

# PRoFo - Reduction of Energy Use by Novel Process Routes for Food

Towards 50% energy reduction in food processing



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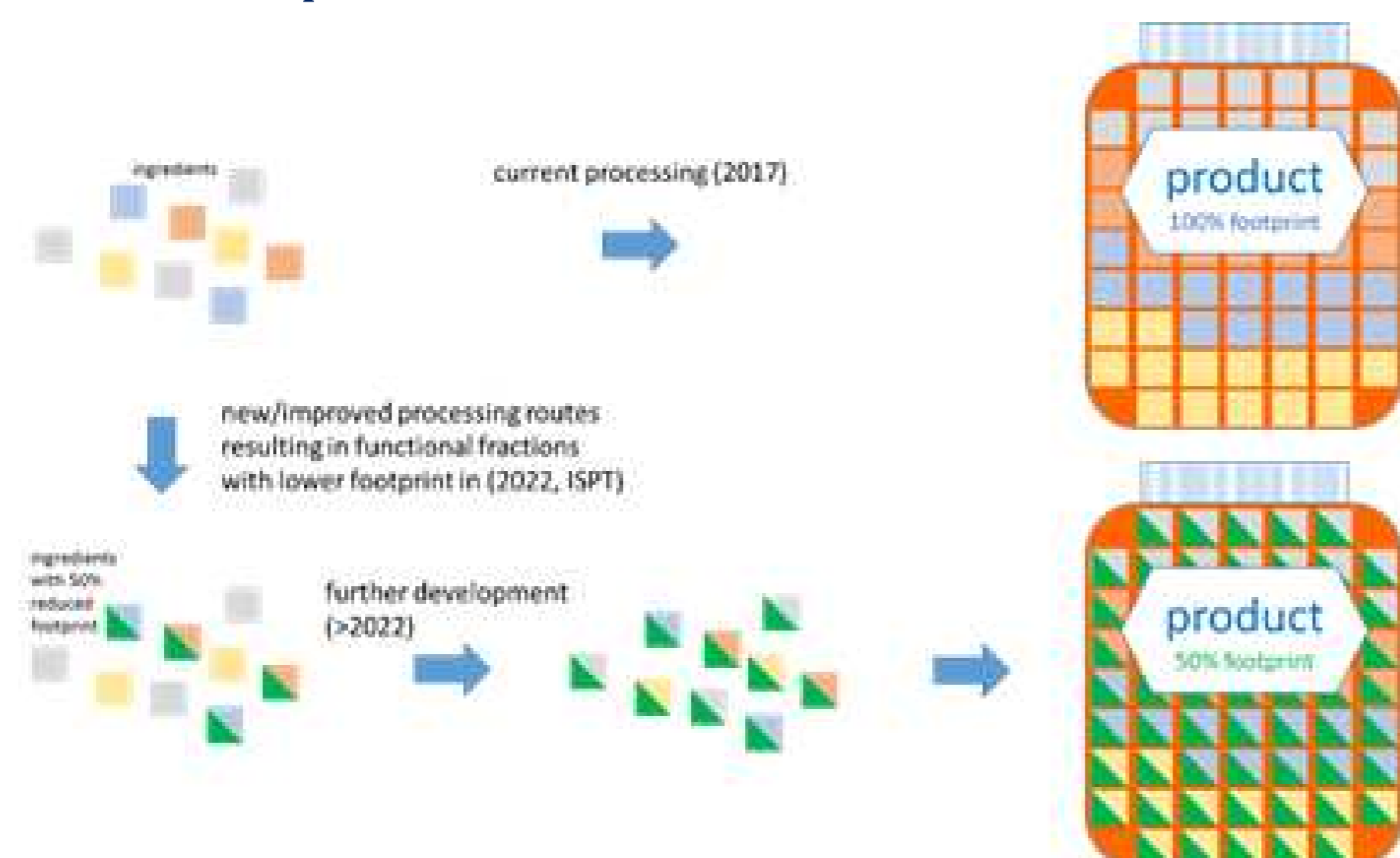
**Partners** Cosun, DSM, FrieslandCampina, Pentair, TU Delft, Wageningen University, RHDHV, NIZO, ISPT  
**Budget** 4 224 k€  
**Duration** 2018 - 2023

## Incentive

The drivers for all the industrial partners are sustainability in terms of reduction of energy consumption per kg food product and total use of raw materials.

