



Agri & food waste valorisation co-ops based on flexible multi-feedstocks  
biorefinery processing technologies for new high added value applications

## PROJECT OVERVIEW

*Georgios Chalkias, IRIS Technology Solutions  
Project Coordinator*

*Online training: Agricultural byproduct valorisation through bio-refineries*

# Agrimax in numbers



**Duration:** 60 Months

**Project type:** BBI-DEMO

**Consortium:** 28 Partners

**Target TRL:** 6 - 7

**Outputs:** 53 Deliverables

**Funding Call:** Valorisation of agricultural residues and side streams from the agro-food industry (VC3.D5-2015)

**Coverage:** 11 Countries

**Budget:** 15 Million €

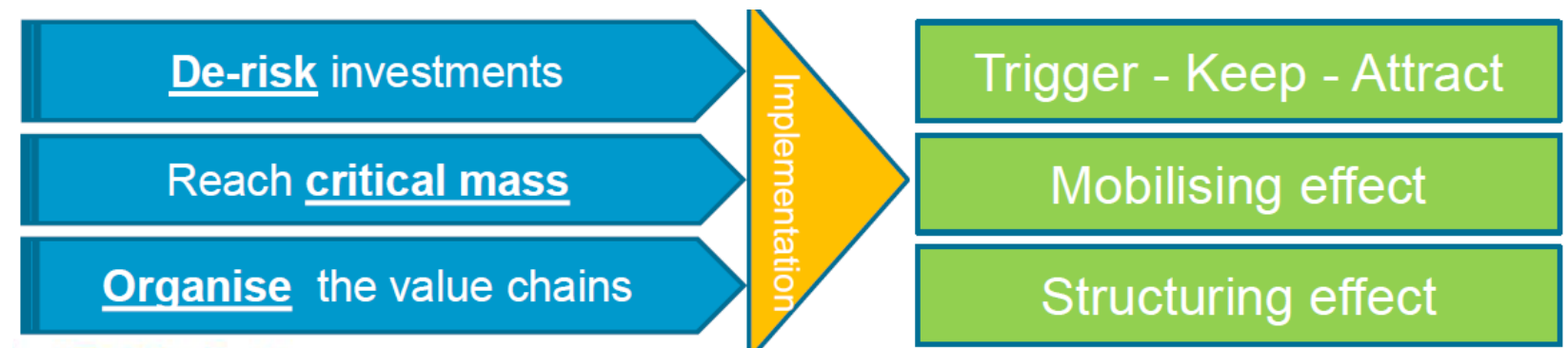
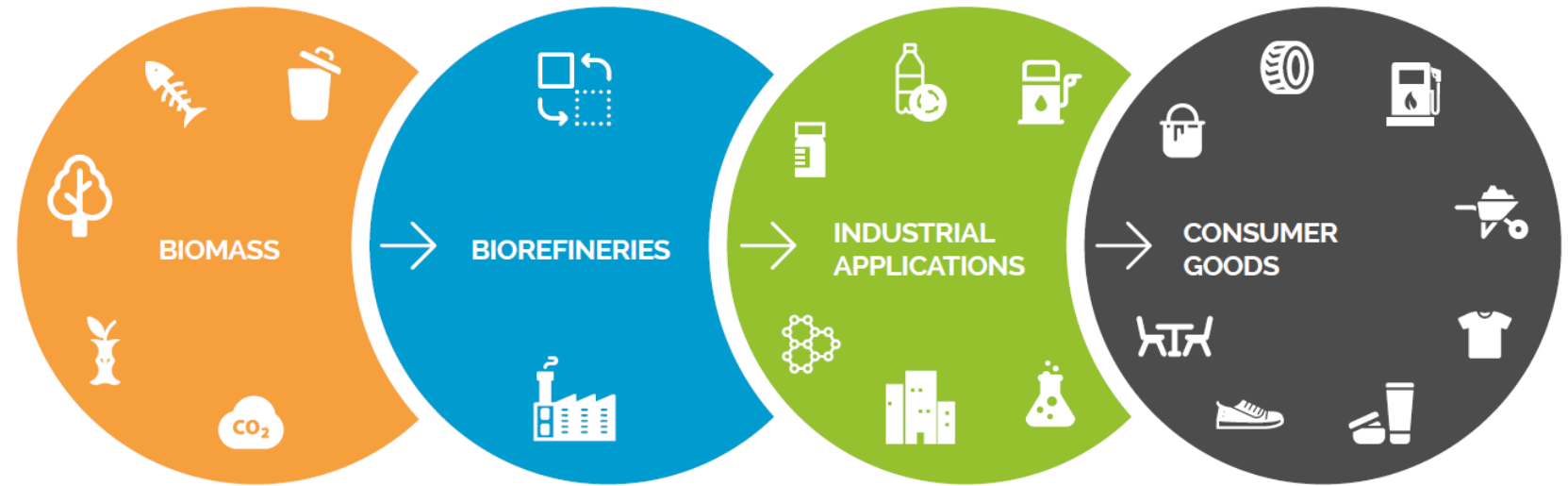
**EU Contribution:** 12 Million €

