



HORIZON-CL4-2021-TWIN-  
TRANSITION-01-14

### **WaterProof**

Full Title: urban WAsTe and water Treatment  
Emission Reduction by utilizing CO<sub>2</sub> for the  
PROduction Of Formate derived chemicals

Aim:

WaterProof aims at closing the waste(water) carbon loop by creating a novel biorefinery concept converting CO<sub>2</sub> emissions from urban waste treatment facilities into valuable green consumer-products. The objective is a technology resulting in a GHG reduction based on CO<sub>2</sub> utilization, replacement of fossil feedstock and industrial electrification.

Concept:

The WaterProof project aims at developing an electrochemical process that converts CO<sub>2</sub> emission captured from consumer waste incineration and wastewater treatment facilities into formic acid to be used in valuable green consumer products such as cleaning detergents and the tanning of fish leather apparel. Additional products of the electrochemical process are peroxides that can be applied to remove pharmaceuticals and pesticides from wastewater. Furthermore, formic acid is used for the generation of acidic deep eutectic solvents (ADES), that can be applied to recover precious metals from wastewater sludge and incineration ashes. As the electrochemical process uses renewable energy, it contributes to a clean water cycle with zero-emission.

Start date:

01/06/2022

End date:

31/05/2026