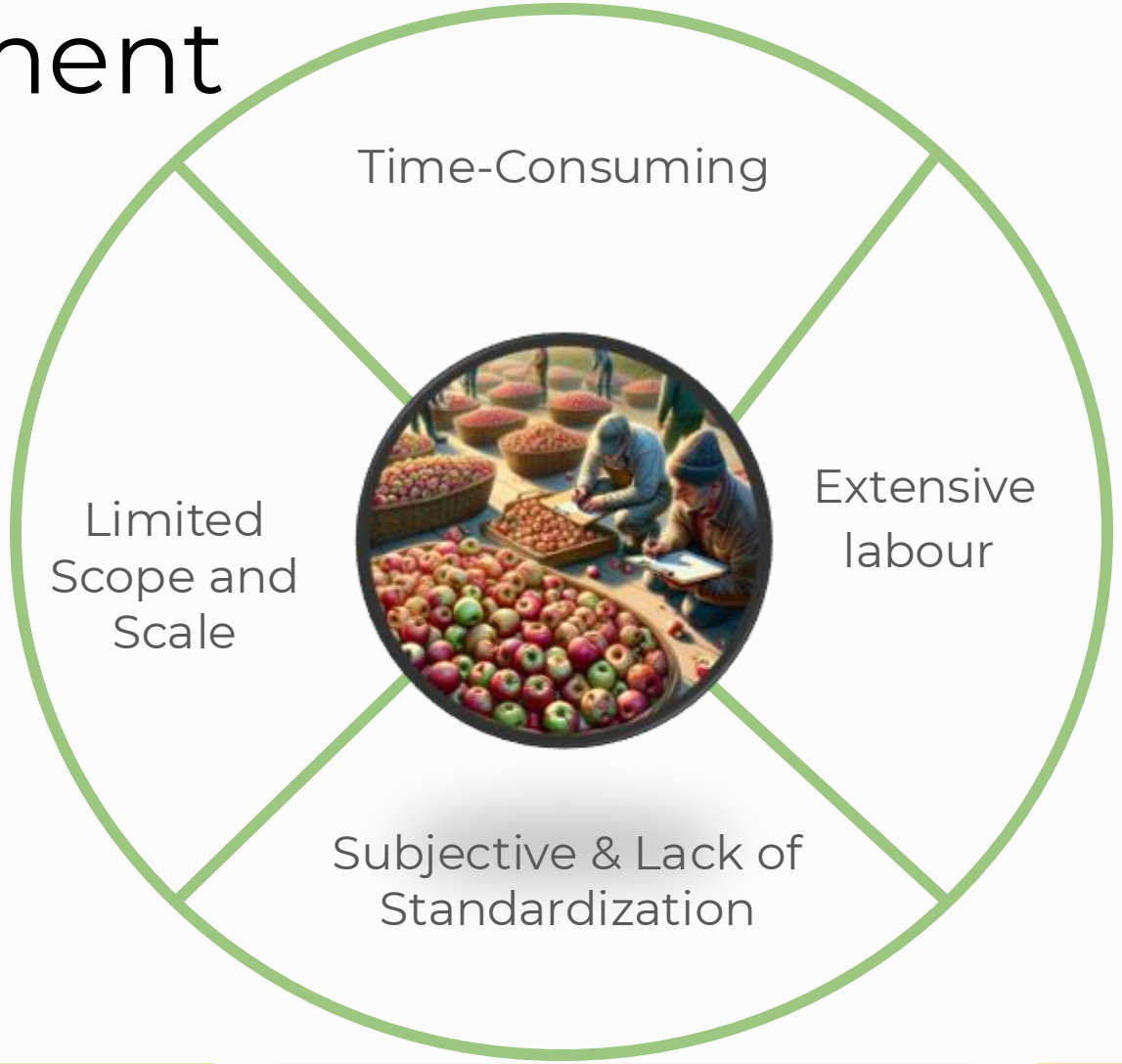
Classical methods for food loss measurement



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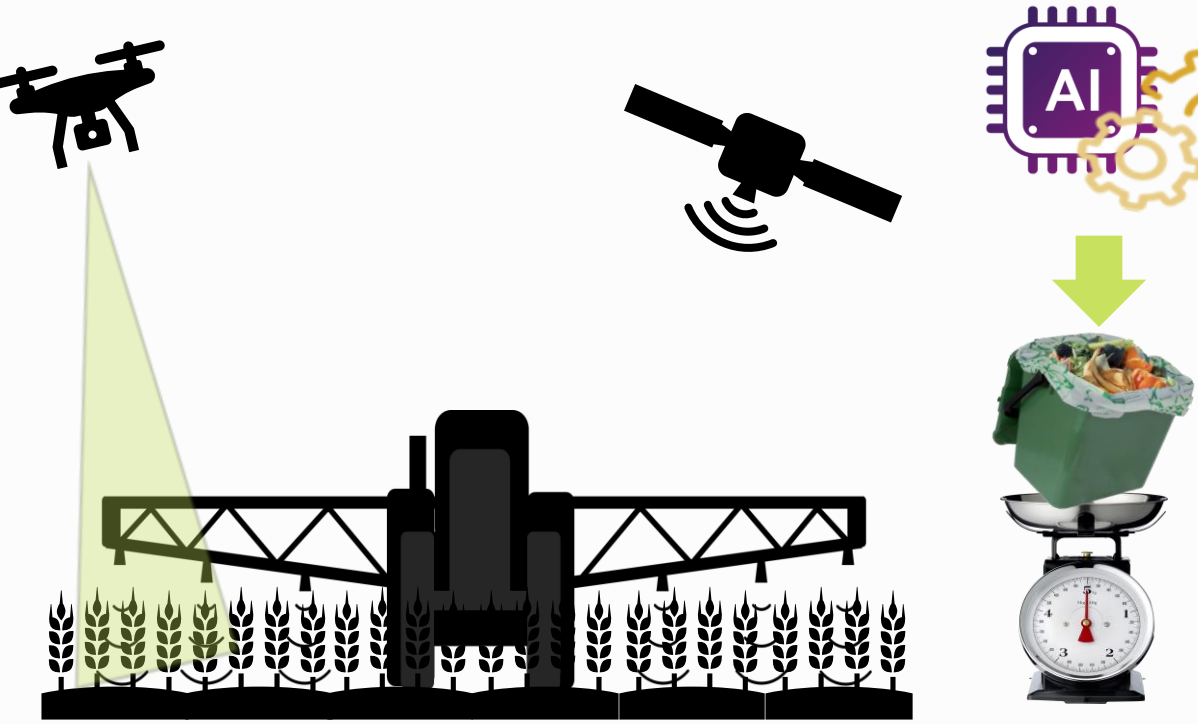
Overview of Module 3



Module 3 technologies are currently under research and development

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Action 1: Bridging the gap between the farmers and scientists (FOLOU used case)

Objective: Bringing the agricultural technology closer to farmers and research centra via **online sessions** by:

- Presenting the acquisition technology (Protocols, guidelines)
- Showing use cases that are relevant for farmers and research centra, e.g.:
  - Direct measurement of yield and yield loss in apple and in cauliflower with high resolution cameras
  - Using satellite data for estimating production losses in corn, wheat, potato, ...
  - Block chain for tracking food losses in mussel aquaculture

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Action 2: Direct field guidance

Objective: Help farmers & research centra to understand the present condition of their fields and crops by leveraging technology to deliver data-driven insights.

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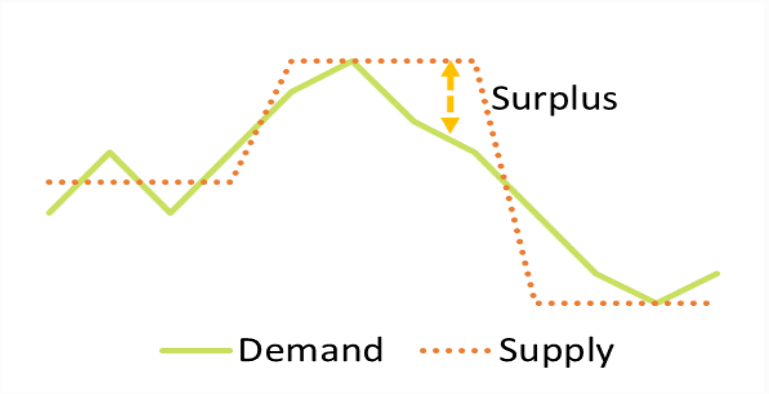
Action 3: Online Demos & Demonstrations



Objective: Present solutions that can help reducing the food loss through two technologies:

- Blockchain for tracking food losses in mussel aquaculture
- Sentiment analysis for forecasting of food demand to prevent the surplus and waste



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Module 1:
The National Food Loss Registry (N-FLR)

Anna Sagrera, UVIC

Funded by the European Union

Module 1: Food Loss Registry

Overview of the FL registry

Monitoring tool for public administrations to collect food losses data

- The main objective is to **obtain data on FL across the EU regions** to understand and analyse what, why and where food losses occur

- **Dimension** the part that **food losses** represent along the food supply chain

- Establish an **evidence-based policy**, to undertake correct strategic choices and make the progress measurable

