Deliverable report

D7.4 – Public communication and dissemination activities (year) 1

WP7 – Communication, dissemination and exploitation

Project Information	
Grant Agreement n°	101058100
Project Dates	September 1st 2022 – August 31st 2025

Funded by the European Union

Horizon Europe Grant Agreement n°101058100

Document status

DOCUMENT INFORMATION

Project Name	e-CODUCT
Deliverable Title/Number	D7.4
Deliverable Name	Public communication and dissemination activities (year 1)
Responsible beneficiary	NIC
Contributing beneficiaries	UGENT, BENKEI
Contractual delivery date	31/08/2023
Actual delivery date	05/10/2023
Dissemination level	Public

DOCUMENT APPROVAL

Name	Organisation	Role	Action	Date
Joris Thybaut	UGENT	Project Coordinator	Approval	05/10/2023
Gleb Veryasov	TOTB	Technical Coordinator	Approval	05/10/2023
Fabienne Brutin	Benkei	Administrative manager	Approval	05/10/2023

DOCUMENT HISTORY

Version	Date	Modifications	Authors
V1	24/08/2023	Initial version	Petra Props, NIC
VF	01/10/2023	Updates	Petra Props, NIC

To request a change to this document, contact the Document Author.

CONFIGURATION MANAGEMENT

Nature of Deliverable		
R	Document, report (excluding the periodic and final reports)	X
DEC	Websites, patents filing, press & media actions, videos, etc.	
DEM	Demonstrator, pilot, prototype, plan designs	
OTHER	Software, technical diagram, algorithms, models, etc.	
ETHICS	Deliverables related to ethics issues.	
DATA	Data sets, microdata, etc	
DMP	Data Management Plan	
Dissemination level		
PU	Public, fully open, e.g., web (Deliverables flagged as public will be automatically published in CORDIS projects.)	X
SEN	Sensitive, limited under the conditions of the Grant Agreement	

ACRONYM/ABBREVIATIONS	
CA	Consortium Agreement (contractual document between members of the consortium)
EC	European Commission
EU	European Union
CDP	Communication and Dissemination plan
GA	Grant Agreement (contractual document between EC and beneficiaries)
IPR	Intellectual Property Rights
LCA	Life Cycle Analysis
TEA	Techno-Economic Analysis
WP	Work Package

Acknowledgements

The information and views set out in this report are those of the author(s) and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained herein. Reproduction is authorized with reference to the source.

Disclaimer

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. Neither the European Union nor the granting authority can be held responsible for them.

Contents

List of tables

List of Figures

1 EXECUTIVE SUMMARY

1.1 Description of the deliverable content and purpose

This report, Public Communication and Dissemination Activities, is Deliverable D7.4, under WP 7, Task 7.2. Communication and Dissemination Activities.

This document provides a detailed report on the progress made in implementing the Communication and Dissemination Plan (CDP) presented in document D7.1. Communication and Dissemination Plan, and uses the same structure, updating each section in terms of approaches taken, channels used and results achieved.

The dissemination objectives, channels and methods used by the e-CODUCT project have been precisely defined and described in the CDP. They include “conventional” approaches, such as participation in events, publications and production of material (flyer, video) as well as web-related activities. The extensive use of online communication by e-CODUCT is also summarised together with analyses showing the use of the e-CODUCT website and relevant social media channels.

Several important relationships have also been established with sister projects and initiatives that can be used later to strengthen the dissemination.

1.2 Corrective action vs. Grant Agreement (if relevant)

N/A.

2 DESCRIPTION OF THE DELIVERABLE OBJECTIVE AND CONTENT

The Public Communication and Dissemination Activities Report provides a detailed description of the progress made in implementing the project's communication strategy, as well as the communication tools and activities planned to achieve the project's objectives. This document presents the activities carried out during the first year of project implementation, with the main objective of promoting e-CODUCT's breakthrough innovations as the only way to achieve large-scale deployment of competitive carbon conversion alternatives. All communication activities carried out were coordinated between the project partners.

The document provides a general overview and detailed insight into the communication and dissemination activities as planned in the project proposal and CDP, as well as the efforts to ensure an efficient and timely implementation of the project. It provides the project partners with an overview of all communication activities.

The communication and dissemination activities follow the communication guidelines of EC in terms of objectives, target groups and users, planned tools and channels, responsibilities and impact metrics. Through the communication and dissemination activities, the project partners build a strong identity for the project, with a logo and brand style, as well as templates for all external communication tools such as information leaflets, newsletters and flyers.

2.1 Purpose, scope and relationship to other deliverables

WP 7 is dedicated to the communication, dissemination and exploitation of the results of the e-CODUCT project, in order to achieve maximum impact.

This document, produced in the first year of the project, reports on the progress of the ongoing communication and dissemination work. The purpose of this document is to document the e-CODUCT communication and dissemination activities during the period from M1 (September 1, 2022) to M12 (August 31, 2023) of the project duration.

It uses the structure of the original CDP and updates and adds to the content of the CDP where activities have taken place. In particular, it reports on active dissemination-related tasks undertaken by partners during the reporting period.

This report is the first of 3 reports within T7.2 “Communication and dissemination activities”, i.e. (D7.4, D7.5, D7.6) developed in parallel with Task 7.4 “Intellectual property rights management”, and T8.5 “Data management“.

A detailed report of each activity is provided within each category (as above).

2.2 Document structure

The sections of this document are structured as follows.

After the introductory section 1 and the explanation of the deliverable objective (2), section 3 contains a report on the communication and dissemination and the activities that took place in the first year of the project. Section 4 contains a completed checklist of indicators used to measure the success of the dissemination work during the reporting period and section 5 draws a conclusion regarding the communication and dissemination work carried out so far.

Main contacts:

Coordinator: Joris Thybaut, joris.thybaut@ugent.be
Technical Coordinator: Gleb Veryasov, gleb.veryasov@totalenergies.com
Administrative Managers : Philippe Lenain, philippe@benkei.fr, Fabienne Brutin, fabienne@benkei.fr
Communication Manager: Petra Props, petra.props@ki.si
For any questions related to Communication, please contact Petra Props, copying the other four.

3 REPORT ON COMMUNICATION AND DISSEMINATION ACTIVITIES

3.1 Communication and dissemination approach

The e-CODUCT consortium is committed to communicate the developments and results of this project to a wider audience and to engage as many relevant stakeholders as possible on the importance of CO_2 reduction through the introduction of breakthrough and innovative electrified processes that replace fossil-based processes. In this way, the consortium aims to improve the process of technology transfer from the laboratory to the market and to establish new links with industrial partners.

WP7 consists of different tasks to plan and implement the communication activities of e-CODUCT.

The CDP provided in D7.1 is being followed by all partners during the entire course of the project and is being adapted as needed. The e-CODUCT project has adopted a two-way communication approach. WP7 partners provide material and support to all partners to help them communicate, and partners are strongly encouraged to provide the WP7 team with information on the ongoing impact of e-CODUCT activities. This open communication ensures that dissemination and awareness-raising activities remain current and targeted. Based on the approach described in the CDP, partners are encouraged to ensure continuous exchange of project information with different stakeholders at all levels, using the most appropriate communication tool to reach them. Evaluation methods are defined to support the achievement of the specific project objective of introducing electrified processes instead of fossil processes.

3.2 Target groups

The partners have identified the following target groups for their communication and dissemination activities:

- **Technology providers (industry)** - interested in transfer of new knowledge, e-CODUCT technology, exchange of experiences and providing guidance for policy recommendations;
- **Scientists' community (research & development)** - interested in replicating e-CODUCT concepts to other reactions and application areas (diversification)
- **National and European Policy Makers** - interested in the e-CODUCT technology for future deployment of electric technologies instead of current fuel-based ones and in policy recommendations

- **Standardization stakeholders and business associations** - ensure newly developed materials and electrified processes overcome non-technological market entry barriers such as normative and certification hurdles (e.g., CEFIC*, ESSENCIA*, etc).
- **Environmental sustainability stakeholders**
- **General public** – interested in possibilities of replacing fossil fuels with the use of new e-CODUCT technologies

3.3 Communication activities

All communication activities are carried out with the aim of raising awareness of the need to reduce CO_2 emissions and replace fossil fuels using new technologies.

