WATER PROOF

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

Collaborative Project (Research Innovation Action)

Call identifier: HORIZON-CL4-2021-TWIN-TRANSITION-01

Start date of project: 1. June 2022 | **End Date:** 31 May 2026

Duration: 4 years

D5.4 Dissemination and Communication Plan

Deliverable reference number

D5.4

Work package number

WP5

Due date of deliverable

30.11.2022

Actual submission date

31.10.2022

Authors

Dušica Banduka	nova-Institut GmbH	Dusica.banduka@nova-institut.de
Dr. Anke Schwarzenberger	nova-Institut GmbH	Anke.schwarzenberger@nova-institut.de

Type Dissemination Le

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

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

Funded by the European Union

Lead beneficiary WP5 Lead beneficiary

nova-Institut für politische und ökologische Innovation GmbH

Contributing beneficiaries WP_Lead beneficiary

Avantium, IZES GmbH

WP5 standard:

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the project consortium or European Commission. Both are not responsible for any use that may be made of the information contained therein.

Internal reviewer(s)

Name	Organization	Email
Jan Hildebrand	IZES GmbH	hildebrand@izes.de
Alena Jahns	IZES GmbH	jahns@izes.de
Laura Muhr	IZES GmbH	muhr@izes.de
Annelie Jongerius	Avantium	Annelie.Jongerius@avantium.com

Change log

Date	Issue/Version	Reason for change
28.062023	V2.0	Small changes as according to AVT's suggestions

Document history and meta data

Action Title	**urban WAste and water Treatment Emission Reduction by utilizing CO_2 for the PROduction Of Formate**
Action Acronym	WaterProof
Action Number	101058578
Deliverable Identifier	D5.4
Deliverable Title	Dissemination and Communication Plan
Document Status	First Draft
Version	2.0
Authors	Dr. Anke Schwarzenberger; Dušica Banduka
Lead Beneficiary	nova-Institut GmbH
Deliverable Type	Document, Report
Dissemination Level	public
Format	Word, .doc
Due Month	6
Date	30.11.2022
DOI	Will be created once published
Keywords	Communication, dissemination, press, publication

Version	**Description**	**Date**
2.0	First version of the Dissemination and Communication Plan D5.4	30.11.2022
2.0	Second version of the Dissemination and Communication Plan D5.4	28.06.2023

Table of Content

1 Publishable Executive Summary 7
1.1 Objectives of the Dissemination and Communication Plan 8
1.2 Definitions of Communication, Dissemination and Exploitation 9
1.3 Communication and Dissemination Tasks and Deliverables 10
1.4 Communication and Dissemination of Expected Impacts and Core Messages 12

2 Stakeholder Analysis 15
2.1 Authorities and Policy Makers 15
2.2 (Chemical) Industry 16
2.3 Civil Society and Media 16
2.4 Scientific Community and Technology Platforms 16
2.5 Waste(water) Treatment Facilities and Energy Sector 17

3 Communication and Dissemination 20
3.1 Project Identity 20
3.2 Internal Communication 21
3.2.1 Notification Procedures 22
3.2.2 Meetings 24
3.2.3 Data Management and FAIR Science 24
3.2.4 Transparency and Accountability 25
3.2.5 Gender, Equality and Diversity 25
3.3 External Communication and Dissemination 26
3.3.1 Online Activities 27
3.3.2 Offline/Hybrid Activities 36
3.3.3 Publications 48

4 Open Access to Scientific Publications and Data 49

5 Quality Control of Dissemination and Communication Activities 54
5.1 Tracking of Dissemination and Communication Activities 54
5.2 Adapted Communication Strategy in Case of Emerging Risks 55

6 Past Activities and Achievements 56
6.1 Website 56
6.2 Press Release 59
6.3 Social Media 59
6.4 Conference and Event Participations and Presentations 60
6.5 Stakeholder Workshop 61
6.6 Promotional Material 63
6.7 Infographic 63
6.8 Publications in Scientific and Non-Scientific Journals 63

7 Conclusion 64

8 References 65

9 Annex 66

10 List of Abbreviations 68

List of Figures

Figure 1: WaterProof Project Logo 20
Figure 2: WaterProof PowerPoint Presentation Template 20
Figure 3: WaterProof Deliverable Template 21
Figure 4: Impressions WaterProof Website 29
Figure 5: Impressions of WaterProof LinkedIn postings 32
Figure 6: Impressions of LinkedIn Analytics 32
Figure 7: Impressions WaterProof Twitter postings 34
Figure 8: WaterProof Infographic 37
Figure 9: WaterProof Brochure 37
Figure 10: Two Designs of WaterProof Roll-Up Banners 38
Figure 11: Example WaterProof Info-Cube 39
Figure 12:Impressions WaterProof Event Participation/Poster Presentation 45
Figure 13: Sophie van Vreeswijk Presentation at the Conference on CO_2-based Fuels and Chemicals 2023 45
Figure 14: Impression WaterProof Press Article in German Trade Magazine PROZESS ...48
Figure 15: Impression of the WaterProof Zenodo community 51
Figure 16: European flag (emblem) and funding statement (in English) 52
Figure 17: Impression ECAS Activities Tracking Sheet 54
Figure 18: Impression WaterProof Website 56
Figure 19: Impression WaterProof Website News and Media Section 57
Figure 20: Project website visits January 2022 to June 2023 57
Figure 21: Website statistics May 2022 to June 2023 58
Figure 22: Origin of visitors May 2022 to June 2023 58
Figure 23: Example Social Media Post on Stakeholder Webinar 60
Figure 24: Example Newsletter Posting on WaterProof Stakeholder Workshop 62
Figure 25: First WaterProof Stakeholder Workshop 62
Figure 23: Important Format Templates 69

List of Tables

Table 1: WP5 Deliverables 11
Table 2: WP5 Tasks 11
Table 3: WP Goals and Core Messages for Dissemination and Communication 14
Table 4: Key-Messages, Stakeholder-Groups and Measures 19
Table 5: Targeted conferences and fairs 44

1 Publishable Executive Summary

The WaterProof project aims to close the wastewater carbon loop. It hereby promotes alternative renewable chemicals that support a shift away from fossil resources. The project will develop a technology (an electrochemical process) for the production of a renewable chemical (formic acid) to be used in consumer goods such as cleaning detergents and fish leather apparel and for the production of acidic deep eutectic solvents (ADES), with the simultaneous generation of peroxides to be used for purification of wastewater.

In detail, the WaterProof project proposes a cyclic system in which CO_2 emissions from waste incineration and wastewater 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, pesticides) from wastewater hereby contributing to a clean water cycle with zero-waste. The generated formic acid will in addition be converted into 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 (LCA) as well as a social life-cycle assessment (S-LCA), 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, relevant acceptance factors and suitable communication and dissemination paths with regard to the developed technology and goods. The WaterProof communication and dissemination plan will make sure these goals are realised and impact maximised by providing a cohesive strategy for effective communication and

impactful dissemination. This document is the second version of the WaterProof Dissemination and Communication Plan (DCP), which will be updated annually.

1.1 Objectives of the Dissemination and Communication Plan

The presented Dissemination and Communication Plan (DCP) introduces the dissemination and communication strategy of the Waterproof project and selected suitable measures and channels to ensure an impactful implementation of both paths. The plan lists and elaborates activities, channels and instruments for communication as well as dissemination that the consortium will use in order to ensure the high visibility, information accessibility and effective promotion of the project and generated results throughout the project duration. In this context, the DCP will serve as a guideline and reference framework to evaluate the impact of taken communication and dissemination activities. This will be achieved by identifying suitable key performance indicators. Should defined goals not be met, the plan will introduce corrective alternative paths and solutions to realise the defined communication and dissemination goals. The DCP will be steadily updated and adjusted with progressing project status.

Key objectives of the communication and dissemination strategy are to ensure an adequate communication of project objectives and results to relevant stakeholders and the broad public, while at the same time supporting an effective dissemination of generated knowledge. Steady management and coordination of planned and executed communication and dissemination activities will ensure stakeholder engagement and hereby maximise the project impact while securing that generated results are exploited in the best possible way.

Communication and dissemination activities will include:

- A protected Microsoft Teams SharePoint for secure internal document exchange
- A comprehensive stakeholder analysis
- Provision of tailor-made communication and dissemination solutions conveying clear and cohesive project messages
- for various stakeholder- and target groups through suitable channels, mediums and tools:
    - A modern project identity and related materials (logo, templates for Word, PowerPoint)
    - A project website
    - Publishable physical and digital marketing materials (brochures, flyers, rollups)
    - At least two factsheets targeting the general public or the scientific community.
    - A project-video

- Regular press releases (at least three)
- Publications in popular press and trade magazines
- Steady and growing social media presence
- Participation at relevant conferences to inform the scientific community
- Presentations at relevant conferences and trade fairs
- Three stakeholder workshops (one as a webinar, two in presence for training and education purposes)
- Scientific publications in journals, chapters in books and conference proceedings
- Open access pathways for scientific publications generated in the project;
- Dissemination through Horizon Europe Instruments (Horizon Results Platform, The Horizon Europe Innovation Radar and the Horizon Magazine)

- Identifying suitable KPIs and methods to assess executed communication and dissemination activities to ensure an effective reach of the defined target- and stakeholder groups (e.g. by using website statistics or tracking and analytical tools)
- Documentation of activities, evaluation of their efficiency and suitable adaptation of the strategy to increase the impact of communication and dissemination activities.

1.2 Definitions of Communication, Dissemination and Exploitation

A tailormade communication, dissemination and exploitation strategy is crucial to accelerate the commercial application, raise awareness, increase acceptance and present generated research results and innovation actions of the WaterProof project to the scientific community, policy makers and the broad public through successful internal and external transfer of knowledge and information. Communication, dissemination and exploitation represent highly interlinked activities that support each other in order to maximise the multi-perspective project impact. The three elements serve different purposes, address different stakeholder- and target-groups and thus use different instruments.

Communication activities serve the purpose to introduce the project and its objectives to relevant stakeholder groups, the media as well as the broad public and inform about the project objectives, progress and related activities. This is executed through strategic and targeted promotion and information measures addressing a multitude of audiences and conveying clear messages. Communication measures aim at creating interactive exchange between project partners, relevant stakeholders and society through steadily ensuring and

increasing stakeholder engagement and receptiveness towards project related issues. Hereby, stakeholder awareness and acceptance of the developed technology and products is increased. Effective communication is ensured through the choice of suitable communication channels (such as press releases, social media and digital networks and the project website). Transparent and steady communication activities demonstrate how EU-funded projects contribute to tackle societal and environmental challenges and how tax payer money is spent to develop and introduce impactful solutions.

Dissemination activities present an essential element of good research practise by circulating knowledge and making project's results publicly available free of charge to any interested stakeholder group, e.g. through Open Access and FAIR science. A focus is set on the scientific and academic community, that can best make use of project results through future research and implementation. The dissemination strategy therefore focusses on approaches of open access publishing, e.g. in form of scientific publications in journals, presentations at scientific conferences or related fairs, publications in conference proceedings as well as the creation of and contribution to suitable open data bases. Additional media increase the original focus-radius of the generated results and support the transfer and diffusion of generated knowledge into related but also alternative scientific disciplines. The overarching goals of all dissemination activities is to maximise the impact of generated results, support future research and make scientific results a common good.

Exploitation describes the process of making concrete use of generated results in commercial, societal and political purposes by identifying exploitable results and respective stakeholder-groups. This is executed e.g. by improving public knowledge, application and transferring it into a supportive political framework. This includes stakeholder groups like researchers, policy makers, industrial bodies, specifically SMEs, entrepreneurs and the civil society. Results can be exploited by developing, creating and marketing a product or process, by creating and providing a service, by the standardisation of activities or supporting the design of beneficial political frameworks and instruments. Project partners can exploit results themselves or facilitate exploitation through others, e.g. by making results available under open license agreements.

1.3 Communication and Dissemination Tasks and Deliverables

The Dissemination and Communication Plan represents Deliverable **D5.4** of the WaterProof project and covers activities related to **task 5.2 Communication and Dissemination**.

While the task lead is covered by the nova-Institute the overall activities will be executed with input and support of the entire research consortium. Both deliverables belong to the **WP5 Management and Knowledge Transfer,** executed under the work package lead of Avantium. The work package will cover the below listed tasks and deliverables, hereby ensuring that relevant information is effectively communicated to identified target and stakeholder groups and the broad society, and guarantee that generated results are sufficiently disseminated within the scientific and academic community to allow an effective use of generated knowledge and hereby maximise impact.

Deliverable No	Name	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
5.1	Meeting plan inc all GA-meetings and workshops	Avantium	R – document, report	PU – public	6
5.2	Risk management and mitigation plan	Avantium	R – document, report	PU – public	6
D5.3	Project website, logo, templates	nova-Institut	O – Other	PU – public	6
D5.4	Dissemination and communication plan	nova-Institut	R – document, report	PU – public	6
D5.5	IP and data Management Plan	nova-Institut	R – document, report	SEN - Sensitive	6
D5.6	Project video	nova-Institut	O – Other	PU – public	18
D5.7	Workshops	nova-Institut	O – Other	PU – public	46

Table 1: WP5 Deliverables

These deliverables cover the following tasks within the WaterProof project.

Deliverable No	Name	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
Task 5.1	Technical Coordination & Project Management	Avantium		PU – public	1-48
Task 5.1.1	Dissemination and communication plan incl. stakeholder analysis	nova-Institute		PU – public	1-48
Task 5.1.2	Internal and External Communication	nova-Institute		PU – public	1-48
Task 5.2	Communication and Dissemination	nova-Institute		PU – public	1-48
Task 5.2.1	Data Management Plan	nova-Institute		SEN - Sensitive	6
Task 5.2.2	Training of Early Stage Researchers	nova-Institute		PU – public	1-48
Task 5.3	Knowledge management	Avantium		PU – public	1-48
Task 5.4	Risk Management	Avantium		PU – public	1-48

Table 2: WP5 Tasks

1.4 Communication and Dissemination of Expected Impacts and Core Messages

The communication and dissemination plan aims to generate the greatest possible impact for results and knowledge generated in the WaterProof project. Therefore, tailormade activities for all identified stakeholder and target groups will be created, applied, analysed and eventually modified to flexibly respond to aberrations of the work packages, emerging risks or in case stakeholder groups display a deviation to the initially expected outcomes. The dissemination and communication strategy of the WaterProof project addresses the following impact areas:

- **Economic/Technological**: Create a new market for the production of renewable chemicals from waste(water)-CO_2 emissions through newly developed and transferable technology, which will be applied in multiple rural communities; increase competitiveness and productivity of European clean tech clusters.
- **Scientific**: Generate knowledge on a new electrochemical process; provide a promising information and knowledge basis to encourage and enable future research in the field of renewable chemicals and renewable carbon by respecting the Open Access and FAIR science approach.
- **Environmental**: Introduce and provide available and scaled up solutions to substitute fossil-based resources, lower and transform CO_2-emissions, provide clean water with zero waste through an electrochemical process which closes the waste(water) CO_2 loop and uses renewable energy sources.
- **Societal**: Raise awareness towards climate and environmental issues as well as receptiveness for available innovative sustainable solutions and consumer goods; identify terminology and factors relevant for social acceptance of the technology and products; increase general societal engagement; create new jobs in the renewable chemistry and wastewater sector and related industries.

