

Problem and Impact of the Rendering Industry

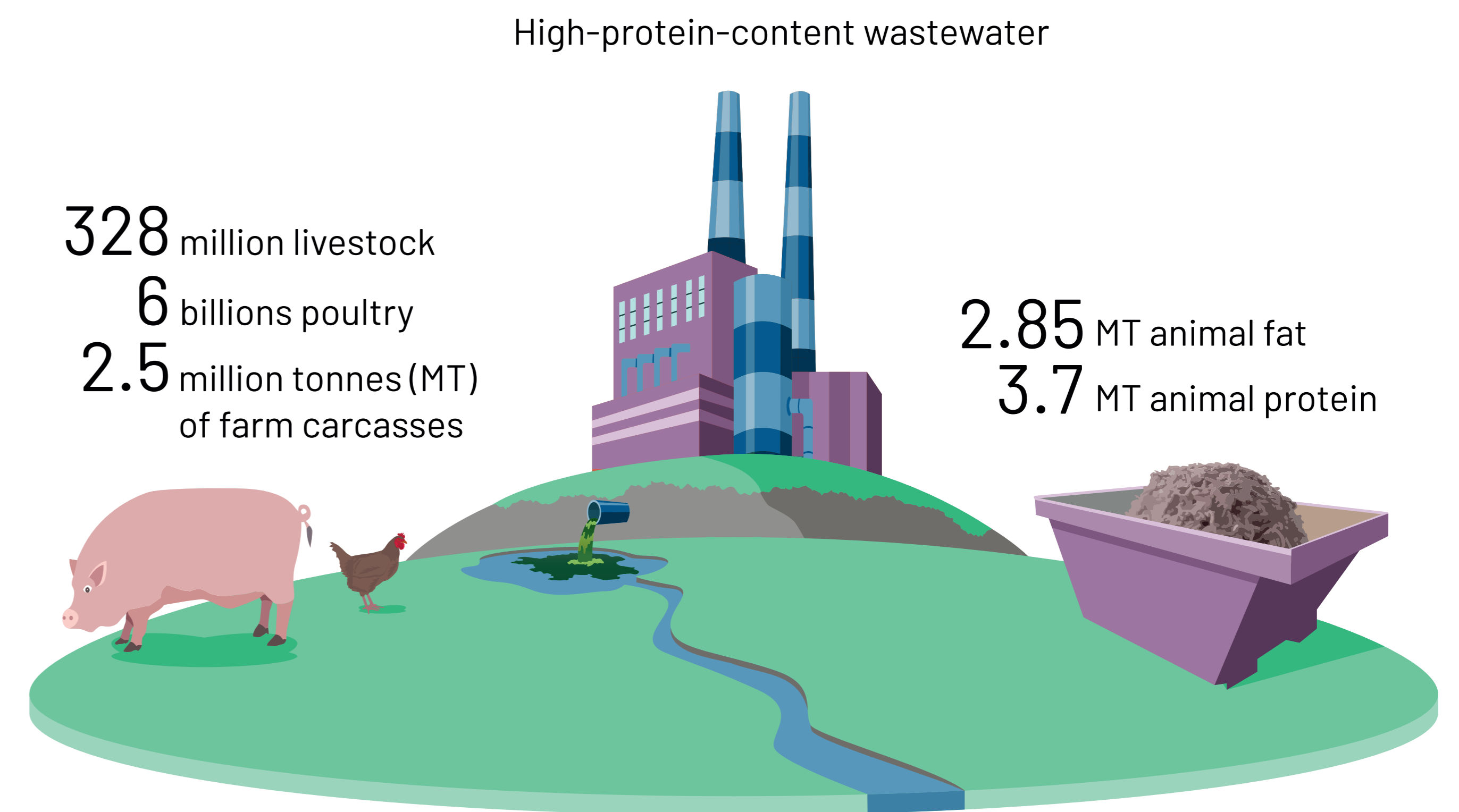
Animal By-Products (ABPs) categories must be conveniently managed in compliance with European Regulation (EC) No 1069/2009 in order to prevent contamination between different types of biowastes and animal species, byProtVal aim is category 2 ABPs which is related to fallen stocks in farms without specific risk.