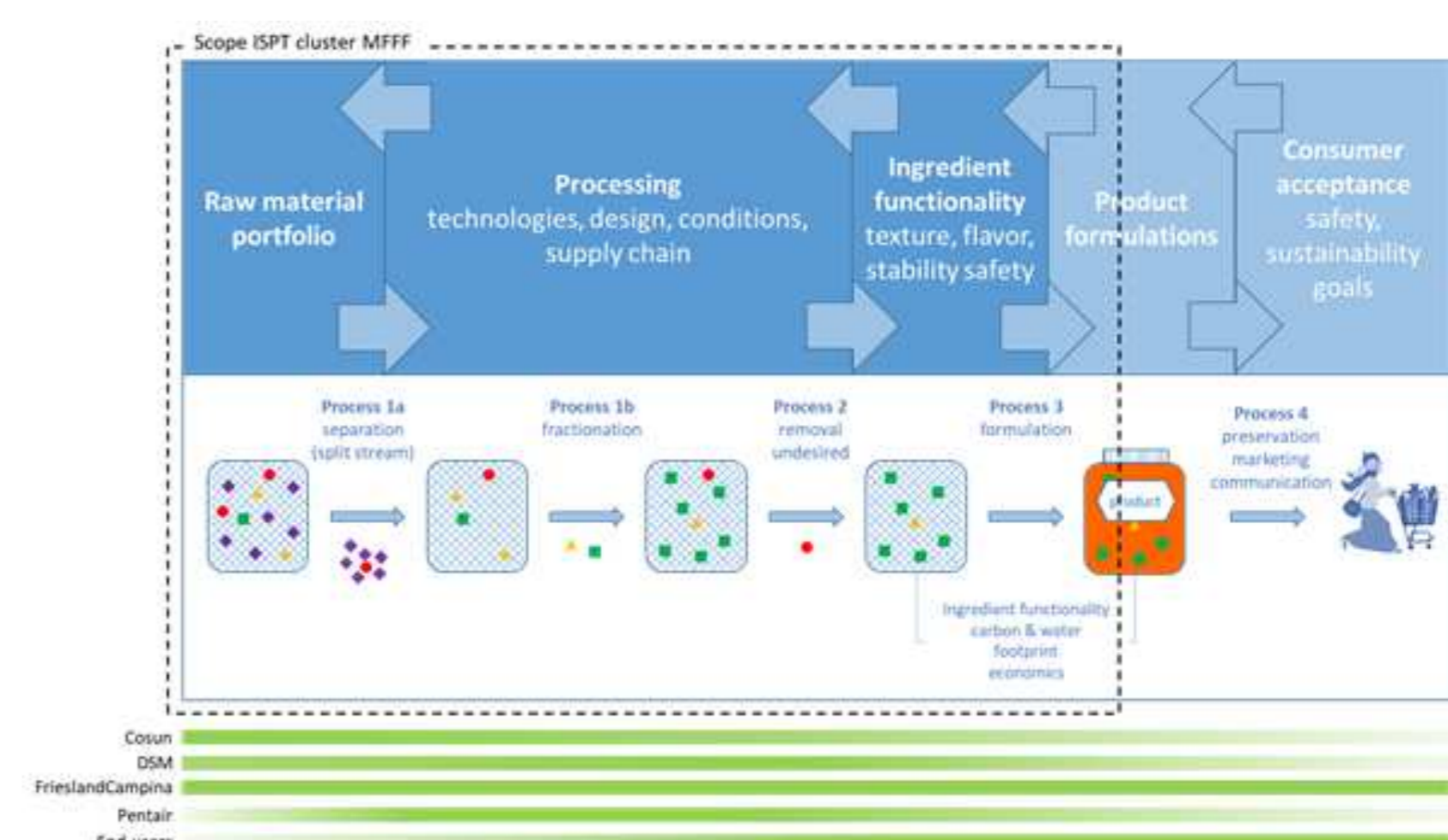
## Objective

To develop and demonstrate novel processing routes or new/improved separation technologies for mildly processed fractions from crop and dairy materials generating functional food ingredients with 50% reduction of the energy/carbon footprint. Also the water footprint is expected to reduce substantially. In fact the footprint reduction is realized by replacement of the current ingredients by functional fractions produced by new/improved technologies and new process routes, as depicted below.