Through a multitude of harmonised communication and dissemination activities, WaterProof aims at realising the following defined impacts:

1) Create a new green, flexible and digital way to build and produce goods.
2) Set out a credible pathway to contributing to climate neutral, circular economy.
3) Provide alternative feedstocks to replace fossil-based raw materials and decrease dependency on imports.
4) Increase productivity, innovation capacity, resilience, sustainability, and global competitiveness of European energy intensive industries. This includes as many as

possible new large hubs for circularity by 2025 (TRL 7 or above); developing sustainable ways for circular utilisation of waste streams and CO_2/CO streams; and electrifying the industry to enable and foster a switch to a renewable energy system.

WP	Work package title	Goals and Core-Messages (→)
1	Technology Development – From CO_2 to Formate-Derived Products	• Demonstrate Technology development and optimisation of the full conversion chain from CO_2 to formic acid. • Show catalyst development and optimization for the anodic formation of H_2O_2 in paired electrolysis. • Testing of new advanced oxidation processes (AOP) on actual effluent wastewater samples. • Development and synthesis of novel Acidic Deep Eutectic Solvents (ADES) from formic acid for the recovery of metals → Show there is value in waste (e.g. CO_2-emission, wastewater sludge). → Show the potential for generation of renewable chemicals through electrochemistry.
2	Scale-up and Demonstration	• Definition of the specifications of the components of the CO_2 Conversion Pilot Facility and DSP. • Successful scale up, validation and manufacturing of electrodes for the CO_2 Conversion Pilot Facility. • Manufacture, install and integrate the CO_2 Conversion Pilot Facility at the site of WAT and HVC. • Testing and optimizing CO_2 to formic acid process. → Show economic feasibility through scale up. → Demonstrate realization of the plant. → Show potential for manufacturing of electrodes. → Show optimisation of the CO_2 to formic acid process
3	Product Implementation and Value Chain Circularity	• Formic acid for use in cleaning and fish leather products • Formic acid for the formation of ADES for metal recovery from waste streams → Commercialisation of renewable chemicals within sustainable products. → Introduce chemical alternatives to fossil-based resources. → Show application variety and value-potential of waste-based formic acid. → development of the stakeholder engagement process
4	Impact Assessment and Concept Transferability	• Assessing ecologic, economic and social benefits by using validated comprehensive analyses, such as multi-level stakeholder analysis, (S-)LCA, and TEE. • Extensive data-collection of a range of stakeholders including consumers. • Identify acceptance factors and supportive terminology. • Creating an outlook on the future by assessing transferability of the WaterProof concept and creating commercialization strategies. → Communicate ecological, economic and social benefits and impact potential of WaterProof. → → research (interviews and polls) of relevant acceptance factors

		→ Increase acceptance for the developed technology and products, e.g. through active implementation of identified terminology, and addressing of acceptance factors. → Show broad future potential for commercialization.
5	Management and Knowledge-Transfer	• Overall legal, contractual, ethical, financial and administrative management in accordance with the grant agreement. • Maintaining communication with the Commission and each partner. • Continuous assessment ant mitigation of risks to the project. • Tailoring the dissemination strategy to various stakeholder groups. • Initiating public and scientific dialogue on the project's results. • Capturing, evaluating and protecting potentially valuable intellectual property. → Establish channels and instruments for effective internal and external communication of WaterProof. → Support dissemination through Open Access and FAIR science approach for strong diffusion of knowledge and information. → Broad variety of communication tools for maximum impact. →Encourage and impact through research and innovation. → Motivate leveraging investment in research and innovation.

Table 3: WP Goals and Core Messages for Dissemination and Communication

2 Stakeholder Analysis

WaterProof is an interdisciplinary project, whose results will have implications for industry and economy, policy makers, civil society and the scientific community. Therefore, different stakeholder and target-groups will be identified, addressed and actively involved in the communication and dissemination efforts. All project partners will therefore make use of their established networks to support the identification of appropriate stakeholders for each project-activity group and the generated results. Throughout the course of the project, the initially listed selection of stakeholder-groups will be monitored and if required amended. This will be realised through analyses of the executed communication and dissemination activities and outcomes of the stakeholder analysis, which is part of task **T.4.2** and the research of local stakeholder in task **T4.2.1**. The following alphabetic list presents an overview of the identified stakeholder and target groups for the WaterProof project. The following **Table 4** provides (1) information about and derived from the WaterProof project that needs to be communicated and disseminated to the respective stakeholder group, (2) effective communication and dissemination measures that are needed in order to successfully realise the transfer, (3) and targeted and expected impacts on the respective stakeholder group (e.g. impact on decision making, on consumer behaviour, on exploitation attempts) following the successful transfer of information/knowledge about WaterProof technology, objectives and results.

2.1 Authorities and Policy Makers

This includes representatives of ministries of science, technology and innovation as well as environmental agencies mainly located in the EU and in Colombia (and other comparable developing economies). In order to emphasise WaterProof's relevance for climate protection and contribute to establishment of and future investments in the developed technologies, communication and dissemination efforts will further target NGOs (e.g. EEA, EEB), standardisation and certification bodies and public environmental monitoring authorities (e.g. Umweltbundesamt, European Environment Agency, UNECE, WECOOP, La Moncloa, ESDN, NCSDS). The promotion of the WaterProof project and support of the generated technological approaches by (local) policymakers, municipalities and other authorities (e.g. Amsterdam Municipality, Port of Amsterdam (NL), Twence (NL), Acea (IT), Facsa (ES), Aqua minerals (NL), Sorigue). By motivating investment and long-term strategies policy makers provide the necessary supportive framework for a positive advancement of the Carbon Capture and Utilisation (CCU) sector on the local, regional, national and EU-level. They further can increase the efficiency of cyclic wastewater treatment and environmental challenges of EU's economy. Authorities can play key roles in promoting best practice strategies of research projects and determine success by providing the required legislative framework.

2.2 (Chemical) Industry

This group includes companies and industrial branches with high potential to apply CCU-generation technologies for formic acid or other renewable chemicals in their production or are potential end-users of CCU-generated formic acid (e.g. ADES producers, leather-, cleaning-product and detergent industries) for which the WaterProof technology will be of high interest (e.g. as a possibility to reach self-imposed sustainability goals and a stimulus to defossilise and electrify their processes with renewable energy). Potential industrial bodies include e.g. Smit&Zoon – sustainable leather tanning chemicals producer, Beiersdorf – personal-care products industry, Mitra Kimva – chemicals, Henkel, Unilever, Seepje, Furthermore, Evonik or BASF. Through coordinated communication and dissemination efforts, the project will further target related industrial groups (e.g. the European cleantech industry) who can also benefit from project generated knowledge and technology and further serve as multipliers for the dissemination of results.

2.3 Civil Society and Media

This group includes the general public, covering end-consumers, educators, and the mass media. WaterProof will identify relevant factors and suitable terminology to communicate the benefits of sustainable consumer goods to this specific stakeholder group and hereby encourage and increase positive customer behaviour towards sustainable consumer goods. This group will be targeted through suitable communication measures such as press releases, promotional releases and social and mainstream media. Overarching goals are to increase the public acceptance of sustainable solutions developed in WaterProof as well as improve the general information level for environmental issues and effective sustainable solutions. In order to achieve these goals, communication activities will promote project objectives, activities and results to the broad public through a multitude of channels.

2.4 Scientific Community and Technology Platforms

This stakeholder group involves researchers and scientific and academic institutions that might support WaterProof in their function as networkers, collaboration partners or peer reviewers. This also includes technology platforms at regional, national or EU level (e.g. CO_2 Value Europe Network, Centro de Ciencia y Tecnología de Antioquia, Cluster Industrielle Biotechnologie e.V (CLIB), Renewable Carbon Initiative, Platform Electrochemical Conversion and Materials (ECCM)). This specific stakeholder group will primarily be targeted by dissemination efforts executed to a broad Open Access and FAIR science approach, in order to ensure a sufficient diffusion of project-generated knowledge, information and technology. Communication activities further aim at enhancing the visibility of the innovation potential of WaterProof developed technologies and dispel unwarranted doubts about methodology, validity or feasibility of the provided data.

2.5 Waste(water) Treatment Facilities and Energy Sector

This stakeholder group focuses on the waste sector including (sustainable) wastewater treatment companies (e.g. Stichting Wetsus – European Centre of Excellence for Sustainable Water Technology, Lenntech Water Treatment, Hermann Sewerin GmbH, Aerzener Maschinenfabrik GmbH, Landustrie Sneek BV, Flottweg SE, EnviroChemie GmbH, Global Water & Energy, SUEZ group), producers of biogas and municipal water treatment facilities and sewage plants (e.g. Ammongas, CleanTeq Water, Omnial, De Nora). A priority in this stakeholder group will be the Dutch "Waterschaps", which are regional governing bodies solely charged with the management of surface water in the environment (*cf.* which will be one of the focus groups in the stakeholder analysis from T.4.2.1). For this, they build hybrid forms of municipalities and treatment facilities. Potential stakeholders will be targeted in order to present WaterProof as an innovative and energy-efficient solution for wastewater processing, efficient generation of renewable chemicals and the recovery of precious metals from wastewater sludge. Case studies and stakeholder workshops will support to demonstrate the economic and technological potential while also addressing potential investment or application risks and barriers.

Required Information for Addressing the Respective Stakeholder Group	Dissemination and Communication Instruments to Transfer the Information	Impact on the Specific Stakeholder Group
Authorities and Policy Makers (EU and CO ministries of science, technology, innovation; environmental agencies; NGOs; certification bodies; local authorities)		
• Insight into WaterProof technology • Identify application and innovation potential • Understanding of success factors, barriers and risks • Identify issues of the political framework • Identify and list supportive political framework conditions • Identify supportive political instruments	• Stakeholder workshop for industrial bodies and policy makers (30-50 stakeholders) • Webinar • Open policy letters • Scientific publications (at least 8) • Success stories (at least 2)	• Creating a supportive political framework for optimised technology diffusion and exploitation • Overcome (potential) risks and barriers that may hinder technology investments and implementation • Encourage investment and technology diffusion through suitable measures • Support interaction and dialogue between science, industry and policy makers • Introduce best practices • Facilitate relations and actively involve local community actors
(Chemical) Industry		

(Industrial interest groups; producers of (fish) leather; producers of personal-care products; producers of consumer cleaning products; other industries that use formic acid)		
• Knowledge about WaterProof technology and application • Understanding of innovation potential	• Stakeholder workshop • Scientific publications • Publications in professional magazines • Press releases • Social Media postings • Participations in conferences • Participation in industry fairs • Presentations at Conferences • Demonstration days with mobile lab	• Inform potential application users of technology and renewable chemicals • Increase and improve co-operations with industrial partners and the economic performance of WaterProof • Optimise exploitation • Support technology and knowledge diffusion • Reduce industrial waste generation by 50% (in weight or volume) • Significantly reduce industry associated GHG emissions • Demonstrate value-potential of waste through successful implementation of the WaterProof technology
Civil Society and Media (end consumers; consumer protection agencies; consumer advocacy groups; educational institutions)		
• Identifying social and environmental benefits of the generated WaterProof technology and • Identifying trigger-terminology and suitable terminology to increase social acceptance and sensitivity towards environmental issues	• Website • Press releases • Project video • Social Media postings • Social Media campaign • Publications in popular professional journals • Brochures, flyers, roll-ups • Scientific Comic • Demonstration Days	• Increase awareness towards environmental issues • Increase public sensitivity towards resource issues • Increase acceptance of sustainable solutions and green consumer goods • Increase market success of generated WaterProof consumer goods (e.g. Ecover cleaning detergents, fish leather products) and thus minimise use of fossil-based resources and CO_2 emissions • Actively implementing effective measures against climate change • Create new jobs in the renewable carbon sector • Protect the environment and hereby increase life-quality • Study social aspects of the community and its improvement and hereby contribute to social innovation
Scientific Community and Technology Platforms (Technology platforms at regional, national and EU level; researchers and institutions; academic institutions; educational organisations)		
• Estimating and identifying potential of developed WaterProof technology • Understanding the innovation potential • Identify related disciplines	• Scientific Publications • Conference participations • Conference presentations	• Create scientific sensitivity towards environmental issues in order to implement them in future research • Encourage future research and action

• Tailormade training concepts for PhD students and postdocs • Detailed and reliable datasets	• Training of early-stage researchers • Stakeholder workshop • Open access and FAIR science • Horizon Europe dissemination instruments (Horizon Results Platform, The Horizon Europe Innovation Radar and the Horizon Magazine) • Mobile laboratory demonstrations	• Demonstrate replication potential in other regions or scientific areas • Provide a broad knowledge and information basis for future research and development
Waste(water) Treatment Groups and Energy Sector (Waste(water) processing companies; waterboards; municipal water treatment facilities; sewage plants; biogas producers; local municipalities; SMEs)		
• Knowledge about WaterProof technology • Identify application potential of developed technology • Identify and estimate future up-scaling potential • innovation potential	• Stakeholder Workshop • Participation at fairs • Participation at conferences • Social Media postings in relevant groups • Demonstration days • Webinar (min. 30 Stakeholder) • Publications in trade journals	• Introduce potential economic income sources (precious metals ins wastewater sludge, CO_2 conversion) • Improve environmental performance of wastewater facilities in rural communities • Improve life quality and environmental situation in rural communities • Support technology diffusion

