# NEWFEED - Turn food industry by-products into secondary feedstuffs via circular-economy schemes

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**Introduction**

The NEWFEED project is an innovative initiative aimed at developing and adopting alternative animal feeds by utilizing food by-products, thereby promoting a circular economy in livestock production.

The primary goal is to enhance the sustainability of Mediterranean livestock by valorizing local food industry by-products, which in turn reduces environmental impact and lowers production costs.

The project focuses on three key value chains: grape stem from wineries for ruminants (dairy sheep and cattle) in Spain, orange peel from the juice industry for dairy sheep in Greece, and olive cake from the olive oil industry for poultry (broiler chicken) in Egypt. These value chains are selected based on their potential to create new business opportunities and improve the overall sustainability of livestock systems in the Mediterranean region.

**Methodology**

The project employs a circular economy approach, which involves transforming food industry by-products into high-value secondary feedstuff. This approach is designed to optimize resource use and minimize waste, aligning with the principles of sustainability. The project adopts a multi-actor approach, engaging a diverse range of stakeholders across the value chain, including food industries, feed producers, farmers, research centres, and advisory institutions. This collaborative strategy ensures that the project benefits from a wide array of expertise and perspectives, enhancing the robustness and applicability of the solutions developed.

The technical validation process includes optimizing bioprocessing techniques such as solid fermentation and enzymatic hydrolysis to improve the nutritional value and digestibility of the by-products. These processes are followed by innovative drying techniques to stabilize the ingredients, ensuring their safety, security, and shelf life. The project also involves conducting animal trials with dairy cattle, sheep, and broiler chickens to validate the nutritional value and digestibility of the new feed ingredients. These trials are essential for demonstrating the practical benefits of the new feeds and ensuring their acceptance by the livestock industry.

The sustainability of the new value chains is assessed from environmental, economic, and social perspectives using comprehensive tools such as Life Cycle Assessment (LCA), Life Cycle Costing (LCC), and social assessment methodologies. These assessments provide a holistic view of the impacts of the new feeds, ensuring that they contribute positively to the sustainability of livestock systems.

**Hurdles and bottlenecks**

The analysis involved interviews and questionnaires with stakeholders across the food, logistics, processing, feed, and livestock industries, highlighting the need for continuous availability, competitive pricing, and guaranteed supply of by-products.

Key challenges include seasonality, storage, and transportation issues, lack of technologies, high investment costs, and concerns about the nutritional value and consumer acceptance of new feed ingredients.

Success stories, such as the use of spent coffee grounds for dairy cattle and orange silage for ruminants, demonstrate the potential for valorizing by-products. These examples show that while there are challenges, effective management and innovative processing techniques can lead to successful integration of by-products into animal feed.

The project aims to build on these insights to develop tailored solutions for each value chain, promoting a circular economy and enhancing the sustainability of livestock production in the Mediterranean region.

**Results**

The project has developed three new alternative feed sources, each tailored to the specific needs and conditions of the Mediterranean region. The expected outcomes include a significant reduction in environmental impact and feed costs, as well as the promotion of circular economy principles in livestock production. By utilizing local food industry by-products, the project reduces dependency on imported feedstuffs, which are often subject to price volatility and supply chain disruptions.

The project has also created new business opportunities and jobs, contributing to the economic resilience of rural communities in the Mediterranean. The development of new value chains based on local by-products fosters stronger partnerships between food industries and livestock producers, enhancing the overall competitiveness of the agricultural sector.

The dissemination and exploitation of project results are key components of the project strategy. The project team has communicated findings through scientific publications, conferences, workshops, and social media, ensuring that the knowledge generated is widely accessible to stakeholders.

The exploitation strategy focuses on ensuring the commercial viability of the new feed ingredients and promoting their adoption across the Mediterranean region. This includes developing business models and roadmaps for market replication, as well as engaging with policymakers to support the implementation of the new feeds.

**Conclusions**

NEWFEED project represents a significant step towards sustainable livestock production in the Mediterranean by utilizing local food industry by-products. By optimizing and validating new feed ingredients, the project reduces dependency on imported feedstuffs, lower environmental impact, and enhance the economic viability of livestock systems. The multi-actor approach and comprehensive sustainability assessment ensure that the project outcomes are robust, scalable, and beneficial to all stakeholders involved.

The project's innovative approach to valorising food by-products not only addresses the pressing issue of feed sustainability but also contributes to broader environmental and economic goals. By fostering a circular economy in livestock production, the project aligns with global sustainability initiatives and sets a precedent for similar efforts in other regions.

So, the successful implementation of the NEWFEED project serves as a model for future projects aimed at enhancing the sustainability of agricultural systems worldwide.

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