# Bio-Based Industries Joint Undertaking

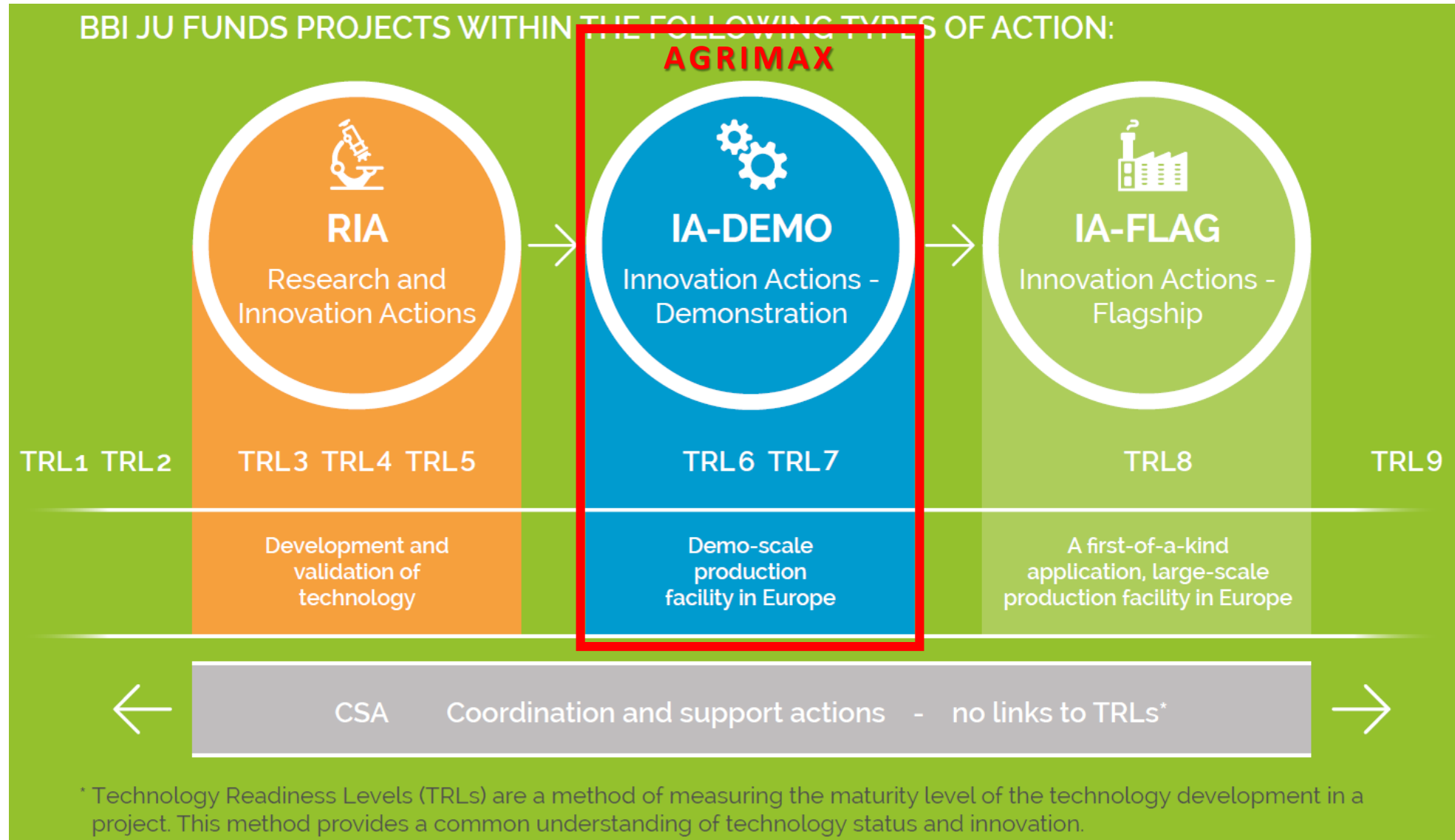
## BIO-BASED INDUSTRIES VALUE CHAIN

A **biorefinery** is a facility that is able to process biomass and convert it to produce fuels, power, chemicals and other value-added products.