Table 4: Key-Messages, Stakeholder-Groups and Measures

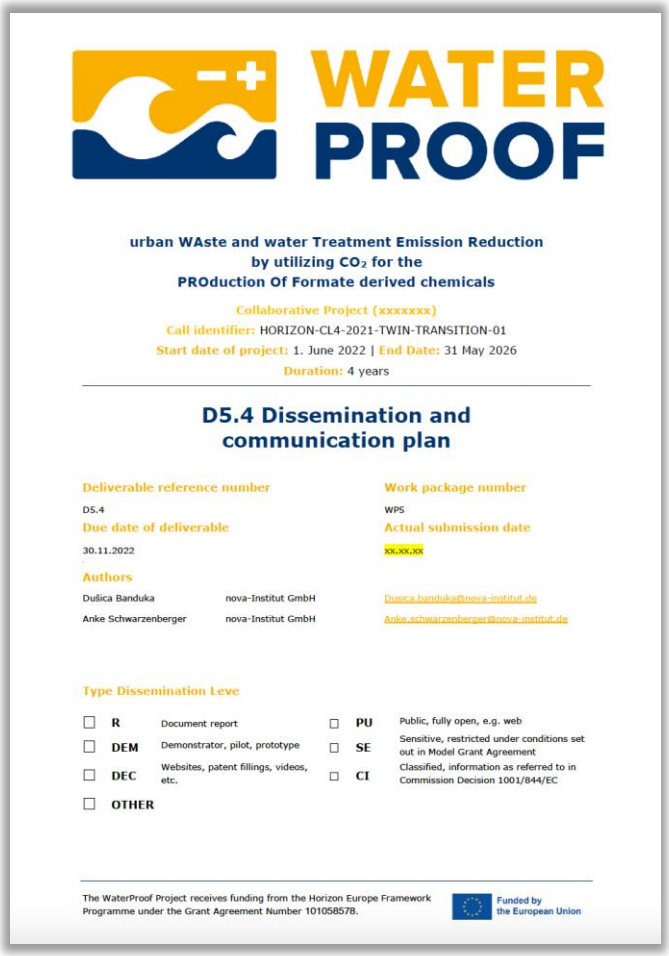
3 Communication and Dissemination

3.1 Project Identity

To ensure an appealing and cohesive presentation of the project and its results and increase the recognition effect, the project received a modern and clear project identity that shapes internal and external communication and dissemination paths and materials. This includes the development of the project logo (Figure 1), a related colour scheme, templates for PowerPoint (Figure 2), Word (Figure 3) and other reporting material, a website design as well as the creation of templates for non-scientific publications and material for online and offline communication ((digital) banners, Zoom backgrounds, posters, brochures and rollup banners). These ensure consistency in all publishable marketing material. All communication material is used at various occasions to communicate the project objectives and aspired benefits to the broad society and raise awareness for the challenges tackled within the WaterProof project in order to raise engagement. The project identity ensures that all project related material conveys a cohesive and consistent message within internal and external communication and dissemination paths. The identity and material were created with input from the entire project consortium.
Various sizes of the project logo and the defined colour codes are available in the annex of this document.

Figure 1: WaterProof Project Logo

Figure 2: WaterProof PowerPoint Presentation Template



WATER PROOF

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

Collaborative Project (xxxxxxx)
Call identifier: HORIZON-CL4-2021-TWIN-TRANSITION-01
Start date of project: 1. June 2022 | End Date: 31 May 2026
Duration: 4 years

D5.4 Dissemination and communication plan

Deliverable reference number: D5.4
Work package number: WP5
Due date of deliverable: 30.11.2022
Actual submission date: xx.xx.xx

Authors

Dušica Banduka	nova-Institut GmbH	Dusica.banduka@nova-institut.de
Anke Schwarzenberger	nova-Institut GmbH	Anke.schwarzenberger@nova-institut.de

Type Dissemination Leve

☐ R	Document report	☐ PU	Public, fully open, e.g. web
☐ DEM	Demonstrator, pilot, prototype	☐ SE	Sensitive, restricted under conditions set out in Model Grant Agreement
☐ DEC	Websites, patent fillings, videos, etc.	☐ CI	Classified, information as referred to in Commission Decision 1001/844/EC
☐ OTHER			

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

Figure 3: WaterProof Deliverable Template

3.2 Internal Communication

Regular internal communication between the consortium partners forms the basis for an effective and impactful dissemination and exploitation of the project results. To create maximum internal and external involvement, all partners of WaterProof are and will be involved in various communication and dissemination activities. Therefore, all partners will advise and report on issues regarding the project and the communication and dissemination strategy as well as the optimisation of applicability and exploitation of the technological and scientific project results.

It is crucial that all partners receive the information and (intermediate) results they need in order to optimise internal communication and to conduct an optimal job within their own work packages. Internal communication within the project will facilitate an effective and interactive exchange between project partners, which extends to external stakeholders in the future process of communication and dissemination.

To allow an easy exchange of documents and relevant information an internal and firewall protected work space is provided. This SharePoint (MS Teams) was established by the project coordinator Avantium. To make sure all participating partners are provided with sufficient information and notified in time, Avantium and nova-Institute created a contact list, covering contact persons from each partner that are responsible for technical, financial and administrative topics. This contact list is shared with all partners.

Work package leaders communicate, coordinate and circulate any information, document, plan and deliverable connected to their specific work package among its members. If required and relevant, the executive board is included.

Work package leaders further deliver progress reports and related project documentation, which also includes reporting on executed communication and dissemination activities. The communication and dissemination task is led by nova-Institute, who organises the internal communication and external communication and dissemination via several activities and tools and monitors the progress on different communication and dissemination topics **every six months**. The internal notification procedures as well as the EU regulations for correct external communication, dissemination and outside appearance of the project are explained in more detail below.

3.2.1 Notification Procedures

During the Project and for a period of one year after the end of the Project, the dissemination of own results by one or several parties including but not restricted to publications and presentations, shall be governed by the procedure of Article 17.4 of the Grant Agreement and its Annex 5 Section Dissemination, subject to the following provisions.

A party shall not include in any dissemination activity another party's results or background without obtaining the owning party's prior written approval, unless they are already published.

Prior notice of any planned publication or presentation shall be given to the other parties at least **45 calendar days** before the intended and indicated publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement in writing to the coordinator and to the party or parties proposing the dissemination within **30 calendar days** after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

Before the planned publication all project partners will be notified by email through an Advance Notice Text, which includes:

- an attachment of the full (pre)publication or at least the abstract including title, author(s), and partners involved;
- where and when the publication will be submitted to or at which event it will be presented.
- Project partners may object if they can show that their protection of results would be adversely affected by the publication, their legitimate interests in relation to the publication would be significantly harmed, or their confidential information would become public, if the disclosure is permitted.

Any other beneficiary may object **within 15 days of receiving notification**, if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the results may not be disseminated unless appropriate steps are taken to safeguard those interests. If no objective is received, the publication is permitted.

An approval system has been created, which makes use of MS Teams and e-mail notifications to the approval team. The approval team consists of at least one representative per WaterProof partner.

Objections are justified if:

a. the protection of the objecting party's results or background would be adversely affected;
b. the objecting party's legitimate interests in relation to the results or background would be significantly harmed, or
c. the proposed publication includes confidential information of the objecting party.

Partners should submit any justified objections, with precise modification instructions, to [main beneficiary email] and the project coordinator within **15 days** after receiving notification.

If an objection has been raised, the involved parties shall discuss how to overcome the justified grounds for the objection on a timely basis (for example by amendment to the planned publication and/or by protecting information before publication) and the objecting party shall not unreasonably continue the opposition if appropriate measures are taken following the discussion.

The objecting party can request a publication delay of not more than 90 calendar days from the time it raises such an objection. After 90 calendar days the publication is permitted, provided that confidential information of the objecting party has been removed from the publication as indicated by the objecting party.

Once partners have completed the publishing requirements, they should inform the project consortium about:

- Title
- Author(s)
- Place of publication + issue no. or volume
- Year of publication
- Provide an according link
- Information whether you used green or gold open access
- If green open access, what embargo period was agreed on? (max. 6 months)
- Publication costs (needed for report, eligible for reimbursement
- ISSN number
- DOI (if the publication has one, otherwise the dissemination team will create a new DOI via Zenodo)

Details on Open Access publication paths are explained in the specific chapter of this document.

3.2.2 Meetings

Internal communication takes place during regular in-person and online project meetings. In the course of the WaterProof project nine consortium meetings and two technical meetings will be organised. General assembly meetings with a representative of each partner will take place every 6 months (1x online and 1x in person per year). The Executive Board consists of WP-leaders and is responsible for ensuring all WP-tasks are executed within the defined timeframes. Executive board meetings will take place 4x year (1x in person). More details on meeting procedures and scheduled meetings is provided in deliverable 5.1 Meeting Plan.

3.2.3 Data Management and FAIR Science

The internal consortium's SharePoint (via MS Teams) helps to store, share and co-edit digital files and procedures for sharing and handling of sensitive information between partners as crucial part of secure collaboration within the project. The project partners must manage the digital research data generated in the action responsibly in line with the **FAIR principles** ('findability', 'accessibility', 'interoperability' and 'reusability', in particular machine-actionable), and deposit and ensure open access to the deposited data only to WaterProof partners and to the European Commission for verification purposes (if required). The data manager is responsible for quality assurance and making WaterProof's project data FAIR.

Metadata of deposited publications must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent, in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: publication (author(s), title, date of publication, publication venue); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the publication, the authors involved in the action and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for any

research output or any other tools and instruments needed to validate the conclusions of the publication.
If necessary for the realisation of the project, license free access to background and foreground will be provided to all participants of the network. For further research and exploitation rights beyond the project, the consortium declares to provide each of the participants access to results and technology on reasonable conditions.
Nightly backup and replication into multiple copies in the online system will be performed for the safe storage of data. The long-term preservation strategy will ensure that the tools, as well as the primary qualitative and quantitative data produced within the lifetime of the project can be found, understood, accessed, and used after the project has been completed, for at least ten years. A bundle of these data will be transferred to the Zenodo repository by the end of the project, which ensures sustainable archiving of the final research data. Items deposited in Zenodo will be retained for the lifetime of the repository (which is currently the lifetime of the host laboratory CERN within the framework OPENAir).

More information can be found in the IP and data management plan (DMP) which includes the guidelines on how to make shared data findable, accessible, interoperable and re-usable (FAIR). The Data Management Plan will be developed within the first six project months and is annually updated during the project's runtime.

3.2.4 Transparency and Accountability

All conducted research should propose digital media design improvements that effectively increase the transparency and accountability of media and contribute to reinvigorating the democratic scientific approach. The communication and dissemination strategy of WaterProof will therefore be guided by the transparency and accountability principles and strategy of The Horizon Europe Programme. Dissemination and communication will take place all along the project realisation through a multitude of activities. This includes the website and the social media web portals (Twitter and LinkedIn). Furthermore, all project related events as well as the collaboration of multipliers within the project will support the idea of transparency and accountability. The project is committed to inform the consortium and the public about progress, financial status and results, which among others paths will be realised through continuous reporting and accessible information on the EU CORDIS website of the WaterProof project.

3.2.5 Gender, Equality and Diversity

Equality between women, non-binary and men in research and development is an essential condition for optimum development of Horizon Europe. WaterProof will take measures to promote equal opportunity between women, non-binary persons and men in line with the gender equality plan where applicable.

Sex and gender will be addressed as a variable during project execution for those tasks in which it may influence the pursued outcome such as the societal perception and acceptance studies. This will also be the case for aspects like human rights, working conditions or cultural heritage with many different sub-indicators.
The participating partners will share the relevant gender and diversity aspects in positioning and publishing of their results with the consortium. Where relevant, gender-neutral result positioning will be pursued, this specifically includes marketing efforts and consumer studies. Furthermore, WaterProof aims for a 50 % representation of women in the stakeholder and end-user focus groups that are and will be addressed.
Generally, all documents will be written in non-discriminatory language. All research will be disseminated and communicated in a transparent, fair and unbiased way with respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment. All partners but especially women and non-binary persons from the consortium will be encouraged to disseminate generated project results through participation and representation at conferences, courses, classes and other measures. This approach will further be transferred to all external communication and activities.

3.3 External Communication and Dissemination

In order to maximise impact, the WaterProof communication and dissemination strategy is based on an extensive stakeholder analysis, which allows to effectively target different stakeholder groups through suitable channels, hereby considering their variety in expertise, background and interest (see 2: Stakeholder Analysis and Table 4). Communication activities ensure that the project objectives, structure and progress are communicated to the identified stakeholder groups and the broad public, while dissemination efforts support the sufficient diffusion of results and knowledge through suitable dissemination instruments in order to maximise the project impact (scientific, economic, environmental, social).
All present and future external communication and dissemination activities follow the following objectives:

- Increase the public's sensitivity and information towards the tackled challenges within WaterProof and developed solutions;
- raise awareness towards renewable materials and chemicals and communicate the approach and outputs from WaterProof to the general public;
- introduce application possibilities of sustainable chemicals to potential future users by demonstrating their actual usability in well-known everyday products (e.g. rural waste and wastewater facilities and processors as well as users of renewable chemicals such as brands and other industrial bodies);
- introduce business opportunities and innovation potential of the WaterProof technology to industries and companies in the commercial sector (e.g. waste(water) facilities);

- enable and encourage other researchers to exploit results through further research, development and action;
- encourage students and young research to consider participation in science and technology and anticipate the generated knowledge in their own efforts (and also to increase the number of women and non-binary scientists in this sector);
- support policy makers, NGOs and authorities in their decision-making process and hereby optimise the political framework for the effective establishment of sustainable solutions in order to motivate investments and lower potential investor risks;
- promote the goals of the wider Horizon Europe work programme of the EU towards a climate neutral Europe.

Besides actively utilising offered EC communication and dissemination routes (CORDIS, EU horizon magazine), future and present dissemination and communication activities include a variety of channels and tools for the external communication and dissemination of WaterProof in order to address the identified groups in the most effective way.

3.3.1 Online Activities

Website

A WaterProof website (Figure 4) was established under the URL www.waterproof-project.eu. It is hosted and maintained by nova-Institute in coordination with project lead Avantium. The website offers a quick overview of the project objectives, related work packages and contributing partners and communicate project news, progress and events to interested stakeholders and the broad public. It hereby serves as the main communication tool for WaterProof-related information and results. The website will remain steadily updated with new information in the form of scientific publications, press releases, scientific schooling material and promotional material. It further provides access to digital media contributions and is used for the promotion of WaterProof related events such as fairs, conferences, stakeholder workshops and webinars. This includes the promotion of the three stakeholder workshops that represent Deliverable **D5.7** "Workshops" and the Task **T5.2.2** "Training of early-stage researchers".