A large quantity of this biowaste is annually collected from farms, which if not carrying infectious diseases, can account for almost **2.5 million tons of category 2 ABPs**. In total, 17 million tons of ABPs are yearly processed, producing more than 3.5 million tons of animal proteins and generating wastewater with high protein content¹. Another source for wastewater with high protein content is the meat processing industry, also addressed by the project.

In practice, category 2 animal by-products are mainly derived to energy recovery or disposed of in authorised landfills (last route recommended by the EU's Circular Economy strategy), while category 3 products are mainly intended for animal feed.

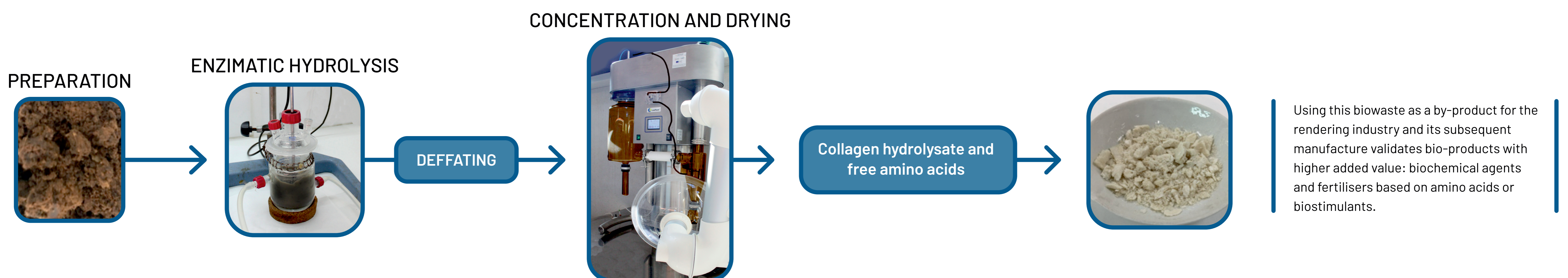
LIFE BYPROTVAL Project's aim

There is a need of **recovery of valuable proteins and their hydrolysates** from high-protein-content processing water and from greaves that are generated in rendering facilities - category 2 ABPs and convert it into valuable Bioproducts.



