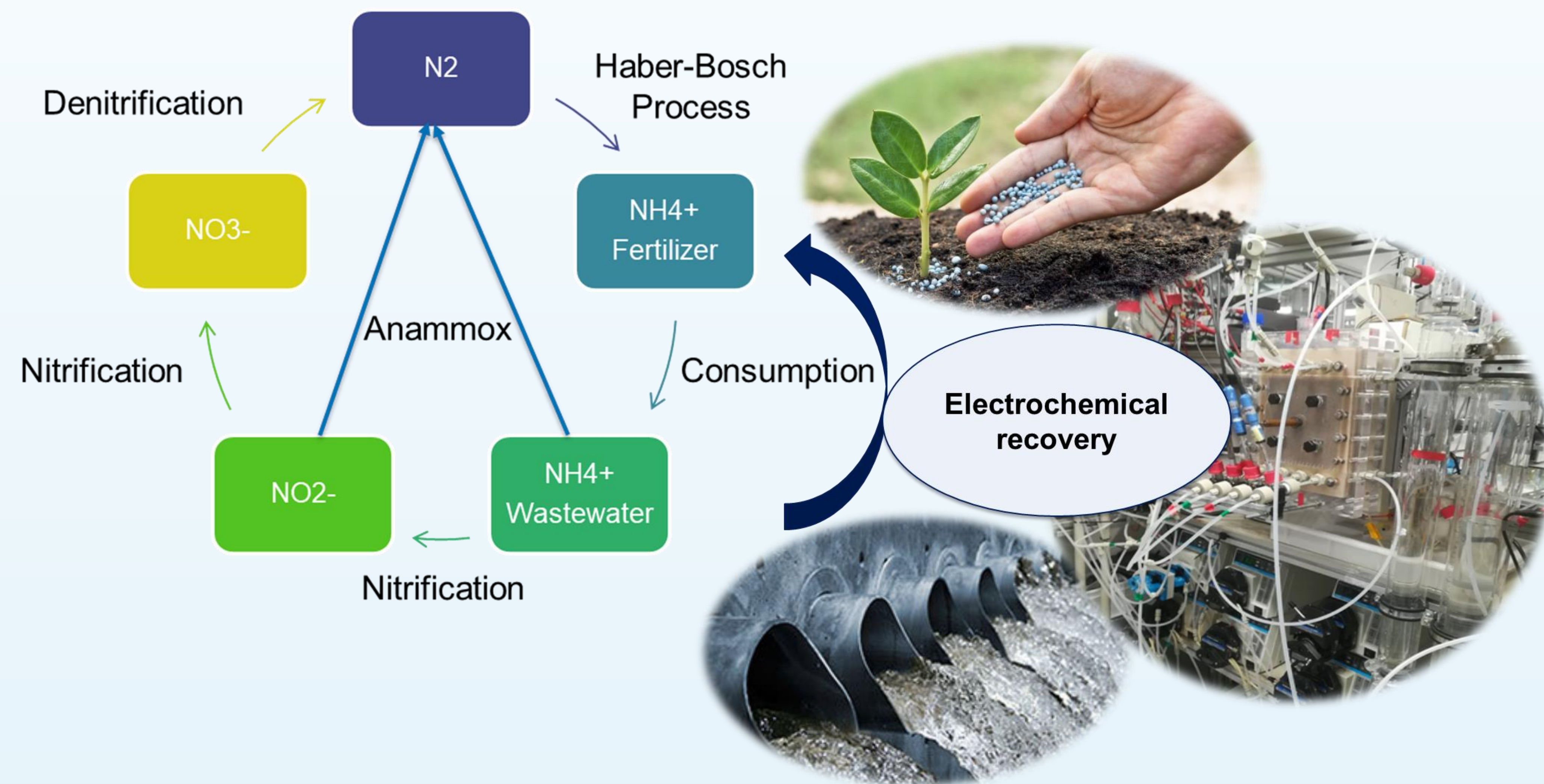


Background

The intensive use of fertilizers in EU region is degrading sensitive water bodies. When the nutrients make their way into rivers, they considerably disturb aquatic ecosystems. Recycling the reactive nitrogen could reduce the energy needed to both produce and dispose of fertilisers, cutting greenhouse gas emissions on both ends of their production chain.



