WATER PROOF

urban WAste and water Treatment Emission Reduction by utilizing CO_2 for the PROduction Of Formate derived chemicals

Collaborative Project (101058578)

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☐	**R**	Document report	x	**PU**	Public, fully open, e.g. web
☐	**DEM**	Demonstrator, pilot, prototype	☐	**SEN**	Sensitive, limited under the conditions of the Grant Agreement
☐	**DEC**	Websites, patent fillings, videos, etc.	☐	**CI**	Classified, information as referred to in Commission Decision 1001/844/EC
X	**OTHER**				

Type Dissemination Level

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Contributing beneficiaries (WP5_AVT)

nova-Institut GmbH (Linda Engel)/ all partners

Internal reviewer(s)

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Change log

Date	Issue/Version	Reason for change

Report

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Document History

Version	**Description**	**Date**
1.0	Final project logo; presentation and document templates; first version of the WaterProof website	

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Publishable executive summary

The WaterProof project aims to close the wastewater carbon loop. It hereby introduces and encourages alternative renewable chemicals that support a departure from fossil resources. Based on an electrochemical process, the project will develop a technology for the production of renewable chemicals to be used in consumer goods such as cleaning detergents and fish leather apparel with the simultaneous generation of substances to be used in waste and wastewater treatment facilities.

In detail, the WaterProof project proposes a cyclic system in which CO_2 emissions from waste and wastewater incineration and processing will be captured and converted into formic acid through an electrochemical process. By-products of this process are high-energy oxidants which then can be used to remove persistent contaminants (e.g. antibiotics, glyphosate) from wastewater hereby contributing to a clean water cycle with zero-waste. The generated formic acid will in addition be converted into Acidic Deep Eutectic Solvents (ADES) which then can support the extraction of precious metals from water treatment sludge and incinerator ash. Furthermore, formic acid will be tested in the formulation of consumer cleaning products, as well as in the processing of fish-leather production, where it will serve as a tanning substance.

The electrochemical process of CO_2 conversion to formic acid will use renewable energy provided by the waste incineration facility. By offering a resource efficient solution for the production of formic acid from CO_2 emissions the WaterProof technology will actively contribute to GHG reduction. Evaluations of the WaterProof approach will be based on a life-cycle assessment as well as a social life-cycle assessment, which will include full business case analysis in order to provide economically feasible target value for technology development and a marketing and deployment strategy.

By targeting an industry as essential as wastewater treatment, WaterProof aims to create a concept that can significantly impact society and climate on a big scale through implementation in numerous facilities. Introducing sustainable chemicals to the broad society can raise awareness for environmental issues and support the increase of sustainable solutions and technologies. Analysis on stakeholder acceptance and workshops will identify effective terminology and ensure sufficient social acceptance of the developed technology and goods through effective communication and suitable dissemination paths.

1 Logo development and graphical identity

The objective of the WaterProof logo and the downstream graphical identity is to convey a consistent message, to increase project recognition and to stand out from other projects throughout all internal and external communication.
The developed ID ensures consistency in all publishable marketing material and an easy assignment of the material to the WaterProof project in the reviewing process of deliverables, milestones and reports.
The unique and representative logo was designed by the graphics department of nova-Institut based on input by the entire consortium. After several feedback loops of identifying key elements, the consortium agreed on the final logo through voting in an online survey.