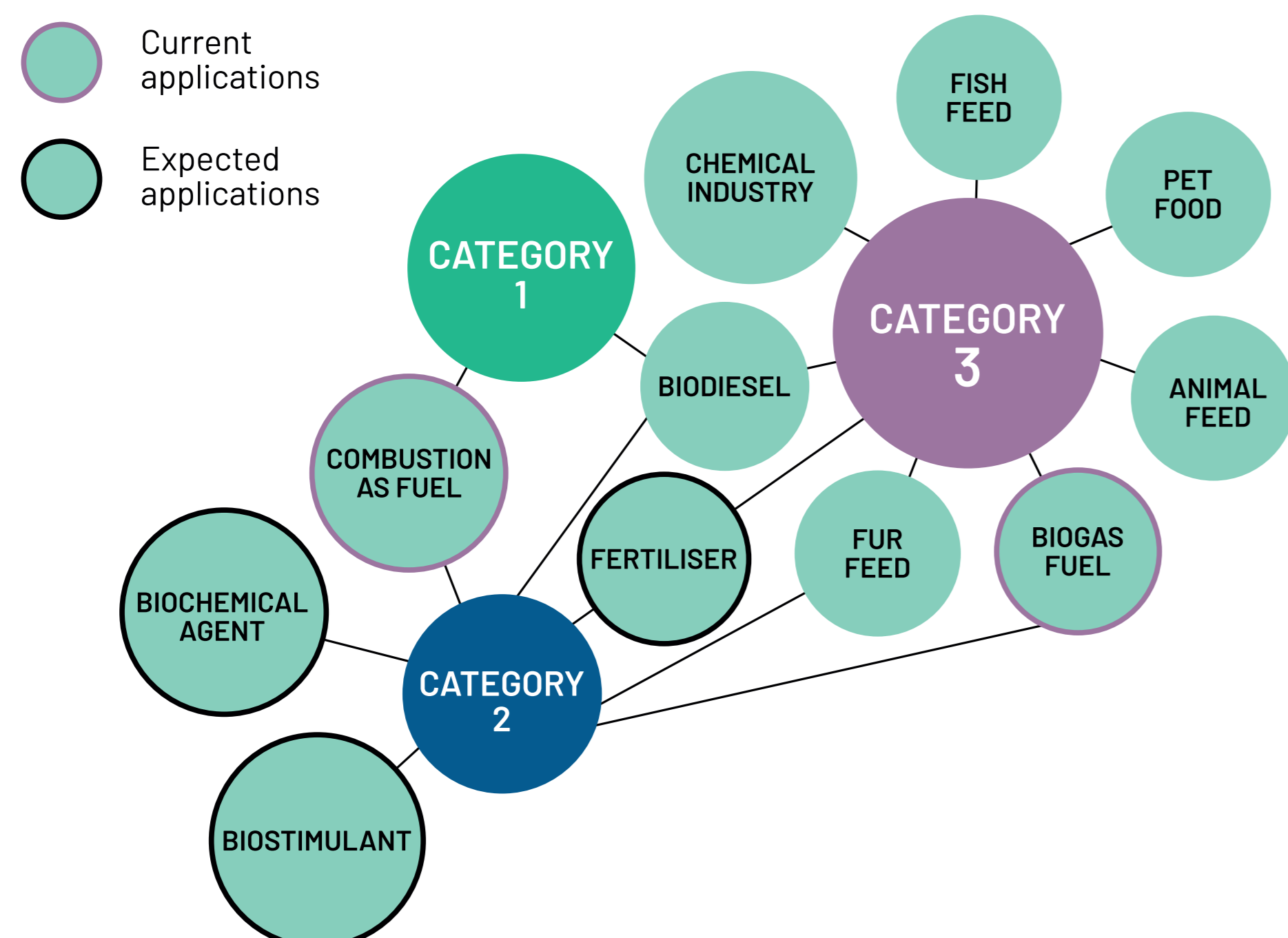
Methodology

LIFE BYPROTVAL project is working on pilot hydrolysis plant for the recovery of protein & water from biowaste specifically from category 2 animal by-products to transform in high valuable products for the agriculture and chemical industry and proposes an enzymatic process as methodological solution that has proven to be suitable for the treatment of non-tanned hides² and processed animal proteins (PAPs)³.

