

Tangible and measurable social, economic and environmental benefits

Main outcome



ENRICH business model

determining the best strategy to follow for a sustainable production and commercialization of the products made from recovered nutrients

Other outputs and achievements



Operation of a treatment train

which will enable to recover
up to 42% of P (>50% as struvite)
up to 11% N from wastewater



Increased crop productivity

staying above 110% of
the Spanish average



11% decrease of the N₂O emissions

by reducing N load to biological reactors



Guidelines for successful replication

of the value chain in other EU countries



3.3% reduction of the total OPEX of the WWTPs:

- 7.4% in aeration requirements
- 17.9% in dewatering energy consumption
- 27% in polymer requirement for dewatering
- 20% in sludge management
- 85% in antiscaling and maintenance due to uncontrolled P precipitation



80% reduction of CO₂ eq emissions

associated to energy consumption in conventional N-fertilizers production



Name Enhanced Nitrogen and phosphorus Recovery from wastewater and Integration in the value Chain

Acronym ENRICH

Funding EU LIFE Programme

Budget 2,770,781 €

EU contribution 1,662,467 €

Duration 51 months (September 2017-November 2021)

Coordinator Cetaqua, Water Technology Center

Demonstration sites

- Full-scale elutriation process for P recovery
- Struvite crystallization prototype for P recovery
- Zeolites and membrane contactors prototype for N recovery

For more information, visit the LIFE ENRICH website:

www.life-enrich.eu



Project partners

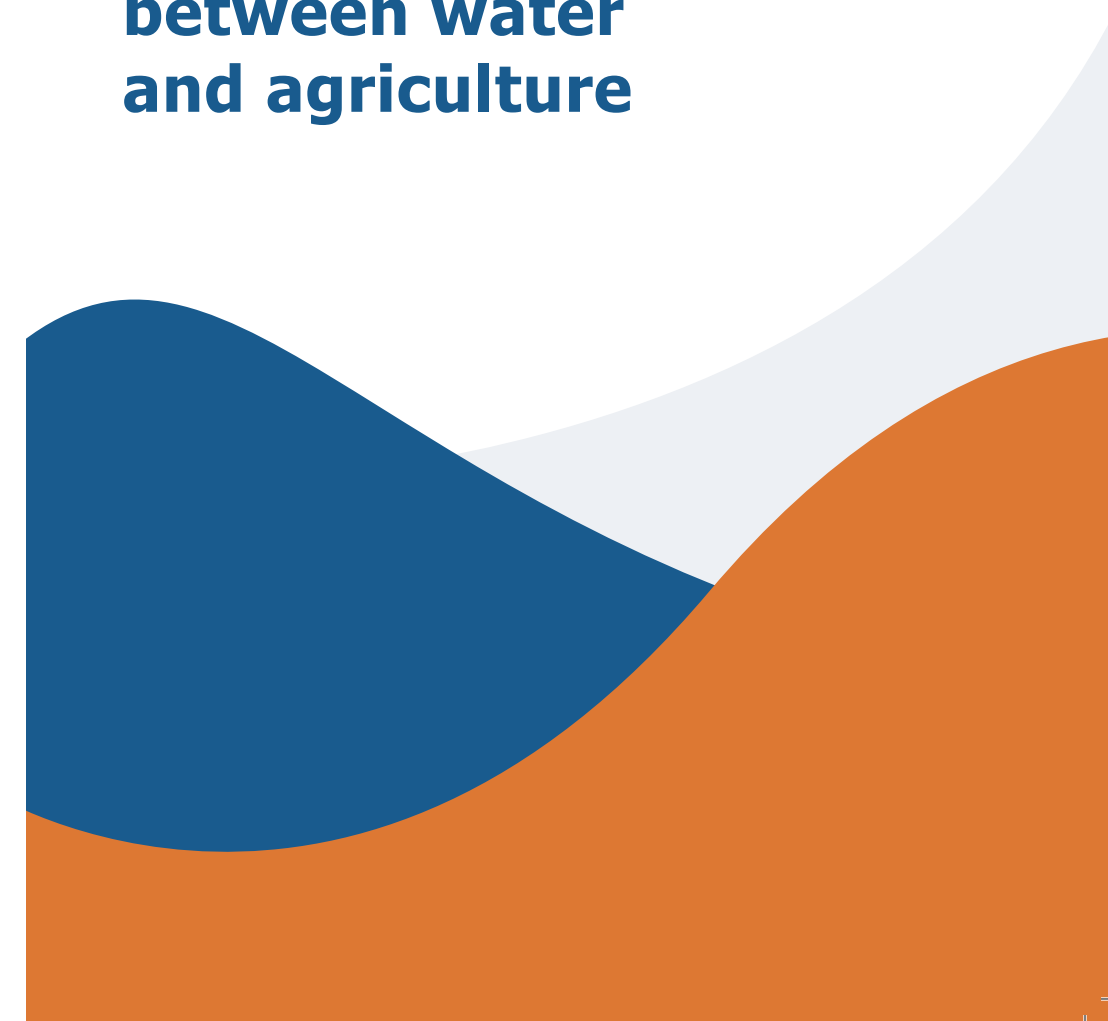


Project stakeholders



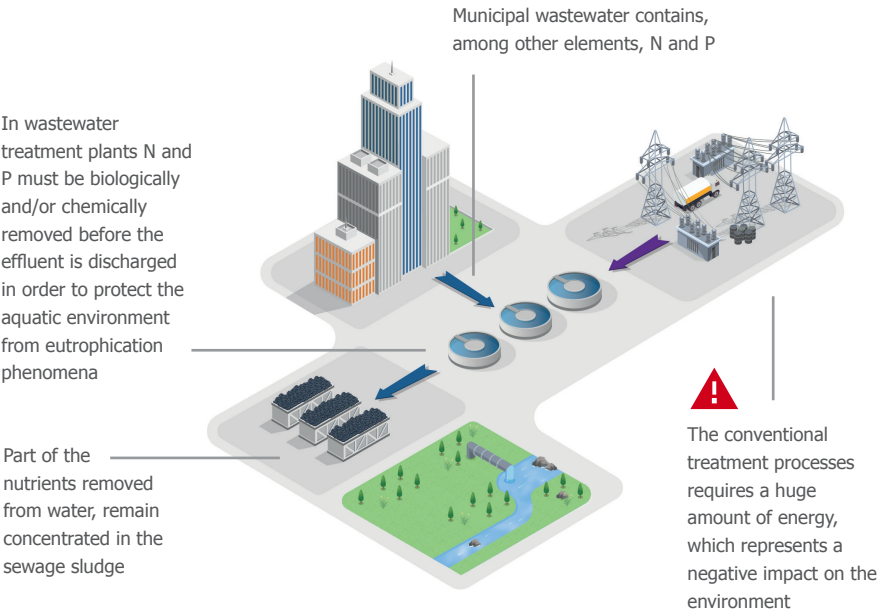
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Boosting synergies between water and agriculture