To this end, all project partners implement the communication approaches provided by the lead communication partner in CDP, based on a balanced mix of promotional tools (website, social media content, newsletters, relevant public events at national/European level):

Table 1 Communication/dissemination means associated with respective objectives and target groups

Communication/Dissemination activities	Objective	Targeted Stakeholders	Timeline
WEB-based communication / dissemination			
Project website	Information and dissemination of knowledge Presentation of the results	All stakeholders	Constantly
Social Media	Information and dissemination of knowledge Presentation of the results	All stakeholders	Constantly
Project e-newsletters	Information and dissemination of knowledge Presentation of the results	All stakeholders - especially project Targeted stakeholders	Periodically based on project developments
EC Online Tools	Information and dissemination of knowledge Presentation of the results	All stakeholders - especially project Targeted stakeholders	Periodically based on project developments
Project presentation video	Information and dissemination of knowledge Presentation of the results	General public All interested stakeholders	As appropriate
Information flyer & publications	Information and dissemination of knowledge Presentation of the results	General public All interested stakeholders	As appropriate
EVENTS-based dissemination			
Project specific workshops organisation	Consultation, brainstorming, discussion and validation of project results and outputs	Relevant stakeholders of e-CODUCT	As appropriate according to the plan
Conferences, other events and workshops participation	Creating awareness Involvement of user groups and experts as well as a wider academic and expert community Presentation/validation of the technology	Communities of users and experts, core community of e-CODUCT, research community, other EU projects, general public	Continuously, based on the projects developments

	Networking and collaboration with relevant stakeholders and other projects		
e-CODUCT's identity kit	Awareness creation and messages dissemination/communication	All	As appropriate to make sure the material is always available for the events
EU Platforms	Information and dissemination of knowledge Presentation of the results	EU initiatives to which the e-CODUCT partners belong (e.g., the Processes4Planet partnership, the European Energy Research Alliance (EERA), and other platforms (SETAC, Zero-Emission Platform, SusChem, Carbon Capture and Storage Association).	Continuously, based on the projects developments
PRINT-based dissemination			
Printed dissemination material (posters, roll-up)	Information and dissemination of knowledge Presentation of the results	Relevant stakeholders (as above), general public, all interested stakeholders	As appropriate, based on project developments and results
PRESS-based dissemination			
Press and news releases	Awareness raising Media and other relevant "Multipliers" Engagement	All interested stakeholders	Periodically based on the project developments and results
Scientific publications			
Scientific papers and publications	Dissemination of knowledge to the relevant scientific community Presentation of the results	Research and academic community Other research projects	As appropriate, based on project phases and results
Patents and scientific publications in open access	Dissemination of knowledge to the relevant scientific community Presentation of the results	Research and academic community Other research projects	As appropriate, based on project phases and results
White paper	Dissemination of knowledge to the relevant stakeholders Presentation of the results	All interested stakeholders	As appropriate, based on project phases and results
Cooperation with sisters and other relevant projects and initiatives			
EU and National projects clustering activity	Exchange of information and knowledge Alignment of activities between relevant projects Cooperation in dissemination activities	EC sister and other relevant projects and initiatives	Continuously, as appropriate

3.3.1 e-CODUCT's identity kit

The following materials were produced in compliance with the graphic design guidelines: Information flyer (project introduction), PowerPoint template, press release template and e-newsletter template. The Identity Kit contains the project logo, public project presentation, flyer, multimedia material (video) as well as a PPT slide presentation and provides all partners with comprehensive and consistent dissemination tools. The e-CODUCT identity kit for all interested parties contains details about the project context, objectives and process for both professionals and the public.

The graphic design guide was distributed to all. It is considered mandatory that all partners who wish to create their own e-CODUCT related dissemination and promotion materials follow the guide.

3.3.2 Project logo

The project logo was designed in December 2022. Partners are requested to use the project logo and "European flag and funding reference" correctly as described in the e-CODUCT graphic design guidelines and in the CDP. In line with the CDP, partners must also refer to the project website reference (https://e-coduct.eu/) and social media profiles (LinkedIn @e-coduct project, Twitter @eCODUCT2022, YouTube @ecoduct2022) on all materials, outputs and deliverables (both paper and electronic) and display logo at events.

Figure 1 e-CODUCT logo

3.3.3 Information flyer

An information flyer has been produced and is available online and in print from month 6. The flyer contains general information about e-CODUCT and can be printed and used by the project partners to ensure maximum visibility of e-CODUCT at events, to increase the reach of the project to the general public and to maintain awareness of e-CODUCT among a wider audience.

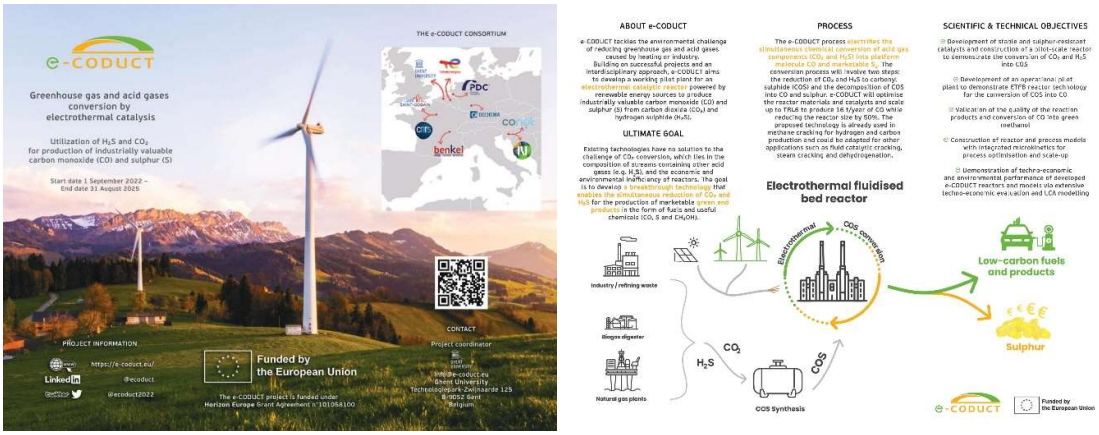


Figure 2 e-CODUCT Information Flyer

3.3.4 Videos

According to the project's grant agreement, Annex 1 (Part A), two videos have to be made: the first at project launch, presenting the project context and process, and the second during project implementation, presenting project objectives, progress and achievements. The first video is available since M6 on the e-CODUCT website (https://e-coduct.eu/) and on the Youtube channel (https://www.youtube.com/@ecoduct2022/playlists).

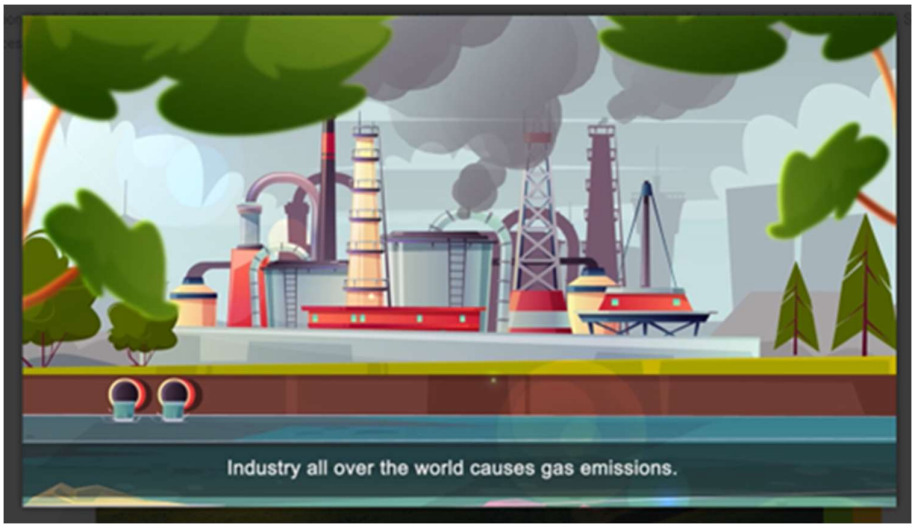


Figure 3 e-CODUCT video #1

3.3.5 e-CODUCT Presentation in PowerPoint

A general presentation of the e-CODUCT has been prepared in PowerPoint to introduce the project context, the process and value chain, the scientific and technological objectives and the key facts of the e-CODUCT. The presentation can be extended by the project partners and their respective project activities, providing they do not disclose any confidential information or with the formal consent of partners according to the Consortium Agreement rules. The presentation is available in the internal collaborative SharePoint.

Figure 4 e-CODUCT presentation in PowerPoint

3.3.6 e-CODUCT Project website

Deliverable D7.2 - Project website is provided under Task 7.2 - Communication and Dissemination Activities. According to the project`s grant agreement, Annex 1 (Part A), the e-CODUCT website should have been online from M4. The delivery of the webpage has however been delayed by 2 months (M6).

The delay is related to major corrections in the creation of the website and the prolonged absence of the external contractor who designed the website.

The project website is the main communication tool for disseminating and sharing information related to the project to all interested parties and contains details of the project objectives, actions, progress and results for both professionals and the public.

It contains a short and long description, all project details and project updates such as news, events and results.

https://e-coduct.eu/

As an integral part of the project communication, the website will be regularly updated and revised as needed throughout the project, especially in terms of structure and content, including news, publications and downloads, in order to follow the development of the project and facilitate navigation for users. The website will be maintained during the project implementation and for at least five years after the completion of e-CODUCT.