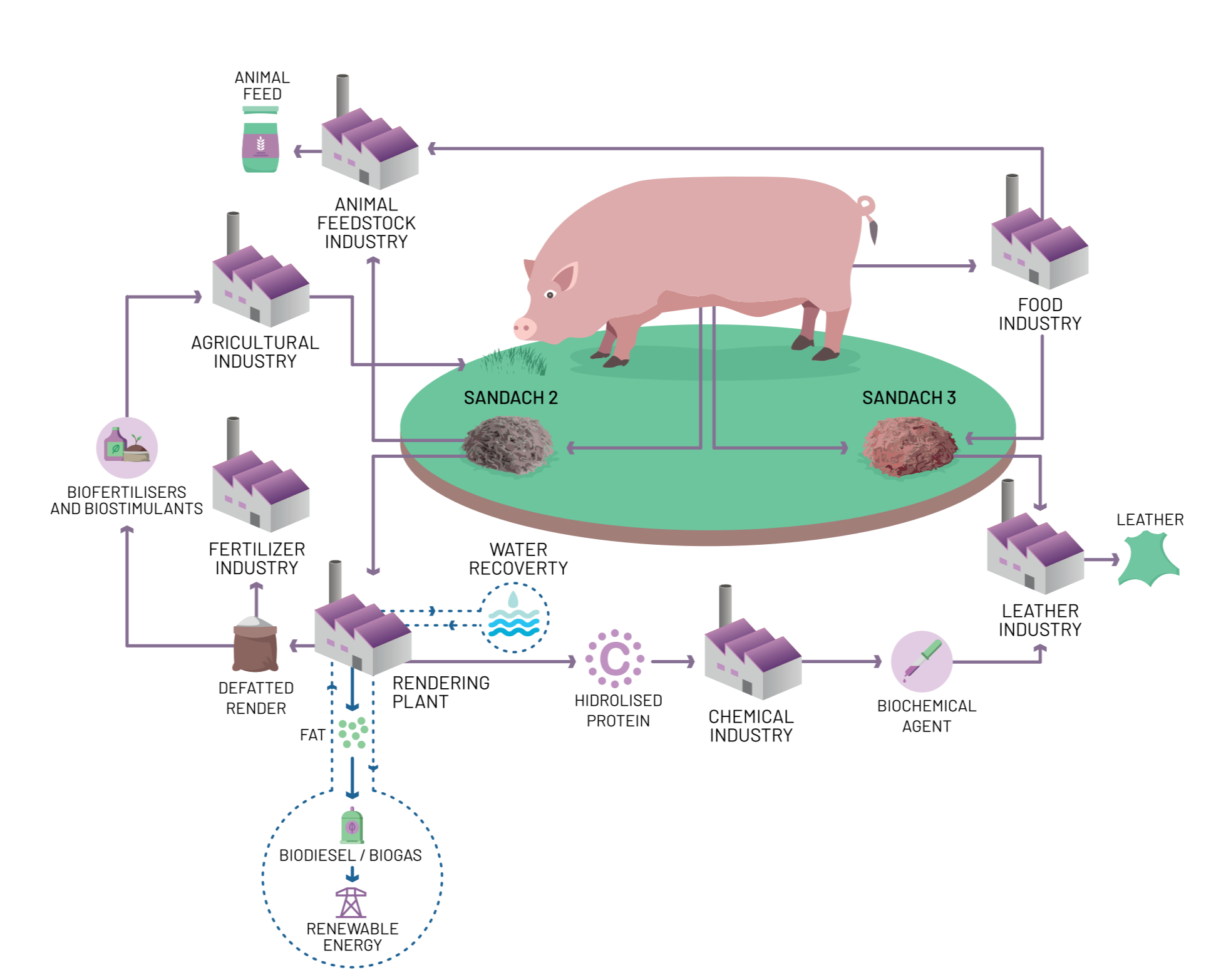


Contributions

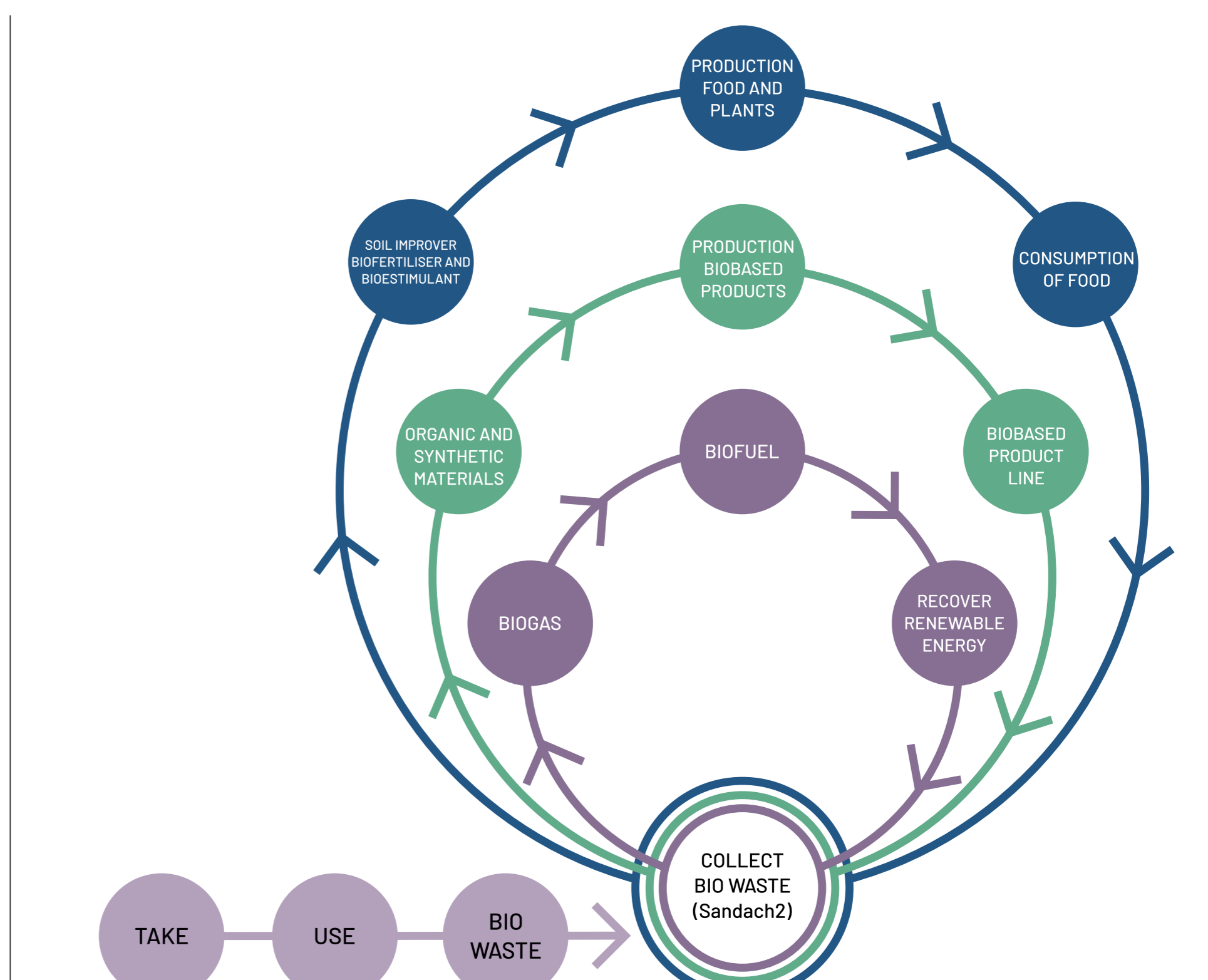
RENDERING PRODUCT APPLICATIONS



INDUSTRIAL SIMBIOSIS



FROM BIOWASTE TO BIOPRODUCTS



The rendering industry recovers nutrients, energy and functional molecules, mainly fats and proteins. According on their level of risk it is processed and use in different ways. There is a market for this type of animal by-products, mainly for category 2 animal by-products whose current use is limited to biofuels, or biogas.

BYPROTVAL's processes and bioproducts promotes intersectoral collaboration. Benefits for the industry can be: reduction of at least 50% of water consumption; opportunity for the tanning, footwear and fertiliser sectors to incorporate new bioproducts; reducing production and waste disposal costs; introduce new functionalised bioproducts on the market.

In line with the European Strategy for a Circular Bioeconomy which aims to prevent waste and use by-products properly, byProtVal enabling products and material circularity and their contribution to a resource efficient and circular bioeconomy.

LIFE BYPROTVAL's RESULTS

Specific enzymatic procedures have been developed to produce different grades of protein hydrolysates and have demonstrated:

- Efficiency: Recovery of up to 90% protein in greaves.
- Suitability: Production of protein hydrolysates with required properties.
- Resource efficiency: Significant reduction of water and chemicals consumption.
- Versatility: Recovering different protein hydrolysates grades by adjusting treatment conditions.
- Contribution to the development of the desired circular bioeconomy in Europe and the Green Deal.

LIFE BYPROTVAL's IMPACT

- Reduction on GHG emissions during fertilisers' production and use, due to the substitution of mineral fertilisers.
- Water quality improvement: reduction of N leaching.
- Sustainable approach for the chemical industry (bio-content) and reduce dependence on imported chemicals.
- Transferability, product circularity and project replicability.

ACKNOWLEDGEMENTS



Project Partners:



REFERENCES:

1. EFPR, "Rendering in Numbers Infographics". Last downloaded from <https://efpra.eu/publications/> on February 28, 2021.
2. M.A. Pérez-Limiñana, et al (2016). Influence of the Extraction Temperature on the Properties of Biopolymers Obtained from Tannery Wastes. J. Renew. Mater 4(1), 3-8.
3. M.J. Escoto-Palacios, et al. (2016). From leather waste to functional leather. Ed. INESCOP, Elda, Spain. Available at <http://microtan.eu/en/results/publications/59-from-leather-waste-to-functional-leather>.