- Develop on-farm **prevention and reduction actions**

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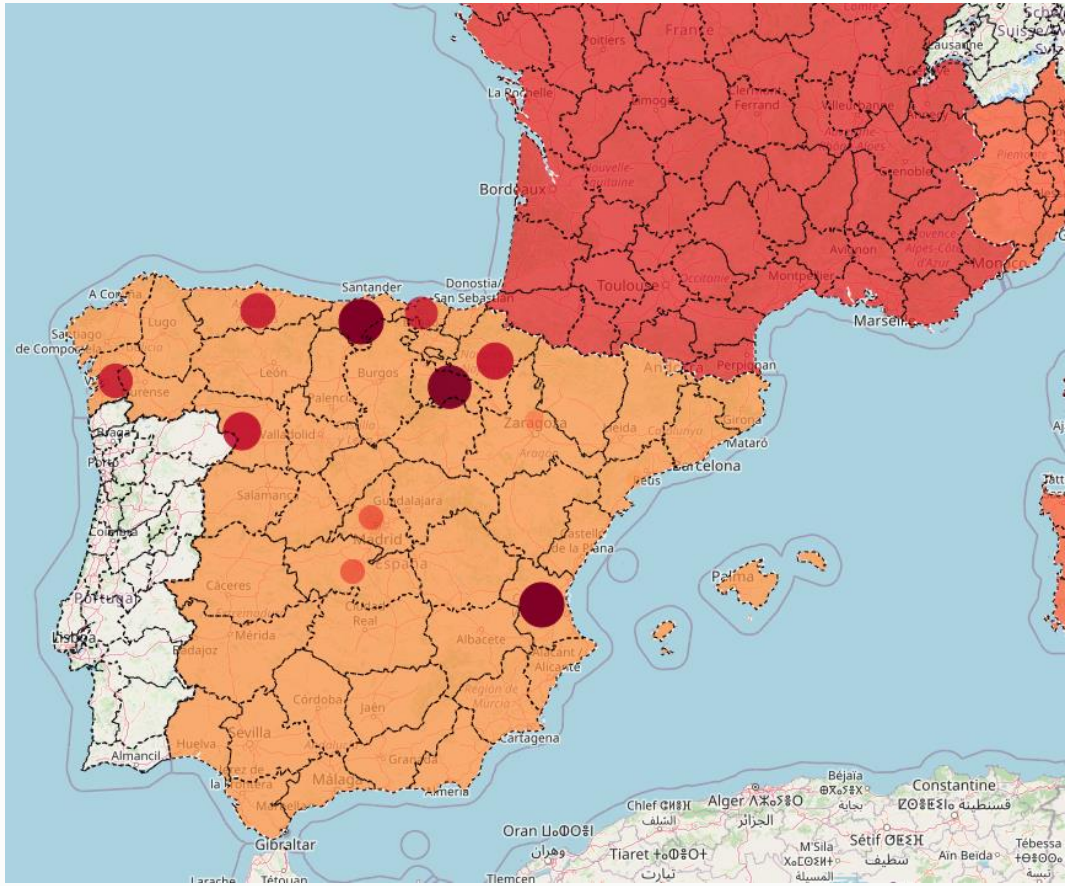
Module 1: Food Loss Registry

How the FL registry works?

- **Integrated into existing annual agrarian declarations of each territory**
- **Store FL data at farm-level**, following the quantification methodology developed. Farm-level data is **then aggregated at territorial scale**, and public authorities can use this platform to monitor the performance of the regional farming system
- **Homogenous and comparable data** among Member States' territories by using:
  - **NACE and CPA** codes for identifying food types
  - **NUTS** codes for identifying territorial levels (NUTS-3)



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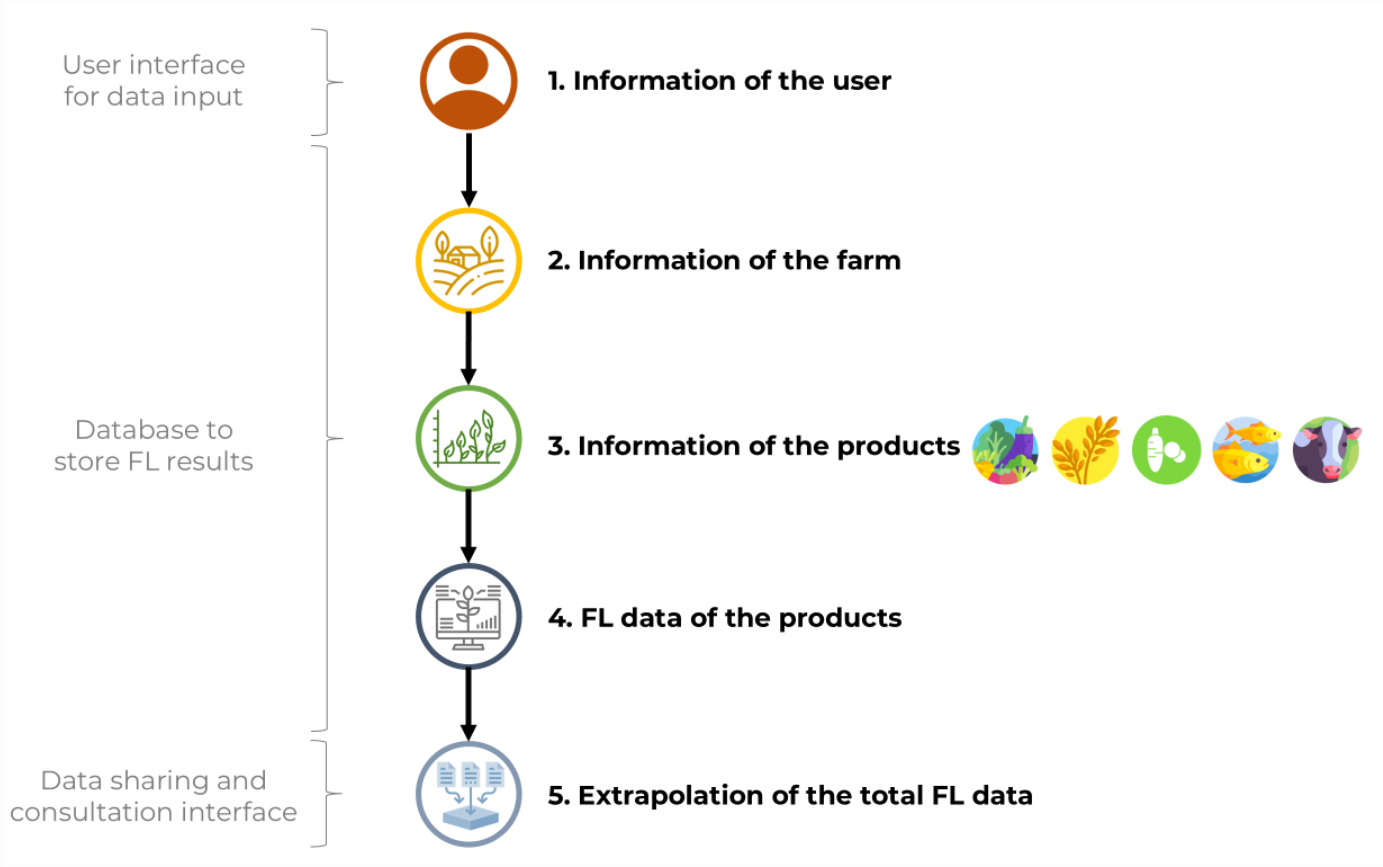
Module 1: Food Loss Registry

How the FL registry works?