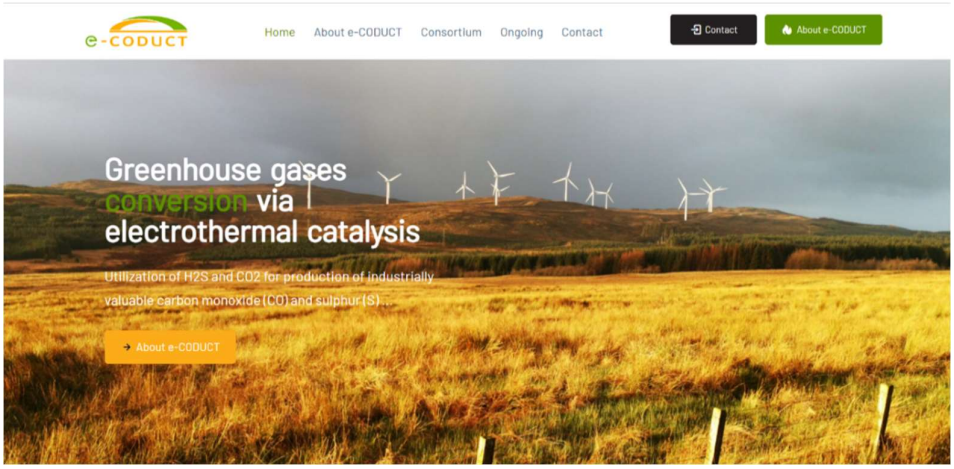


Figure 5 e-CODUCT website – home page

The website contains basic project information, public project results, news, event information and also offers value- added services such as publications, newsletters and links to related news, events and projects.
The main sections of the project website in the top menu include the following:

- **Home:** Intro page presenting the main concept of the project and the consortium, including funding and contact information in the footer.
- **About e-CODUCT:** This part of the website provides a general overview of the project, e-Coduct and the consortium. Consortium contains a brief description of the partners and their role in e-CODUCT.
- **News:** This part announces all project news and events based on the work plan, including project and working meetings and the presentation of the project at other workshops.
- **Results:** This section provides all dissemination, promotion and communication materials available to the public, including
    - *Publications* (Journal/Title/Authors/Partners/Publication Date/Link)
    - *Presentations* (Title/Event/Partners/Event date)
    - *Deliverables* (Deliverable Nb./File)

- **Contact us:** Here are the contact form and contact details to communicate with the project coordinator and dissemination and communication team.
- **Social Media profiles:** This information is located at the top and bottom of all pages and provides access to the project's pages Twitter, LinkedIn and YouTube.
- **Newsletter subscription area**

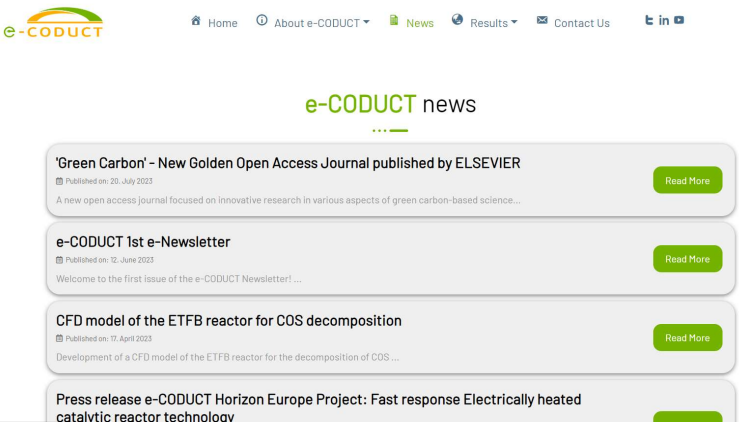


Figure 6 Screenshot of the updated section "News" of the project website

3.3.6.1 Website analytics

From the figure below, taken from the Google Analytics Platform, we can observe the following trend up to M12:

- Nb. of unique visitor on the site: 285
- Nb. of page views: 1.695

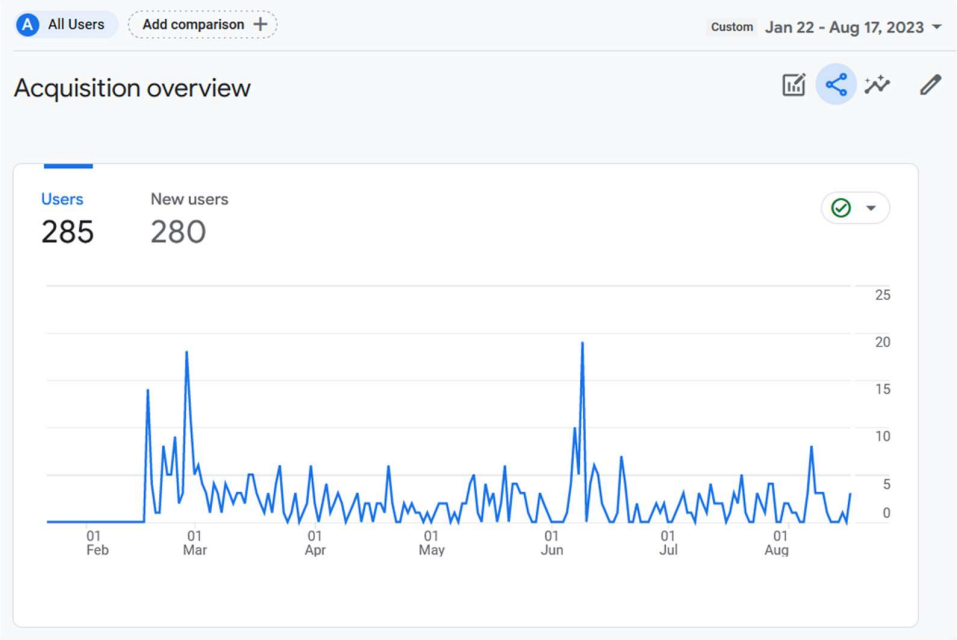


Figure 7 Google Analytics for www.e-coduct.eu - User Overview Analysis

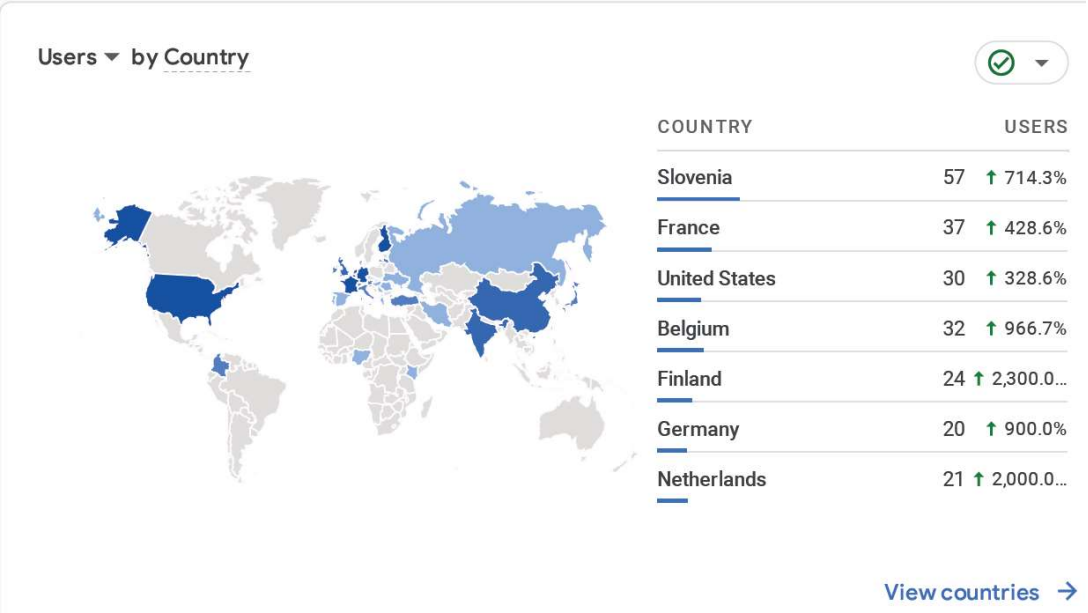
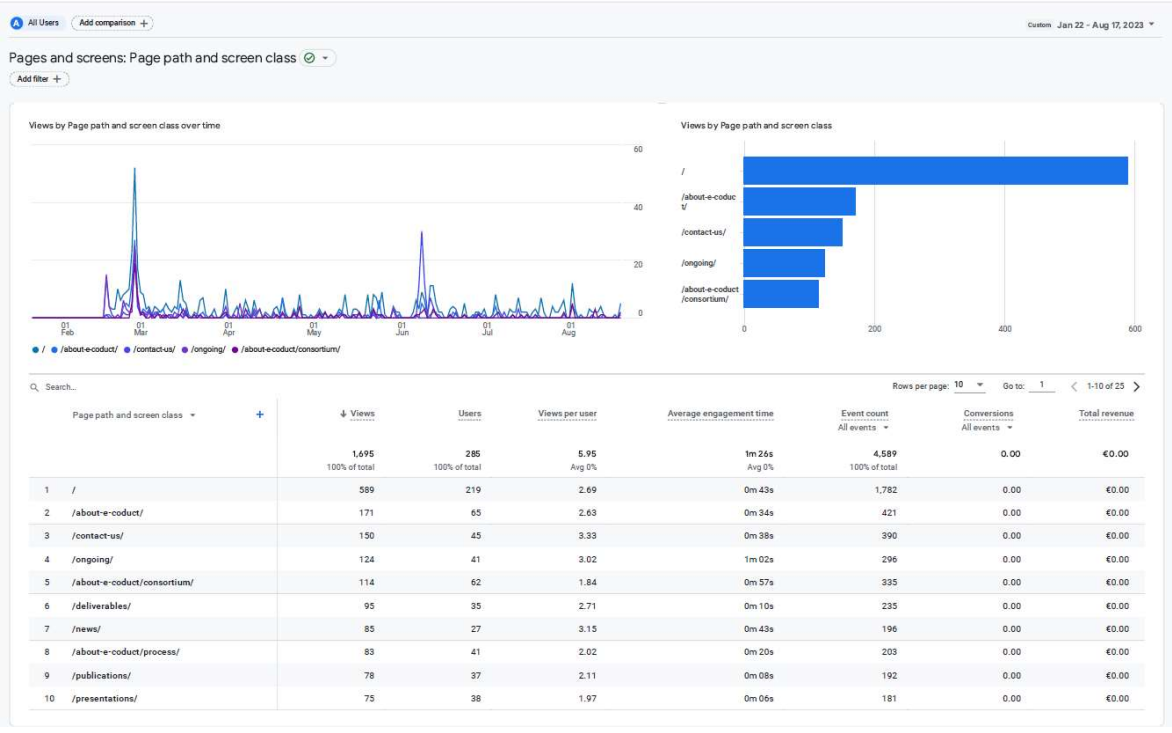