The biorefinery is analogous to today's petroleum refinery, which produces multiple fuels and products from petroleum.



# Types of BBI-JU projects



**1.3 Million** tonnes of food is globally wasted yearly



**32%**

of the food  
produced is  
wasted



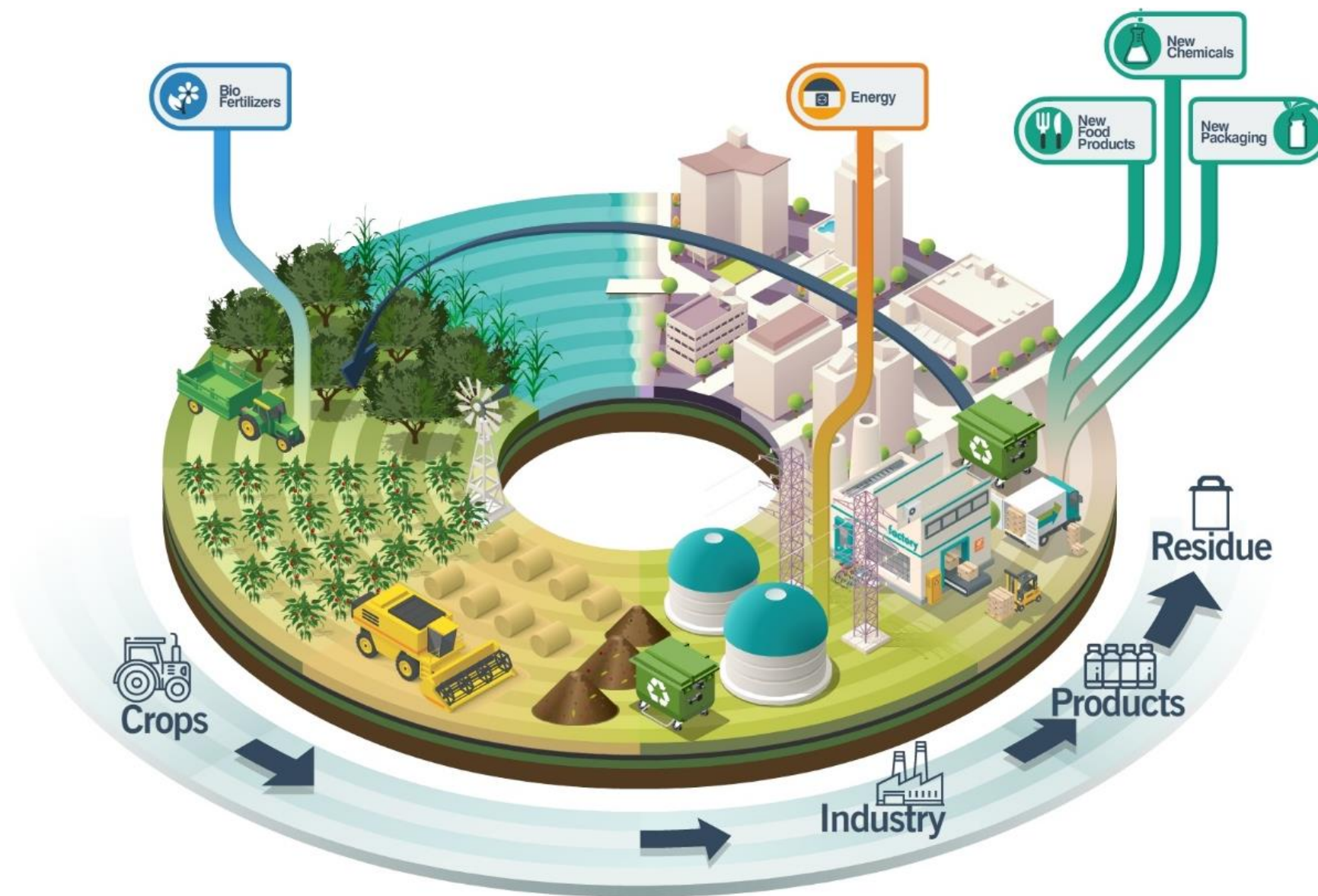
**16%** of food waste is generated at **field and processing level**

