



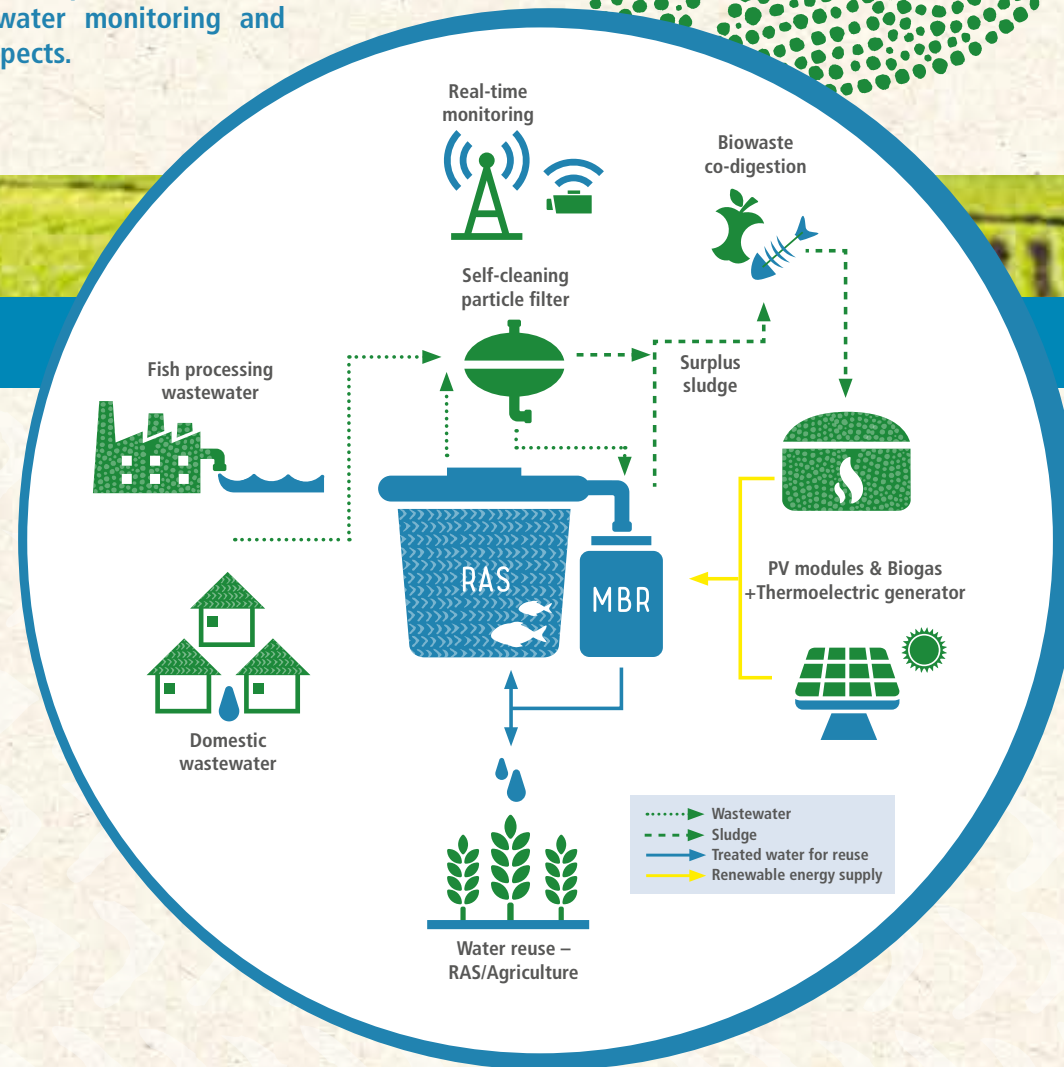
VicInAqua has a clear trans-disciplinary perspective involving new materials/membrane development for wastewater treatment processes, sensor technologies for remote water monitoring and renewable energy supply aspects.