Structure



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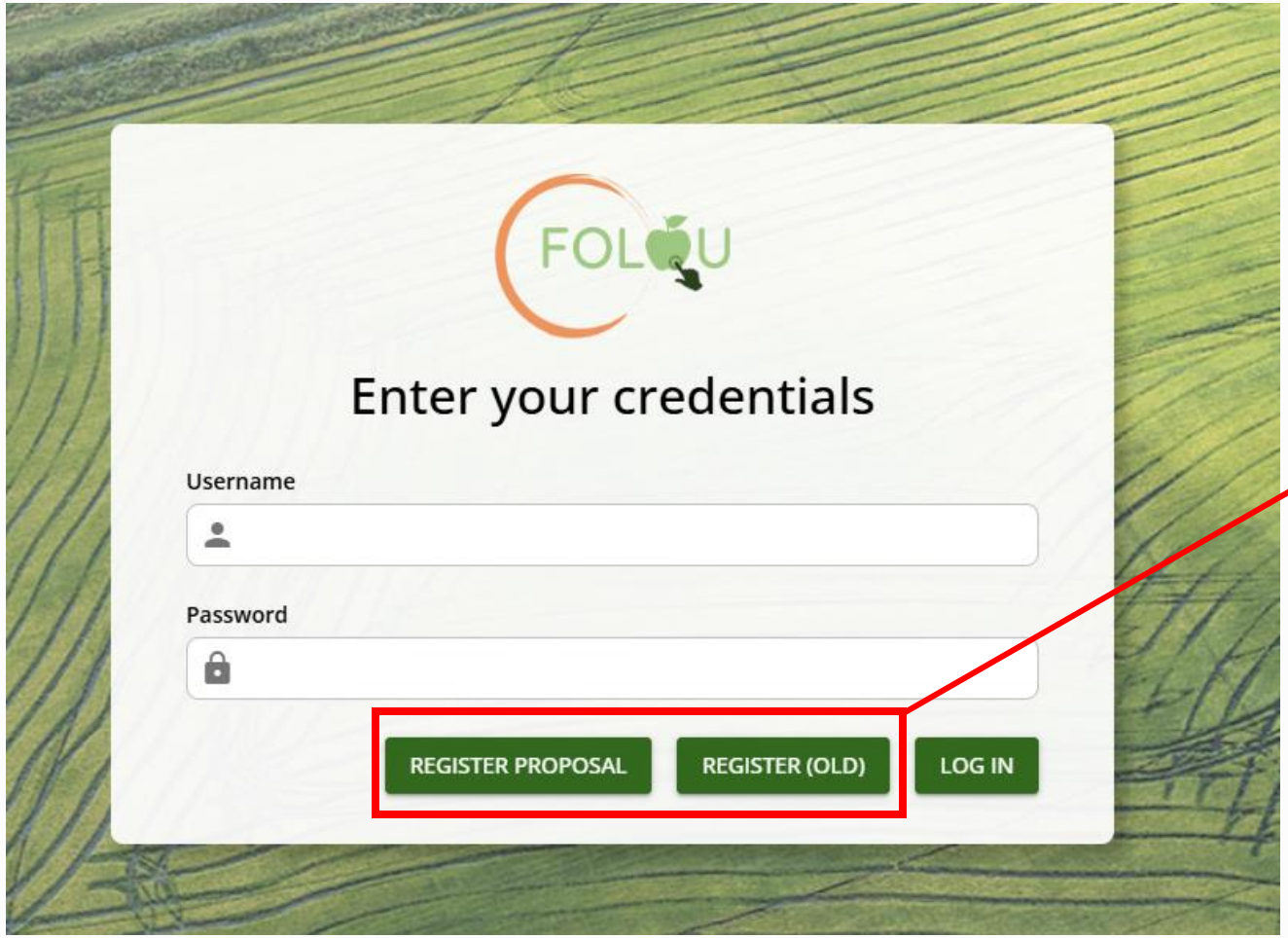
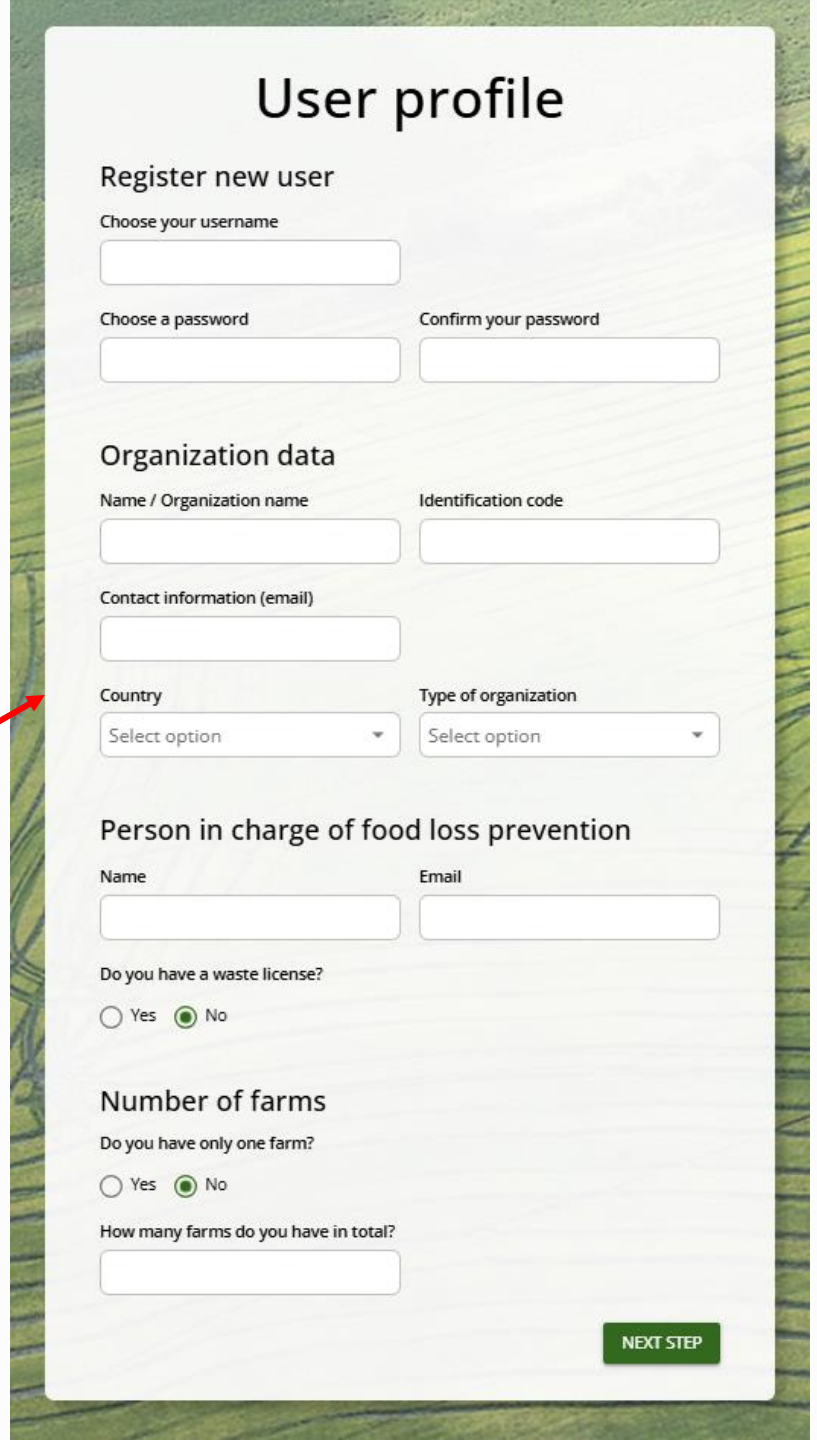
Module 1: Food Loss Registry