**700 million tonnes** of agricultural waste are  
generated in EU annually

# 1.3 Million tonnes of food is globally wasted yearly

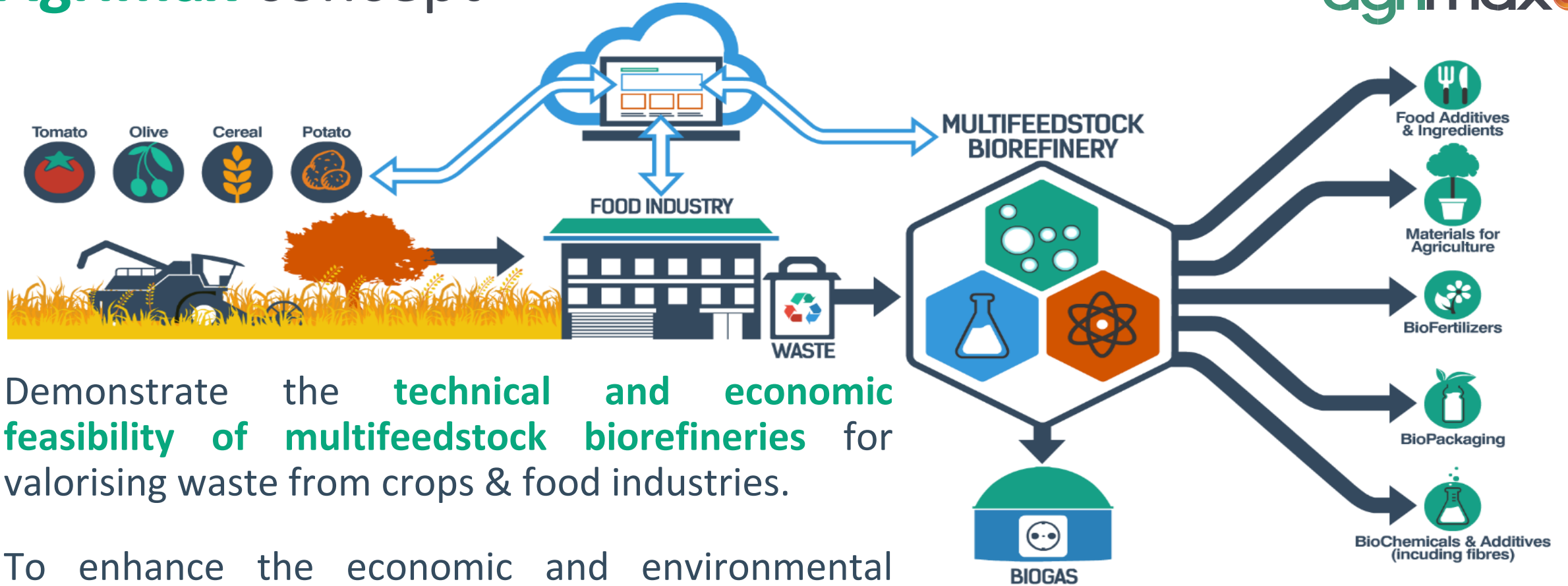


# Agrimax vision





# Agrimax concept



Demonstrate the **technical and economic feasibility of multifeedstock biorefineries** for valorising waste from crops & food industries.

To enhance the economic and environmental sustainability of EU's **agricultural and food sectors**