Objectives

- Demonstrate a novel technique to extract ammonium.
- Develop a pilot system capable of recovering from different wastewater in an economic, effective and energy-efficient way.
- Evaluate the economic and environmental impact by comparing with the existing nitrogen removal technologies.
- Select strategic partners to ensure a market for the produced fertilizer.

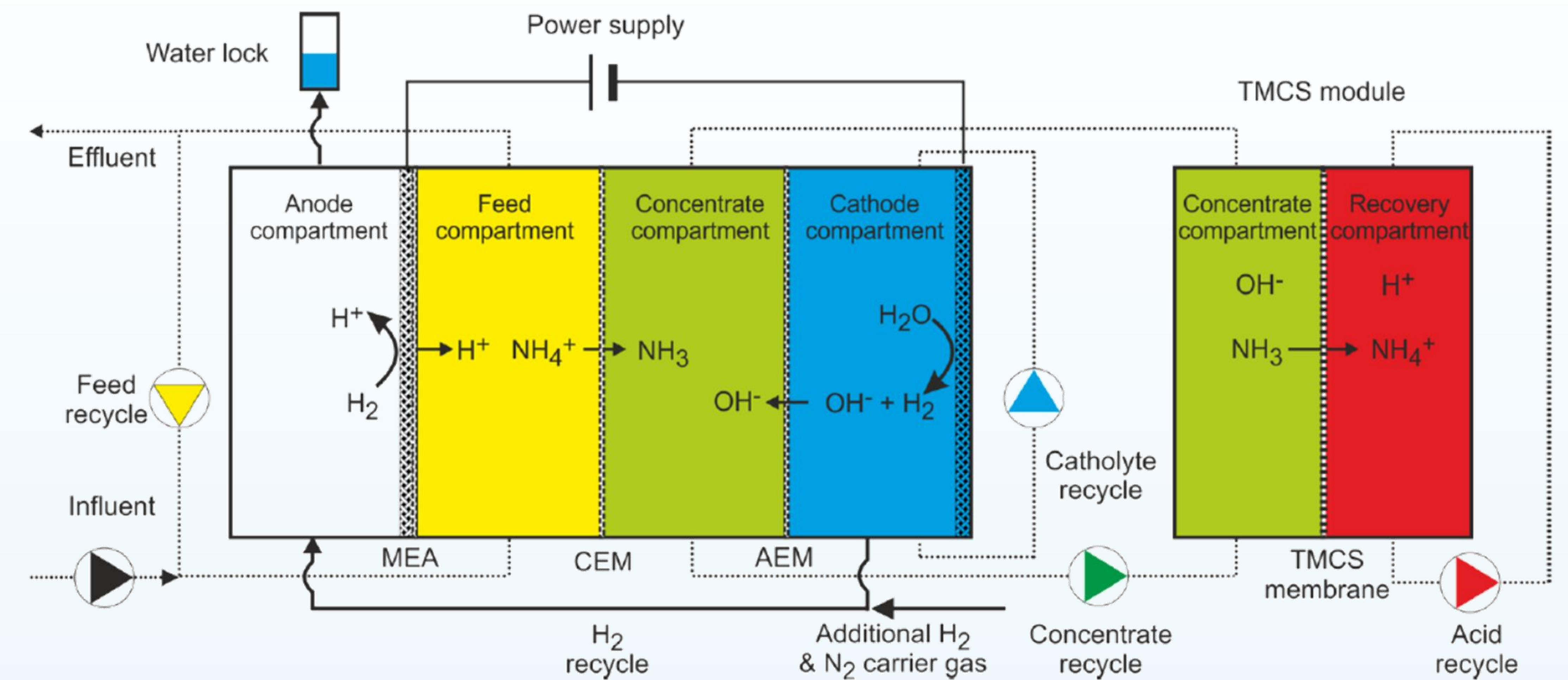


Fig 1. Scheme of the up-scaled electrochemical system for ammonia-nitrogen recovery. Source: P. Kuntke et. al, Journal ACS Sustainable Chemistry & Engineering (2018) 7638-7644.

Expected Results

1 kg_N per day

Remove over 90% of the nitrogen present in the waste streams

Low cost of N per kg

Reduce the energy consumed by the process to under 16 MJ per kg of nitrogen recovered

Marketable product

Produce a nitrogen compound that is pure enough to reuse as fertilizer in agriculture