1. Information of the user





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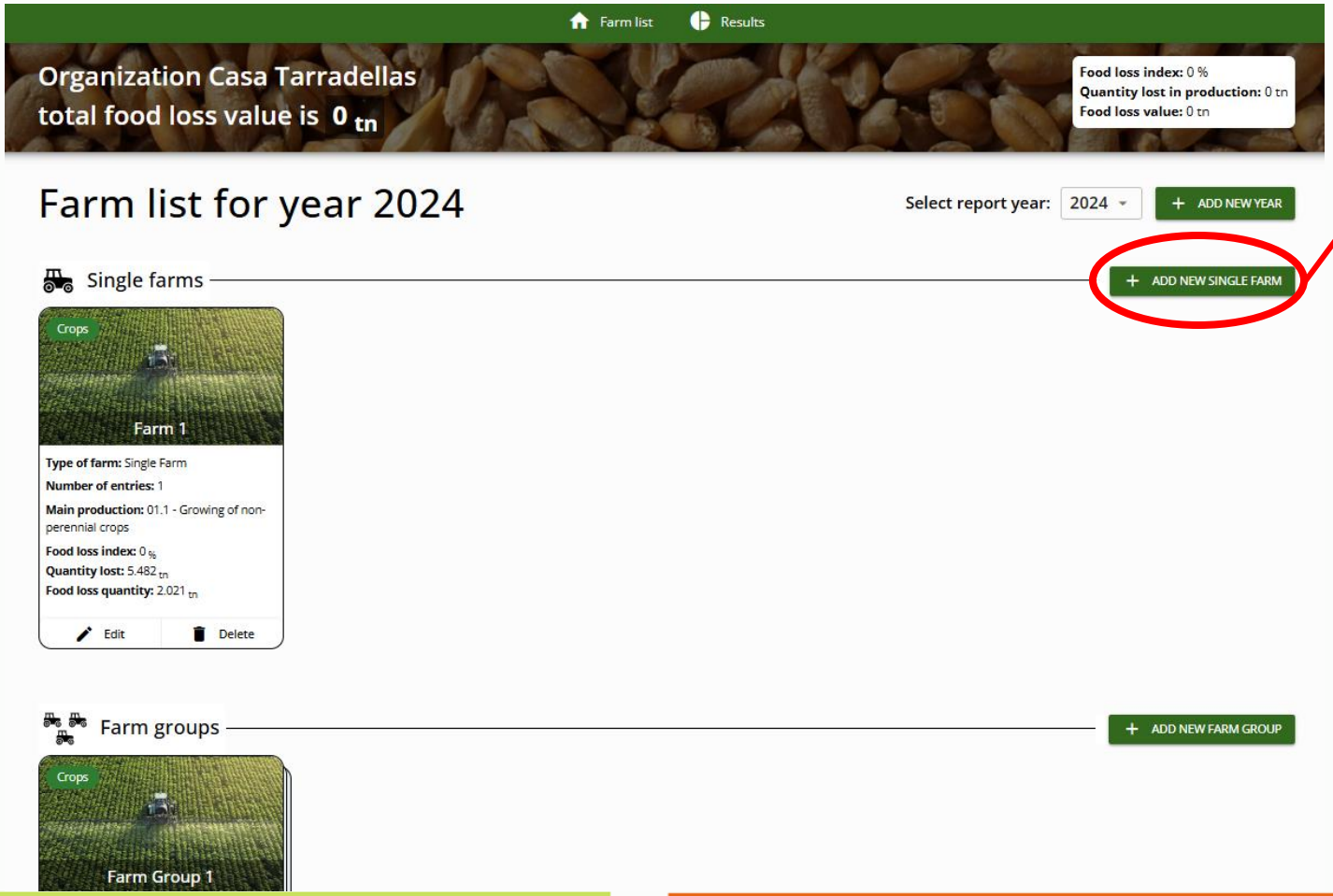
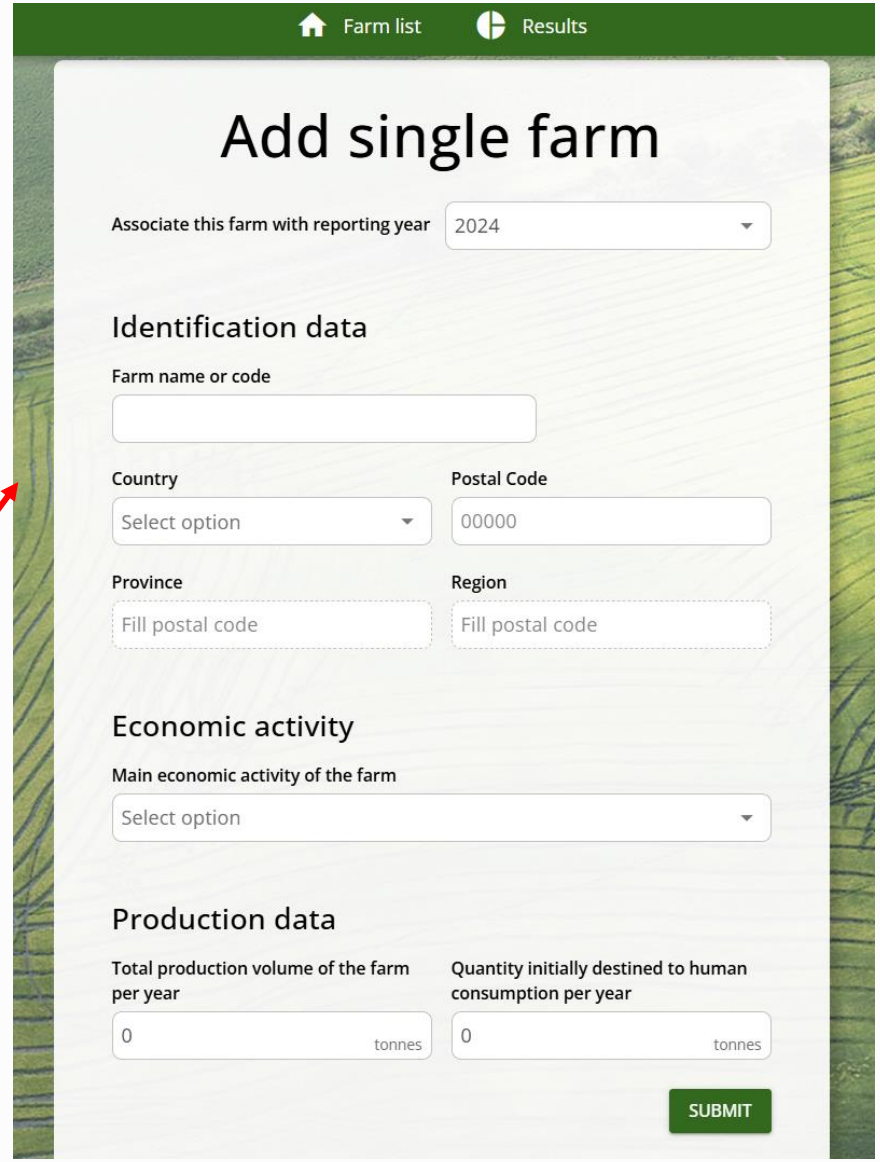
Module 1: Food Loss Registry

2. Information of the farm





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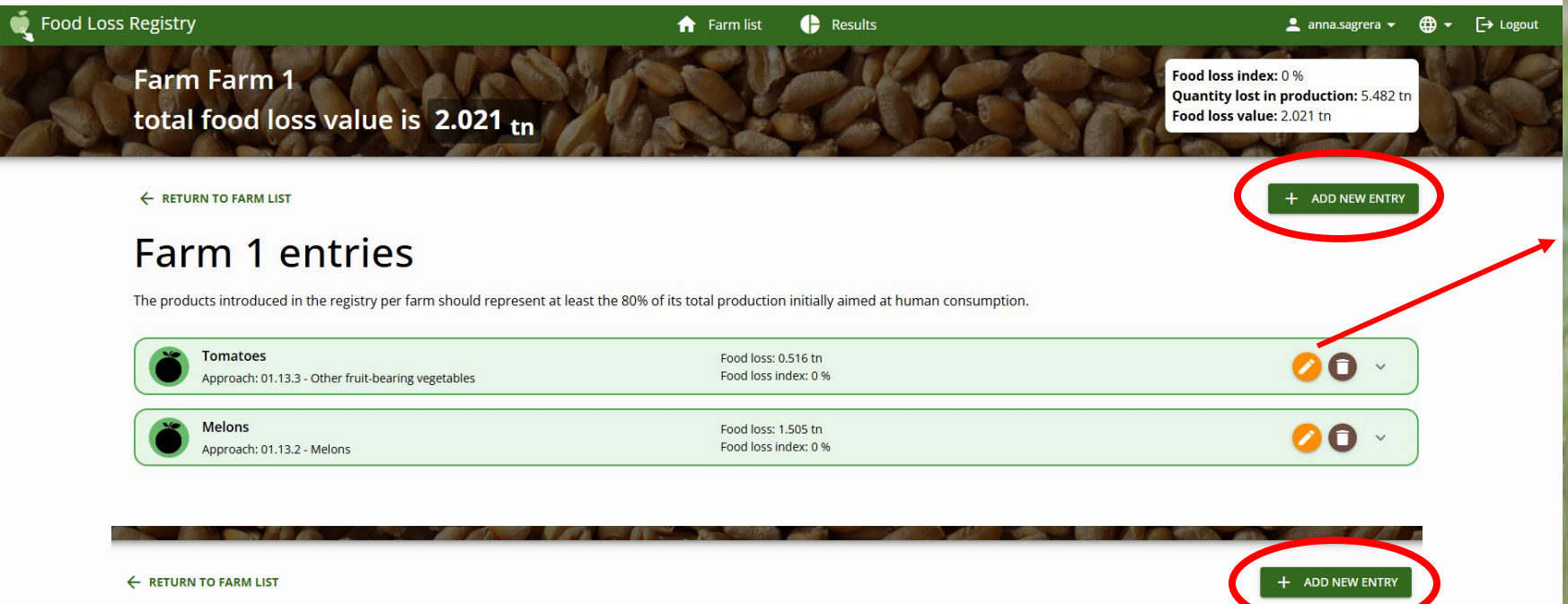
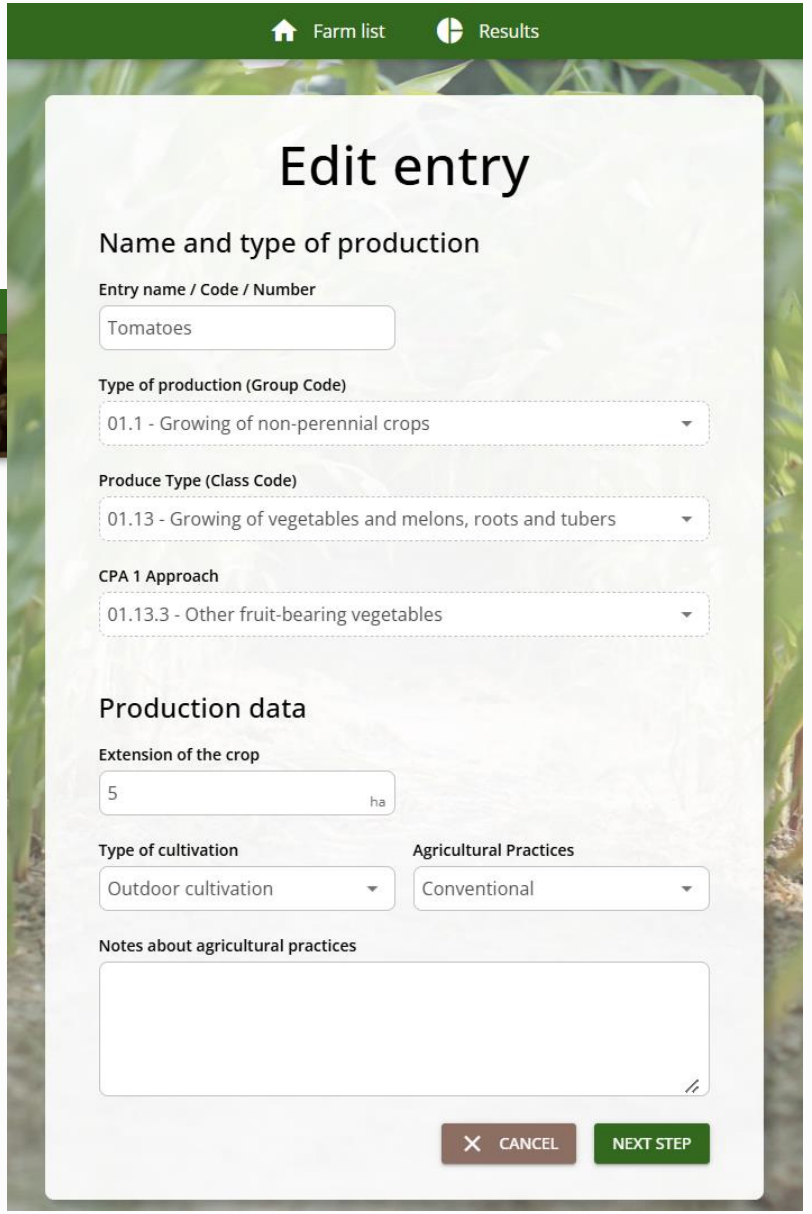
Module 1: Food Loss Registry

