

°C Mission Model Canvas

Project title:

AlgaeCycle:
Pure Water, Trapped Carbon

Created by:

Arrhenius AG

Date:

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Partners & Support 🤝

Local wastewater treatment plant (ARA) providing pilot plant testing site

University of Almeria (SABANA project) is a partner with experience in combining algae growth and wastewater treatment

Hopefully clima now, the spotlight partners and their community for support and increased visibility for our project

Activities 🚀

Design and build a pilot plant to purify wastewater using microalgae. Operate pilot plant in 2026 to collect data on costs and results as a basis for scalability plans

Engage community through small events explaining the project, its relevance and impact

Ressources 🏠

Arrhenius's expertise in bioprocessing, geochemistry, and modeling: we developed and operated several photobioreactors over the last two years to optimize algae growth

Cooperation with SABANA (workshop in June 2025) to integrate wastewater treatment into our concept

Project 📦

AlgaeCycle transforms wastewater into pure water using microalgae that gobble pollutants like nitrogen and phosphorus. To do so, we build a photobioreactor for efficient algae growth next to a wastewater treatment plant. The symbiosis of water treatment and algae production benefits not only cleaner water, but it will store algae underground, trapping 3.7 kg CO₂ per kg biomass. It's a zero-waste win for Swiss water and climate!

Relationship, Community ❤️

Host small events at the pilot plant to showcase the process of algae growth for clean water.

Involve local schools through talks and events targeted to pupils to inspire water-wise action early on. This will be flanked by a DIY algae growth kit for kids.

Channels 📺

Social media such as LinkedIn to share videos, infographics Arrhenius AG website to post project updates

Communication via Hochschule Luzern and reach out to local newspapers and websites

Target Groups 👥

AlgaeCycle engages people passionate about clean water and climate action, such as:

Lucerne residents seeking healthier local water systems
Secondary school students and teachers eager to learn about sustainable water solutions

Wastewater professionals aiming for innovative treatment such as ARA operators and municipal environmental staff

Young adults (18–35) and eco-advocates wanting climate impact

Budget 💰

Total estimated at 150,000 CHF

30,000 CHF: Reactor modeling and conceptualization

40,000 CHF: Building the pilot plant

10,000 CHF: Reactor materials

20,000 CHF: Operations & testing in summer of 2026

30,000 CHF: Lab-scale pyrolysis and nutrient recovery measurements

20,000 CHF: Project management and communication

Impact 🌱

Remove >90% of wastewater pollutants (nitrogen, phosphorus) in a Lucerne pilot plant and document results to enable scaling and adoption by other Swiss ARAs

Produce microalgae biomass, sequester 3.7 kg CO₂ per kg biomass and store it geologically

Engage 500+ community members through communication and events to promote our water-wise solution that also contributes to reverse climate change