REcovery and REcycling of nutrients TURNing
wasteWATER into added-value products
for a circular economy in agriculture

Starting date: 01.07.2017

Duration: 42 months

WHY?

Why Water2REturn?

Resources recovery is a very important topic nowadays, and the demand of nutrients' sources continuously grows. The **EU slaughtering sector**, characterised by its **high water and energy consumption**, produces large amounts of wastewater (~750,000 m^3/year), containing relevant nutrients that are daily discarded.

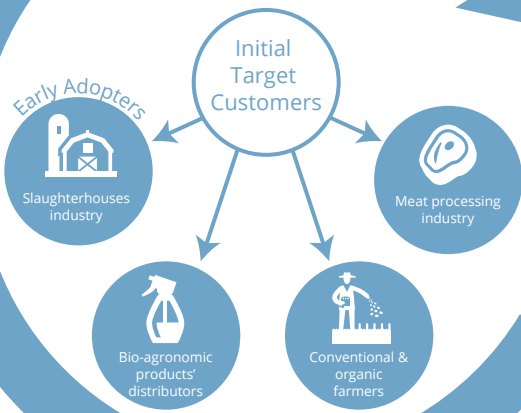
Ununderstandably, the **current approach** with regards to the treatment of these wastewaters tends to **nutrient's removal** instead of nutrients' recovery and recycling. Not only the existing nutrients are not upgraded, but the discharged wastewater entails environmental risks as well.

In addition, there is another growing sector experiencing an **unstoppable increase: chemical fertilisers** (containing mainly nitrogen, phosphorous and potassium) (consumption rate ~ 13.6 Mt/year). However, their extensive use also causes environmental problems.

So...what if we make use of **industrial symbiosis**, turning wastewater treatment facilities like those installed in slaughterhouses into **nutrients' bio-refineries?**

WHOM?

Whom is Water2REturn for?



WHAT?

What is Water2REturn?

Real technological breakthrough based on a **Circular Economy approach.** It aims to treat **slaughterhouses' wastewaters** and **recover nutrients** with high market value that can be injected back into the economy as new raw materials, **becoming a resource and not a waste anymore**. Thus, maximum value from slaughterhouse waste extraction, supply security increase and landfilling/emissions avoidance are achieved.

W2R proposes an **integrated full-scale demonstration process** (treatment capacity: 50 m^3 wastewater/day) in cascade using biochemical and physical technologies and a positive balance in energy footprint to be implemented in a **real case study**, the slaughterhouse "Matadero del Sur" (Salteras, Spain).

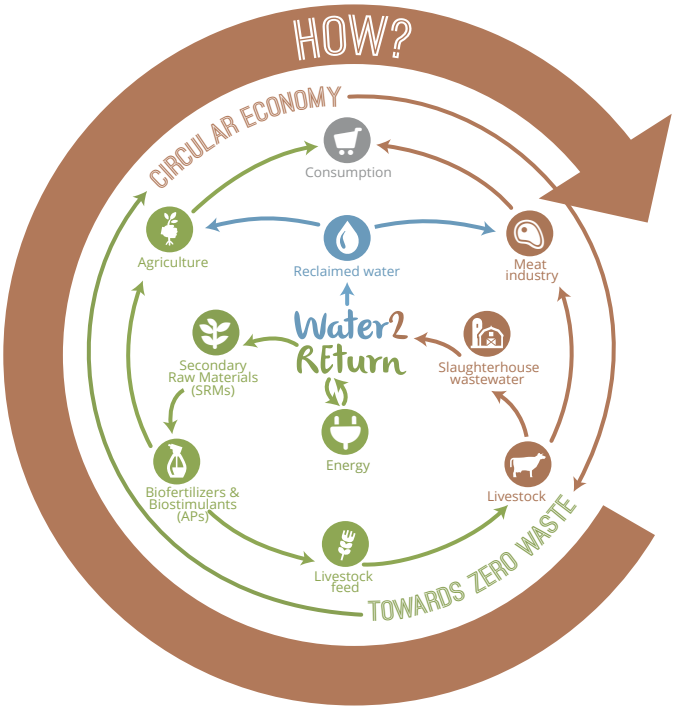
The project outcomes will be:

- **1 Integrated system to treat wastewater** → Novel combination of technologies and processes maximising the extraction of valuable products
- **3 Slaughterhouse Raw Materials (SRMs)** → The basis for further producing the agronomic products
- **3 Agronomic Products (APs): 1 fertiliser & 2 biostimulants** → Free of pathogens and pollutants ready to commercialise

WHERE?

Where is the consortium from?

HOW?



WHICH?

Which are Water2REturn expected outcomes?

Wastewater discharged reduction: **90%**

Treatment costs:
· Conventional solutions: 2.63 €/m³
· Water2REturn system: 1.85 €/m³

30% Costs Savings

Recovery rates:
· Fresh water savings: **20-40%** in the meat industry
· Nutrients recovery: **90-95%**

N-fertilisers production:
Potential production more than **4%**
(of total chemical N-fertilisers consumed in EU)

Payback period:
· APs production lines: 2.38 years
· Wastewater treatment system: 6,98 years

Bioazul S.L. (BIOAZUL) **Spain**

University of Seville (USE) **Spain**

University of Cadiz (UCA) **Spain**

Foundation Centre for the New

Water Technologies (CENTA) **Spain**

Agroindustrial Kimitec S.L. (KIMITEC) **Spain**

Adventech, Advanced Environmental

Technologies Lda (ADVENTECH) **Portugal**

Algen, Algal Technology Centre (ALGEN) **Slovenia**

University of Ljubljana (UL) **Slovenia**

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European Landowners Organisation (ELO) **Belgium**

www.water2return.eu

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CONTACT :

Coordinator: Pilar Zapata Aranda

BIOAZUL S.L. (Málaga, Spain)

+34 951 047 290

pzapata@bioazul.com

www.bioazul.com

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