3. Information of the products





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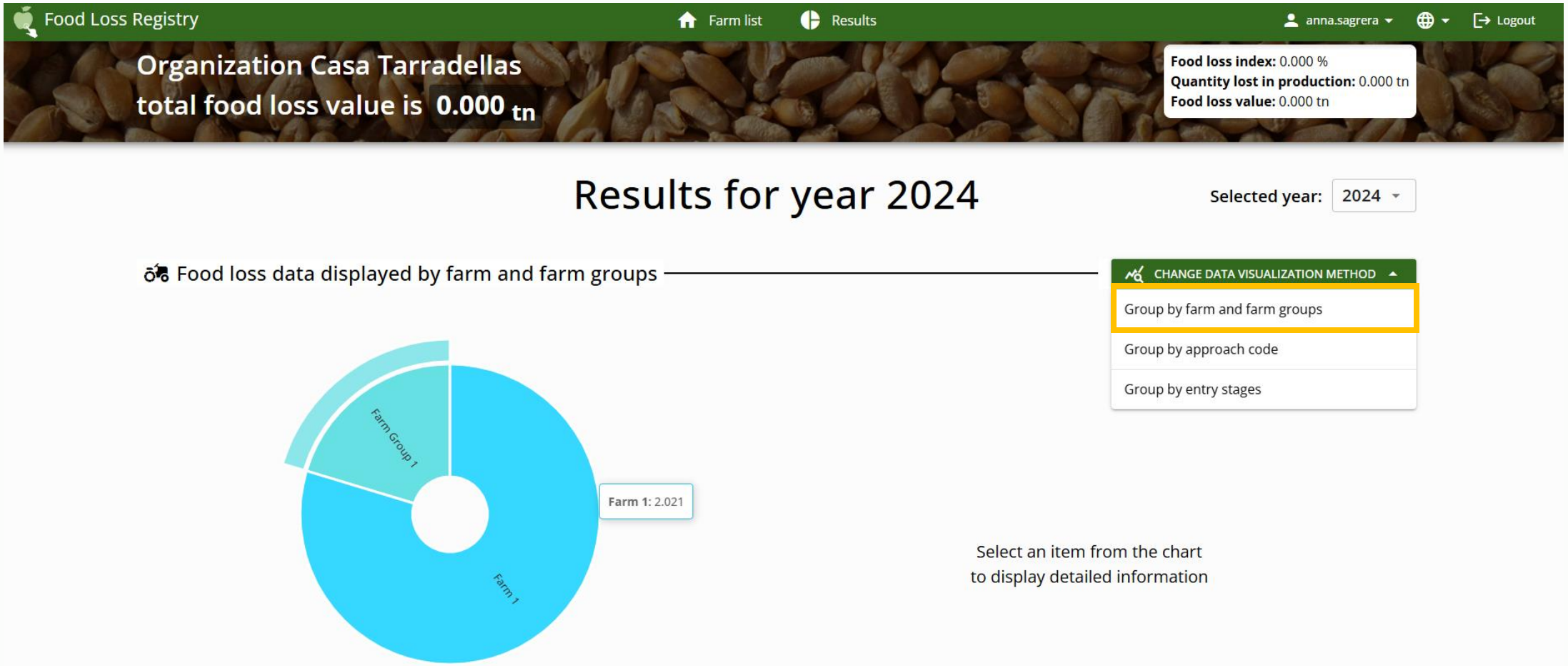
Module 1: Food Loss Registry

4. FL data of the products



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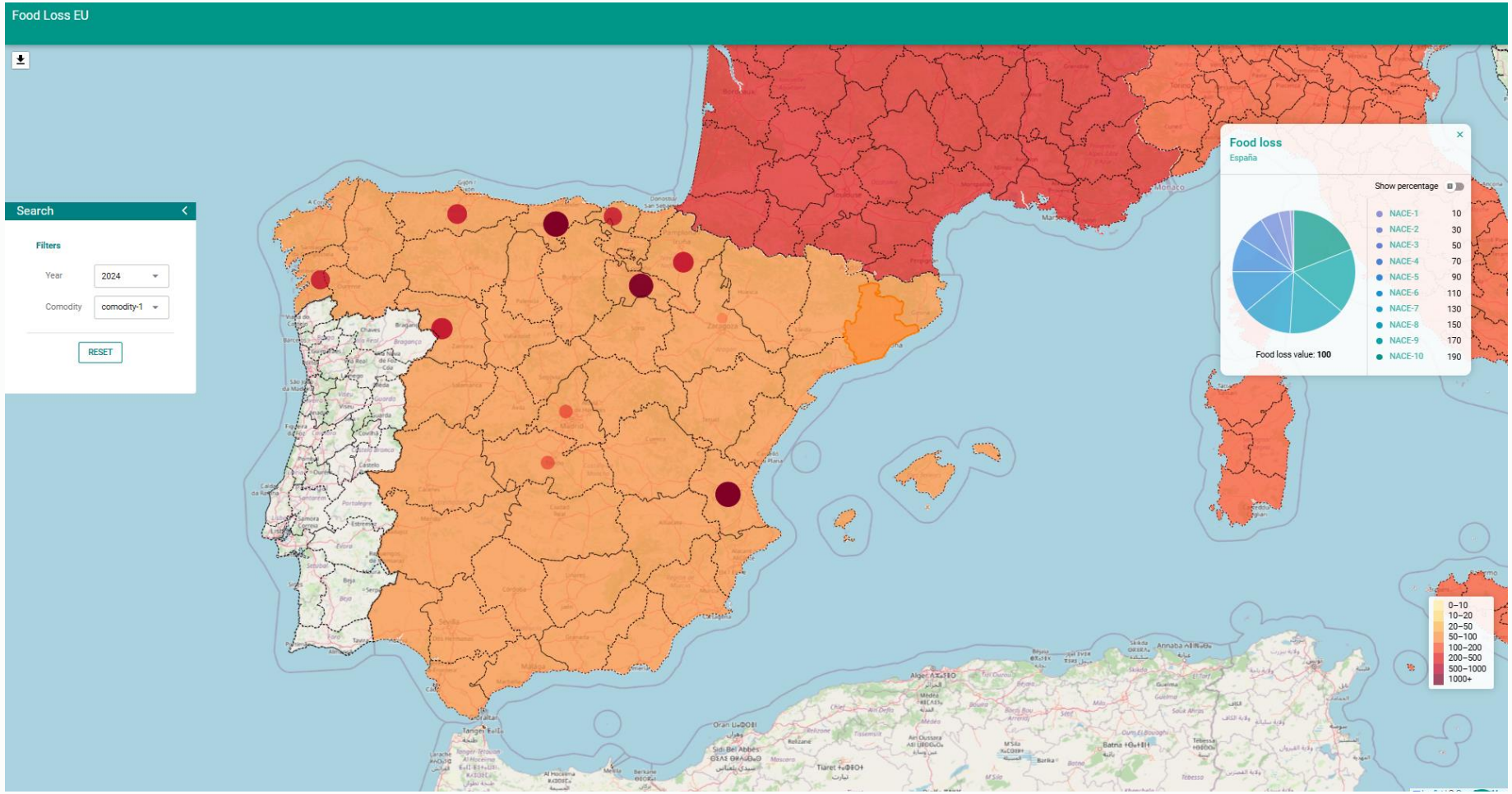
Module 1: Food Loss Registry

5. Extrapolation of the total FL data



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Module 5:
The FOLOU Sustainability Tool

Agnese Boccalon, ACR+

Funded by the
European Union

Module 5- The FOLOU Sustainability Tool

Module 5 provides the opportunity to evaluate the magnitude and impact of food losses based on environmental, economic and social criteria using the FOLOU Sustainability Assessment Tool. Using collected data, the module elaborates a Life Cycle Assessment (LCA) where the contribution of food losses to greenhouse gas (GHG) emissions is calculated. The analysis also includes an assessment of the impact on habitat degradation and biodiversity loss.