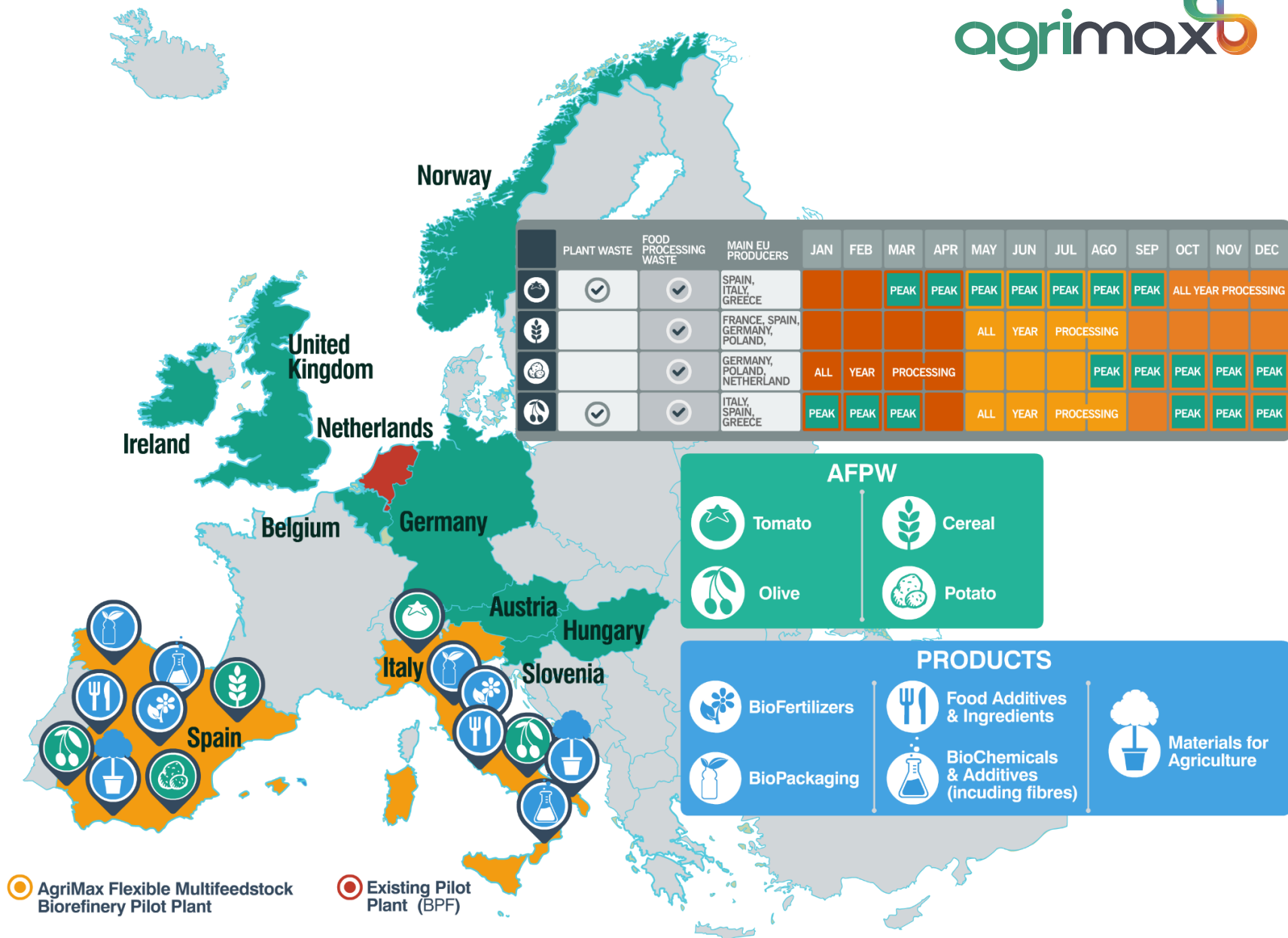
To create **new bio-based products for the food, packaging and agricultural sectors**



# Agrimax concept



Two pilot biorefineries are designed, built and used to process AFPW into added value bio-based products to be used in key applications in the food, packaging and agricultural sectors