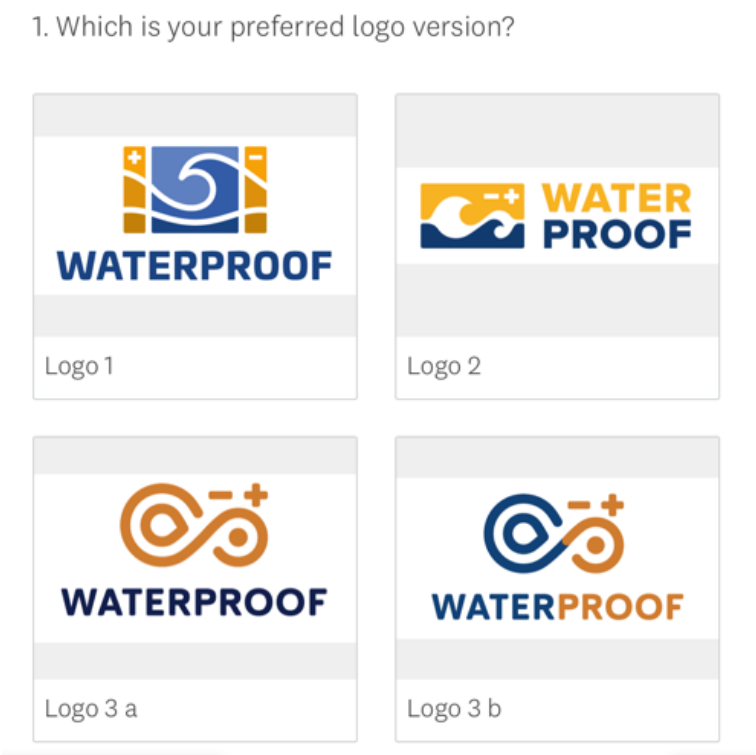


Figure 1: Logo suggestions by nova-Institut

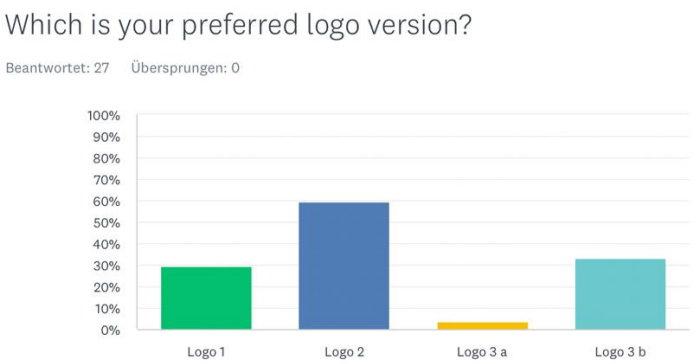


Figure 2: Logo vote results

The logo elements represent the key aspects of technology, waste and wastewater feedstock and the WaterProof electrochemical process. WaterProof will use CO_2 from waste incineration and wastewater treatment as a feedstock. In the logo, the wastewater is apparent in the project's acronym and highlighted by the wave and the dark blue colour. The electrochemical process in which CO_2 is transformed into formic acid is presented in yellow colour. The -+ sign symbolise the electrochemical cellwhich is part of the WaterProof process. The circularity of the process is graphically represented by the wave delineated as an eternity sign.

Figure 3: Final WaterProof logo

To allow an effective use, the logo was provided in different variations, e.g. black and white, to be used with different backgrounds and on different surfaces.
The WaterProof project identity is based on a specific colour code, which also was provided to the consortium and is available in the appendix of the Dissemination and Communication Plan. This colour scheme will shape all elements of the project identity.

Figure 4: Variations WaterProof Logo

Dark blue
CMYK: 100/70/0/40
RGB: 0/53/112
HEX: #003570

Yellow
CMYK: 0/35/100/0
RGB: 249/176/0
HEX: #f9b000

Figure 5: WaterProof colour code

2 Templates

Based on the generated graphical identity of the project, nova-Institut created several templates to be used by the consortium for internal and external presentations, reporting and publications. These templates include:

- A PowerPoint (.ppt) template for presentations
- A Word template (.txt) specifically designed for deliverables
- A Word template (.txt) specifically designed for milestones
- A Word standard (.txt) template for reporting, publications and other purposes.