The Sustainability Assessment Tool combines data from the National Food Loss Registry (Module 1), with LCA inputs to assess the sustainability of current production models in the region. It also evaluates the impact of adopting mitigation strategies for the reduction of food losses, quantifying the resulting benefits in economic, environmental and social terms.

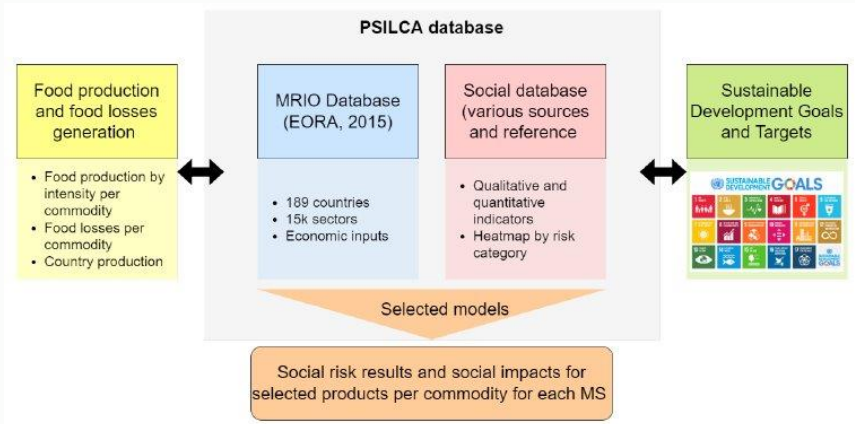


Figure 38- Building block of the framework to be followed for the social assessment linking the models in PSILCA database to SDGs framework.

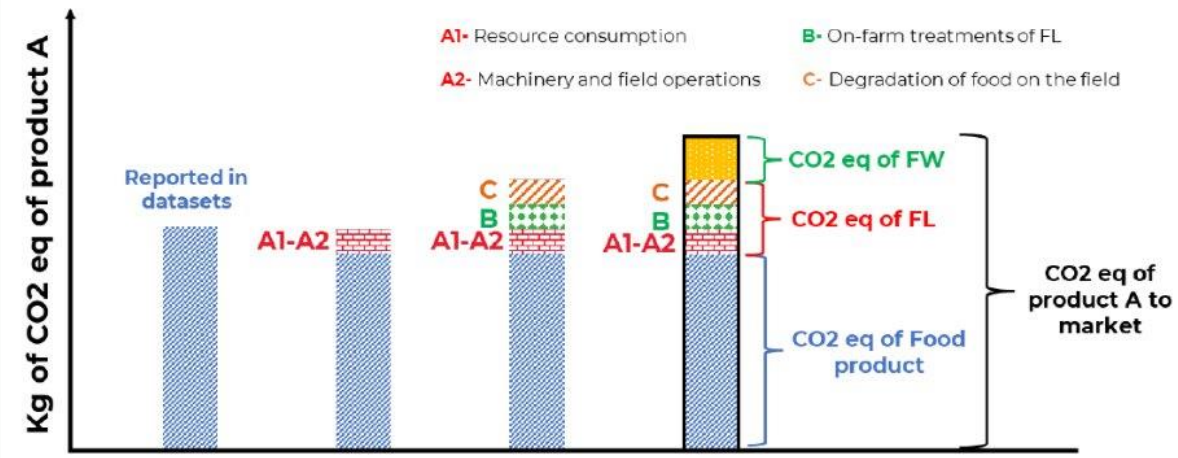
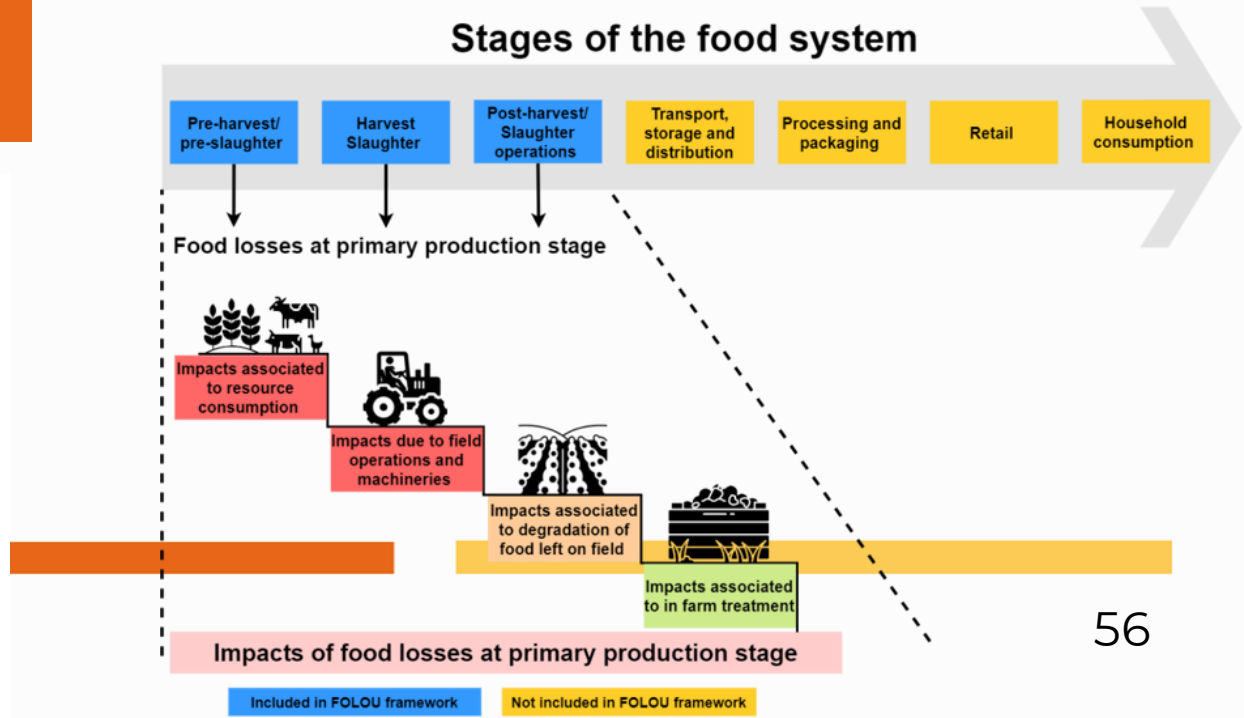


Figure 21- Actual food product impact allocation and proposed impact after accounting the impacts of side flows.



Module 2:
Food Loss Drivers

Agnese Boccalon, ACR+

Funded by the
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Module 2- Food Loss Drivers

This module allows users to validate FOLOU's preliminary findings on the direct and indirect drivers of food losses in agricultural production. These drivers have been categorized into 3 groups: behavioral, societal and environmental. Participants will be able to access the list of drivers and rank them according to their level of importance. They will also be able to contribute additional insights into the role of each driver and how to potentially address them.

Behavioral drivers	Societal drivers	Environmental drivers
= Crop management at field level, farmers and fishermen knowledge, skills, and abilities, etc.	= Food appearance, retail sector marketing standards, market price of the product, etc.	= Hail, droughts, excessive rainfall, excessive temperatures, pests, etc.

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Module 6:
The FOLOU Learning Center

Alice Mauchline,
University of
Reading

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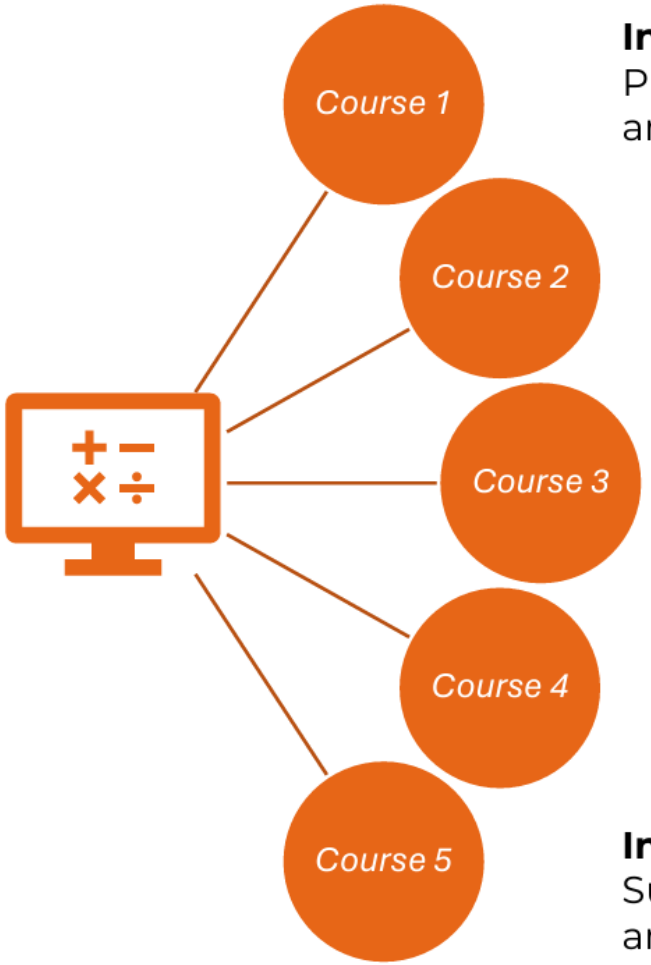
Module 6- The FOLOU Learning Centre