# Agrimax concept

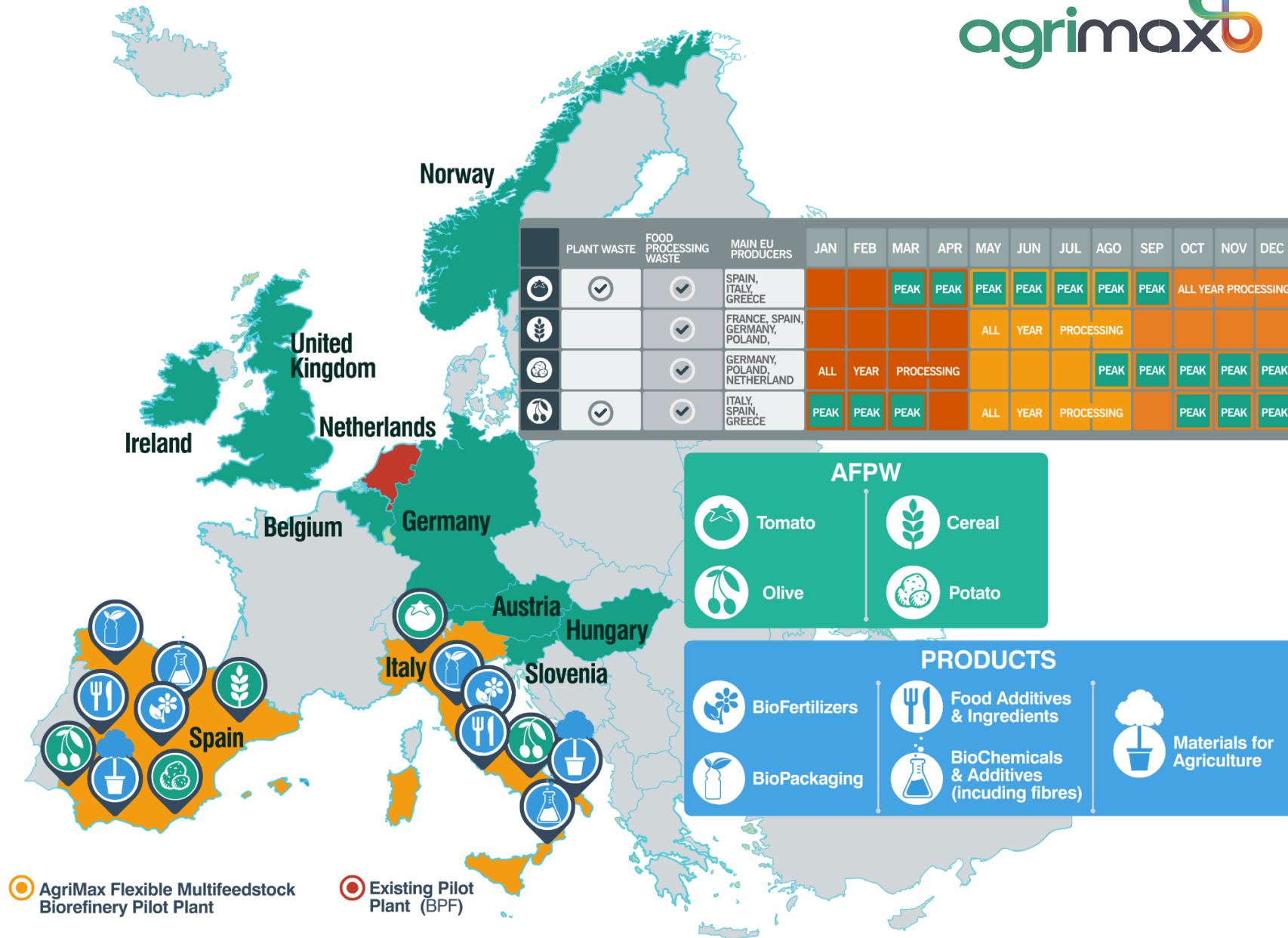


## Italian Pilot Biorefinery

Hosted by Chiesa in Parma (Italy) will convert **Tomatoes and Cereals residues**

## Spanish Pilot Biorefinery

Hosted by Indulleida in Lleida (Spain) will convert **Olives and Potatoes residues**