Each template exhibits the project logo, is held in the colours of the graphical identity and states the general information on the project (e.g. name and acronym, action number, call identifier, runtime).
The documents designed for deliverables and milestones contain a fillable report table. Furthermore, information on work package numbers, authors, beneficiaries, reviewers, report type and dissemination level, funding information with EU logo, due and submission dates, a project log and a table on the document history, etc. can be filled in manually. The .txt templates have a default structure, header and footer that fill in automatically, predefined table settings, and default fonts and font sizes for headers, sub-headers and the main text.
The standard .txt template is a reduced version of the report templates for milestones and deliverables with default fonts and font sizes for headers, sub-headers and the main text, a header and a footer that fill in automatically, the logo, link to the homepage and a funding statement with the EU logo.
The .ppt template similarly shows the logo and is designed by making use of the WaterProof colour code. It has default settings for fonts and font sizes for headers, sub-headers and the main text, tables, figures and backgrounds. On the title page also the funding statement and the EU logo is shown.

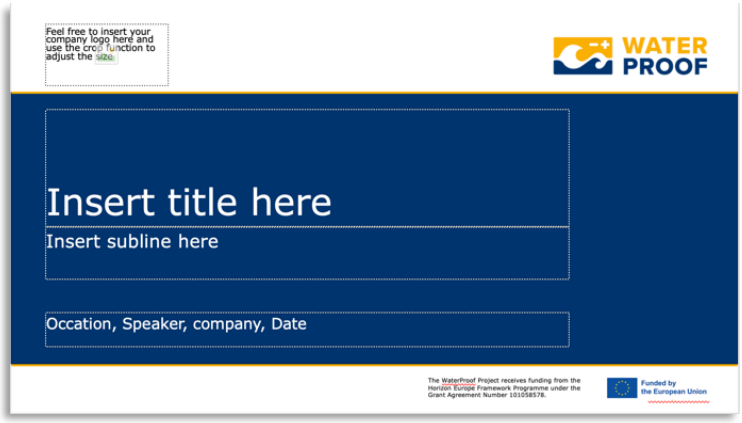


Figure 6: WaterProof PowerPoint template

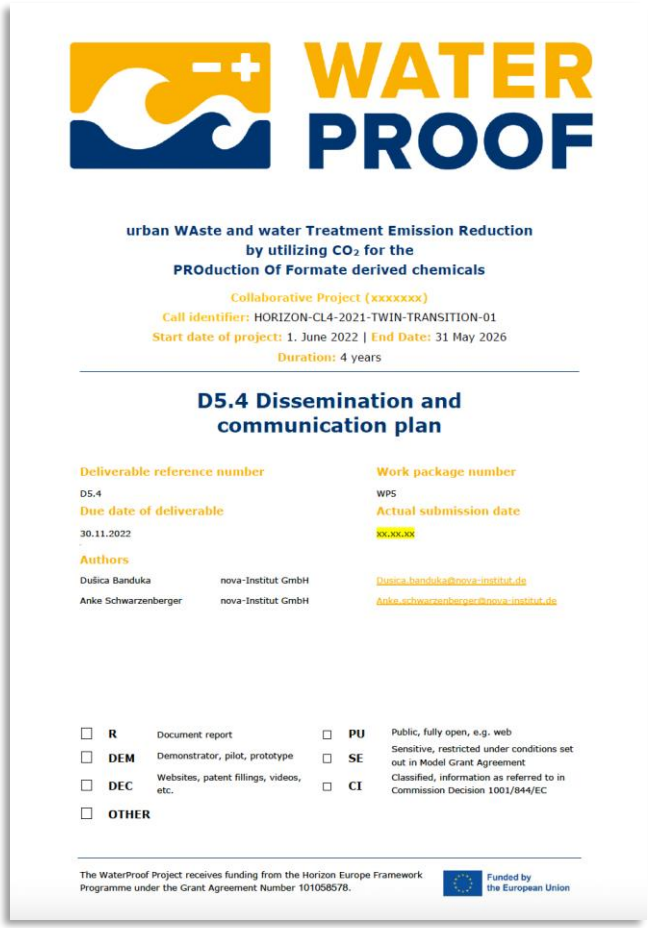


Figure 7: WaterProof deliverable template

Additionally, background images for Zoom and Microsoft Teams meetings were created to ensure a cohesive presentation of the project in online meetings but also increase the recognition of WaterProof and related persons.

