BIOAZUL

ORGANISATION	BIOAZUL S.L.
Profile	BIOAZUL SL (www.bioazul.com) is an **engineering and consultancy SME** focused on **process engineering, wastewater treatment, water reuse concepts and resources recovery**. It has a wide experience in providing integrated solutions to its clients, **designing, constructing and commissioning tailor-made complete water treatment systems** for urban, agriculture and industrial applications, designing control modules and control philosophy. BIOAZUL also provides its clients with technical assistance for the **optimisation, validation and management of their plants** and control systems, as well as for the implementation of energy saving solutions. BIOAZUL services thus include improvement of the technical/ economic performance of existing plants and integration of state-of-the-art technologies for retrofitting obsolete installations or for their energetic optimisation. In addition to BIOAZUL's technical expertise in developing eco-innovative (water) solutions, the company has a strong profile in the **project management** area. BIOAZUL has in-depth know-how both of the available funding tools and the necessary technical, financial and administrative procedures for and successfully managing private and public funded R&D&I projects. This knowledge, together with the company's extensive network of technological and commercial contacts all over the world, has facilitated BIOAZUL to set up **strong R&D&I proposals** on **circular economy, environmentally-sound agriculture, food sustainable systems and water** and **solid waste management** finally **funded by the EC**, in which BIOAZUL takes care of **management, coordination and R&D&I tasks**. This way, **from 2003** BIOAZUL has participated in **58 projects,** from which **53 of them are international initiatives funded or co-funded by the European Commission** under any of its framework programmes (14 FP6, 16 FP7, 15 H2020, 2 IEE, 1 CIP Eco-Innovation, 1 PRIMA, 2 ERASMUS+, 1 EIT Food, 1 INNOWIDE, including international cooperation initiatives in Asia, Africa and Latin America). **BIOAZUL has coordinated 31 out of those 53 international projects**, either as general coordinator (11 projects) or as administrative coordinator (20 projects). BIOAZUL is member of: the Water Europe Platform, leading the Water and AgriFood working group, Network partner of the EIT Food, the European leading initiative on food innovation, SAVE-FOOD Network: Global Initiative on Food Loss and Waste

	Reduction, the EIP Water Action Group: WIRE – Water & Irrigated agriculture Resilient Europe (AG112) and the Food for Life Platform, among others. Finally, BIOAZUL signed in April 2013 the United Nations Global Compact, a call to companies to align strategies and operations with universal principles on human rights, labour, environment and anti-corruption, and take actions that advance societal goals. Since July 2019, BIOAZUL is enrolled in the CEO Water Mandate to advance in the sustainable water management. Moreover, since March 2020 BIOAZUL is part of the Women's Empowerment Principles (WEPs) initiative, established by UN Global Compact and UN Women, which sets the Principles offering guidance to business on how to promote gender equality and women's empowerment in the workplace, marketplace and community.
Previous experience in European projects	As mentioned, **from 2003** BIOAZUL has participated in **58 projects,** from which **53 of them are international initiatives funded or co-funded by the European Commission** under any of its framework programmes, **coordinating 31 out of those 53 international projects**, either as general coordinator (11 projects) or as administrative coordinator (20 projects). A list of the projects run by BIOAZUL attached at the end of this form. Some highlightable projects are: BIOAZUL coordinates Water2Return, **which** is an **Innovation Action** co-funded by the **European Commission** under its **Horizon 2020** programme. **Water2REturn** proposes a **viable, cross-sectoral and integrated full-scale demonstration process** by using a **novel combination** of biochemical and physical technologies and processes in cascade, all while aiming for a positive balance in terms of energy footprint –biological aeration systems, membrane technologies, anaerobic processes for bio-methane production and algal technologies, all combined in a zero-waste- emission system, with an integrated monitoring control tool that improves the nutrient flow data quality – . An **environmental, economic, social and risk assessment of the technology performance and the products obtained** will be also performed. Water2REturn is built on a bottom-up approach based on a current market demand. It constitutes a real technological breakthrough conceived to recover and recycle nutrients from slaughterhouse wastewater in the framework of a Circular Economy model. Nutrients recovered are turned into value added products for the agro-chemical industry and, consequently, for the agricultural sector, that seeks more sustainable products fulfilling the increasingly restrictive legislation requirements. At the same time,

slaughterhouses solve their wastewater management problems, and reduced costs related to water consumption.

Water2REturn commercial outcomes will be: - An integrated system to treat wastewater while recovering nutrients, customisable according to the needs of the end user. - 3 raw materials: nitrate and phosphate concentrate, hydrolysed sludge and algal biomass, the basis for further manufacturing agronomic products. - 3 agronomic products: 1 organic fertiliser and 2 biostimulants, ready to be commercialised.