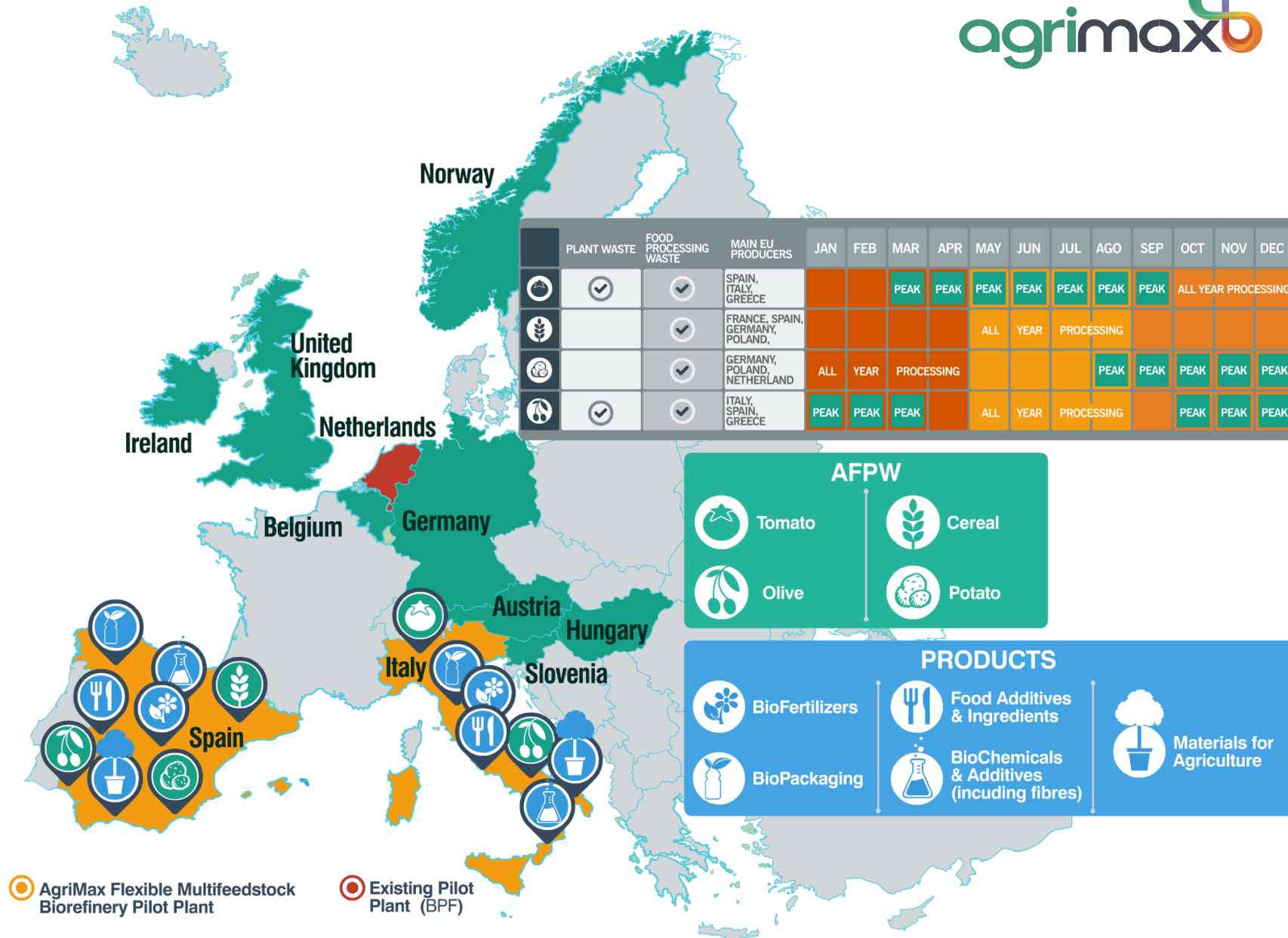


# Agrimax concept



Agrimax biorefineries are:

- ✓ Multi Feedstock
- ✓ Flexible
- ✓ Cascading
- ✓ Integrated
- ✓ Low Capex
- ✓ Low Opex
- ✓ Safe & Green



Design of the cascading approach

Construction of the pilot biorefineries

Conversion of AFPW to bio-based products

**We are here** → Validation of the products in selected use cases

Develop business strategy for commercialization

# Agrimax processing technologies



**Thermal Treatment** to prepare the biomass for the cascading processes

**Enzymatic Treatment** to upgrade and prepare the biomass for the cascading processes

**Ultrasound Assisted Extraction** to enhance the recovery of target compounds

**Solvent-based Extraction** to recover target compounds and fractionate the biomass

**Sedimentation & Precipitation** to recover target compounds and fractionate the biomass

**Filtration & Centrifugation** to concentrate target compounds and fractionate the biomass



# Agrimax final products



## Environmentally friendly Bio-Packaging

(bioplastic for flexible and rigid packaging, active and barrier packaging, biobased coatings for metal packaging, biocomposites, and more).

**Healthier and functional Food products** (food additives, food ingredients, food coatings, microorganisms used in production, and more)

**Bio-based Agriculture products** (biodegradable mulching films, biodegradable pots, biofertilisers with biostimulant and biocontrol properties, and more)



# Agrimax objectives



1. **Map** the available **Agricultural and Food Processing Waste (AFPW)** and their features
2. **Define** the specifications for the waste-derived biocompounds and the pilot plants
3. **Build** two pilot-scale flexible multifeedstock biorefineries for processing bio-wastes
4. **Process** AFPW through the pilot biorefineries and produce value added biocompounds
5. **Validate** the waste-derived biocompounds by using them in **packaging applications**
6. **Validate** the waste-derived biocompounds by using them in **food applications**
7. **Validate** the waste-derived biocompounds by using them in **agricultural applications**
8. **Demonstrate** the safety, compliance, and sustainability of the developed processes and products
9. **Develop** a software platform for managing the supply and demand of AFPW and biocompounds
10. **Identify** sustainable value chains and **propose** suitable business models for the processing of AFPW
11. **Maximize** the impacts of the project by boosting the uptake of the project results



