



# UNLOCK

## MEDIA KIT



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**Bio-based Industries**  
Consortium

# What is UNLOCK?

The European poultry sector generates **3.6 million tonnes of waste feathers each year**, of which only around **25% are valorised** for animal feed or fertilizers.

In line with the **EU Bioeconomy Strategy**, the BBI-JU funded project UNLOCK proposes to valorise this waste stream and design an **economically and environmentally sustainable value chain**, generating **innovative bio-based products** for agricultural applications.



# Why is feather waste a problem and why could it be an opportunity instead ?

## From an environmental threat to a valuable molecule

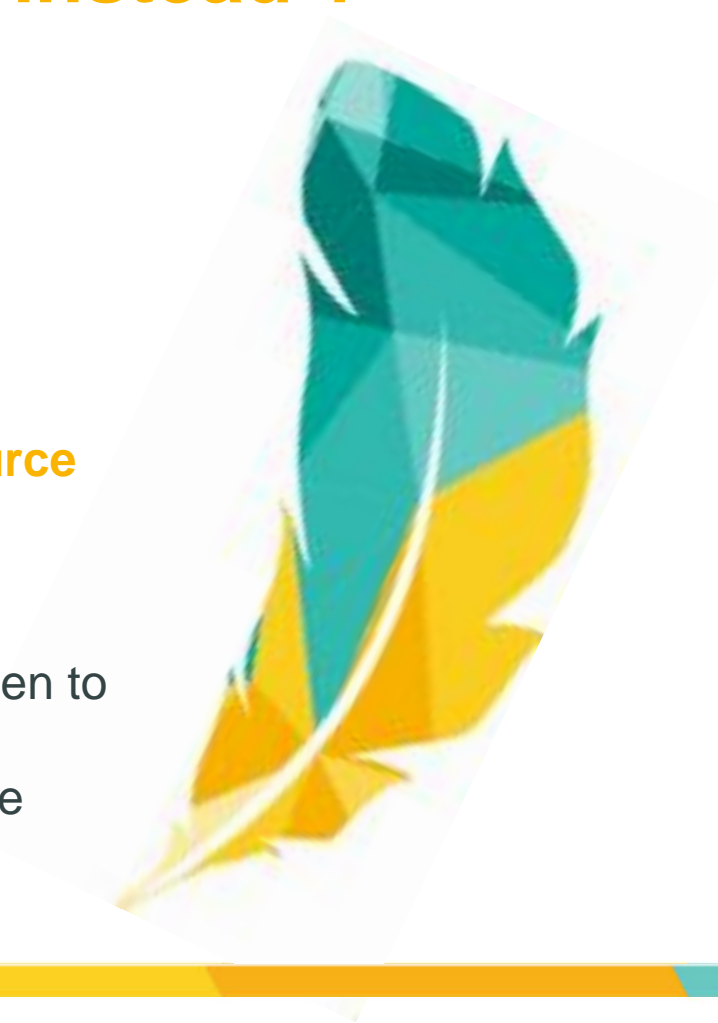
Feathers landfilling is a threat for ecosystems, as they contain high amounts of microorganisms that **disrupt soil cycles** and consequently biodiversity.

But feathers contain nearly **90% of keratin**, a valuable protein that can be a **source for biodegradable materials**.

After valorisation, feather-based materials offer **environmental benefits** :

→ **Soil enrichment**. Keratin-based products can release organic nitrogen to the soil, with a desired fertilizing effect.