Figure 8 Google Analytics for www.e-coduct.eu - User Location Analysis

A significant percentage of the visitors is located in Slovenia, followed by France and Belgium.



	Page path and screen class	Views	Users	Views per user	Average engagement time	Event count All events	Conversions All events	Total revenue
		1,695 100% of total	285 100% of total	5.95 Avg 0%	1m 26s Avg 0%	4,589 100% of total	0.00	€0.00
1	/	589	219	2.69	0m 43s	1,782	0.00	€0.00
2	/about-e-coduct/	171	65	2.63	0m 34s	421	0.00	€0.00
3	/contact-us/	150	45	3.33	0m 38s	390	0.00	€0.00
4	/ongoing/	124	41	3.02	1m 02s	296	0.00	€0.00
5	/about-e-coduct/consortium/	114	62	1.84	0m 57s	335	0.00	€0.00
6	/deliverables/	95	35	2.71	0m 10s	235	0.00	€0.00
7	/news/	85	27	3.15	0m 43s	196	0.00	€0.00
8	/about-e-coduct/process/	83	41	2.02	0m 20s	203	0.00	€0.00
9	/publications/	78	37	2.11	0m 08s	192	0.00	€0.00
10	/presentations/	75	38	1.97	0m 06s	181	0.00	€0.00

Figure 9 Google Analytics of www.e-coduct.eu - Page content Analysis

The analyses show that the home page is the most visited page. About e-CODUCT and the Ongoing (news) are the next most visited pages, which means that users are interested in information about the project.

3.3.7 e-CODUCT Social Media

Social media were available from month 3 onwards. They are used to ensure the highest possible visibility of e-CODUCT on the internet, to increase the project's reach to the general public and to maintain awareness of e-CODUCT among a wider audience.

Various social networks (LinkedIn, YouTube, Twitter) are used as a marketing tool to regularly promote the project's activities and results, while also encouraging a wider discussion on the topics related to e-CODUCT activities. The e-CODUCT social media are linked to the project's website and are complemented by the partners' own channels.

3.3.7.1 LinkedIn

@e-coduct project https://www.linkedin.com/in/ecoduct/

LinkedIn is a business-oriented professional networking tool used by many as a source of information and inspiration, so a solid presence is necessary to reinforce the news on the page. It is therefore an important platform for discussions relevant to e-CODUCT, among experts in the field and various stakeholders in general. e-CODUCT maintains a LinkedIn profile page that allows to connect with relevant professionals and share most important news and developments with them. On the other hand, it gives the possibility to subscribe and post to the main groups relevant to the project's fields. The page has currently 61 connections, 90 followers, 9 posts, 6.382 total impressions.

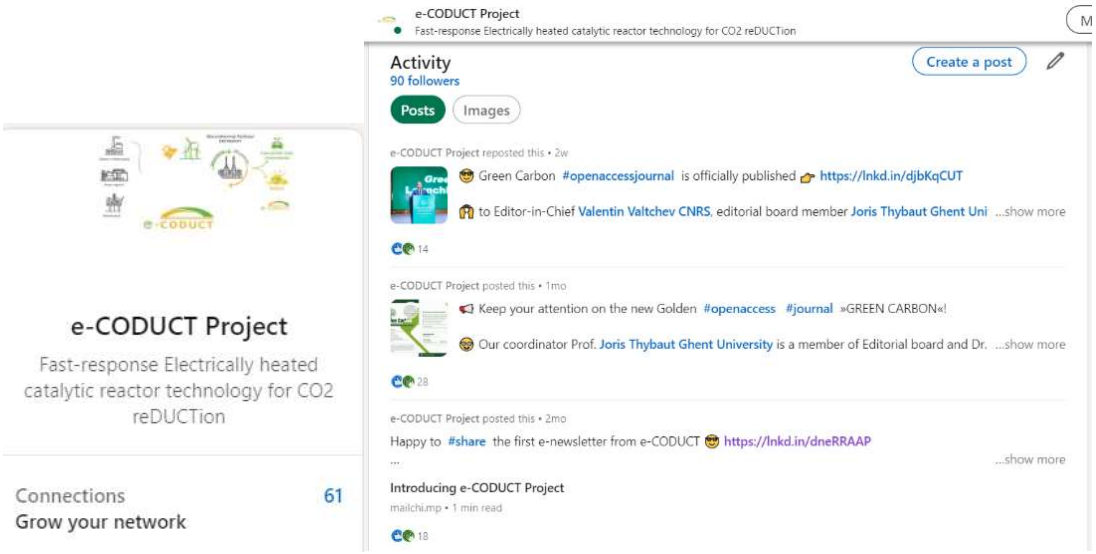


Figure 10 Activity of e-CODUCT on LinkedIn page

3.3.7.2 Twitter (now X)

Twitter: @eCODUCT2022 https://twitter.com/eCODUCT2022

As a fast and professional communication tool, Twitter (now X) enables real-time interactions and offers a very high potential to reach the target audience of e-CODUCT using hashtags and thematic tweets.

e-CODUCT has an active Twitter account (@eCODUCT2022) as of M3 and has used the hashtag #e-CODUCT for its tweets. The Twitter account is used to promote and disseminate e-CODUCT developments, news, events, results, etc. It also retweets relevant and interesting content from different sources. Last but not least, by targeting other relevant users, e-CODUCT not only gets access to more relevant content and updates, but also gains more followers.

As a Horizon Europe project, e-CODUCT follows the official Twitter account for the Horizon Europe programme @HorizonEU and thus becomes part of the Horizon Europe project community on social media. Since the launch of the e-CODUCT account in December 2022, the project's Twitter activities have resulted in 18 followers and 36 followed accounts. The total number of tweets is 7.

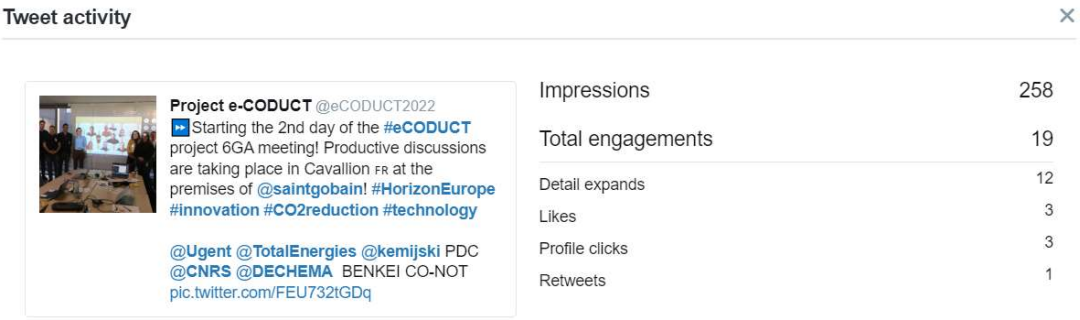


Figure 11 Example of Tweet with the relevant statistics

3.3.7.3 YouTube

@ecoduct2022 https://www.youtube.com/@ecoduct2022/about

YouTube works as a tool for communication with different stakeholders. e-CODUCT has its YouTube channel. As of August 2023, the first video has 167 views. The aim of the channel is to promote the e-CODUCT project.

