

Goals and Objectives



Workflow of WaterProof

- Development of an efficient CO₂-conversion technology based on Carbon Capture and Utilisation (CCU)
- Efficient production of formic acid in adequate volumes
 - Successful application of CO₂-derived formic acid in leather tanning and in consumer cleaning goods
 - Successful production of solvents for metal recovery in waste(water) treatment

WaterProof aims to

- Source sustainable resources by replacing fossil feedstocks in order to produce renewable chemicals.
- Achieve climate neutrality through reducing GHG emission and industrial electrification.
- Create circularity in urban environments by connecting the waste sector, chemical industry and users of renewable chemicals.
- Transfer the successful concepts to urban communities in other regions, such as Colombia.



Funded by
the European Union

The WaterProof project receives funding from the Horizon Europe framework programme under the grant agreement number 101058578. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

Project Coordinator



Partners



#WaterProofProject
June 2022 – May 2026



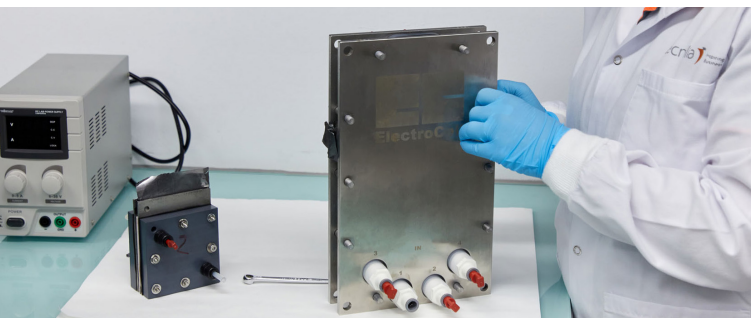
Urban Waste and Water Treatment Emission Reduction by Utilising CO₂ for the Production of Formate Derived Chemicals



waterproof-project.eu

The Power of Electrochemistry. From Fossil to Renewable. From Linear to Circular.

WaterProof's partners share the vision of an innovative, climate neutral and resource efficient technology to close the waste(water) carbon cycle.



Dyeing of fish leather after tanning with sustainable formic acid.
Source: Nordic Fish Leather

WaterProof is an interdisciplinary project that includes a collaborative team from science and industry, e.g., producers of fish leather and consumer cleaning products as well as waste(water) treatment facilities.

Reduction of CO₂ and other greenhouse gases, moving away from fossil to renewable feedstock and the creation of a circular economy are key elements in addressing climate change and pollution.

CO₂ has shown great potential as an alternative carbon source for fuels, chemicals and plastics and can be captured directly from point emissions and converted into renewable chemical building blocks.

If optimised and powered by renewable energy, this process can create negative emissions and supports the transformation to industrial electrification.

WaterProof will demonstrate this through a comprehensive Life Cycle Assessment (LCA), while its effect on social transformation will be monitored in a Social Life Cycle Assessment (S-LCA).

The WaterProof Approach

At the heart of the WaterProof project is an electrochemical process converting captured CO₂ from waste incineration and wastewater treatment into formic acid. To increase the sustainability impact, the process can also run with renewable energies.

Not only does waste(water) treatment and processing provide the required CO₂ feedstock, it also will profit from the developed WaterProof technology and emission reduction. Peroxides that emerge as by-products of the CO₂ conversion can be used to purify wastewater from pesticides, antibiotics and pharmaceuticals.

The formic acid produced within WaterProof will be tested in different applications. While it will be directly used for sustainable tanning of fish leather, it will also serve as an active ingredient for consumer cleaning goods.

Furthermore, it can be chemically transformed to Acidic Deep Eutectic Solvents (ADES), which can be used for the recovery of precious metals from waste incineration ash.

