A circular Economy Approach to Remediation of Dairy Processing Industry Wastewater

Dairy industry expansion in Ireland is resulting in substantial increases in dairy processing wastewater. Remediation of dairy processing wastewater constitutes significant challenges for the industry in Ireland. Dairy industry wastewater is an exploitable and valuable source of components as it contains high amounts of carbon, nitrogen and phosphorus.

The EPA-funded NEWTRIENTS project at University College Cork is developing eco-innovative technologies that enable reuse of valuable components present in the effluent with potential environmental and economic benefits, ultimately enhancing the competitiveness of the industry and boosting rural economies.

NEWTRIENTS aims to deliver innovation and efficiency through value-added diary wastewater resource recovery in two novel linked technologies carried out in sequence:

- Acidogenic fermentation yielding building blocks for bioplastics, followed by
- Production of duckweed which is a protein rich plant with potential to serve as a high-value agricultural feed

THE NEWTRIENTS CYCLE

NEWTRIENTS provides an example of new closed loop processes where maximum value is extracted from waste streams in a cascading approach. It illustrates the potential benefits for economies and societies of adopting a circular economy that maintains the utility and value of products, components and materials in the economy for as long as possible. The project presents a real new opportunity for systemic eco-innovation for the dairy industry where symbiotic new industries can grow alongside an existing industry, i.e. an agricultural feed and bioplastics production industry alongside dairy processing industries.

NEWTRIENTS will support the delivery of a range of national and EU economic, agricultural and environmental policies (such as 'Food Wise 2025', 'Project Ireland 2040', 'An EU Action Plan for the Circular Economy', 'Sustainable Growth – A Bioeconomy for Europe'). NEWTRIENTS will contribute to the transition to a low-carbon, climate-resilient and environmentally sustainable economy (High Level Objective 4 and 5, DCCAE Strategy, 2016-2019).

Policymakers are invited to liaise with the NEWTRIENTS team to explore opportunities of joint interest.

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"This project is funded under the EPA Research Programme 2014-2020. The EPA Research Programme is a Government of Ireland initiative funded by the Department of Communications, Climate Action and Environment. It is administered by the Environmental Protection Agency, which has the statutory function of co-ordinating and promoting environmental research."

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