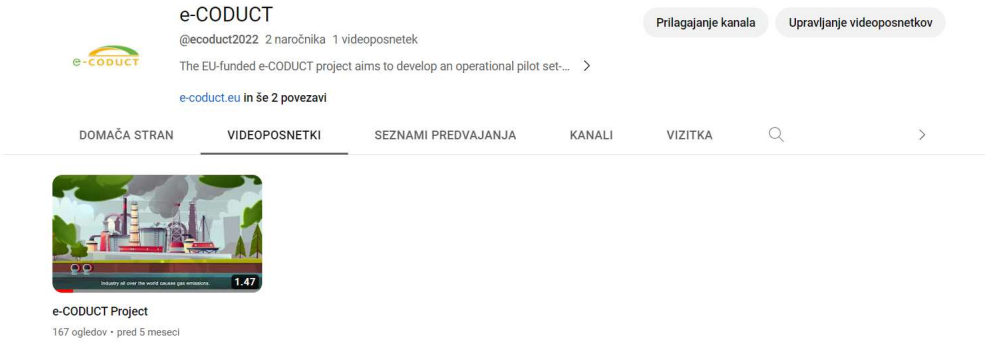


Figure 12 e-CODUCT YouTube profile

3.3.8 EC Online Tools

Horizon Magazine https://ec.europa.eu/research-and-innovation/en/horizon-magazine

A press release about the project was sent to the publisher RTD-HORIZON-MAGAZINE@ec.europa.eu. Horizon publishes three to five articles per week and in English only, and usually reports on research projects funded by the European Union (EU).

CORDIS EU research results https://cordis.europa.eu/en

The CORDIS page is updated with links to the website and social media https://cordis.europa.eu/project/id/101058100

To the editor of CORDIS 'editorial@cordis.europa.eu' the first press release was sent.

3.3.9 Press, news and e-newsletter releases

An average of at least 2 press/news releases per year are expected on specific project topics and milestones or to promote project events. These will be disseminated online, via social media and the website.

A press release and the first e-newsletter have already been produced to provide regular updates on what is happening in the project and to highlight key achievements. The National Institute of Chemistry is responsible for structuring, collecting/writing the content, layout and publishing the e-newsletter, while the project partners provide information on request and ensure the accuracy of the content. The online tool “Mailchimp” was used for publishing.

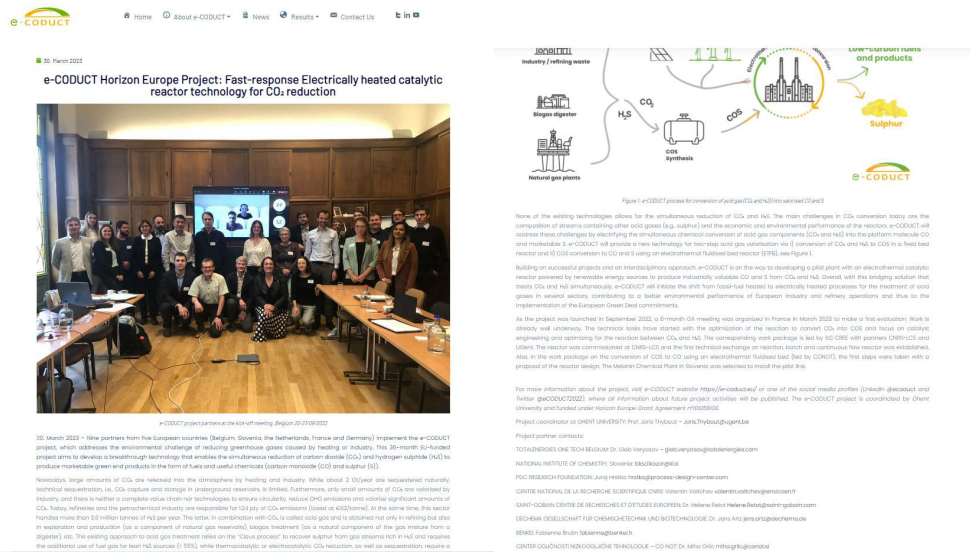
The e-newsletter will be published twice a year, based on the timetable of project developments/news and activities (e.g. organisation of events). A six-monthly newsletter will keep all interested parties informed about the progress of the project and will contain information on project events and conferences where e-CODUCT will be presented. It will have a direct connection with the project website and social media network. It will be available on the project and partners' website and distributed to all stakeholders.

The first edition of the e-CODUCT e-newsletter was launched online in June 2023 to communicate and explain the concepts and scope of the project. Links to both the project website and social media channels are provided (all are clickable and lead directly to the desired page) to make it easier for the interested reader to search for more information on our website and follow our social media accounts.

The 1st press release and e-newsletter are uploaded on the project website:

Press release https://e-coduct.eu/press-release-e-coduct-horizon-europe-project-fast-response-electrically-heated-catalytic-reactor-technology/

1st e-Newsletter: https://e-coduct.eu/e-coduct-1st-e-newsletter/



e-CODUCT

Home About e-CODUCT News Results Contact Us

30. March 2023

e-CODUCT Horizon Europe Project: Fast-response Electrically heated catalytic reactor technology for CO_2 reduction

e-CODUCT project partners at the kick-off meeting, Belgium 20-21/09/2022

30. March 2023 – Nine partners from five European countries (Belgium, Slovenia, the Netherlands, France and Germany) implement the e-CODUCT project, which addresses the environmental challenge of reducing greenhouse gases caused by heating or industry. This 36-month EU-funded project aims to develop a breakthrough technology that enables the simultaneous reduction of carbon dioxide (CO_2) and hydrogen sulphide (H_2S) to produce marketable green end products in the form of fuels and useful chemicals (carbon monoxide (CO) and sulphur (S)).

Nowadays, large amounts of CO_2 are released into the atmosphere by heating and industry. While about 2 GT/year are sequestered naturally, technical sequestration, i.e., CO_2 capture and storage in underground reservoirs, is limited. Furthermore, only small amounts of CO_2 are valorised by industry, and there is neither a complete value chain nor technologies to ensure circularity, reduce GHG emissions and valorise significant amounts of CO_2. Today, refineries and the petrochemical industry are responsible for 1.24 Gt of CO_2 emissions (taxes at €82/tonne), At the same time, this sector handles more than 3.0 million tonnes of H_2S per year. The latter, in combination with CO_2, is called acid gas and is obtained not only in refining but also in exploration and production (as a component of natural gas reservoirs), biogas treatment (as a natural component of the gas mixture from a digester), etc. The existing approach to acid gas treatment relies on the "Claus process" to recover sulphur from gas streams rich in H_2S and requires the additional use of fuel gas for lean H_2S sources (< 55%), while thermocatalytic or electrocatalytic CO_2 reduction, as well as sequestration, require a

Figure 1: e-CODUCT process for conversion of acid gas (CO_2 and H_2S) into valorised CO and S

None of the existing technologies allows for the simultaneous reduction of CO_2 and H_2S. The main challenges in CO_2 conversion today are the composition of streams containing other acid gases (e.g., sulphur) and the economic and environmental performance of the reactors. e-CODUCT will address these challenges by electrifying the simultaneous chemical conversion of acid gas components (CO_2 and H_2S) into the platform molecule CO and marketable S. e-CODUCT will provide a new technology for two-step acid gas valorisation via i) conversion of CO_2 and H_2S to COS in a fixed bed reactor and ii) COS conversion to CO and S using an electrothermal fluidised bed reactor (ETFB), see Figure 1.

Building on successful projects and an interdisciplinary approach, e-CODUCT is on the way to developing a pilot plant with an electrothermal catalytic reactor powered by renewable energy sources to produce industrially valuable CO and S from CO_2 and H_2S. Overall, with this bridging solution that treats CO_2 and H_2S simultaneously, e-CODUCT will initiate the shift from fossil-fuel heated to electrically heated processes for the treatment of acid gases in several sectors, contributing to a better environmental performance of European industry and refinery operations and thus to the implementation of the European Green Deal commitments.

