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Supercritical CO<sub>2</sub> power cycles demonstration in Operational environment Locally valorising industrial Waste Heat

## D8.2 – CO<sub>2</sub>OLHEAT public website

Lead partner: ETN





## Project Contractual Details

<b>Project Title</b>	Supercritical CO <sub>2</sub> power cycles demonstration in Operational environment Locally valorising industrial Waste Heat
<b>Project Acronym</b>	CO <sub>2</sub> OLHEAT
<b>Grant Agreement No.</b>	101022831
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<b>Duration</b>	48 months
<b>Website</b>	www.co2olheat-h2020.eu

## Deliverable Details

<b>Number</b>	8.2		
<b>Title</b>	CO <sub>2</sub> OLHEAT public website		
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<b>Deliverable responsible</b>	ETN		
<b>Contributing Author(s)</b>	Jitka Spolcova		
<b>Reviewer(s)</b>			
<b>Final review and quality approval</b>	Rene Vijgen		

## Document History

Version	Date	Name	Comments <sup>2</sup>
0	27/09/2021	Jitka Spolcova	Creation
V1	29/09/2021	Rene Vijgen	Final comments

<sup>1</sup> Dissemination level: **PU** = Public, **PP** = Restricted to other programme participants (including the JU), **RE** = Restricted to a group specified by the consortium (including the JU), **CO** = Confidential, only for members of the consortium (including the JU)

<sup>2</sup> Creation, modification, final version for evaluation, revised version following evaluation, final





## Executive summary

CO2OLHEAT aims to unlock the potential of industrial waste heat and transform it into power (WH2P) via supercritical CO<sub>2</sub> cycles (sCO<sub>2</sub>).

Through the development of a 2MW sCO<sub>2</sub> power block and its integration in the cement plant of CEMEX in Prachovice (CZ), CO2OLHEAT will enable the operation and design of a novel integrated WH2P plant layout to untap the industrial waste heat valorisation at  $T > 400^{\circ}\text{C}$  in an efficient and cost-effective way. The concept will be studied for upscale and replication in other type of resource and energy intensive industries and in power plants.

This report corresponds to the D8.2 – CO2OLHEAT public website. It presents the sections, features and specifications of the CO2OLHEAT website.



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## List of abbreviations

ETN – European Turbine Network  
EU – European Union  
GDPR – General Data Protection Regulation  
sCO<sub>2</sub> – supercritical CO<sub>2</sub>  
WH2P – Waste Heat to Power

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## Introduction

The current deliverable (8.2) is entitled “CO2OLHEAT Public Website”. It is a public document produced within Task 8.1 “Dissemination and communication activities” (WP8) of the CO2OLHEAT project.

The main objective of WP8 is to conduct targeted, effective and high impact dissemination and communication activities, and the public website described in this document is a structural pillar to achieve optimal communication and dissemination results throughout the entirety of the project and beyond.

This report describes the structure and the main features of the project website, which has been designed to provide detailed technical information for the scientific community while remaining accessible and self-explanatory for the general public.

The website will be regularly updated with the latest information on the project. It will also feature news on policy and projects related to sCO<sub>2</sub> technology, as well as on active collaborations between the project, existing initiatives, and other (“sister”) projects. It features a repository for articles, press releases and scientific publications. The website will be responsive, SEO optimised and GDPR compliant.

The official project website ([www.co2olheat-h2020.eu](http://www.co2olheat-h2020.eu)) is available at the end of M4 (end of September 2021). The present report aims at explaining the structure, the visual elements, the content and the decision process behind the website’s concept. The project website is integral part of the CO2OLHEAT communication and dissemination strategy, which will be detailed in the D 8.3 – Plan for the Exploitation and Dissemination of Results (PEDR).

Next to its captivating design, the website is structured to provide plenty of information to the reader. Built as a Russian doll, the website offers opportunity to discover more and dig into the details of the project without compromising its general readability.



## Technical details

The CO2OLHEAT website is accessible via its official domain <http://www.co2olheat-h2020.eu> as well as by <http://www.co2olheat.eu>. The second domain redirect the user to the official one. ETN, as project coordinator and as leader of dissemination and communication activities, has secured the registration of these specific URL names. The growing popularity of sCO<sub>2</sub> technology and its association with cool and heat made crucial to secure an URL that would identify unequivocally the project funded under the Horizon 2020 research and innovation programme, thus the choice to insert the specification “h2020” after the name CO2OLHEAT. This added layer increases clarity and ensures that the project is easily findable. However, to cater for various typos, the project team decided to register also the simplified version of the name ([www.co2olheat.eu](http://www.co2olheat.eu)). As the name “CO2OLHEAT” is not largely common, all the social media handles related to the project will feature only the name “CO2OLHEAT”.