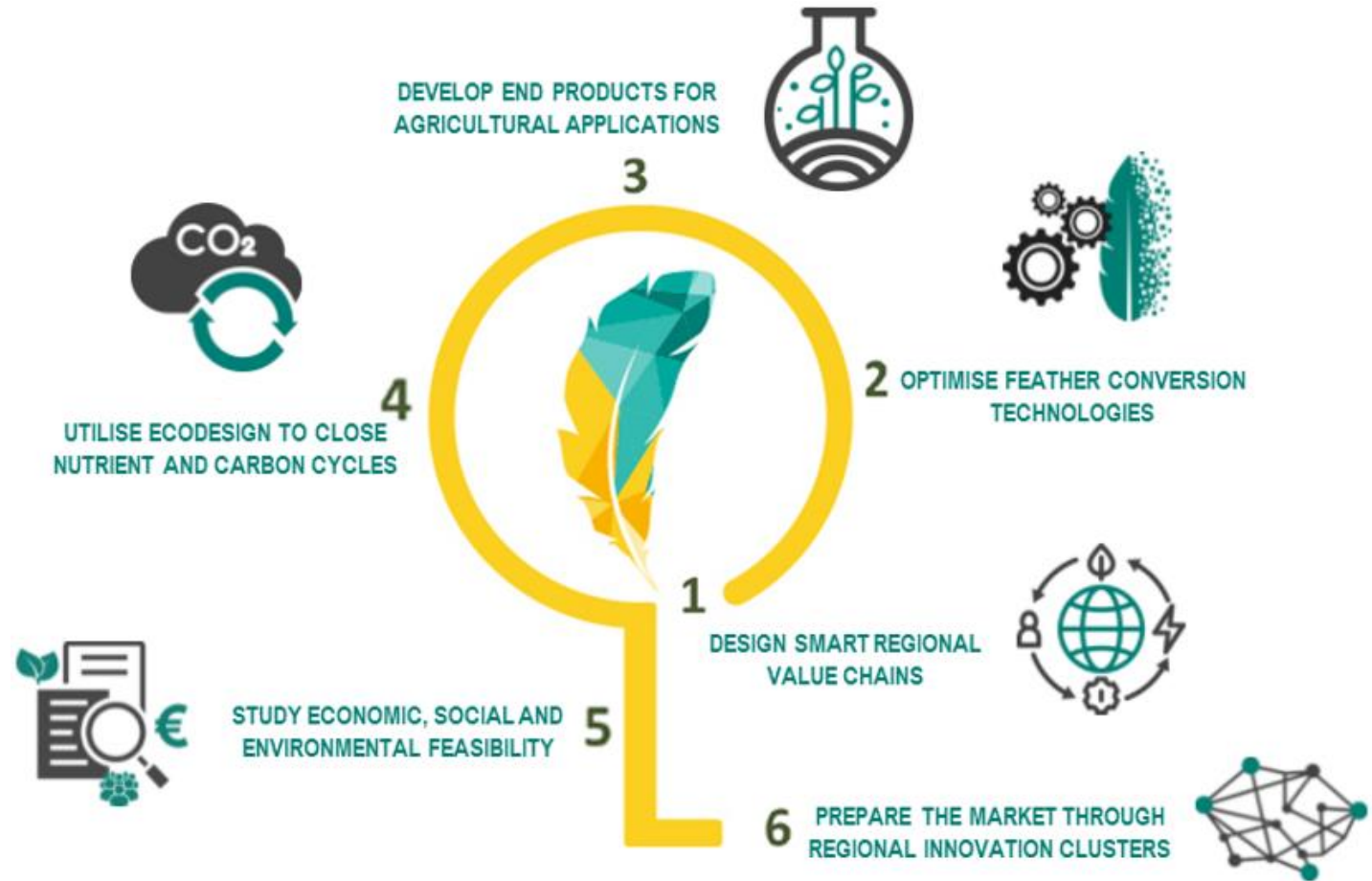
→ **Tailor-made biodegradation**. Biodegradability will be adjusted to the crops' duration, resulting in zero waste generation at the end of the product life.



# How will UNLOCK release the potential of feathers ?

## A comprehensive approach

From feathers' storage to treatment efficiency, keratin-based products' performances and market readiness, UNLOCK works on finding **solutions to every hurdle along the value chain and create a feather-based bioeconomy.**



# What will UNLOCK make out of feather waste ?

## Products for agricultural applications

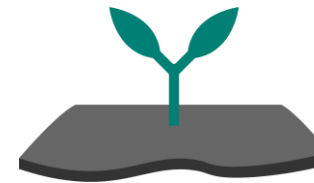
To **replace fossil-based products**, UNLOCK will demonstrate the production of sustainable keratin-based end-products with tailored biodegradability properties at the end-of-life.



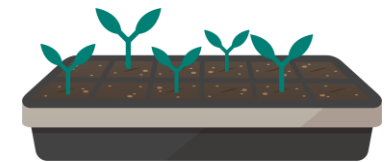
- Hydroponic foams



- Nonwoven geotextiles



- Mulch films



- Forest and seed trays

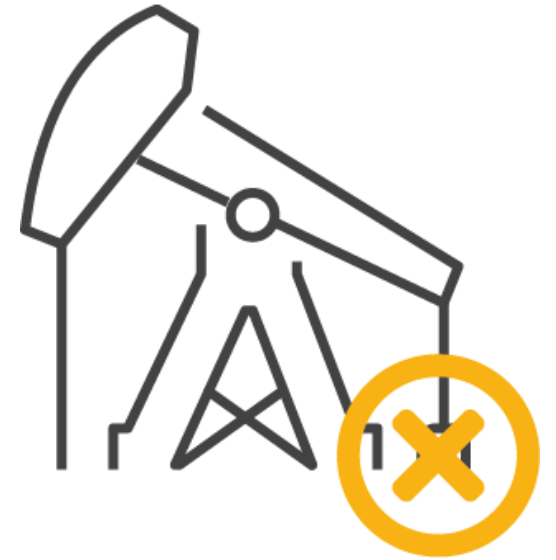
# Why is it important to have biodegradable materials for agricultural application ?