Introduction to food losses in primary production (Q1, 2025): Provide a general introduction to the importance of measuring and reducing food losses

Measuring food losses: implementing the FOLOU methodology (Q4, 2025): Present the framework, methods and tools available to develop a food loss inventory, along with a repository and reporting processes

Technological innovations in food loss measurement and estimation (Q2, 2026): Outline current and innovative technologies and their potential application in food loss reduction

Food loss sustainability implications (Q4, 2026): Instil greater understanding of the need to measure, evaluate and minimise food loss through the use of the FOLOU sustainability tool

Integrating food loss into policy and decision making (Q3, 2026): Support the integration of food loss considerations into policy and decision-making

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PART 2

Q&A session per TWRP Module (break-out session)

11.00 – 11.45

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Break-out sessions

→*Q&A and open discussion of the TWRP modules in more detail (15 min)*

→*The room moderator will report back during the plenary*

→*Choose your breakout session according to the module that most interests you:*

Module 1: National Food Loss Registry

Module 3: Food loss estimation technologies

Module 4: Food losses quantification protocol

Questions for Modules 2,5 and 6 can be addressed in the plenary

10 minutes coffee break while we assign you to the rooms

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Plenary session

1. Main discussion points per module:

Module 1: National Food Loss Registry

Module 3: Estimation technologies

Module 4: Quantification protocol

What should we consider to ensure the successful implementation of the program?

Can you see yourself using the modules?

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FOLOU TWRP
Registrations and selection process

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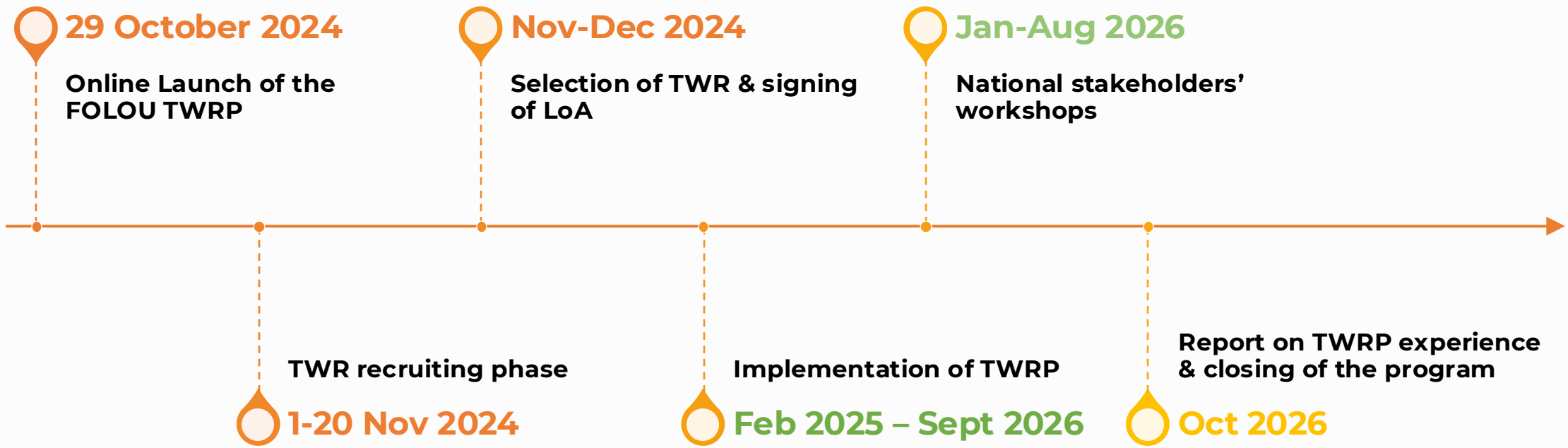
Timeline of the programme



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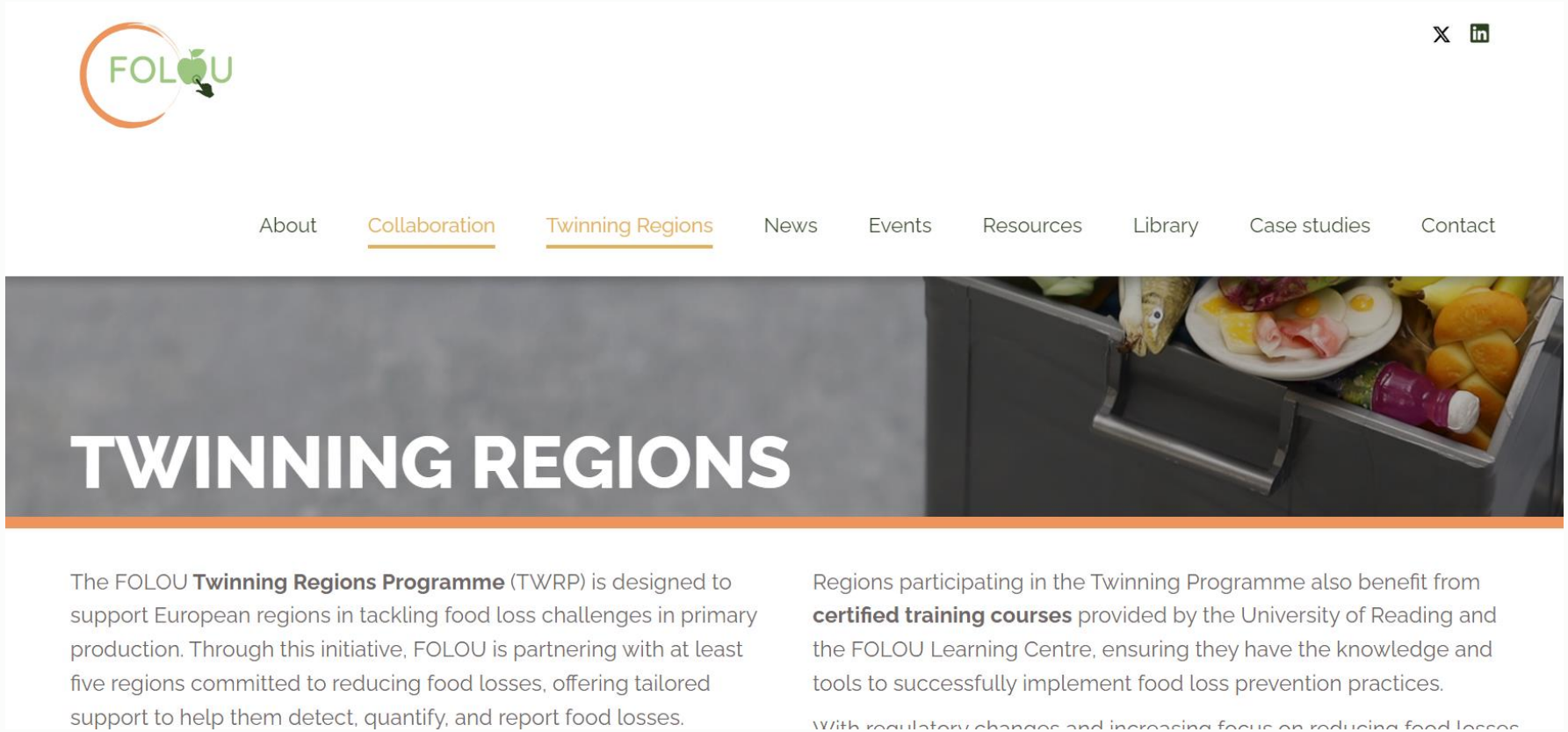
Registration

Application form: https://www.folou.eu/twinning-regions/



Registration closes on 20 November 2024 !!!