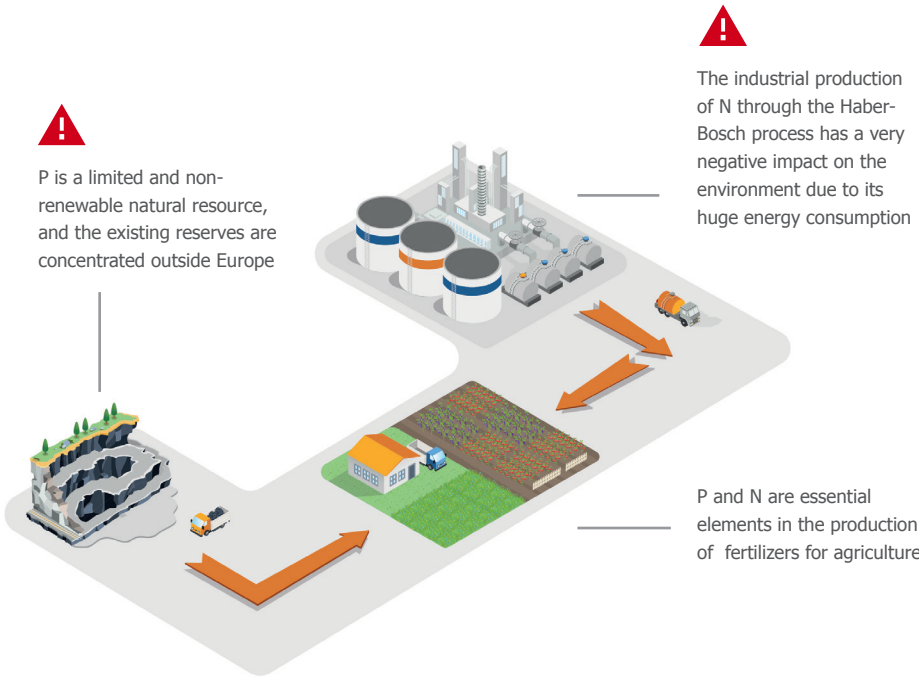


Towards a circular resources management: nutrient recovery and reuse is a double win

Conventional flow of N and P in Wastewater Treatment Plants (WWTP)

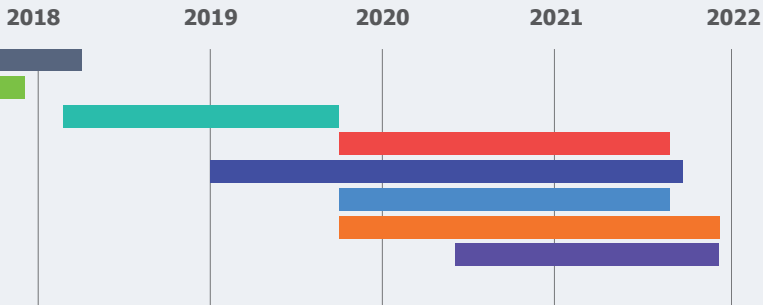
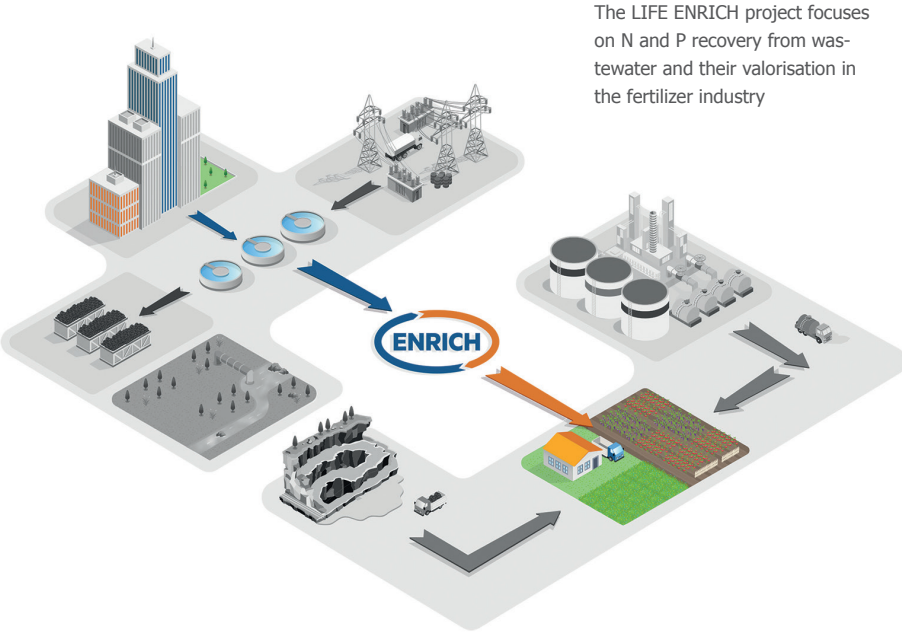


Conventional flow of N and P in Agriculture



contained in the wastewater, as ammonium salts and struvite, respectively. The products obtained will be blended in order to obtain suitable fertilizers for the target crops. In parallel to the technical development, a business model for the entire nutrient recycling value chain will be defined.

The LIFE ENRICH approach: towards a circular flow of N and P



- Murcia Este municipal WWTP characterization
- Definition of field tests: crops selection, methodology, timings
- Design and construction of the prototype
- Prototype operation and integration of results

- Definition of optimal mixtures and evaluation of the agronomic value through field tests
- Business model and business plan for Spain
- Technical, environmental and economic assesment
- Geographical replicability and transferability of the whole value chain