Water2REturn also aims to create new business opportunities and green jobs based on nutrient recovery and recycling, as well as to promote wide and fast market uptake of Water2REturn processes and products by implementing targeted business plans, and to improve their acceptance through capacity building and awareness raising.

BIOAZUL coordinates the SuWaNu Europe project, a Thematic Networks co-funded by the European Commission under its Horizon 2020 programme. SuWanu Europe is focused on water reuse projects in Europe through the reuse of treated wastewater in agriculture. The reason behind is that wastewater treated according to appropriate standards and methods has a strong potential to complement conventional water resources used in agricultural irrigation.

The aim of the water reuse projects is to promote the effective exchange of knowledge, experience and skills between practitioners and relevant actors of water reuse in agriculture, so that direct applicable technological and organizational solutions are widely and balanced disseminated all around Europe resulting in a more resilient agricultural sector to cope with water scarcity and climate change effects.

SUWANU EUROPE is based on a previous project of water treatment in Europe called SuWaNu: Sustainable Water treatment and Nutrient reuse options, which consisted in developing strategies based on water reuse projects to solve problems such as the scarcity or the availability of nutrients. However, SUWANU EUROPE has been conceived not only as an extension of former SuWaNu project activities but also as the creation of a new instrument based on an existing network to accelerate the uptake of research results in the field of water reuse in agriculture and water innovation in Europe. For that reason, the project will create Regional Working Groups between consortium members and relevant actors in 8 target regions that will work to spread the water

recycle project findings. The objective is to establish permanent links - beyond the project timeframe - with relevant local actors, encouraging flow of information among researchers, private innovators, civil organizations and public administration.

The objectives are (a) **Set the basis** in a participatory and evidence-based process for the development of implementation strategies in 8 target regions.; (b) **Develop strategies and recommendations** to pave the way for the implementation of water reuse solutions; (c) **Create regional networks** that combine efforts within and outside the consortium to support implementation and uptake of organizational and technological solutions; (d) **Increase the capacities** of practitioners and other stakeholders in water reuse for irrigation; (e) **Develop, summarize and structure practical knowledge for practitioners** in a way that it is easy to understand.; (f) **Create synergies** between Regional Working Groups, operational groups, national and international networks and practitioners who supporting the implementation of water reuse; and (g) **Strengthen the links between water and farming sectors** in order to find synergies for water reuse in agriculture.

BIOAZUL has coordinated RichWater® project, funded by the European Commission's Horizon 2020 R&D program. Thus, the project received a total of € 1,658,703.13, which were used for the successful demonstration of the modular wastewater reuse system. Subsequently, it was funded by the European BRIGAID project - that offers support for innovation in adaptation to climate change - being selected in a European competition for its high degree of innovation. Moreover, some of the partners participating in this project created in 2017 the Operational Group "AXARQUÍA SOSTENIBLE". The members of the Operational Group are currently waiting to receive financing for the operational phase of the innovative project, which will allow the continuity and expansion of the activities developed in RichWater®.

RichWater® is based on an innovative technology that combines the efficient and low-cost treatment of wastewater through a Membrane Bioreactor (MBR), a mixing module to obtain the optimal combination of clean and reclaimed water, and a control and monitoring unit through soil and water sensors. This combination provides a reliable source of pathogen-free water and responds in situ to the demand for irrigation and fertilization of each type of soil. The implementation of this system in the agricultural production process implies a more sustainable use of water resources, savings fertilizer and freshwater costs and allows the possibility for fruit and vegetable producers to adjust the fertigation

	unit according to their specific needs using a mixture of fresh and treated water. The MBR has been designed in such a way that the nutrients contained (mainly nitrogen and phosphorus) remain after treatment, while pathogens are eliminated. The mixing station obtains the appropriate combination of fresh water and treated water from the MBR, which is transferred to the fertigation module (drip irrigation). The adequate level of mixing is determined by monitoring the nutrient content in the soil thanks to the sensors. The control unit automatically adjusts the mixture within the module through valves according to the demand of the crops. RichWater® solution has been verified under the EC Environmental Technology Verification programme (https://ec.europa.eu/environment/ecoap/etv/richwater-series-2018_en) and has been selected as a **Living Lab** as one of the 105 water oriented living lab research settings that met the **Water Europe Living Labs assessment criteria, and included in the Water Oriented Living Lab Atlas** (page 41) https://watereurope.eu/water-europe-launches-new-publication-atlas-of-the-european-water-oriented-living-labs/
Interests for future projects proposals	BIOAZUL has interest in projects related to sustainability in the management of natural resources, especially water, in line with the circular economy approaches, and the biodiversity protection, as well as project related to conservative and regenerative agriculture, sustainable food systems, rural renaissance, local economic development and entrepreneurship, and gender equality.
Project ideas	We do not have specific ideas at this stage, but we are willing to build string consortiums with private and public entities working in our filed of expertise.
3 key words	Sustainable water management and reuse, circular economy, sustainable development.
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