Figure 8: Zoom and Teams background images

3 Website

The WaterProof website will serve as the main communication instruments. Its content follows the objective to increase the project reach, to accelerate the commercial application and to structure and highlight project related activities. Furthermore, the website provides a channel for quick and broad distribution of information on the project progress to all interested stakeholders and the general public.

All texts and images presented on the project website were created under the lead of nova-Institut with contributions and feedback of the entire WaterProof consortium. General content and the website structure were discussed in the first weeks and agreed on by all partners.

The website is available under http://waterproof-project.eu and showed some preliminarily information during the first project weeks. In later project stages, the website will further provide access to all project related publications and public deliverables. Additional downloadable content will include the project video, the project flyer and the WaterProof infographic.

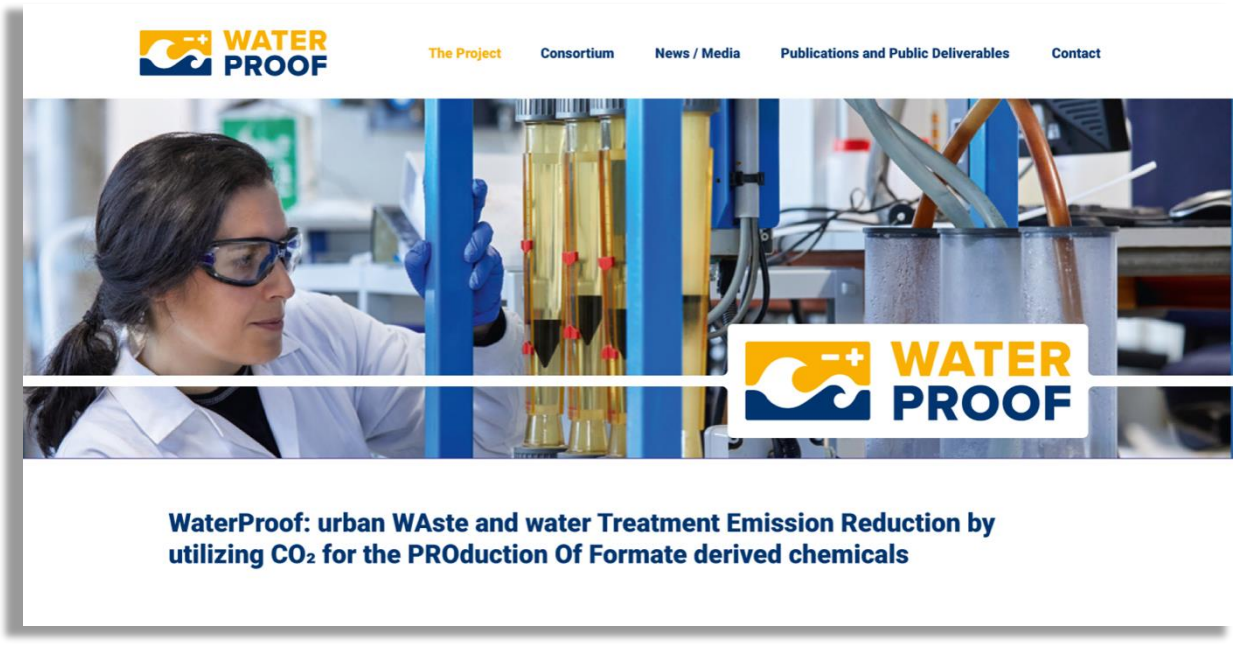
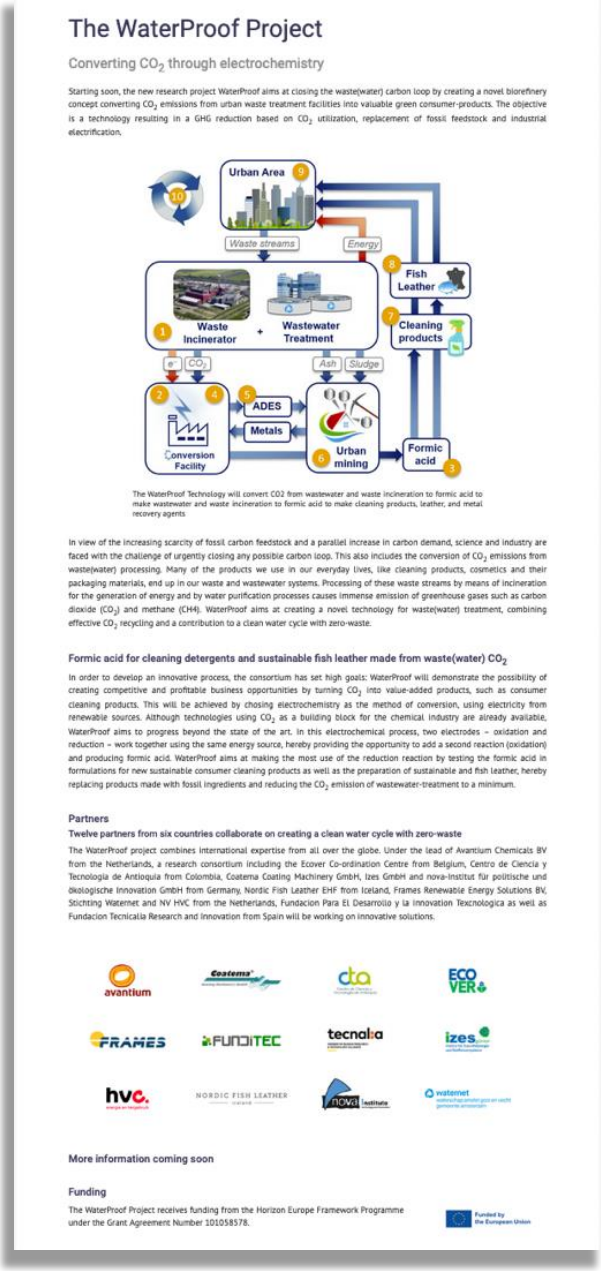