The website further includes a publications and public deliverables section that will make any presented material that does not compromise confidentiality agreements available for public download. This includes conference proceedings, scientific publications and deliverables classified as public. It hereby also serves as a dissemination tool for results generated within the WaterProof project and ensures a sufficient diffusion of knowledge and information into the scientific community and specific stakeholder groups.

The website performance will be steadily monitored by the analytics tool Matomo LogFile Analytics, which provides a multitude of useful information about visitor-statistics, visit durations and visitor locations. These analyses will serve as a basis for steady improvement and optimisation of the chosen measures and presented content of the project website.
All website activities are accompanied and promoted by additional communication and dissemination activities, e.g. Social Media postings (LinkedIn and Twitter) of news, events, available publications, project videos, press releases or publications in professional magazines.
The website will remain continuously up-dated and maintained throughout the project duration as well as after the project's completion.

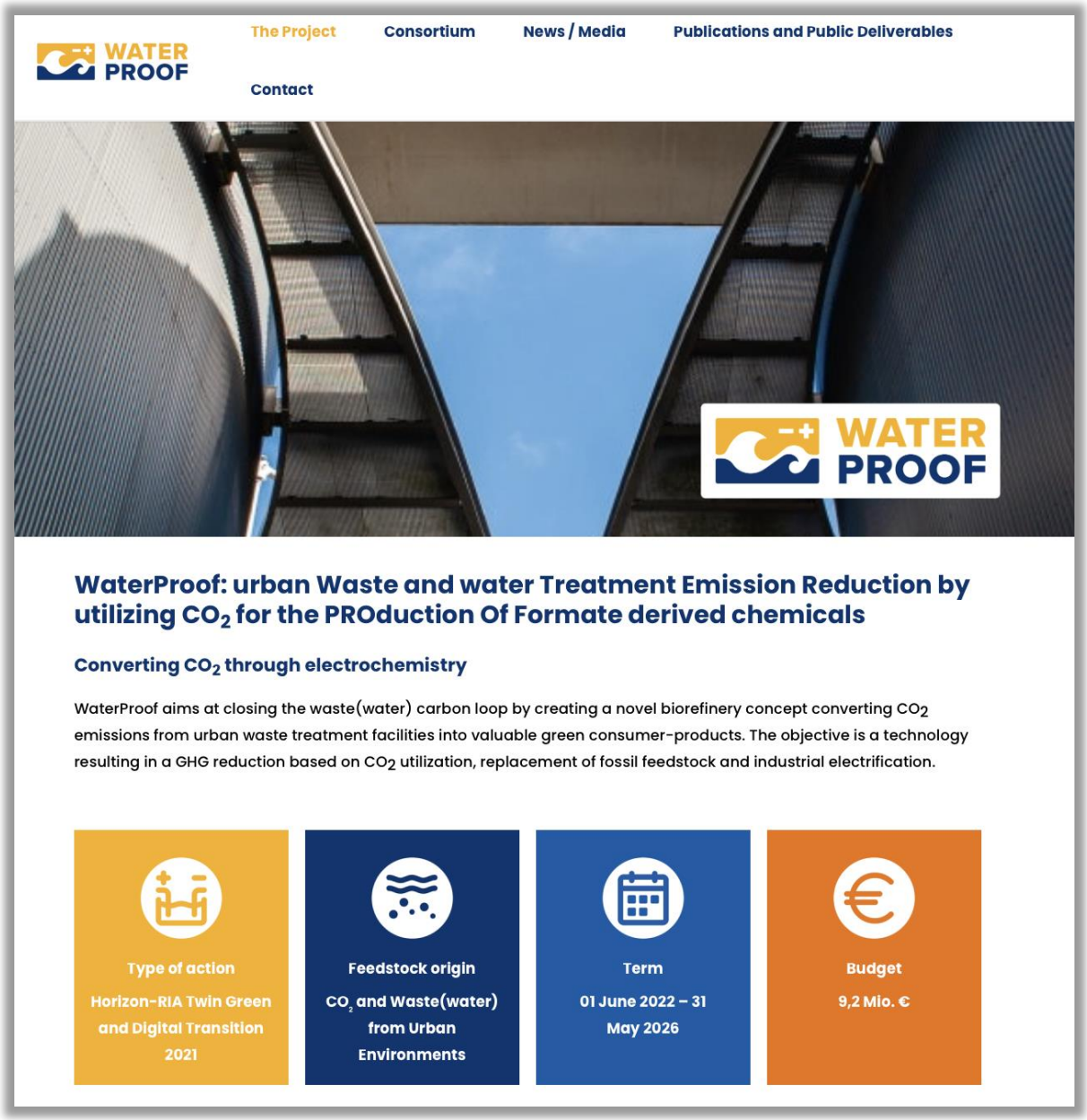


Figure 4: Impressions WaterProof Website

Social Media and nova-Network

With regard to steadily increasing digital communication, social media platforms represent important channels for the share and communication of relevant project content as well as for the dissemination of project results. Social media and social media groups allow to reach out to a broad audience of various stakeholder groups. Especially the social media platform LinkedIn features (regional) groups on a wide variety of interests that allow to

reach specific target groups with high engagement. All partners are instructed to tag the other project partners and use relevant project related hashtags. This approach simplifies the sharing of information and enables utilising all partner networks. To increase stakeholder engagement, it is recommended that postings include visual images supported by informative texts.

LinkedIn

Due to its strong network character, the platform LinkedIn has established itself as an effective tool for communication of project related information. A majority of the consortium partners own well connected LinkedIn profiles with broad professional networks. This includes personal profiles of participating project members and accounts of their affiliated enterprises. Many project partners have further joined specific interest groups within this very well-established social media business platform, that allow the communication of target specific information to topic related groups. These LinkedIn accounts of project partners serve as multipliers for sharing WaterProof related content and news throughout their established networks and within suitable groups. To increase the project-reach, additional suitable WaterProof related groups have been identified and utilised (e.g., Electrochemistry, Renewable Carbon, Wastewater treatment, etc.).

A selection of topic-related LinkedIn groups is presented below.

- Carbon Capture and Storage Network (ca. 4,800 members),
- Carbon Capture, Utilisation and Storage (CCUS) & Hydrogen Network (ca. 17,300 members)
- Carbon Capture, Utilization, and Storage (CCU and CCS) (ca. 250 members)
- Carbon Capture, Utilization, and Storage (CCUS) Network (ca. 800 members)
- The new CO_2 economy (ca. 350 members)
- Journal of CO_2 Utilization (ca. 90 members)
- CO_2 Capture Utilization and Clean Energy (ca. 350 members)
- CO_2 Utilization in Chemical Processes (ca. 580 members)
- Water and Wastewater Professionals (ca. 80,000 members)
- Wastewater/Water Treatment Plant Operations & Maintenance (ca. 38,000)
- Water and Wastewater Treatment Professionals Worldwide (ca. 31,000 members)
- Industrial Wastewater Treatment (ca. 20.000 members).

Project related content has been and will further be shared by nova-Institute's company LinkedIn profile (ca. 4,700 followers), the account of nova-Institute`s CEO Michael Carus (about 13,000 follower) as well as the accounts of other project partners (e.g. Avantium with ca 17,700 follower). The communication and dissemination team considers this

strategy to be more effective than the creation, build-up and maintenance of a separate WaterProof LinkedIn community, which would be unlikely to have a stronger impact than the utilisation of already existing established partner networks.
Using project related hashtags increases the effectiveness of communication to relevant stakeholder groups. A list of suitable hashtags was provided to the consortium and will be steadily utilised throughout the project to increase project recognition, e.g. **#WaterProofProject, #RenewableCarbon, #CircularCarbon, #WasteWaterTreatment, #ElectroChemistry**, **#SustainableChemistry**, **#UseCO2**.

To introduce the project, announce the launch of the project website and promote the first stakeholder workshop, over 45 LinkedIn postings have been published by various partners. Some examples are listed below.

- https://www.linkedin.com/posts/nova-institut-gmbh_waterproofproject-useco2-renewablecarbon-activity-7046731833392148480-H9uJ
- https://www.linkedin.com/posts/avantium-technologies_20220517-avantium-awarded-e3-million-eu-grant-to-demonstrate-the-electrochemical-conversion-of-co2-activity-6932196098388197376-gu6q
- https://www.linkedin.com/feed/update/urn:li:activity:6932336677520613376/
- https://www.linkedin.com/feed/update/urn:li:activity:6945736660282183680
- https://www.linkedin.com/posts/du%C5%A1ica-b-7b6b9022a_waterproofproject-electrochemistry-useco2-activity-7018117126125178881-Dh7A

The following figure (Figure 5) shows some examples of WaterProof related LinkedIn posts by nova-Institute and other project partners.

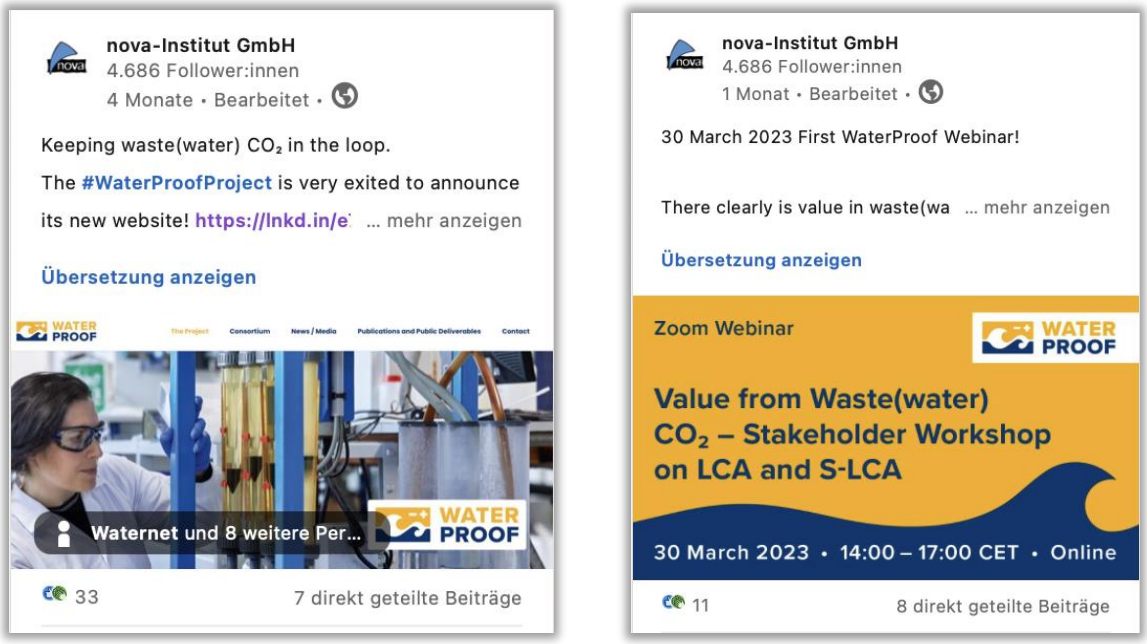


Figure 5: Impressions of WaterProof LinkedIn Postings

For the evaluation of content reach and reader engagement, LinkedIn offers own analytics tools (Figure 6) hat allow for an easy monitoring of audience figures. The tool offers precise numbers on organic impressions, click rates and active reader interactions of the published post. The tool hereby supports a steady improvement of stakeholder engagement through effective communication.

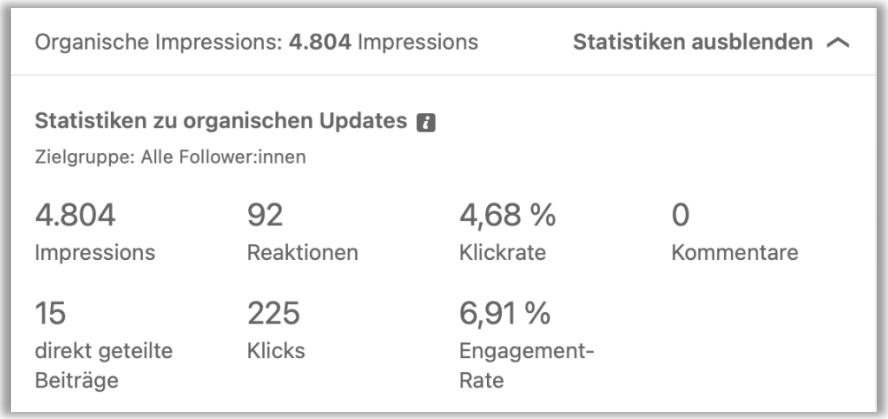


Figure 6: Impressions of LinkedIn Analytics

Twitter

The same strategy applies to the use of the Social Media platform Twitter. Twitter allows the identification, selection and addressing of suitable target groups through the use of specific and related hashtags. Rather than establishing a new WaterProof Twitter account, it was estimated to have more impact to gather project related and relevant hashtags that

highlight and suit the project objectives. WaterProof related postings therefore include the project specific hashtag (#WaterProofProject), which is and will also be included in all physical and digital communication materials. The hashtag has not been used prior and therefore offers great opportunity to be branded and established as a project-specific term as well as a high indexation for CO_2- and electrochemistry-related projects on social media platforms in general. The hashtag is and will be used by all partner Twitter accounts as well as parties that are interested in being connected to the WaterProof project. To increase the project reach, the communication and dissemination team assembled a list of highly frequented project related hashtags such as **#WaterProofProject, #RenewableCarbon, #CarbonCapture, #CircularCarbon, #ElectroChemistry and #WasteWaterTreatment**.

Also in future, all project partners will retweet relevant, project-related tweets and hereby support the communication of project generated content and news. Current Twitter figures of WaterProof partners include @novaInstitut with around 2,000 followers; @RenewableCNews with around 3,800 followers and @mkarus with 1,200 followers. Although Twitter itself shows lower interaction rates in comparison to other social media platforms, it is proven to significantly increase the recognition of posted content on other channels such as LinkedIn (Dwivedi et al. 2021).

In order to monitor the success and impact of twitter activities, the communication and dissemination team uses the service "Twitter Analytics" which offers precise information on impression and interaction rates of the specific post. The use of this analytics tool is therefore equally recommended to all project partners.

