Interreg

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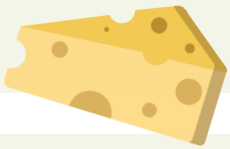
Alpine Space

CEFoodCycle

## Valori-what?

Food byproducts encompass all secondary products that occur within the food production chain such as whey in cheesemaking or apple pomace from the production of apple juice. The valorisation of these goods entails a redirection or conversion to be used as ingredient in another food production process. To implement a food byproduct into a new value chain, robust supply and market relevancy must be ensured.

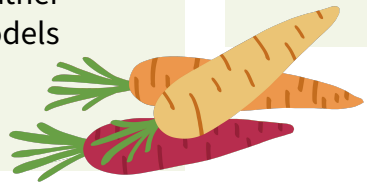


## Potential Benefits

- Utilizing byproducts might reduce landfill use, methane emissions, and overall resource depletion.
- Case studies suggest successful applications, such as brewers' spent grain in baked goods or fruit pomace as dietary fiber supplements.
- If accompanied by environmental and economic analysis (LCA & LCC), confidence in benefits can be established.
- The nutritional properties of many by-products offer opportunities for the development of meat and dairy alternatives.

## One piece in a bigger puzzle

While food byproduct utilization has undeniable potential for reducing waste and improving resource efficiency, it is not a panacea for the food system's sustainability crisis. Without systemic shifts toward reducing overproduction, improving primary food utilization, and rethinking supply chains, byproduct valorization risks being a symptom-focused solution rather than a transformative one. A critical perspective is essential to ensure that byproduct utilization serves genuine environmental goals rather than reinforcing business-as-usual models under the guise of sustainability.



## Where do we stand?

The food industry produces vast quantities of byproducts, many of which contain valuable nutrients and functional compounds. Food byproduct utilization faces significant challenges in food safety and logistics, requiring strict quality control to mitigate risks such as contamination and spoilage. To ensure safe and efficient integration into food products, technological advancements are essential, particularly in processing, preservation, and traceability. However, most explored solutions remain at a low Technology Readiness Level (TRL), meaning they are still in early-stage research or pilot phases, limiting their immediate scalability and commercial viability.

## Critical Challenges

- Without comprehensive evaluation, the net environmental gain remains uncertain.
- Byproducts often require extensive processing (e.g., drying, fermentation, enzymatic treatments) to be safe and functional in food products.
- The energy and water demand of processing can, in some cases, negate the environmental benefits.
- Many byproducts are prone to contamination (e.g., mycotoxins in cereal waste, heavy metals in seed residues).
- broader market acceptance remains uncertain.

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