As the project was launched in September 2022, a 6-month GA meeting was organized in France in March 2023 to make a first evaluation. Work is already well underway. The technical tasks have started with the optimization of the reaction to convert CO_2 into COS and focus on catalyst engineering and optimizing for the reaction between CO_2 and H_2S. The corresponding work package is led by SO CIRE with partners CNRS-LCS and UGent. The reactor was commissioned at CNRS-LCS and the first technical exchange on reaction, batch and continuous flow reactor was established. Also, in the work package on the conversion of COS to CO using an electrothermal fluidised bed (led by CONOT), the first steps were taken with a proposal of the reactor design. The Melamin Chemical Plant in Slovenia was selected to install the pilot line.

For more information about the project, visit e-CODUCT website https://e-coduct.eu/ or one of the social media profiles (LinkedIn @ecoduct and Twitter @eCODUCT2022), where all information about future project activities will be published. The e-CODUCT project is coordinated by Ghent University and funded under Horizon Europe Grant Agreement n°101058100.

Project coordinator at GHENT UNIVERSITY: Prof. Joris Thybaut – Joris.Thybaut@ugent.be

Project partner contacts:

TOTALENERGIES ONE TECH BELGIUM: Dr. Oleb Veryasov – gleb.veryasov@totalenergies.com

NATIONAL INSTITUTE OF CHEMISTRY, Slovenia: blaz.likozar@ki.si

PDC RESEARCH FOUNDATION: Juraj Hrstko: hrstko@process-design-center.com

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS: Valentin Valtchev valentin.valtchev@ensicaen.fr

SAINT-GOBAIN CENTRE DE RECHERCHES ET D'ETUDES EUROPEEN: Dr. Helene Retot: Helene.Retot@saint-gobain.com

DECHEMA GESELLSCHAFT FUR CHEMISCHTECHNIK UND BIOTECHNOLOGIE: Dr. Jens Artz jens.artz@dechema.de

BENEQ: Fabienne Brulin fabienne@beneq.fi

CENTER ODLICNOSTI NIZKOOGLJICNE TEHNOLOGIJE – CO NOT: Dr. Miha Grilc miha.grilc@conotsi

June 2023

Introducing e-CODUCT project

Dear reader,

Welcome to the first issue of the e-CODUCT Newsletter! We want to regularly inform you about the progress and results of the project, events and networking opportunities, as well as the activities and initiatives of the e-CODUCT partners related to scientific and technological solutions to treat CO_2 and H_2S - the most common by-products in industrial and refinery operations.

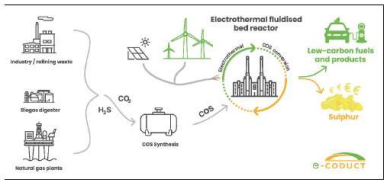
We hope you find the content of the e-CODUCT newsletter interesting and relevant to your work! Feel free to forward it to your colleagues working in this field!

Best regards,
e-CODUCT Project team

e-CODUCT project partners at the kick-off meeting, Belgium 20-21/09/2022

ABOUT e-CODUCT

The EU-funded e-CODUCT project had a successful start in September 2022. The e-CODUCT tackles the environmental challenge of reducing greenhouse gas and acid gases caused by heating or industry. Existing technologies have no solution to the challenge of CO_2 conversion, which lies in the composition of streams containing other acid gases [e.g. H_2S], and the economic and environmental inefficiency of reactors. The e-CODUCT will address these challenges by electrifying a simultaneous chemical conversion of acid gas components [CO_2 and H_2S] into platform molecule CO and marketable S. The e-CODUCT will provide a new technology for two-step acid gas valorisation via i) conversion of CO_2 and H_2S into COS in a fixed bed reactor, and ii) COS conversion into CO and S using an electrothermal fluidised bed [ETFB] reactor:



e-CODUCT process for conversion of acid gas (CO_2 and H_2S) into valorised CO and S.

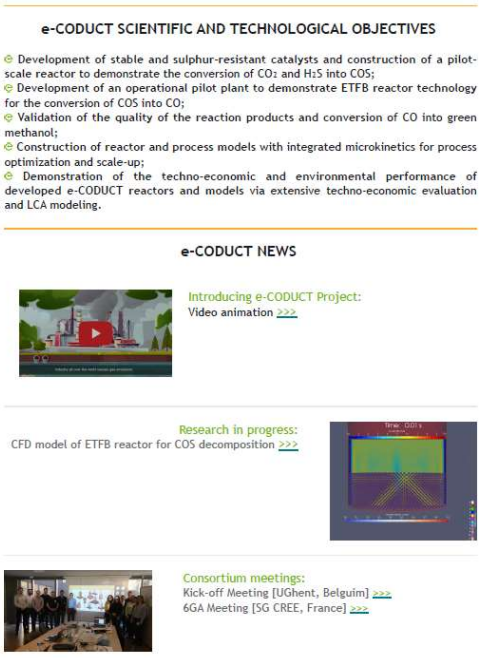
The fluidised bed electrothermal reactor will produce industrially valuable carbon monoxide [CO] and sulphur [S] from carbon dioxide [CO_2] and hydrogen sulphide [H_2S]. The conversion process will involve two steps: the reduction of CO_2 and H_2S to carbonyl sulphide [COS] and the decomposition of COS into CO and sulphur. The e-CODUCT will optimise the reactor materials and catalysts and scale up to TRL6 to produce 16 t/year of CO while reducing the reactor size by 50%. The proposed technology is already used in methane cracking for hydrogen and carbon production and could be adapted for other applications such as fluid catalytic cracking, steam cracking and dehydrogenation.

"Building on successful projects and an interdisciplinary approach, e-CODUCT partners are developing a breakthrough technology that enables the simultaneous reduction of CO_2 and H_2S to produce marketable green end products in the form of fuels and valuable chemicals. Our bridging solution, tackling CO_2 and H_2S together, will contribute to a better environmental performance of European industry and refinery operations and thus to the implementation of the European Green Deal commitments."

dr. Joris W. Thybaut
Ghent University
Laboratory for Chemical Technology
project coordinator

Subscribe

e-CODUCT PARTNER CONSORTIUM



e-CODUCT SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES

- Development of stable and sulphur-resistant catalysts and construction of a pilot-scale reactor to demonstrate the conversion of CO_2 and H_2S into COS;
- Development of an operational pilot plant to demonstrate ETFB reactor technology for the conversion of COS into CO;
- Validation of the quality of the reaction products and conversion of CO into green methanol;
- Construction of reactor and process models with integrated microkinetics for process optimization and scale-up;
- Demonstration of the techno-economic and environmental performance of developed e-CODUCT reactors and models via extensive techno-economic evaluation and LCA modeling.

e-CODUCT NEWS

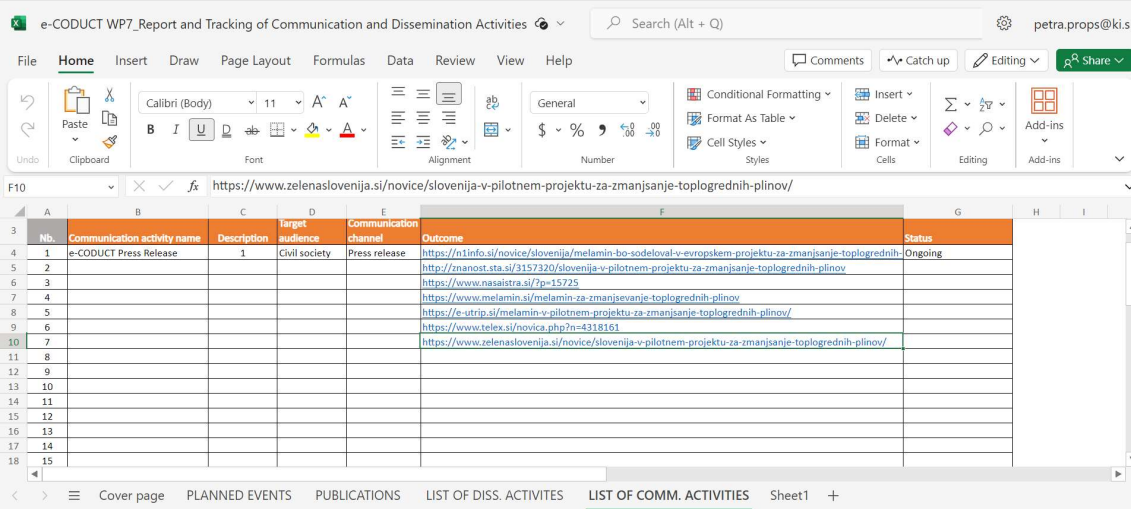
Introducing e-CODUCT Project:
Video animation >>>

Research in progress:
CFD model of ETFB reactor for COS decomposition >>>

Consortium meetings:
Kick-off Meeting [UGhent, Belguim] >>>
6GA Meeting [SG CREE, France] >>>

Figure 14 e-CODUCT 1st e-Newsletter

Project partners are asked to fill in the information in the SharePoint table **e-CODUCT WP7_Report and Tracking of Communication and Dissemination Activities.xlsx,** each time they perform any communication activities. By the end of M12, this list amounted to 7 articles.