In order to introduce the WaterProof project to the public and inform about the project kick-off event (Figure 7), various partners published related Twitter posts, e.g.:

- https://twitter.com/novaInstitut/status/1539966651893837826
- https://twitter.com/novaInstitut/status/1526567847320768512

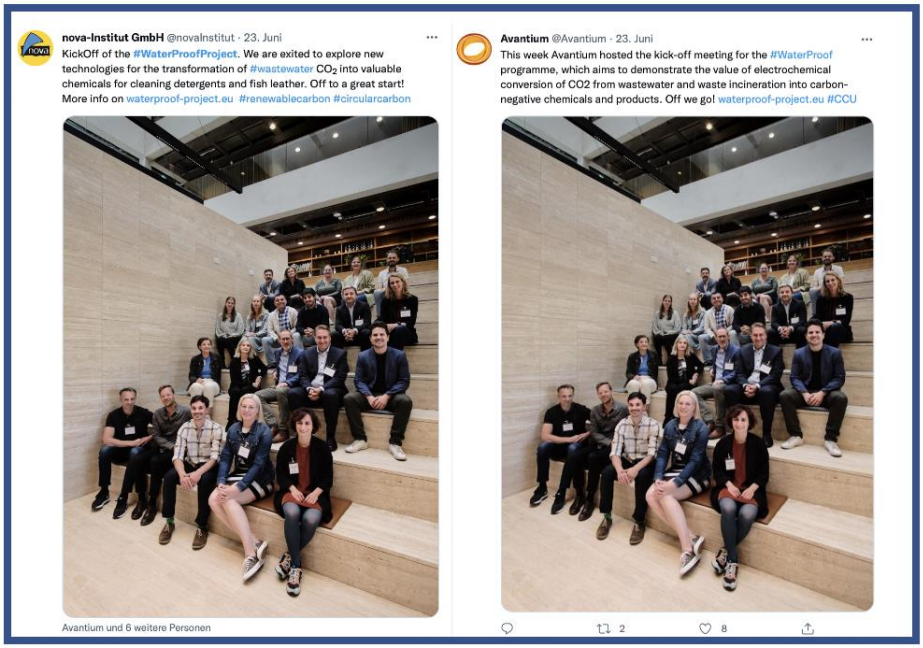


Figure 7: Impressions WaterProof Twitter postings

Press Releases

Press releases communicate intermediate results, important milestones and extraordinary achievements to key media actors and are also be made available on the project website. nova-Institute provides a network of more than 1,800 press contacts, which are used in order to maximise project reach and impact. Press activities will include at least three press releases, summarising the project results and achievements. Project partners will distribute these press releases through their established media networks as well as through nova-Institute's own media platform and channels. The nova-Institute's own media platform Renewable Carbon News (https://renewable-carbon.eu) reaches over 150,000 monthly readers and has established itself as a key platform for carbon-related topics. Project news and press releases will further be published in the monthly nova-newsletter covering various topics and is send to 3,500 professional contacts from the chemical and renewable material industry. This approach also applies to the newsletters of all project partners.

First press releases to introduce the project to the public and inform about the project start were published by nova-Institute and Avantium and made available through various channels listed below:

- https://renewable-carbon.eu/news/converting-co2-through-electrochemistry-the-waterproof-project/
- https://renewable-carbon.eu/news/avantium-awarded-e3-million-eu-grant-to-demonstrate-the-electrochemical-conversion-of-co2-to-consumer-products/
- http://nova-institute.eu/press/?id=350

- https://www.avantium.com/press-releases/avantium-awarded-e3-million-eu-grant-to-demonstrate-the-electrochemical-conversion-of-co2-to-consumer-products/
- https://www.process.vogel.de/wie-elektrochemische-prozesse-co2-in-wertvolle-produkte-verwandeln-a-8e24500f34ff0d88d0db48c9cf9facbd/

Newsletter and Renewable Carbon News

The nova-Institute as well as all other project partner will also in future actively incorporate, communicate and disseminate WaterProof news via their specific company newsletters. Being one of the leading institutes in the renewable carbon sector, nova-Institute reaches over 3,000 monthly newsletter subscribers that include all relevant stakeholder and target groups from industrial bodies, policy makers and authorities but also the scientific community.
nova-Institute further hosts the carbon focussed news platform *Renewable Carbon News* that focusses on renewable carbon and renewable material news and reaches more than 150,000 monthly readers. All press releases and news are published via both mentioned paths.

Project Video

In order to introduce and communicate the WaterProof project to the public and interested stakeholder groups in simplified and visualised form, a project video will be produced by the end of month 18 **(D5.6).** The project video will offer an overview of the project structure and defined project objectives and impacts in an engaging form. Due to the simplified presentation of scientific and technological information it will allow the communication of project content to a broad audience. The video will further be implemented on the project website (www.waterproof-project.eu) and made available via nova-Institute`s YouTube channel. All project partners will distribute the video through the individual networks and media channels.

Horizon Europe (HEU) Instruments

To introduce and spread the generated knowledge and technology, WaterProof will also actively include and utilise pathways provided by the European Commission. This includes the publication of all Deliverables and Publications on the project CORDIS site, but also technology boosting options like the Horizon Results Platform, The Horizon Europe Innovation Radar and the Horizon Magazine.

Synergies with Other Projects

WaterProof recognises the importance of knowledge sharing and collaboration. All partners will therefore actively utilise synergies with other related projects and their established related networks. This includes other Horizon 2020 and Horizon Europe Projects (e.g. CROCODILE, TARANTULA, PEACOC, BIOCONCO$_2$, BioRECO$_2$ver, Afterlife, PEFerence, UseCO$_2$) but also suitable initiatives, e.g. the Renewable Carbon Initiative supporting the development and implementation of renewable carbon solutions with 44 members from industry and science which was initiated and founded by nova-Institute.

To create maximum synergy with upcoming CSA projects, the coordinator of WaterProof, Avantium, is participating in the SUNER-C project (GA 101058481).

Additionally, WaterProof has been taken part in the sensemaking workshops of the ECOP H4C program that was held in collaboration with two other projects, which were granted funding under the same call (Symsites and Ashcycle).

3.3.2 Offline/Hybrid Activities

Infographic

Infographics represent an effective information tool, that allows to describe complex processes in a structured visualised form. They hereby offer a possibility to build awareness and increase engagement and understanding of the tackled issues. The complex interconnection and mode of operation of the different parts of the WaterProof project (i.e. technology, wastewater treatment, fish leather tanning, production of consumer cleaning goods, etc.) are represented visually in a plausible, easy to understand and appealing way. Infographics can be used both online (e.g. on the website) and in offline communication material. The infographic developed for WaterProof displays the project-objectives, chosen pathways and processes and the anticipated end-products in a simplified way (Figure 8). It is primarily used in the in the frame-work of project-presentations but is also available for download on the project website.

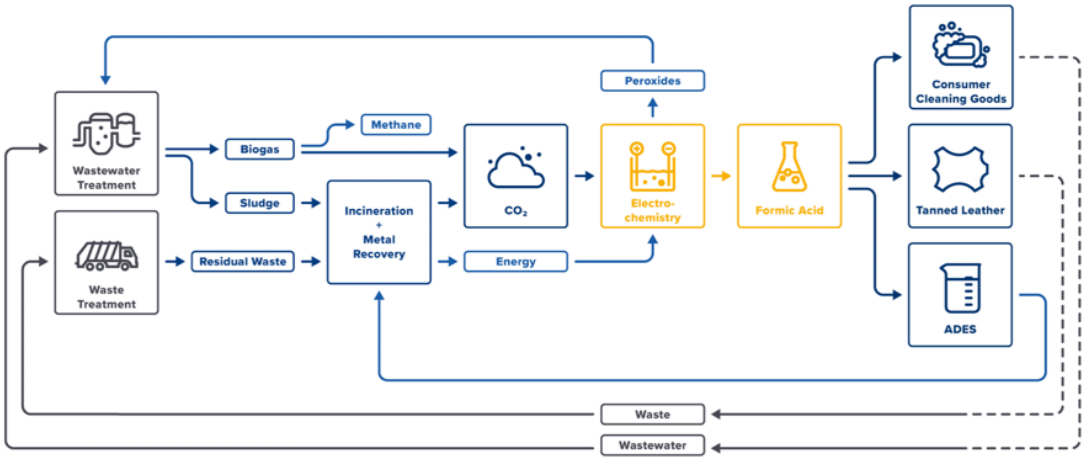


Figure 8: WaterProof Infographic

Material for offline Communication (e.g. Brochures, Flyers, Roll-Ups)

Besides online communication channels (e.g. project website, Twitter, LinkedIn) WaterProof also creates and designs material for offline communication with contribution from the entire consortium. This includes role-up banners, flyers, brochures and at least two factsheets targeting the general public or the scientific community. This material is distributed at exhibitions, trade fairs and conferences. Another focus to showcase the CO_2 conversion technology will be the open day for the public during the Dutch National Day of Science in Amsterdam, NL.

A first brochure was created in English language, mainly to be used at events and at conferences, which will be updated with developing project progress (Figure 9).

Figure 9: WaterProof Brochure

To provide easily transportable promotional material, two designs of roll-up banners were created, that were also made available on the project website and can be printed for the partners on demand. All roll-ups used in WaterProof are made from recycled material (Figure 10).

Figure 10: Two Designs of WaterProof Roll-Up Banners

To also provide more creative and interactive promotion material, NOVA further designed 12 different info cubes, which focus on different process steps and end products of the WaterProof project. These cubes aim to initiate dialogue and interaction with interested stakeholders, can be used at seat-boxes at events and add interesting visual elements to conference- and exhibition booths (Figure 11).

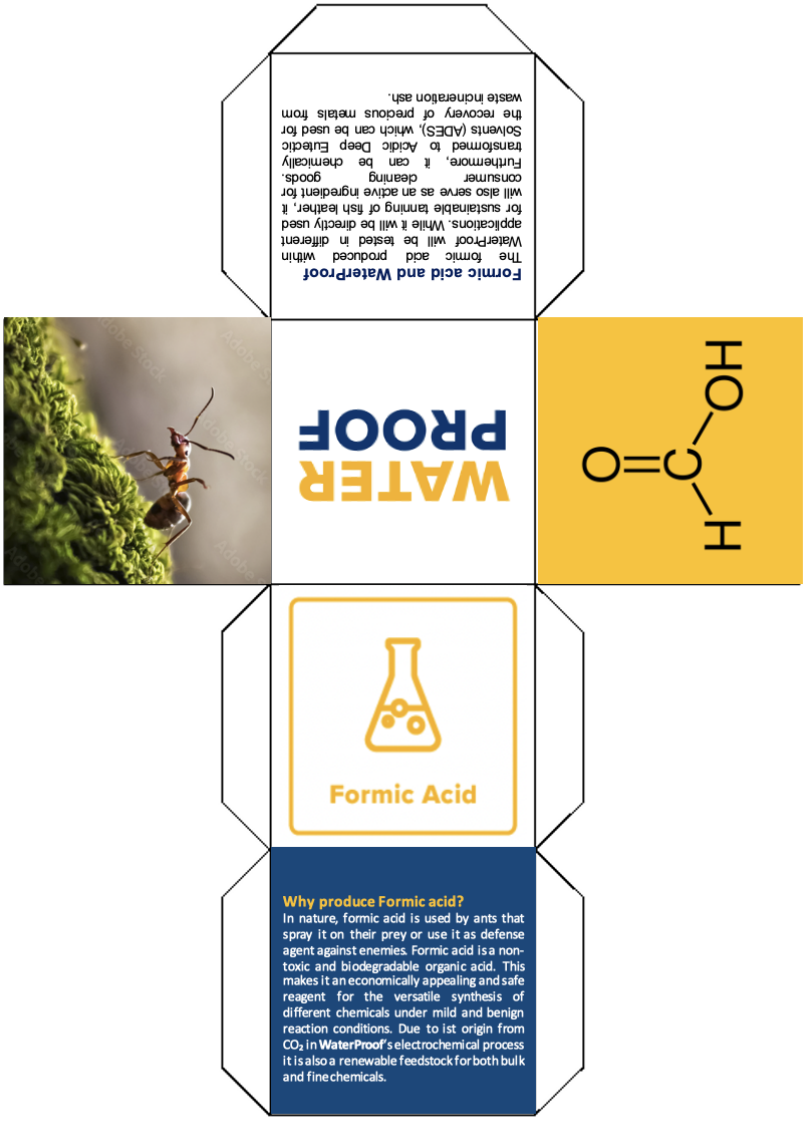


Figure 11: Example WaterProof Info-Cube

Conferences, Exhibitions, Fairs and Seminars

The presentation of the WaterProof project and the attendance of different events outside the project framework enable an effective and broad exchange of know-how and experiences, as well as a comprehensive dissemination of project outcomes based on direct contacts with representatives of the project target groups.

Also in future, the consortium will actively promote WaterProof technologies, applications, consumer products and gathered project information by attending and participating in numerous international trade fairs and conferences focused on CCU industries, wastewater

treatment and the targeted markets. The dissemination of the conducted research will be presented in at least six conference contributions in involved research fields.

The industrial and academic partners are going to use exhibition booths on national and international levels to promote WaterProof developments to industry, policy makers, end-users and society. At conferences the partners will present their research activities and results obtained in the project for the technical and scientific communities. All partners will also in future include WaterProof in their general communication and dissemination activities on the relevant conferences and events.

WaterProof will set up a network of local community actors such as municipalities, local investment organisations, and utility companies. Within the network, relevant topics are discussed continuously and in moderated process with the aim of achieving a joint understanding and commitment to concretely formulated goals. In collaboration with the local community actors, Avantium will organise an open day for the public during the Dutch National Day of Science to showcase the CO_2 conversion technology to the public.

The nova-Institute organises (trade) conferences and has many years of experience in attending at trade events and conferences, as do the other project partners. A list of the most relevant project related industry and academic events will steadily be updated within the Dissemination and Communication Plan in coordination with the consortium and shared among all participants. The continuously updated list is also available on the project's SharePoint

Furthermore, as a part of the P4Planet programme, WaterProof will actively utilise synergies with these partner projects.

