UNLOCK

Releasing the **potential of feathers**
to foster circularity in agriculture

@UNLOCK_BBI

UNLOCK_project

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TRANSFORMING ENVIRONMENTAL CHALLENGES....

7 million
tonnes of plastic
are used worldwide in agriculture

The need to replace fossil-based products in agriculture

Plastics are widely used in agriculture as they **present significant advantages in terms of logistics and even water use efficiency**. Mulch films for instance, representing 80% of plastics in agriculture, 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**.

A valuable but underutilised waste, with potentially harmful effects.

Feathers contain nearly 90% keratin, a valuable protein that can be a source for biodegradable materials. But currently, only around **25% of feather waste is valorised** for animal feed or fertilizers.

Besides, unprocessed feather waste contains high quantities of microorganisms. When landfilled those represent a considerable risk of environmental pollution!

The European poultry sector generates

3.6 million
tonnes of waste feathers each year

… INTO OPPORTUNITIES:
High value end-products for agricultural applications

- In line with the **EU Bioeconomy Strategy**, UNLOCK proposes to valorise feather waste and generate the following **innovative bio-based products** for agricultural applications:

Mulch films

Hydroponic foams

Nonwoven geotextiles

Forest and seed trays

Did you know?

Keratin-based materials are targeted **to be zero waste and allow for controlled biodegradability, while also enriching soils**.

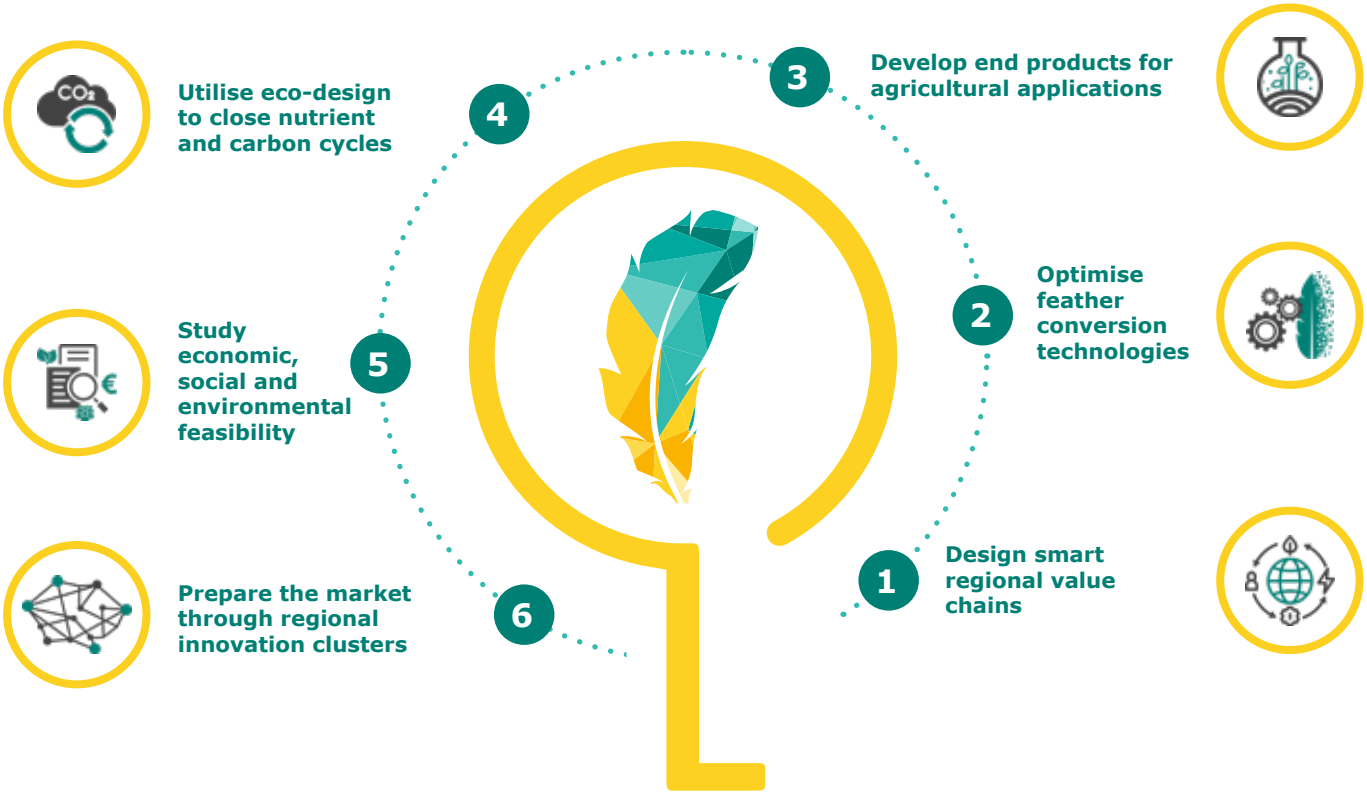
- The biodegradability of UNLOCK's products will be adjusted to the crop duration
- The products will release nitrogen with a fertilizing effect.

Feathers contain nearly

90% keratine

A COMPREHENSIVE APPROACH TO RELEASE THE POTENTIAL OF FEATHERS

From storage to treatment efficiency, product performance to market readiness, UNLOCK finds **solutions to every hurdle along the value chain to create a feather-based bioeconomy.**



Environmental impacts

Managing natural resources sustainably

UNLOCK deploys innovative solutions for a circular use of biomass, using feather 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

Microorganisms contained in unprocessed feather waste can affect biodiversity if landfilled. But after revalorisation, feathers are a source of nitrogen to microbial soil communities, thus enhancing biodiversity.

Reaching climate neutrality in the EU by 2050

UNLOCK aims at reducing the overall CO_2 emissions in the value chain by 20%.

UNLOCK IN **NUMBERS**

€ 5M	48	15	7	8
Budget	Months	Partners	Countries	Work Packages

Project partners

UNLOCK is driven by a well-balanced consortium that covers the whole value-chain, from feedstock and supply chain analysis to processes, end-product fabrication and sustainability assessments.

COORDINATION

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