Figure 9: Impression WaterProof website



The WaterProof Project

Converting CO_2 through electrochemistry

Starting soon, the new research project WaterProof aims at closing the waste(water) carbon loop by creating a novel biorefinery concept converting CO_2 emissions from urban waste treatment facilities into valuable green consumer-products. The objective is a technology resulting in a GHG reduction based on CO_2 utilization, replacement of fossil feedstock and industrial electrification.

The WaterProof Technology will convert CO2 from wastewater and waste incineration to formic acid to make wastewater and waste incineration to formic acid to make cleaning products, leather, and metal recovery agents

In view of the increasing scarcity of fossil carbon feedstock and a parallel increase in carbon demand, science and industry are faced with the challenge of urgently closing any possible carbon loop. This also includes the conversion of CO_2 emissions from waste(water) processing. Many of the products we use in our everyday lives, like cleaning products, cosmetics and their packaging materials, end up in our waste and wastewater systems. Processing of these waste streams by means of incineration for the generation of energy and by water purification processes causes immense emission of greenhouse gases such as carbon dioxide (CO_2) and methane (CH_4). WaterProof aims at creating a novel technology for waste(water) treatment, combining effective CO_2 recycling and a contribution to a clean water cycle with zero-waste.

Formic acid for cleaning detergents and sustainable fish leather made from waste(water) CO_2

In order to develop an innovative process, the consortium has set high goals: WaterProof will demonstrate the possibility of creating competitive and profitable business opportunities by turning CO_2 into value-added products, such as consumer cleaning products. This will be achieved by chosing electrochemistry as the method of conversion, using electricity from renewable sources. Although technologies using CO_2 as a building block for the chemical industry are already available, WaterProof aims to progress beyond the state of the art. In this electrochemical process, two electrodes – oxidation and reduction – work together using the same energy source, hereby providing the opportunity to add a second reaction (oxidation) and producing formic acid. WaterProof aims at making the most use of the reduction reaction by testing the formic acid in formulations for new sustainable consumer cleaning products as well as the preparation of sustainable and fish leather, hereby replacing products made with fossil ingredients and reducing the CO_2 emission of wastewater-treatment to a minimum.

Partners

Twelve partners from six countries collaborate on creating a clean water cycle with zero-waste

The WaterProof project combines international expertise from all over the globe. Under the lead of Avantium Chemicals BV from the Netherlands, a research consortium including the Ecover Co-ordination Centre from Belgium, Centro de Ciencia y Tecnologia de Antioquia from Colombia, Coatema Coating Machinery GmbH, Izes GmbH and nova-Institut für politische und ökologische Innovation GmbH from Germany, Nordic Fish Leather EHF from Iceland, Frames Renewable Energy Solutions BV, Stichting Waternet and NV HVC from the Netherlands, Fundacion Para El Desarrollo y la Innovation Texcnologica as well as Fundacion Tecnicalia Research and Innovation from Spain will be working on innovative solutions.

More information coming soon

Funding

The WaterProof Project receives funding from the Horizon Europe Framework Programme under the Grant Agreement Number 101058578.

Funded by the European Union

Figure 10: Preliminary draft website

The website is hosted and maintained by nova-Institut with support of the project coordinator Avantium. The official website launch is planned for the end of M6 and equals deliverable D5.3 of the WaterProof project.

This website is based on the open-source software WordPress (https://wordpress.org), which is a content management system (CMS) that guarantees a long-term availability of up-to-date features that can be accessed without any hurdles. It is user-friendly and receives updates and technical support from a big international community of users and

programmers. After the end of the project, the website will remain available for five years in order to make the project results accessible for the public even once the project has ended.

3.1 Website structure

The website menu consists of several subpages. By clicking the title of the subpage in the menu item, the website automatically jumps to the selected subcategory on the respective page.

The initial website menu includes the following elements and might be adjusted in the future according to the project requirements:

1. The Project (front page)
    a. Sliders with graphical material provided by the consortium
    b. General information on the project (type of action, run-time, feedstock)
    c. The project objective and specific goals
    d. Expected impacts of the project
    e. Work packages in the form of fold out articles
    f. Download material
    g. Funding statement
2. Consortium: information on each partner and partner logos (subpage 1)
3. News/ Media (e.g. press releases, project presentations and webinars; subpage 2)
4. Publications and Public Deliverables (subpage 3)
5. Contact (subpage 4)

3.2 Website Content

The website provides a comprehensive overview over the project objectives as well as the goals and objectives of the single work packages. Additional information is provided on the chosen methodology and process.
An infographic created with input from the entire consortium will allow a simplified and easy to understand visualised understanding of the different objectives and key elements of WaterProof.
A subpage introduces all project partners with a short profile and external links to their provided entity websites.

A publication and public deliverables section will provide access to all project related publications and hereby actively support the open access requirements of the European commission.
A funding statement and logo of the European Union in the website footer informs visitors about the grand number and related funding agreement.

4 Conclusion

The website in its current form will be updated throughout the course of the project with further downloadable material, information on progress, publications, further photos and graphical material provided by the consortium, etc. The final templates, the logo and the graphical identity will be used throughout the project runtime by all project partners for reporting, event and conference presentations as well as publications. Furthermore, the graphical identity will provide the basis for the project video and further marketing material, e.g. posters, brochures, roll-up banners, etc., that will be produced by nova-Institut in the course of the project.

The deliverable **D5.3** was finished and submitted in time by nova-Institut with ongoing support and feedback of the entire WaterProof consortium and the project coordinator Avantium.