Date	Conference Name	Location	Web Page
CCU, GHG Reduction, Recycling			
05-06/10/22	The 18th European Carbon Dioxide Utilisation Summit	Düsseldorf, D	https://www.wplgroup.com/aci/event/co2/
14-15/10/22	Advanced Recycling Conference	Cologne, D	https://advanced-recycling.eu/
19-20/10/22	Carbon Capture Technology Expo	Bremen, D	https://www.carboncapture-expo.com
19-20/10/22	Climate technology show	London, UK	https://climatetechshow.com/
23-27/10/22	Greenhouse Gas Control Technologies (GHGT) conference series	Lyon, Fr	https://ghgt.info/
09-10/11/22	The Greener Manufacturing Show	Cologne, D	https://www.greener-manufacturing.com/
19-20/04/23	Conference on CO_2-based Fuels and Chemicals 2023	Cologne, D	https://co2-chemistry.eu/
11-12/05/2023	17. International Conference on Chemistry and Renewable Biobased Chemicals	Berlin, Germany	https://waset.org/chemistry-and-renewable-biobased-

			chemicals-conference-in-may-2023-in-berlin
16-17 May 2023	CO_2 Capture, Storage & Reuse 2023	Copenhagen, Denmark	https://energycentral.com/event/co2-capture-storage-reuse-2023
23-25/05/23	Renewable Material Conference	Siegburg, D	https://renewable-materials.eu/
22-23/06/2023	Global Summit on Recycling and Waste Management	Berlin, Germany	https://www.meetingsint.com/conferences/recycling
28/05-02/06/23	Carbon Capture, Utilization and Storage Gordon Research Conference	Les Diablerets, CH	https://www.grc.org/carbon-capture-utilization-and-storage-conference/2023/
28-29 Jun 2023	Carbon Capture Technology Expo North America 2023	28-29 Jun 2023	https://energycentral.com/event/carbon-capture-technology-expo-north-america-2023
30 Aug-2 Sep 2023	18th International Conference on Environmental Science and Technology	Athens, Greece	https://cms.gnest.org/cest2023
11-12 Sep 2023	17. International Conference on Carbon Capture Technologies and Pollution Management ICCCTPM	New York, USA	https://waset.org/carbon-capture-technologies-and-pollution-management-conference-in-september-2023-in-new-york?utm_source=conferenceindex&utm_medium=referral&utm_campaign=listing
27-29/09/23	ANZ Carbon Capture	Online	http://claridenglobal.com/conference/anz-carbon-capture/
27-28 Sep 2023	Carbon Capture Technology Expo Europe 2023	Bremen, Germany	https://energycentral.com/event/carbon-capture-technology-expo-europe-2023
17-18 April 2024	Conference on CO2-based Fuels and Chemicals	Köln, Germany	https://co2-chemistry.eu/
29-30 July 2024	18. International Conference on Chemistry and Renewable Biobased Chemicals	Istanbul, Turkey	https://waset.org/chemistry-and-renewable-biobased-chemicals-conference-in-july-2024-in-istanbul
Leather Products			
22/04/23	2023 Society of Leather Technologists and Chemists Conference	Northampton, UK	https://www.sltc.org/latest-sltc-conference/
25-26 May 2023	Tokyo Leather Fair	Tokyo, Japan	https://tlf.jp/english
29 – 31 Aug 2023	Shanghai Leather Fair	Shanghai, China	https://www.aclechina.com/about-acle/
2-4 Sep 2023	International Leather Goods Fair	Offenbach, Germany	https://www.ilm-offenbach.de/en/
19-20 Sep 2024	5th Fish Waste for Profit Conference	Reykjavik, Iceland	https://www.worldfishing.net/icefish-conference
Technology and Renewable Carbon			

22-26/08/22	ACHEMA/highlight session petroleum-free processes	Frankfurt/Main, D	https://www.achema.de/de/?pk_medium=n2g&cHash=82b03965053d7da7dd6e9c635be5c34c
07/10/22	Industria Biotec	Berlin, D	https://industria-biotec.com/
26-27/10/22	European Forum for Industrial Biotechnology and the Bioeconomy	Vilnius, LT	https://efibforum.com
09-11/05/23	Women in Tech Global Conference	Hybride	https://www.womentech.net/en-de/node/35741
10-11/06/23	ICLFCPS 2023: 17. International Conference on Low Fossil-Carbon Process Planning	Tokyo, JP	https://waset.org/low-fossil-carbon-production-scheduling-conference-in-june-2023-in-tokyo
30/06-03/07/24	19th International Biotechnology Symposium	Maastricht, NE	https://iupac.org/event/19th-international-biotechnology-symposium-2/
Wastewater			
30/10-02/11/22	Onsite Wastewater Mega-Conference	Springfield, Missouri, USA	https://www.nowra.org/conference/mega-conference/
03-04/11/22	16. International Conference on Wastewater Treatment in Environmental Engineering	Amsterdam, NE	https://waset.org/wastewater-treatment-in-environmental-engineering-conference-in-november-2022-in-amsterdam
18-19/02/23	17. International Conference on Wastewater Technology	Rome, IT	https://waset.org/wastewater-technology-conference-in-february-2023-in-rome
8-10/05/2023	The Global Water Summit	Berlin, Germany	https://www.watermeetsmoney.com/
11-13/05/2023	Water Management Show Dhaka	Dhaka, Bangladesh	https://www.savor-watermanagement.com/
11-12/05/2023	17. International Conference on Chemistry and Renewable Biobased Chemicals	Berlin, Germany	https://waset.org/chemistry-and-renewable-biobased-chemicals-conference-in-may-2023-in-berlin
15-16/05/2023	International Conference on Water Pollution and Treatment (ICWPT 2023)	London, UK	https://waset.org/water-pollution-and-treatment-conference-in-may-2023-in-london
20-21/05/23	ICWWPTT 2023: 17. International Conference on Wastewater, Water Pollution and Treatment Technologies	Vancouver, CA	https://waset.org/wastewater-water-pollution-and-treatment-technologies-conference-in-may-2023-in-vancouver
25-26/05/2023	4th Global Smart Water Summit	Berlin, Germany	https://www.luxatiainternational.com/product/4th-global-smart-water-summit
29 May-2 June 2023	LET2023 – The 18th IWA Leading Edge Conference on Water and Wastewater Technologies	Daegu, South Korea	https://iwa-let.org/
26-29/06/2023	6th IWA Interntional Conference in eco-Technologies for Wastewater Treatment	Girona, Spain	https://www.ecostp2023.org/index.php

3-7 July 2023	NOVA Tech	Lyon, France	https://www.novatech2023.org/en/index
4–5 July 2023	European Wastewater Management Conference & Exhibition	Manchester, UK	https://ewwmconference.com
23-26 July 2023	The 10th International Water Association (IWA) Membrane Technology Conference & Exhibition for Water and Wastewater Treatment and Reuse	St. Louis, USA	https://mtc2023.wustl.edu/
13-15 Sep 2023	EFFICIENT Urban Water Management	Bordeaux, France	https://efficient2023.org/
3-8 Dec 2023	Conference on Water & Wastewater Management	Perth, Australia	https://wwmdc2023.com/
13–17 May 2024	IFAT Munich—trade fair for water, sewage, waste and raw materials management	Munich, Germany	https://ifat.de/en/
17-20 May 2024	IWA Conference on Sustainable Sludge Management	Beijing, China	https://iwa-network.org/events/iwa-conference-on-sustainable-sludge-management/
24-25 May 2024	International Conference on Water Pollution and Treatment	London, UK	https://waset.org/water-pollution-and-treatment-conference-in-may-2024-in-london
9-14 June 2024	16th International Conference on Urban Drainage 2024	Delft, The Netherlands	https://icud2024.org/
24-25 June 2024	18. International Conference on Wastewater	Paris, France	https://waset.org/wastewater-conference-in-june-2024-in-paris?utm_source=conferenceindex&utm_medium=referral&utm_campaign=listing
9-10 October 2024	International Conference and Exhibition on Water, Wastewater and Environmental Monitoring (WWEM 2024)	Birmingham, UK	https://www.ilmexhibitions.com/wwem/
ADES			
6-9 June 2023	WEF/IWA Innovations in Process Engineering: Sustainable Water Resource Recovery	Portland, Oregon	https://www.wef.org/processengineering
1-4 Nov 2023	IWA Resource Recovery Conference	Shenzhen, China	https://www.iwarr2023.com/En/Default
6-10 April 2024	9th IWA Water Resource Recovery Modelling Seminar	Notre Dame, USA	https://wrrmod2024conference.nd.edu/
Cleaning Products			
27-28 June 2023	CleanTech 2023	Jerusalem, Israel	https://clean-tech.world/en/

25-27 Oct 2023	SEPAWA Congress/European Detergents Conference	Berlin, Germany	https://sepawa-congress.de/en/european-detergents-conference/
7-9 Nov 2023	Hygenialia 2023	Madrid, Spain	https://www.hygienalia.com/en/
14-16 Nov 2023	Cleantech Forum Europe	Tallinn	https://www.cleantech.com/event/cleantech-forum-europe/
16-17 Nov 2023	6th Annual Sustainable Cleaning Products and Formulation Conference	Prague, Czech Republic	https://lp.bcf-events.com/6th-annual-sustainable-cleaning-products-and-formulation-conference/
28-29 April 2024	CleanEx 2024	TBA, UK	https://megevents.co.uk/clean-ex/
TBA, 2024	Cleaning Products Europe	Amsterdam, The Netherlands	https://www.cleaningproductsconference.com/cleaning-products-europe
TBA, 2024	The Manchester Cleaning Show 2024	Manchester, GB	https://cleaningshow.co.uk/manchester

Table 5: Targeted conferences and fairs

Attended Events and Conferences

Project partner Volta/Avantium already presented WaterProof at the following conferences. A full list can be found in chapter 6 of the presented document.

- 22-06-09: Processes4Planet forum organised by A.SPIRE, Brussels, Belgium.
- 22-06-09: R&D playground: Green Industry, Groningen, The Netherlands.
- 22-09-05 to 07: Symposium on Insights into Gas Diffusion Electrodes – From Fundamentals to Industrial Applications, Magdeburg, Germany (Figure 12).
- 22-10-05: 18th annual CO_2 utilization summit, Düsseldorf, Germany.
- 22-10-23: OCEAN: Demonstrating the Electrochemical CCU-Chain – Oxalic Acid from CO_2 as Feedstock for Industries, Lyon, France.
- 23-04-20: Conference on CO_2-based Fuels and Chemicals, Cologne, Germany (Figure 13).
- 23-05-24: Renewable Materials Conference, Siegburg, Germany.

Figure 12:Impressions WaterProof Event Participation/Poster Presentation

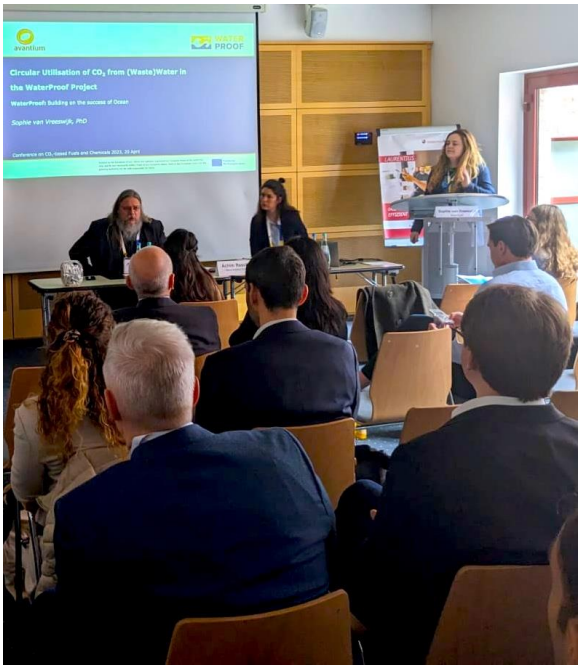


Figure 13: Sophie van Vreeswijk Presentation at the Conference on CO_2-based Fuels and Chemicals 2023

Stakeholder Workshops

WaterProof will offer (training) workshops on different topics in order to facilitate the green transition in Europe both in academia and industry and secure a sufficient knowledge

transfer to industry and the scientific community. The WaterProof training program will be compiled jointly by all participants, coordinated by the Training and Network Team (T&N) which is led by IZES.

Workshops and webinars are a popular measure to evaluate the current state of a project with stakeholder interaction and to generate new pathways and ideas for future project progress. Workshops are further used to communicate and disseminate key (experimental) results and present project successes.

Throughout the WaterProof project, three stakeholder workshops (one as webinar and two as workshops with physical presence) are organised in order to evaluate the current status of the project in co-operation with scientific and industrial stakeholders (including the Industrial Interest Group IIG). At least one of the three workshops will focus on training and engaging PhD students and Post-Docs through various training activities.

The WaterProof consortium discussed first ideas and suggested to execute three stakeholder workshops on the following lead topics:

1.) First workshop about LCA and/or S-LCA organised and headed by nova-Institute, in order to introduce the other project partners to LCA methodology and data-requirements (between M10-13, advertisement 3-4 months in advance).
This workshop took place on 30 March 2023. More details are listed in chapter 6 "Past Activities and Achievements".

2.) Second workshop about social interaction/consumer perception and interdisciplinary work organized and headed by IZES (to be executed in year 2-3).

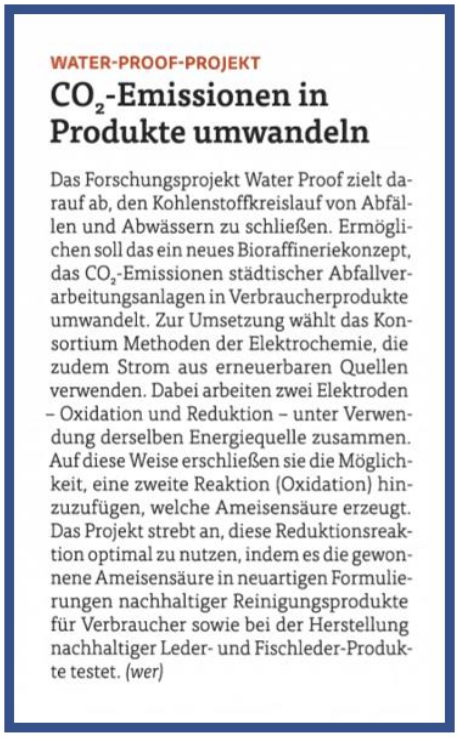
3.) Third workshop in the shape of a symposium (e.g. with round table sessions or a networking moment) on technical aspects (e.g. CO_2-conversion), focussed on PhD students and young researchers, potentially including a visit of the then built plant or a mobile lab unit. The workshop will be led by Avantium (last workshop after year 3-4).