The CO2OLHEAT website has been built by a professional creative and communication agency using WordPress 5.8.1. WordPress is a free and open-source content management system (CMS) based on PHP and MySQL. WordPress features include plugin architecture and a template system.

The website features specific plugins that allow full customization of each page, allowing to reach the best results in term of communication. It is responsive, adaptable to the different devices used by the audience, and GDPR compliant.

To ensure necessary updates, ETN staff members are listed as administrator on the website and have full access to the administration panel. The communication agency that built the website will support ETN with their technical expertise and offering quick support in case the website is down and/or technical patches are required.

Finally, ETN ensured that Search Engine Optimisation, including proper referencing and specification of key words for each subpage, news item and event item, was carried out before the website went online. Together with cross-referencing from partners’ websites to the ROBINSON’s website, it is ensured that the contents of the website are highly visible on search engines, such as Google, and that relevant traffic is channelled to the website.

## Website structure

The website has been structured and designed with the goal of disseminating the key information about the CO2OLHEAT project, targeting different technical and non-technical audiences. The website’s design is captivating and appealing, while its journalistic and explanatory style of the content ensure that a broad audience can be reached and well informed. Furthermore, the website is structured in such a way that more information is available for the interested reader, satisfying in this way all the different targeted audiences. The website’s structure is based on an easy to navigate and intuitive sitemap; the different pages will cross-reference to each other, thus increasing dwell time on the website and user-friendliness.

The sitemap, analysed more in details further in this report, is structured as follow:

- **HOMEPAGE:** highly graphic, it features all the key information to gain and exhaustive overview of the project
- **ABOUT THE PROJECT:** divided in thematic subsections, this section will guide the reader into the most technical details about CO2OLHEAT. The subsections are:
  - The concept



- Key goals and objectives
  - Expected impacts
  - Technology
  - Consortium
  - Structure
- **DEMONSTRATION:** overview of the demonstration and replication sites, featuring a subsection for each replication site:
  - Demonstration site
  - Replication sites
- **DOCUMENTATION:** online repository of the CO2OLHEAT's public deliverables, communication materials (e.g. leaflet, poster, roll-up banner etc.), press releases and newsletter, accessible to the partners and to the general public. The subsections are:
  - Public project deliverables
  - Dissemination materials
  - Media
  - Scientific publications
- **NEWS & EVENTS:** online repository of the news and events related to CO2OLHEAT. The subsections are:
  - News
  - Events
- **CONTACT:** features project contact details and a form for newsletter subscription

## Website's homepage

The website's homepage offers a clear overview of all the key information to familiarize with the project (the concept and key numerical facts on the project, introduction of the demonstration site, overview of the replication sites, the consortium, the latest news and event, and the twitter feed linked to the official project's twitter handle) and serves as entry point for visitors. Its appealing design invites the visitor to remain on the website and "keep scrolling"; strategic cross-references within the website will guide the visitor experience on the website.

The leitmotif of the project is "heat", which is also reflected in the logo as well as on the website homepage; the common theme of a modern chimney is replicated often throughout the website.

The front page is vertically split in four conceptual parts: top "header" section, central "main" section, third "news" section, bottom "footer" section.

The top part of the homepage is the header of the website (Figure 1):





Figure 1 – CO2OLHEAT website header

The header is the first “impression” of the website, so its design is vital in retaining the audience. The header is clear, concise, but complete: next to the logo and the full title of the project, a captivating picture of a glass furnace, reminding of the CO2OLHEAT theme, showcase at a glance that the project will deal with the industrial heat. The top menu bar provides navigation to all the public sections of the project website. On the top right corner, the Twitter, LinkedIn and YouTube icons will link the visitor directly to the project’s social media channels. Their placement on the upper part of the page and close to the top menu bar has been chosen for enhancing their visibility to the visitor and for making it easy to navigate to the project’s social media websites right after visiting the CO2OLHEAT project website.

The “subscribe” button allows visitors of the website to subscribe to the newsletter and be updated on the outcomes of the project.