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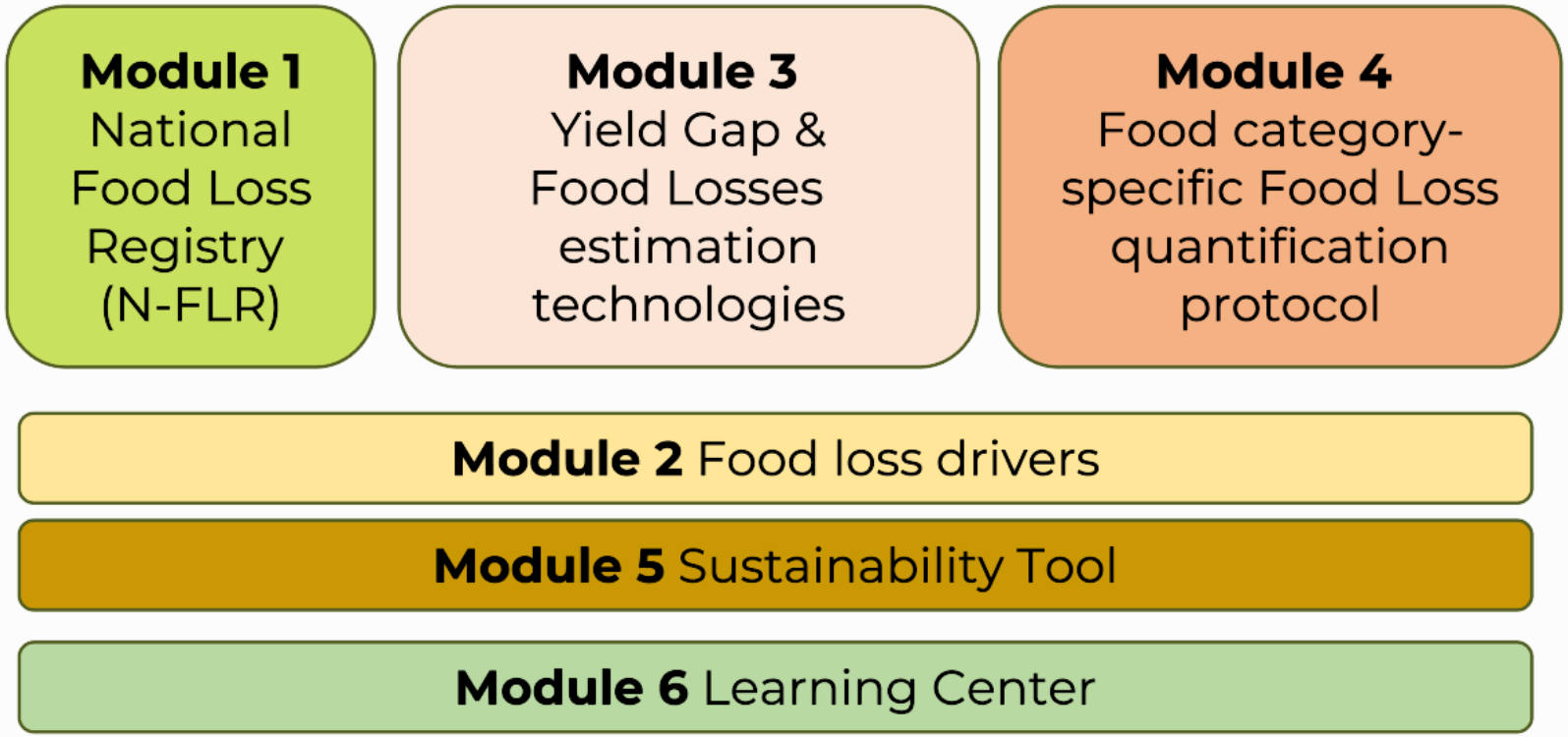
The FOLOU TWRP: Modularity option



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Formal requirements

There are three formal requirements to participate to the programme

1. Designate a **referent authority** for the participating region (or participating actors within the region when the main beneficiary is not a regional authority)
2. Sign a **Letter of Agreement**, and commitment to collaborate in the program
3. Draft a short **final report** to summarise the outcomes of the participation in the program

Any sharing of data with FOLOU partners will be GDPR-compliant

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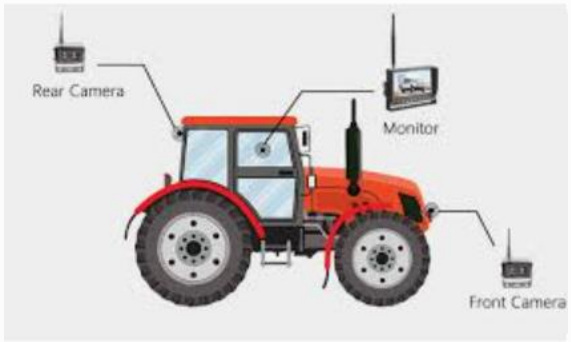
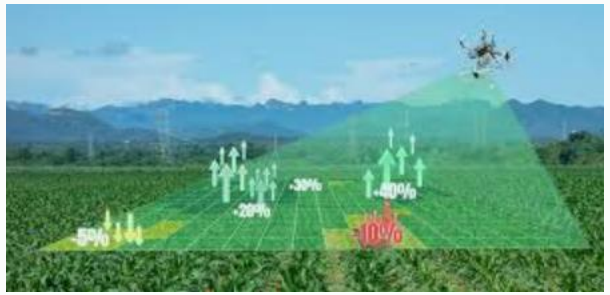
Good to know …

→ The program facilitates participtionin study visits (i.e. experimental sites) through a partial contribution to travel expenses





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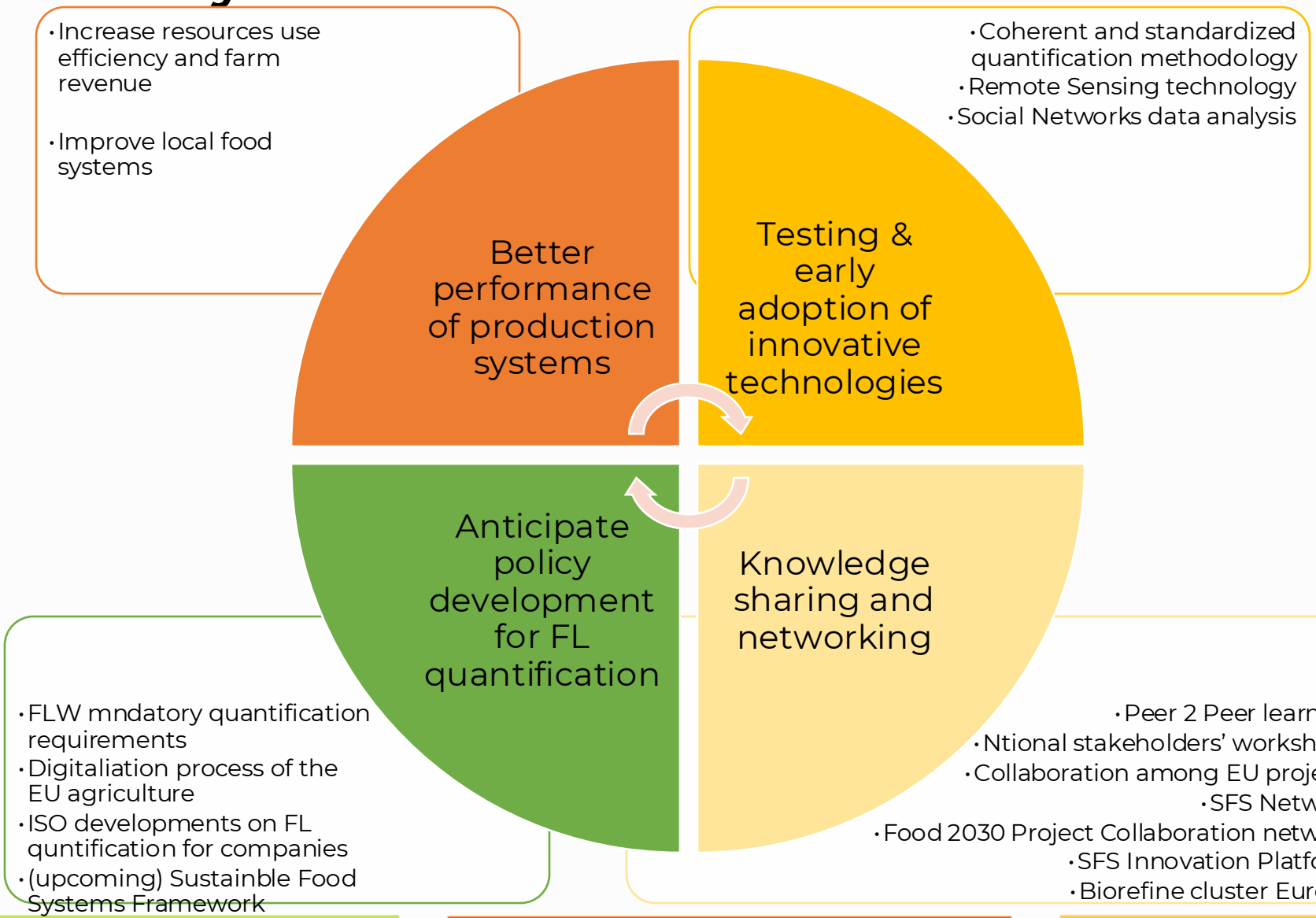
4 reasons to join the FOLOU TWRP



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Questions?

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Thank you for joining us today!

Useful contacts:

TWRP implementation: Ms. Agnese Boccalon (ACR+) abo@acrplus.org

Module 1 Food Loss Registry: Ms. Anna Sagrera (UVIC) anna.sagrera@uvic.org

Module 3: FL technologies: Mr. Wouter Maes (UGhent) wouter.maes@ugent.be

Module 4: FL quantification protocol: Mr. Hector Barco (Espigoladors) circular@espigoladors.com

FOLOU project coordinator: Mr. Joan Colon (UVIC) joan.colon@uvic.cat

Ms. Anna Sagrera (UVIC) anna.sagrera@uvic.org

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