	Dissemination and Communication Channels										
Target Group	Website	Social Media	News-letter	Press Releases	Video	Offline material	Conferences/ Trade-Fairs	Workshops/ Webinars	Dutch Day of Science	HEU Instru-ments	Open-access Publication
Authorities and Policy Makers	x	x	x	x	x	x	x	x		x	x
(Chemical) Industry	x	x	x	x	x	x	x	x		x	x
Civil Society and Media	x	x		x	x	x	x		x	x	
Scientific Community and Technology Platforms	x	x	x	x	x	x	x	x		x	x
Waste/ Water Treatment Groups and Energy Sector	x	x	x	x	x	x	x	x		x	
KPI/Amount											
Final Achieved Results											

3.3.3 Publications

The innovative findings in the project will be disseminated to other researchers in peer-reviewed papers (at least 5 scientific publications in high-impact journals) as well as communicated through publications in popular non-scientific magazines targeting the scientific community and young researchers as well as the broader public. All publications of the project will follow the Open Access guidelines of the European Commission and will be made available through a free online repository and on the project website.

Publications will also cover topic-related popular publication options in relevant non-scientific magazines. A first publication in a popular magazine was realised for the project start featuring the WaterProof project in issue 6 of the German PROCESS magazine for chemistry, pharma and process technology (Figure 14).



WATER-PROOF-PROJEKT

CO_2-Emissionen in Produkte umwandeln

Das Forschungsprojekt Water Proof zielt darauf ab, den Kohlenstoffkreislauf von Abfällen und Abwässern zu schließen. Ermöglichen soll das ein neues Bioraffineriekonzept, das CO_2-Emissionen städtischer Abfallverarbeitungsanlagen in Verbraucherprodukte umwandelt. Zur Umsetzung wählt das Konsortium Methoden der Elektrochemie, die zudem Strom aus erneuerbaren Quellen verwenden. Dabei arbeiten zwei Elektroden – Oxidation und Reduktion – unter Verwendung derselben Energiequelle zusammen. Auf diese Weise erschließen sie die Möglichkeit, eine zweite Reaktion (Oxidation) hinzuzufügen, welche Ameisensäure erzeugt. Das Projekt strebt an, diese Reduktionsreaktion optimal zu nutzen, indem es die gewonnene Ameisensäure in neuartigen Formulierungen nachhaltiger Reinigungsprodukte für Verbraucher sowie bei der Herstellung nachhaltiger Leder- und Fischleder-Produkte testet. *(wer)*

Figure 14: Impression WaterProof Press Article in German Trade Magazine PROZESS

4 Open Access to Scientific Publications and Data

According to the GA all partners are obliged to follow the legal requirements on Open Access (OA) to scientific publications and the principles of the FAIR science approach. This applies to all projects funded within the framework of Horizon 2020 and Horizon Europe. In consequence, all beneficiaries must:

- provide access to a machine-readable electronic copy of the published document version or a final peer-reviewed manuscript accepted for publication in a repository for scientific publications.
- Furthermore, each beneficiary must ensure open access to all peer-reviewed scientific publications relating to the project's results.

The term **"Open access"** (OA) refers to the practice of providing online access to scientific information that is free of charge to any end-user and reusable. Here, the term 'access' includes not only basic elements – the right to read, download and print – but also the right to copy, distribute, search, link, crawl and mine.

Meanwhile the term **"scientific"** refers to all academic disciplines. In the context of research and innovation, 'scientific information' can represent:

1. peer-reviewed scientific research articles (published in scholarly journals) or
2. research data (data underlying publications, curated data and/or raw data).

"Peer-reviewed" publications are those assessed by other qualified scholars and experts. A peer review is typically, though not exclusively, organised and initiated by the journal or publisher to which an article or manuscript is submitted. The dominant type of scientific publication is the journal article. Besides, all partners are also strongly encouraged to provide open access to other types of scientific publications. These include project results such as:

- Monographs
- Books
- Conference proceedings
- Grey literature (informally published written material not controlled by scientific publishers, e.g. reports).

Due to the bibliographic metadata requirement, open access allows an easier finding of publications and ensures the acknowledgement of provided EU funding. To ensure a structured and proper monitoring of Horizon 2020 and Horizon Europe projects, all published material must include information on EU funding as part of the bibliographic metadata. Publications must include the publication date and name the agreed embargo period, to monitor possible embargo periods. Therefore, the bibliographic metadata of the publication must follow a standard format and include all of the following information:

- Publication (author(s), title, date of publication, publication venue);
- Horizon Europe funding;
- Grant project name, acronym and number;
- Licensing terms;
- Persistent identifiers for the publication, the authors involved in the action and, if possible, for their organisations and the grant.
- Where applicable, the metadata must include persistent identifiers for any research output or any other tools and instruments needed to validate the conclusions of the publication.

The two Pathways of Open Access (Green and Gold)

After depositing publications each partner must ensure open access to those publications via a chosen repository. Beneficiaries can choose one of two main pathways to meet this requirement:

• Self-archiving/'green' OA: Beneficiaries can deposit the final peer-reviewed manuscript in a repository of their choice. They must ensure open access to the publication within at most 6 months (12 months for publications in the social sciences and humanities). To provide support concerning compliance with Horizon 2020 embargo periods the Commission offers a model amendment to publishing agreements, which are often signed between authors and publishers. This model is not mandatory but reflects the obligations for the beneficiary under the H2020 and Horizon Europe grant agreements. It can be supplemented by further provisions agreed between the parties, provided they are compatible with the Grant Agreement. The Commission/Agency takes no responsibility for the use of this model.

• Open access publishing/'gold' OA: Researchers can also publish in open access journals or hybrid journals that both sell subscriptions and offer the option of making individual articles openly accessible. Monographs can also be published either on a purely open access basis or using a hybrid business model. 'Article processing charges' are eligible for reimbursement during the duration of the project under the file 'other costs'. 'Other costs' are defined in Article 6.2.D.3 of the Grant Agreement. As stated, articles and other scientific publications must also be made accessible through a repository upon publication. Costs of 'gold' open access publications incurred once the project is completed cannot be refunded from the project's budget.

Free Open Access journals

The scientific landscape covers opportunities for free of charge Open Access publishing venues. An overview of Open Access publishing venues without APCs (Article Processing Costs) can be found here: www.doaj.org.

Zenodo Community

In order to ensure Open Access to all project related publications and materials (publications, presentations, conference proceedings, flyers, brochures, scientific posters and other scientific schooling material) even after the project has ended, nova-Institute established a Zenodo Community. Zenodo is a free of charge online repository built and operated by CERN and OpenAIRE in order to ensure pathways to and participation in Open Science as well as FAIR research outputs. All research results and publications are stored safely for future use by the broad society in CERN's Data Centre for as long as CERN exists. All materials published up to this point in the project process will be added to this online group and linked to the project website. The approach simplifies the publication process and ensures that knowledge gained throughout the project remains accessible to the public and interested stakeholders even after the project ends.

Zenodo further allows an easy citation of scientific work by using a so-called Digital Object Identifier. The DOI identifies and links to an authoritative version of the publication. In all cases, the European Commission encourages authors to retain their copyright and grant adequate licenses to publishers. In this context, Creative Commons offers useful licensing solutions. This type of license offers a suitable legal tool for providing open access in its broadest sense.

The WaterProof Zenodo Community (Figure 15) is accessible under the following Link https://zenodo.org/communities/101058578/?page=1&size=20.

It will remain updated throughout the duration of the project period as well as after the project has ended. Additionally, Zenodo will allow an easy transfer and integration of uploaded publications, scientific materials and research results to the EC Cordis page of the WaterProof project.

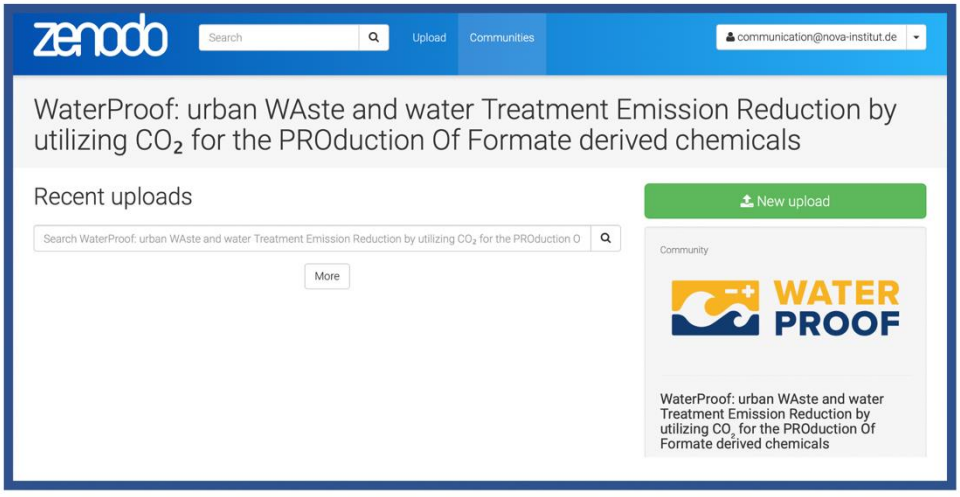


Figure 15: Impression of the WaterProof Zenodo community

Website

All project related publications und public deliverables will further be made available for download on the project website by linking to the according entry in the Zenodo Community. The section is available under https://waterproof-project.eu/publications-and-public-deliverables/ and currently contains approved public deliverables.

Self-publishing

All partners can also use alternative solutions by publishing articles or scientific publications on the individual website of their entity or institution, within an own journal or alternatively chose similar options. Partners should take into consideration that once they are publishing in a journal, in most cases they lose the right to self-publish.

Funding Statement and Right and Obligation to use the EU Emblem

Moreover, EU emblems and funding statement (Figure 16; translated into local languages, where appropriate) must be displayed as according to the Grant Agreement for all communication activities related to the action (including media relations, conferences, seminars, information material, such as brochures, leaflets, posters, presentations, etc., in electronic form, via traditional or social media, etc.), all dissemination activities and any infrastructure, equipment, vehicles, supplies or major result funded by the grant. Apart from the emblem, no other visual identity or logo may be used to highlight the EU support. When displayed in association with other logos (e.g., of beneficiaries or sponsors), the emblem must be displayed at least as prominently and visibly as the other logos. More information, guidelines can be found here https://rea.ec.europa.eu/communicating-about-your-eu-funded-project_en#how-to-acknowledge-eu-funding while various forms of the EU logo are available here for various purposes https://european-union.europa.eu/principles-countries-history/symbols/european-flag_en

Figure 16: European flag (emblem) and funding statement (in English)

In addition, as per Article 17.3 of the GA, any communication and dissemination activity related to the action must indicate that it reflects only the author's view and that the Commission is not responsible for any use that may be made of the information it contains. This disclaimer should be especially added to all public deliverables (translated into local languages where appropriate):

"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them."

5 Quality Control of Dissemination and Communication Activities

5.1 Tracking of Dissemination and Communication Activities

Throughout the project duration, all communication and dissemination activities have to be documented and reported to the European Commission via the EU Cordis portal of the WaterProof project. In order to ensure a seamless documentation and monitoring of all partner activities, nova-Institute created a so called ECAS sheet (Figure 17). This term describes an MS Excel worksheet aiming to keep track of all communication and dissemination activities carried out by the project partners throughout the project duration. The sheet covers a variety of possible activities, e.g., conference participations, organisations of workshops, social media activities, press releases and various sorts of publications which are documented in a separate tab. It also estimates the audience numbers reached by these activities divided in various relevant stakeholder groups. A front file contains a summarising tracking chart offering an overview of all dissemination activities carried out to date as well as specific charts for scientific publications and patents. All project partners are required to keep an accurate own documentation of the sheet, while all results will be combined in a final mainsheet.

ECAS results will be collected every six months and serve as a basis for activity evaluation.

Figure 17: Impression ECAS Activities Tracking Sheet

This tracking tool is updated at least twice a year with the information provided by all participating project partners based on their dissemination and communication activities throughout the reporting period. It also provides a basis (a database) for the technical periodic reports as well as the final dissemination and exploitation report. The activities collected in the ECAS sheet are transferred to the EU Cordis portal by nova-Institute.

5.2 Adapted Communication Strategy in Case of Emerging Risks

Every project bears a certain amount of risk. In case of WaterPoof these might be technical, financial, organisational and managerial risks (see Table 3.1e in the original proposal). Therefore, a risk management plan will be defined by Avantium (Task 5.4) and used in the risk management of the project. The project will be continuously assessed for risks and their mitigation measures. Risks and mitigation measures require flexibility also in the communication, dissemination and exploitation strategy. Therefore, this strategy will not only be tailored to various stakeholders but also be modified according to changes of plan to help mitigate the risks and move forward in steps to the sustainable future.

6 Past Activities and Achievements

This section provides a full and detailed overview over executed past dissemination and communication activities throughout the project duration.

Up until M12 the WaterProof partners have executed various communication and dissemination activities in order to introduce the project to relevant stakeholder groups and secure early stakeholder engagement.

6.1 Website

By M6 a project website (Figure 18) was successfully set up, which is available under https://waterproof-project.eu and serves as the main information source on the WaterProof project for interested parties.

Figure 18: Impression WaterProof Website

The website includes a dedicated news and media section (Figure 19), which keeps visitors updated on planned webinars, scheduled conference presentations and relevant past activities.

Figure 19: Impression WaterProof Website News and Media Section

Since the launch of the preliminary version, the website has increasingly been visited (Figure 20) with a peak visit on the 5th of April 2023 (920 visits). This coincides with social media activity and promotion of the first stakeholder workshop.

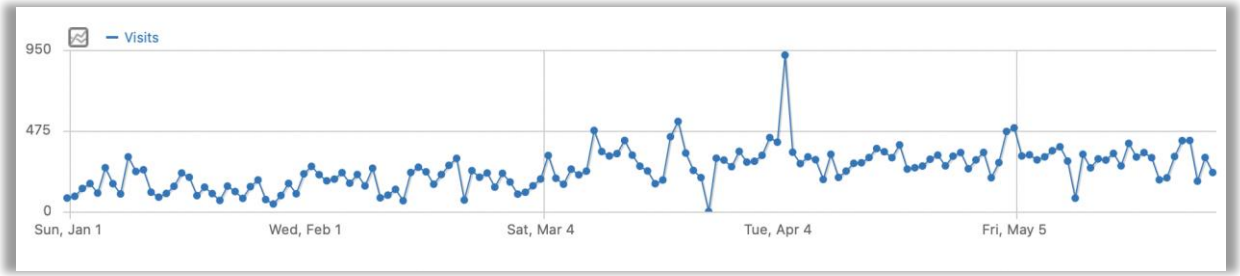


Figure 20: Project website visits January 2022 to June 2023

In summary, there had been ca. 52,500 website visits and ca. 122,300 pageviews with an average duration of ca. 3 min (more details in Figure 21).