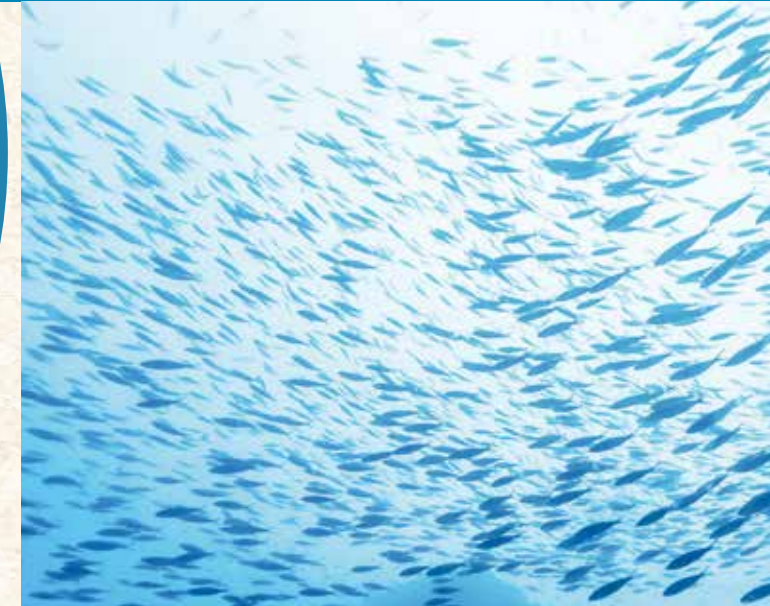
VICINAQUA PARTNERS



VICINAQUA CONCEPT



WATER FOR LIFE



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VicInAqua is a medium-scale focused research project co-financed by the European Union's Horizon 2020 research and innovation programme.

An international consortium consisting of 11 partners from 7 different countries (Europe and Africa) will aim at developing an **integrated approach for water management** by providing an integral, sustainable, innovative, cost effective and robust solution for water sanitation combined with the demand for clean water in aquaculture at **Lake Victoria**.



EXPECTED IMPACTS & BENEFITS

Sustainable environmental protection is at the core of VicInAqua solutions by permitting:

- **Effective sanitation** – Wastewater treatment (aquaculture, households, fish processing industry), solid waste management and utilisation.
- **Fresh water availability** – By avoiding release of fertilisers, antibiotics and diseases of aquaculture in the ecosystem; by reusing treated water for aquaculture and agriculture purposes.
- **Use of renewable energy** – Thereby reaching a very low CO₂ footprint and enabling autonomy to cover energy demand of VicInAqua facilities.
- **Assessment of the environmental impact, sustainability and life cycle analysis** – To guarantee a proper observance of environmental regulations.
- **Extraction and use of natural by-products (nutrients to be used as fertilisers)** – To be used in agriculture, thus providing a sustainable and environmentally friendly solution, which permits to take distance from chemical-based fertilisers.
- **Increase in fish production productivity (Nile perch and tilapia)** – and enabling the production of native fish species which can be step-by-step reintroduced in the Lake Victoria ecosystem.

VicInAqua will empower local stakeholders in the agro and aquaculture sectors by:

- **Raising awareness** on the critical relevance of environmental protection and food security.
- **Providing an integral technical solution** for more effective sanitation and water supply.
- **Translating the knowledge** gained into economical benefit and job creation.
- **Encouraging women** to undertake a more active role in the aquaculture sector.

VICINAQUA VISION

VicInAqua will develop innovative multipurpose self-cleaning water filtration solutions adapted for sanitation of different wastewater streams, which will be reused in Recirculation Aquaculture Systems (RAS) and Agriculture Irrigation.

The technological development and demonstration at pilot scale will be combined with participative measures aimed at **capacity building of local and regional actors**. A special focus is set on the robustness, energy efficiency and economic viability of the VicInAqua solutions in order to be adapted to the local challenges and to achieve a high acceptance in **peri-urban areas**, where the sanitation infrastructures are poor and the demand for water is high.

VicInAqua novel solutions are conceived as a tailor-made response to local sanitation and water supply needs of Victoria Lake inhabitants and industry.



VICINAQUA OBJECTIVES

The innovative core idea of VicInAqua is to develop, test and integrate novel technologies (e.g. self-cleaning membrane bio-reactor (MBR)) in a common system. VicInAqua's main goal is to enable the supply of clean water to RAS and agriculture (water reuse) through a single solution for water treatment (sanitation) of different wastewater streams (domestic waste, fish production and processing industry).

- 1 Development and screening of novel self-cleaning membranes.
- 2 Set-up of a small technical MBR using novel **self-cleaning membranes** which will be integrated into a domestic wastewater treatment system (DWTS), a pilot RAS and a fish processing industry.
- 3 **Integrated renewable energy power supply** based on photovoltaics and biogas (generated from RAS sludge in combination with bio-waste), which will be integrated to the system for autonomous operation.

- 4 A robust and low-cost **real-time sensor system for water management** based on wireless network monitoring, which will contribute to the overall improvement of the aquaculture process.
- 5 Set-up and pilot trials of an autonomous MBR for DWTS, RAS and fish process industry with **integrated renewable energy power supply** and smart sensor system.
- 6 All R&D steps will be accompanied by an **Environmental Impact Assessment and socio-economic studies** in order to ensure affordability, sustainability and environmental friendliness.
- 7 **Awareness raising, capacity building and knowledge transfer** among local population (aquaculture operators, stakeholders and scientific community).
- 8 **Foster gender equality and better integration of women** in aquaculture activities.