Nb.	Communication activity name	Description	Target audience	Communication channel	Outcome	Status
1	e-CODUCT Press Release	1	Civil society	Press release	https://n1info.si/novice/slovenija/melamin-bo-sodeloval-v-evropskem-projektu-za-zmanjsanje-toplogrednih-	Ongoing
2					http://znanost.sta.si/3157320/slovenija-v-pilotnem-projektu-za-zmanjsanje-toplogrednih-plinov	
3					https://www.nasaistra.si/?p=15725	
4					https://www.melamin.si/melamin-za-zmanjsevanje-toplogrednih-plinov	
5					https://e-utrip.si/melamin-v-pilotnem-projektu-za-zmanjsanje-toplogrednih-plinov/	
6					https://www.telex.si/novica.php?n=4318161	
7					https://www.zelenaslovenija.si/novice/slovenija-v-pilotnem-projektu-za-zmanjsanje-toplogrednih-plinov/	

Figure 15 Articles published in Slovenian Media related to e-CODUCT Press release

3.4 Dissemination activities

Project partners are asked to fill in the information in the SharePoint table **e-CODUCT WP7_Report and Tracking of Communication and Dissemination Activities.xlsx** each time they perform any dissemination activities.

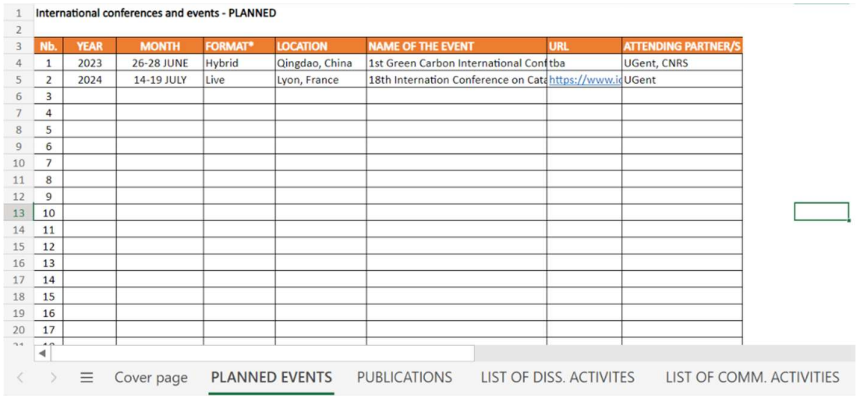
3.4.1 Publications

In order to keep the project participants' submissions, the respective SharePoint table has been created. Project partners are asked to fill in the information in the spreadsheet each time they make relevant publications. By the end of M12, this list amounted to 0 publications.

3.4.2 Events and workshops

To promote and disseminate the project results and raise awareness on advantages and opportunities of e-CODUCT's technology, partners are asked to disseminate project updates and results at relevant sector events.

> **Project partners are asked to fill in the information in the SharePoint table e-CODUCT WP7_Report and Tracking of Communication and Dissemination Activities.xlsx each time they attend relevant events.** In advance, (international) events must be selected at which e-CODUCT can be presented - Sheet2 (Planned events). It is expected that the list is very dynamic and needs to be constantly updated.



International conferences and events - PLANNED

Nb.	YEAR	MONTH	FORMAT*	LOCATION	NAME OF THE EVENT	URL	ATTENDING PARTNER/S
1	2023	26-28 JUNE	Hybrid	Qingdao, China	1st Green Carbon International Conf	tba	UGent, CNRS
2	2024	14-19 JULY	Live	Lyon, France	18th Internation Conference on Cata	https://www.id	UGent
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							

Cover page | PLANNED EVENTS | PUBLICATIONS | LIST OF DISS. ACTIVITES | LIST OF COMM. ACTIVITIES

Figure 16 Spreadsheet created to list planed participation in events

3.4.2.1 Participation to events

In the first year of the e-CODUCT project, partners attended one event to present the project activities:

1st Green Carbon international Conference Dissemination Event

e-CODUCT Project is presented at 1st Green Carbon international Conference in China Event Date: July 26-28, 2023 **Venue of the event**: Qingdao, Shandong, China, and online **Size-Audience:** 300

Impact: ICGC aims to provide an interdisciplinary academic exchange platform and academic community for scientific and technological innovation in the area of CO2 emission reduction and sustainable development. The conference focused on carbon resources, carbon conversion technologies, carbon life cycle management, and breakthrough developments in green carbon science. Valentin Valtchev (CNRS) and Joris Thybaut (UGent) were keynote speakers. Thybaut presented the topic Green Carbon Reaction Engineering: Catalyst and Process Design for Sustainability and e-CODUCT project.

3.4.3 Project workshops

Aim: promote the developed e-CODUCT concept.

First workshop in Brussels – 17.1.2024 (online)

Target group: policymakers, members of the European Parliament, representatives of regions, lobbyist organizations and other stakeholders.

Figure 17 1st Workshop - e-CODUCT and (sister) Horizon Europe Projects - SAVE THE DATE

e-CODUCT, EReTech and eQATOR are Horizon Europe sister project under call HORIZON-CL4-2021-RESILENCE-01. e-CODUCT has already organised a first cooperation meeting to hold the first joint project workshop “The Electric Decade – Realising the Green Deal through electrification and CO2 reduction": Discussion on challenges and innovative catalytic solutions for the chemical processing industry. The project TITAN and STORMING will also act as co-organisers. The first steps have been taken and the event has been announced.

eQATOR (Electrically heated catalytic reforming reactors) focuses on using renewable power sources for the industrial production of chemicals from renewable carbon sources to significantly reduce CO_2 emissions. eQATOR plans to show how biogas could play such a role, by developing scalable catalytic reactor technology for the conversion of biogas to syngas. The reactor will be electrically powered and more efficient than existing tech, enabling conversion into higher-value products such as methanol, hydrogen, and synthetic fuels. The efficiency gains will be demonstrated by electrically heating the catalyst, either by resistive or microwave heating. Implementation of the eQATOR technology is estimated to decrease life-cycle CO_2 emissions for syngas production by 60-80 % and save from 7 Mt CO_2/year in 2030 to 45 Mt CO_2/year in 2045.

EReTech (Electrified Reactor Technology) proposes to develop and validate at TRL 6 a transformative electrically heated reactor, together with the tailored catalyst for steam methane reforming, using a 250 kW unit. Based on SYPOX technology the reactor hosts ceramic supported structured catalyst, electrically heated by internal direct contact resistive heating elements. This allows achieving an energy efficiency close to 95%, i.e. nearly twice the value typical for gas-fired heat boxes, and a reactor volume that is two orders-of-magnitude smaller. As designed, the 250 kW reactor integrated with all required peripherals in a reforming skid will be used to produce approximately 400 kg/day of 99.999% pure H_2. This is equivalent to the size of a commercially relevant biogas reforming plant for the decentralized

production of renewable H_2. The targeted design will allow to increase the power via parallelization, while scale-up will be conceptually targeted for larger capacities (>20 MW electrical input). EReTech's final goal is to offer solutions for the decentralized market and for the decarbonization of existing or new centralized reforming plants.

The TITAN project will develop an innovative process that will enable production of cost-competitive hydrogen together with integrated carbon sequestration. It will be achieved by direct conversion of biogas (CO_2 containing methane-rich feedstock) into hydrogen and valuable carbon materials. The project will also consider further valorisation to power, chemicals and fuels. As a result, the process has the potential to produce 0.6 Mt of green hydrogen in 2030 to almost 4 Mt per year from 2045 on, corresponding to the saving of 237 Mt CO_2 by 2045.

STORMING will develop breakthrough and innovative structured reactors heated using renewable electricity, to convert fossil and renewable CH_4 into CO_2-free H_2 and highly valuable carbon nanomaterials for battery applications.

Second workshop in Slovenia (Y3 - Final conference)/TBD

3.4.4 Testing site visits

Aim: inform journalists about latest results and solutions developed in the project.

Timeline: Y2 and Y3/TBD

3.4.5 Final conference

Aim: The event will take place at the National Institute of Chemistry (Ljubljana, Slovenia) in collaboration with the Trial Site. The Experimental Site will be used to its full potential within the project and will be open to the public to disseminate key findings and engage with an interdisciplinary group of stakeholders. The final conference will feature speakers from the fields of research and innovation, academia, business and policy makers.

Timeline: Y3

3.4.6 White paper

During the project, a white paper will be produced on the electrification of processes with a focus on the technology of e-CODUCT. This will include the technical results as well as the results on LCA, TEA, and social perception.

3.4.7 Patents and scientific publications in open access

Academic partners and other partners will prepare at least 10 patents and 16 publications in high-impact factor journals.

Project partners are asked to fill in the information in the SharePoint table e-CODUCT WP7_Report and Tracking of Communication and Dissemination Activities.xlsx each time they submit their relevant publications.