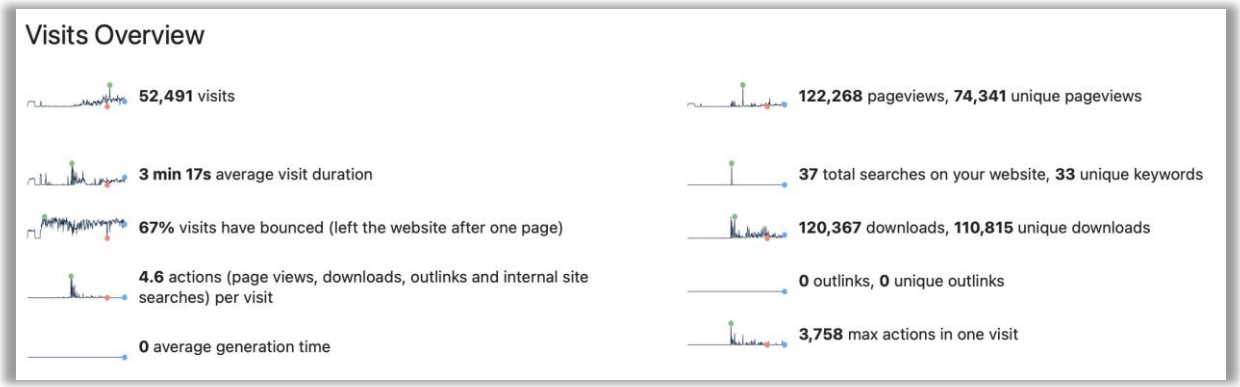


Figure 21: Website statistics May 2022 to June 2023

Most visitors were situated in the US followed by Germany and France (Figure 22). The strong interest of the US might be due to the U.S Inflation Reduction Act of 2022, which incentivizes CCU and the use of CO_2 by various industries.

COUNTRY	VISITS
United States	39.8% 20,914
France	12% 6,297
Germany	9.4% 4,949
Singapore	7% 3,652
Netherlands	3.3% 1,711
United Kingdom	2.8% 1,490
Russia	2.6% 1,369
India	2.4% 1,270
China	2.4% 1,246
Vietnam	2.3% 1,199
Totals	**52,491**

Figure 22: Origin of visitors May 2022 to June 2023

6.2 Press Release

To introduce the project's start to the public and relevant stakeholders, various partners published press releases, which were made available on different industry- and science related platforms, e.g. NOVA's news portal Renewable Carbon News with over 150,000 monthly readers.

A full list of press releases is provided below:

- http://nova-institute.eu/press/?id=350
- https://www.process.vogel.de/wie-elektrochemische-prozesse-co2-in-wertvolle-produkte-verwandeln-a-8e24500f34ff0d88d0db48c9cf9facbd/
- https://www.avantium.com/press-releases/avantium-awarded-e3-million-eu-grant-to-demonstrate-the-electrochemical-conversion-of-co2-to-consumer-products/
- https://renewable-carbon.eu/news/converting-co2-through-electrochemistry-the-waterproof-project/?utm_source=mailpoet&utm_medium=email&utm_campaign=renewable-carbon-news-daily
- https://renewable-carbon.eu/news/co2-umwandlung-durch-elektrochemische-prozesse-das-waterproof-projekt/
- https://renewable-carbon.eu/news/value-from-wastewater-co2-invitation-to-the-first-stakeholder-workshop-on-lca-and-s-lca-of-the-waterproof-project/
- https://www.avantium.com/press-releases/avantium-awarded-e3-million-eu-grant-to-demonstrate-the-electrochemical-conversion-of-co2-to-consumer-products/

6.3 Social Media

Project related news have been shared steadily on different social media platforms such as LinkedIn and Twitter and served the purpose to share project related and inform relevant stakeholder about project activities, e.g., the launch of the project website (Figure 23), the first stakeholder webinar or presentations at conferences. Various partners have contributed to the social media activities executed in WaterProof resulting in 45 postings in the period M1-12. To include specific and relevant stakeholder groups, different partners have joined topic-related stakeholder groups, listed in **3.3.1 Online Activities**.

Figure 23: Example Social Media Post on Stakeholder Webinar

6.4 Conference and Event Participations and Presentations

To address a specific high interest expert audience and initiate dialogue with industry partners and the scientific community, various WaterProof partners have presented the project at different conferences and related events, resulting in 11 activities. A full list of attended or organised conferences is shown below:

- 18th annual CO_2 utilization summit https://www.wplgroup.com/aci/event/co2/?utm_term=Register%20Online&utm_campaign=Registration%20now%20open%20for%202023%20edition&utm_content=email&utm_source=Act-On+Software&utm_medium=email&cm_mmc=Act-On%20Software-_-email-_-Registration%20now%20open%20for%202023%20edition-_-Register%20Online
- OCEAN: Demonstrating the Electrochemical CCU-Chain – Oxalic Acid from CO2 as Feedstock for Industries – https://ghgt.info/
- Inspiration session - WaterProof/Avantium RVO Webinar Cluster 4: Digital, Industry and Space – www.rvo.nl
- NCCC – https://n3c.nl
- ACS SPRING 2023, Crossroads of Chemistry, Poster: Challenges and opportunities in scaling electrochemical conversion of CO_2 from lab to commercial scale – https://www.acs.org/meetings/acs-meetings/spring-2023.html

- ACS SPRING 2023, Crossroads of Chemistry, Presentation: Challenges and opportunities in scaling electrochemical conversion of CO_2 from lab to commercial scale – https://www.acs.org/meetings/acs-meetings/spring-2023.html
- AMCEL Symposium 2023, Presentation: Development and upscaling of an electrochemical technology for the conversion of CO_2 – https://www.amcel.nl/events/symposium-2023/symposium-2023.html
- 2nd Symposium on Insights into Gas Diffusion Electrode, Poster: Development of gas diffusion electrodes for applications in electrochemical CO_2 reduction – from laboratory to industrial scale – https://www.mpi-magdeburg.mpg.de/4344758/BookofAbstract_complete.pdf
- Value from Waste(water) CO_2 – WaterProof Stakeholder Workshop on LCA and S-LCA – https://waterproof-project.eu/news-media/
- Conference on CO_2-based Fuels and Chemicals 2023, Presentation by Sophie van Vreeswijk: Circular Utilisation of CO_2 from Waste Water in the WaterProof Project – https://co2-chemistry.eu
- Renewable Materials Conference 2023, Presentation by Mariana Paredinha Araujo: Turning CO_2 Into High-Performing and Biodegradable Plastic Materials with Tunable Properties – https://renewable-materials.eu

6.5 Stakeholder Workshop

On March 30th 2023 NOVA organised the first stakeholder workshop on the topic of LCA and S-LCA. The topic was chosen to

a) inform different stakeholder groups about the functions of LCA and S-LCA as tools to access sustainability performance, which will be executed in WaterProof;
b) inform WaterProof partners that are not familiar with these instruments about their use and function within WaterProof;
c) prepare the WaterProof partners for the best possible data collection within the project;
d) secure best possible LCA and S-LCA results within WaterProof.

The stakeholder workshop included presentations by internal and external experts;

1) Matthias Stratmann from nova-Institute,
2) Ema Nemet from Process Design Centre,
3) Shraddha Metha from Sintef Ocean.

The event was promoted through various channels, such as partner-newsletters, social media postings, postings in topic related groups, articles on renewable-carbon related

platforms, and the project website. Links to some promotional postings can be found below (see Figure 24).

- https://renewable-carbon.eu/news/value-from-wastewater-co2-invitation-to-the-first-stakeholder-workshop-on-lca-and-s-lca-of-the-waterproof-project/
- https://www.linkedin.com/feed/update/urn:li:activity:7046731833392148480
- https://twitter.com/novaInstitut/status/1633023395943137281
- https://waterproof-project.eu/news-media/

Figure 24: Example Newsletter Posting on WaterProof Stakeholder Workshop

To allow a visually appealing promotion of the workshop, nova created a digital banner (Figure 25), which was used by multiple partners.

Figure 25: First WaterProof Stakeholder Workshop

The workshop received 105 registrations, with 78 people finally attending the webinar. To learn more about the participants background, the registration included a survey, where registrants were requested to provide information on their background, their level of LCA-knowledge, LCA focus (sustainability, economics or social aspects), and the aspired outcome of the webinar. While a huge majority of the participants (60 %) came from the scientific community, 20 % stated to be from the industry. 20 % classified their background as "other". With 53 % a huge majority estimated sustainability to be the most relevant LCA factor. 20 % viewed economics to be the main pillar and 27 % estimated social aspect to be most relevant.

47 % of the participants were not very familiar with the LCA and S-LCA tools, while 20 % labelled themselves as LCA-users. Additional 20 % were professional LCA-reviewers. The remaining percentage claimed to have no idea what LCA was or how it worked.
87 % stated to be interested in the WaterProof project and would like to be informed about future events and project news.

A recording of the webinar, as well as the presentation slides were made available to all consortium partners at the WaterProof SharePoint.

6.6 Promotional Material

To allow an appealing presentation of WaterProof at trade fairs, exhibitions, and other events, NOVA has created different promotional materials like info-brochures, roll-up banners and cardboard made info-cubes.
These are available in digital and physical form and were distributed to the project partners on request. More information on the material is provided in chapter **3.3.2 Offline/Hybrid Activities**.

6.7 Infographic

In collaboration with the entire consortium an infographic was created, which displays all relevant process steps of WaterProof as well as the main end-products and results. The graphic is shown in chapter **3.3.2 Offline/Hybrid Activities** and is intended to be used on posters and in conference-presentations.

6.8 Publications in Scientific and Non-Scientific Journals

As the project is still at an early stage, no publications in scientific journals have been made yet.
Still the established German trade-magazine "Process" published a piece on the WaterProof concept in its physical and digital issue on wastewater treatment.
https://www.process.vogel.de/wasser_abwasser/

7 Conclusion

Providing a cohesive and comprehensive dissemination and communication strategy ensures a cohesive internal and external presentation of the WaterProof project, maximises the project reach and at the same time optimises impact on a social, economic, scientific but also environmental scale. This is achieved through tailormade instruments and channels addressing the specific target and stakeholder groups. To measure and monitor the success of the selected measures, suitable key performance indicators have been selected and introduced in the presented document.

Recent measures and activities have focused on introducing the WaterProof project and creating dissemination and communication materials and channels, such as a project identity, a project brochure and infographic but also a project website and related content and imagery.

8 References

Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., ... & Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. International Journal of Information Management, 59, 102168.

9 Annex

Project Logo

Colour scheme and colour codes

Yellow
RGB 249, 176, 0
HEX #f9b000
CMYK 0, 35, 100, 0

Blue
RGB 0, 53, 112
HEX #003570
CMYK 100, 70, 0, 40

Table head	Table head	Table head	Table head	Table head
Table content	Table content	Table content	Table content	Table content

10 List of Abbreviations

Abbreviation	Description
CCS	Carbon Capture and Storage
CCU	Carbon Capture and Utilisation
CO_2	Carbon Dioxide
D	Deliverable
DCP	Dissemination and Communication Plan
EC	European Commission
EU	European Union
IP	Intellectual Property
KPI	Key Performance Indicators
LCA	Life Cycle Assessment
S-LCA	Social Life Cycle Assessment
T	Task
WaterProof	urban Waste and water Treatment Emission Reduction by utilizing CO_2 for the PROduction Of Formate derived chemicals
WP	Work Package

Waterproof colour codes and format templates

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

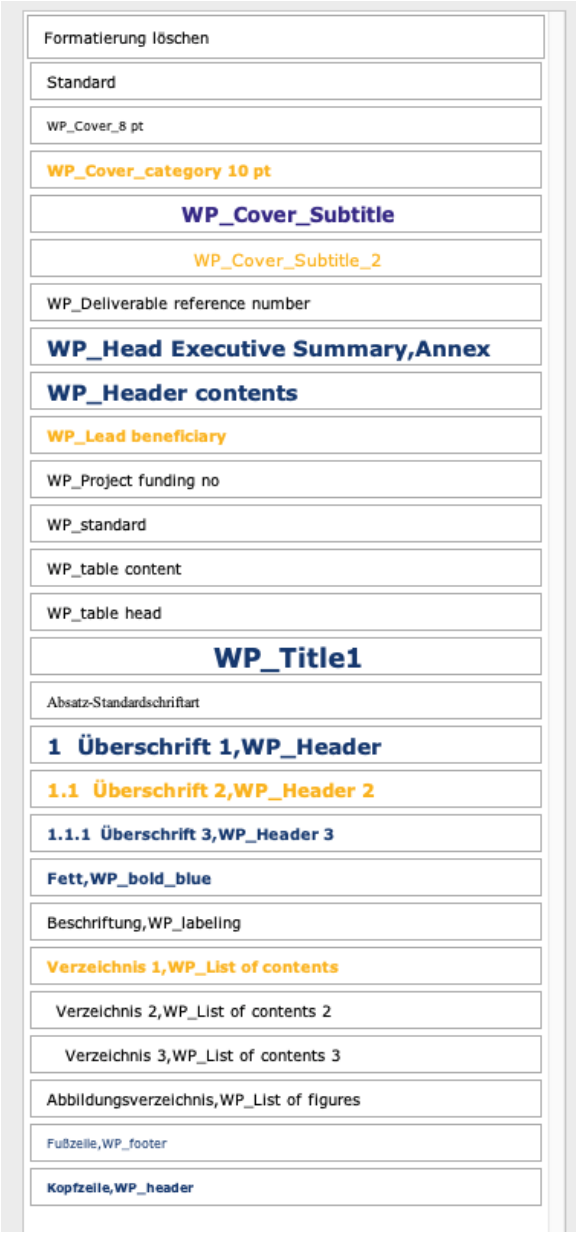


Figure 26: Important Format Templates