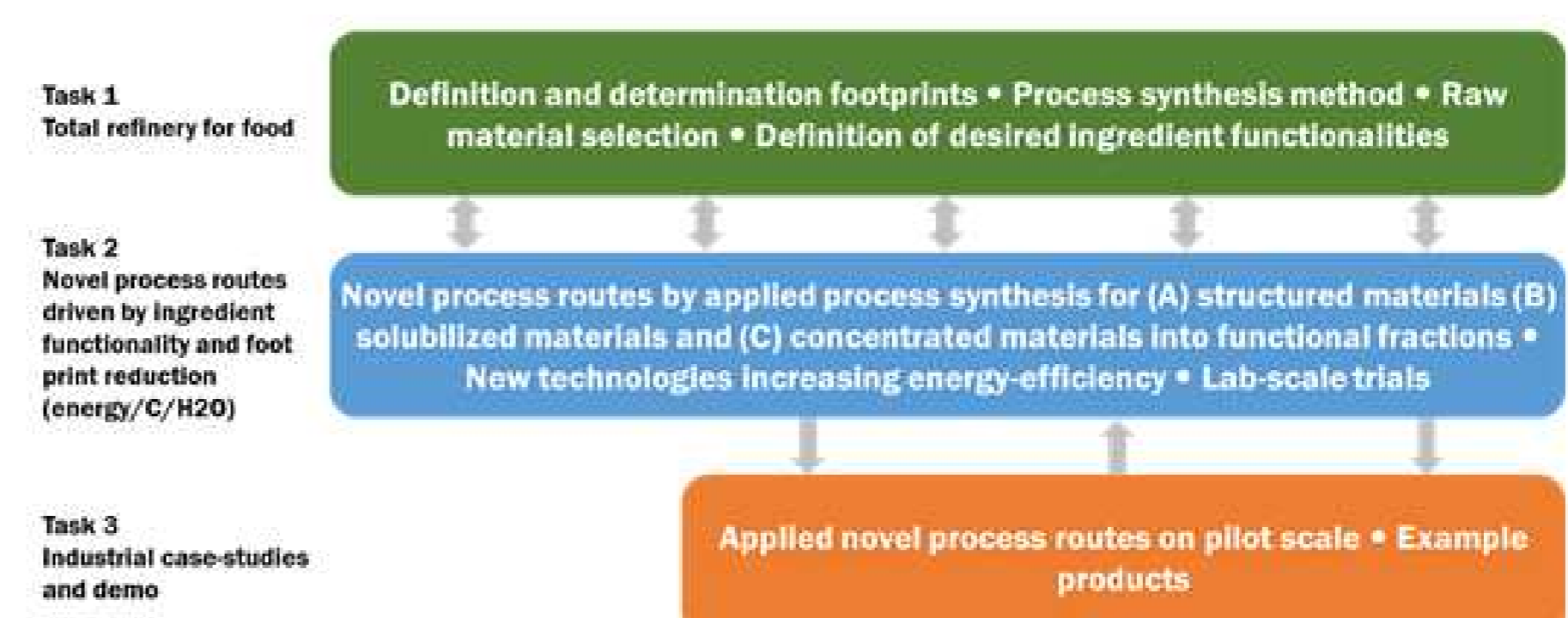
## Approach

- Investigation of portfolio of enriched fractions from dairy and crops.
- Design of processing routes for production of enriched fractions with minimal energy consumption and maximal valorization of total crops/raw materials.
- Design of separation technologies needed for novel sustainable processing routes.
- Application and control of enriched fraction functionality in process routes.
- Demonstration of successful technologies on pilot scale.



## Results

- Demonstration of how highly processed ingredients can be replaced by mild fractions with 50% less energy consumption.
- Proven methodology to design optimal processing routes with respect to ingredient functionality, energy costs and C/H<sub>2</sub>O footprint.
- New/improved design of separation technologies.



## Next steps

3 PhD's started in 2019 and 1 PhD in 2020. A PostDoc will start in Q1-2021. NIZO is investigating the strategic needs on sustainable ingredient functionality of the main manufacturers of food based prototype base products.



**Institute for Sustainable Process Technology**



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