By the end of M11, this list amounted to 0 patents and scientific publications in open access.

3.4.8 EU Platforms

Besides the dissemination opportunities, e-CODUCT is also engaged with activities fostered by the international associations to which the project partners belong.

The project will take advantage of the wide reach of EU initiatives to which the e-CODUCT partners belong (e.g., the Processes4Planet partnership, the European Energy Research Alliance (EERA), and other platforms (SETAC, Zero-Emission Platform, SusChem, Carbon Capture and Storage Association). The e-CODUCT partners will take an active role in the European initiatives and present the main results and opportunities of the project. e-CODUCT will also be represented at the annual event of the SET plan. Each partner is responsible to become aware of the dissemination opportunities related to their linked association(s) and share the information with the WP7 leader.

By the end of M11, this list amounted to 0 EU Platforms.

3.4.9 EU and National project clustering activity

Organization of a joint workshop with (sister) Horizon Europe projects (see 3.4.3 Project Workshops).

3.5 Updated communication and dissemination activities plan

Table 2 Communication and dissemination action plan

Type	Description	Time	Responsible partner	Status
e-CODUCT logo	The e-CODUCT logo has been designed and will be used in all documents and publications of the project	M4	NIC, all PP	Completed
e-CODUCT PPT template	Template to be used for the project presentations	M6	NIC, BENEKI	Completed
e-CODUCT Project website	Online presence of e-CODUCT	M6	NIC, all pp	Completed
Twitter account	Create a Twitter Account for disseminating project news & developments	M3	NIC	Completed
LinkedIn account	Create LinkedIn Account for disseminating project news & developments	M3	NIC	Completed
YouTube account	Create a YouTube Account for disseminating project videos	M3	NIC	Completed
Project presentation video	Produce first animated video for project presentation	M6	NIC, UGent, Total	Completed
Project Flyer	Design project flyer depicting the concepts of the project	M6	NIC, UGent	Completed
Project poster/roll-up – initial version	Design a poster to promote the project at different events. A poster template can also serve as a basis for creating new posters with updated content	M14	NIC	Pending

Infographics	Produce infographics depicting the results (in the advanced phase of the project, when meaningful results are already available)	M14-M36	NIC, UGent, TOTAL	Pending
Press Releases	M6 - The start / commencement of the Project M12 – The first results M18 – The joint workshop and project progress M24 – On project progress M30 - White paper on process electrification (e-CODUCT technical results, LCA, TEA and social perception) M36 - Presentation of the pilot demonstrational centre and finalization of the project.	M1-M36	NIC, all PP	Continuous
Publications	A considerable number of publications are expected at conferences and in professional journals	M12-M36	All PP	Pending
Events' participation	Participate in events (e.g. conferences, workshops, national events) to raise awareness of e-CODUCT and disseminate the results of the project	M1-36	All PP	Continuous
e-Newsletter	Dissemination of project news, achievements and events in the form of an e-newsletter	2per year	NIC, all PP	Continuous
e-CODUCT #1 Workshop	Joint (online) event with sister projects and related Horizon Europe projects. T Topic – electrification of process in the next decade	M16	UGent, NIC, BENKEI, All PP	Continuous
e-CODUCT #2 Workshop	To disseminate key findings and engage with an interdisciplinary group of stakeholders.	M24-M36	NIC, All pp	Pending
Testing site visits	Inform journalists about latest results and solutions developed in the project.	M24-M36	All PP	Pending
Final Conference	To disseminate key findings and engage with an interdisciplinary group of stakeholders. Involve speakers from the fields of research and innovation, academia, business and policy makers. Presentation of the pilot demonstrational centre of Melamin (Slovenia)	M34	NIC, CONOT, all PP	Pending
Video #2	Produce second video to present project results	M30	NIC, all PP	Pending
Cooperation with other projects / initiatives	Collaboration for mutual dissemination and knowledge exchange with other relevant projects & initiatives	M9-M36	UGent/ All PP	Continuous
White paper	Paper on electrification of processes with a focus on the technology of e-CODUCT to provide policy makers a clear view on the process issues	M34	TOTAL, UGent, all PP	Pending

4 COMMUNICATION AND DISSEMINATION KEY PERFORMANCE INDICATORS

Dissemination and communication activities are closely monitored and coordinated by WP7 leader to track all ongoing activities in this task (T7.2). In order to measure the impact of the activities carried out and to adapt the CDP to achieve the expected results and maximise visibility, a set of metrics has been developed and presented in the CDP (D7.1). These metrics provide a continuous overview of the scope and effectiveness of the dissemination and communication activities carried out.

The performance of e-CODUCT's communication channels and tools is analysed using a wide range of measurement tools and software, such as Google analytics, Twitter analytics and Page Insights from LinkedIn. To measure progress, achievable qualitative and quantitative targets were set during dissemination planning.

The following tables show the results of the communication and dissemination activities in the period M1 – M12:

Table 3 Key performance indicators - Communication

KPI - Communication	M12 result (overall)	M24 result (overall)	M36 result (overall)
Nb. of visits on the e-CODUCT website	1.695	/	/
Nb. of attended events and conferences	1	/	/
Nb. of registrations to e-CODUCT newsletter	416		
Nb. of invitations to present e-CODUCT to stakeholders (EU Platforms)	0	/	/
Nb. of (online) articles published	0	/	/
Nb. of participants to webinars/workshops organised by e-CODUCT	0	/	/
Nb. of followers on Twitter	18	/	/
Engagement of LinkedIn posts (impressions)	6382	/	/
Nb. of followers on YouTube channel	2	/	/
Number of e-CODUCT videos views	167	/	/
Nb. of press and news releases	2	/	/

Table 4 Key performance indicators - Dissemination

Type of dissemination	Workshop/ Events organization or contribution	Open-Access Journal articles	EC online tools (Cordis/ Horizon EU)	Conference papers	General public presentation	Video	White paper	Patents
UGENT	1	0	0	0	0	0	0	0
TOTB	0	0	0	0	0	0	0	0
NIC	0	0	1	0	0	1	0	0
PDC	0	0	0	0	0	0	0	0
CNRS- LCS	0	0	0	0	0	0	0	0
SG CREE	0	0	0	0	0	0	0	0
DECHEMA	0	0	0	0	0	0	0	0
BENKEI	0	0	0	0	0	0	0	0
CO NOT	0	0	0	0	0	0	0	0
Totals	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**0**

5 CONCLUSION

This report provides an overview of the communication and dissemination work undertaken by the project in its first year of implementation. It summarizes the main activities related to Tasks 7.1, 7.2 and 7.3 carried out by the National Institute of Chemistry (NIC) in close cooperation with the lead partner UGent and the administrative partner BENKEI..

e-CODUCT has prepared a detailed Communication and Dissemination Plan (presented in Deliverable D7.1 “Communication and Dissemination Plan” at M6), an internal tool that provides a consistent framework for all activities necessary to disseminate and sustain the concepts, achievements and technical and knowledge results developed under the project. It is an ongoing document that allows for any necessary adaptation. The consortium is aware that dissemination, communication and exploitation activities are essential throughout the project and are integrated in all work packages.

The main achievements of this period in terms of dissemination and communication are the confirmation of the project website as a high-quality dissemination channel with an increasing number of visitors, the establishment and growth of the project’s social media channels and the creation of a strong brand identity for the project. A number of important relationships have been established with related projects to be used for dissemination – the topic and date for the joint online workshop in January 2024 have been set and agreed. The project partners UGENT and CNRS participated in the 1st Green Carbon International Conference (ICGC) in July 2023 as keynote speakers and presented e-CODUCT. The ICGC aims to create an interdisciplinary academic exchange platform and community for scientific and technological innovation in the field of CO_2 emission reduction and sustainable development.

During the reporting period, most of the initial activities proposed in the CDP were implemented. However, due to the initial phase of the project, partners have not yet participated in dissemination events (with presentations, poster presentations or for networking reasons). Intensive work on this part is planned for Y2 and Y3. In M13, high quality promotional material for the project will be produced (posters and roll-ups) to be widely used and disseminated at upcoming events. The first flyer to introduce the concepts of e-CODUCT to both professional stakeholders and a wider audience was published and widely promoted on the website and social media. The first issue of the e-newsletter was put online in June 2023 to inform about important news and events.

The electronic dissemination tools for the project (website, social media presence) have been in operation since the beginning of the project, as the consortium is convinced that web tools can be an important tool for further dissemination of the e-CODUCT vision and developments.

In order to measure the achieved impact of the proposed strategy and plan, a set of indicators has been defined and will be monitored and reported. After the first year of project implementation, the current data is below expectations and needs to be improved through various actions, such as participation in conferences, events, meetings and cluster activities. It is expected that communication activities will be intensified in year 2 based on the first project results.