## The need to replace fossil-based products in agriculture

**7 million tonnes of plastic** are used worldwide in agriculture production each year, **mainly fossil-based**.

Plastics use in agriculture can hardly be revoke, as **it presents significant advantages in terms of logistics and even water use efficiency**. Mulch films for instance, representing 80% of plastics in agriculture, help limit weed growth and prevent moisture loss.

Unfortunately, plastics used in agriculture are **not sufficiently recycled** due to contamination at use phase, and a significant part stays in the fields, generating **microplastics!**



# How will UNLOCK create these bio-based products ?

## The optimisation of feather conversion technologies

UNLOCK conducts analyses to **improve the efficiency** of the following feather conversion treatments:



• Chemical hydrolysis



• Steam explosion



• Mechanical grinding



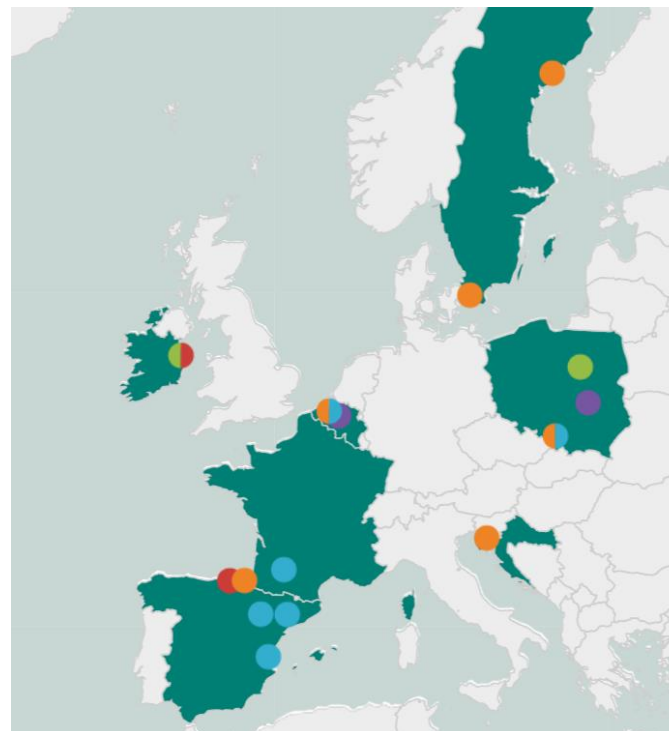
• Microbial fermentation

External factors during treatment- such as time or temperature - can **impact the biodegradability of end-products**. UNLOCK investigates on the effect of treatment conditions on the final properties of keratin-based products.

# Who is involved ?

## Our consortium

→ UNLOCK is driven by a well-balanced consortium, composed of **15 partners** from **7 EU countries**, that covers the whole value-chain, from feedstock and supply chain analysis to equipment, processes, end-product fabrication and sustainability assessments.



- Feedstock
- Sustainability assessments
- End products
- Processes
- Communication, Dissemination & Exploitation





# How does UNLOCK mitigate the environmental impacts of agriculture?

## UNLOCK contributes to...



### Managing natural resources sustainably

UNLOCK deploys innovative solutions for a circular use of biomass, using waste as a raw material.



### Reducing dependence on non-renewable resources

UNLOCK proposes solutions to substitute fossil raw materials in agricultural applications.



### Protecting life on land

Feathers contain high amounts of microorganisms that can disrupt soil cycles and biodiversity. By revalorising the feathers, UNLOCK removes this threat.



### Reaching climate neutrality in the EU by 2050

UNLOCK reduces the overall CO2 emissions in the value chain by 20%.

## UNLOCK resources

- Download the logo [here](#).
- Find relevant publications [here](#) (leaflet, poster, facts' cards...)
- Read last articles about UNLOCK's progress [here](#)
- More about UNLOCK's partners [here](#)