# Agrimax expected impact



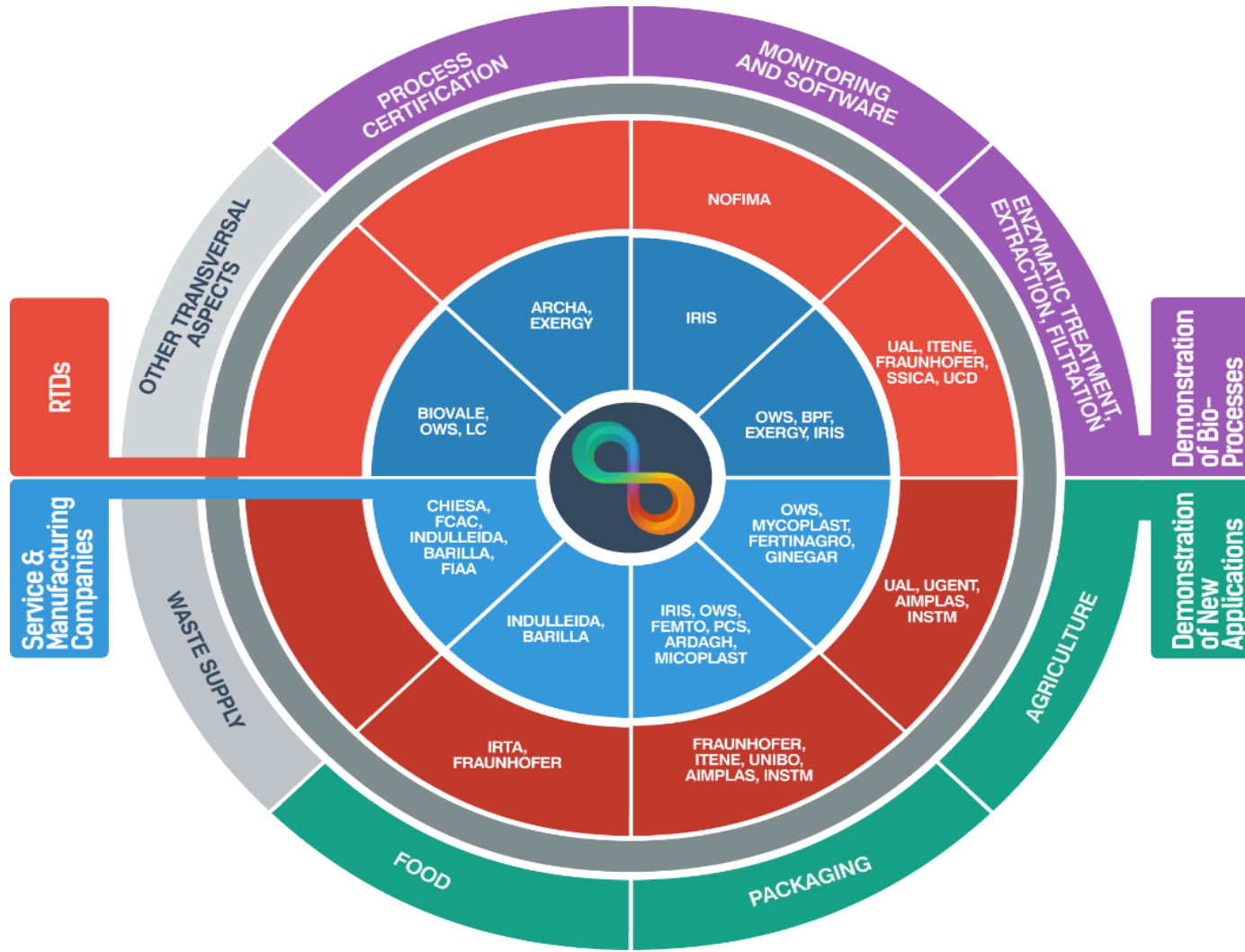
Demonstrate **new value chains** for **higher added value products** and **open new markets**

Improve the **environmental performance and cost efficiency** of the biorefinering process as compared to the current state of the art

Demonstrate an integrated process where **more than 40% of the raw material is valorised** into high added value products

Validate new products with a **2-5 times higher value** than the current applications of the raw material

Significantly higher total valorisation of the agricultural crops so contributing to **rural development and employment**

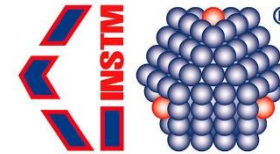


The whole supply and value chain is covered thanks to:

- **11 RTDs**
- **17 industrial partners** (11 SMEs and 6 large enterprises)

3 partners are **BIC members** and **8 associated BIC members** to maximise the alignment with the BBI programme

# Agrimax consortium





# Thanks for your attention!



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