The central, and main, part of the CO2OLHEAT’s homepage features all the key information needed to acquire a comprehensive overview of the project. Divided in the main sub-section, the central part of the homepage displays an overview on the CO2OLHEAT’s concept and key facts about it, the demo site and the replication sites, and the consortium (Figure 2). Each sub-section has been designed with the aim to catch the attention of the visitor with icons representing key relevant information of the project as well as reminding of the project main theme.



## CO2OLHEAT

### Unlocking the potential of industrial waste heat and its transformation into electricity via supercritical CO<sub>2</sub> (sCO<sub>2</sub>) cycles

CO2OLHEAT is an EU's H2020 funded project addressing energy efficiency challenge and decarbonisation of the European REIIs – Resource and Energy Intensive Industries. It focuses at their unused waste heat and its transformation into electricity in an efficient and cost-effective way. The cutting-edge sCO<sub>2</sub> technologies will be employed to design and demonstrate the EU's first-of-its kind sCO<sub>2</sub> plant in a real industrial environment.

This pioneer power plant will generate completely clean energy while saving significant amounts of primary energy and thus also CO<sub>2</sub> emissions.



The concept



Key goals



Expected impacts



Technology



Project structure



## Demonstration site

### Prachovice – Czech Republic

The CO2OLHEAT project will be demonstrated in a real industrial environment in CEMEX cement plant in Prachovice. This facility has a wide untapped waste heat potential, that is currently not exploited and it is rejected by means of water-cooling towers.

The project will introduce the concept of the circular economy and industrial symbiosis in waste heat management. The CO2OLHEAT 2MW power block will be able to cover approximately 10% of the plant's electricity needs, translating into 750.000 € savings per year, thus allowing short payback period (estimated between 4 and 8 years).

[More information](#)





Figure 2 – Central part of CO2OLHEAT's homepage

The third part of the homepage features an overview on the latest news and events related to CO2OLHEAT, as well as the twitter feed of the CO2OLHEAT's official social media channel.

The fourth and last section is the footer of the website (Figure 3). The footer features the acknowledgement of the funding received from the EU Horizon 2020 programme, the privacy policy and the terms of use, as well the links to the project's social media channels, and the link to subscribe to the project's newsletter.

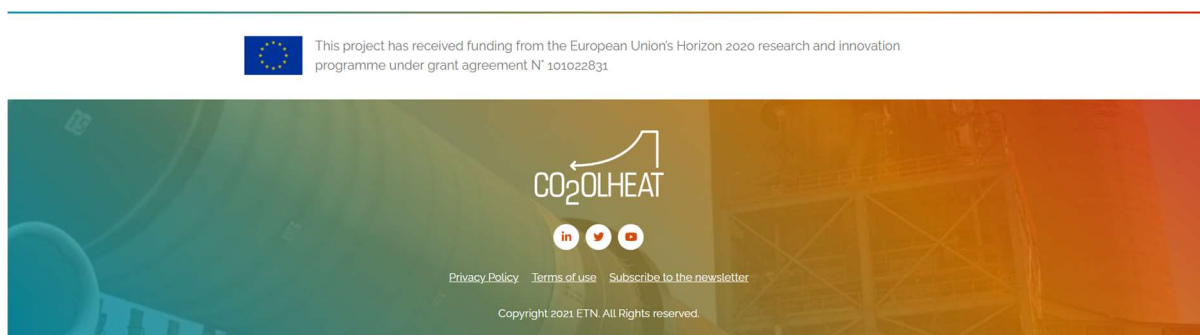


Figure 3 – Website footer

## Section “About the project”

The section “About the project” is the richest in information. Its aim is to guide the visitor in discovering the project and its (technical) details. It is divided into 6 sub-sections:

- The concept: the reader can find an overview of the CO2OLHEAT concept, including a schematic drawing of the power cycle that will be designed in the project.
- Key goals and objectives: This sub-page contains all the goals and objectives of the CO2OLHEAT project. In this section, the visitor can find an high level overview of CO2OLHEAT’s goals, complemented by more a detailed description of its objectives in the drop-down menus.
- Expected impacts: this page features the main expected impacts of the project; the page offers a general overview on the main impacts, while featuring as well the opportunity to dig more into details and explore the actual target for each expected impact.
- Technology: this page features an explanation why the project will use the sCO<sub>2</sub> as a working fluid, what are its qualities and why it is interesting to use it. The following section lists all the components of the future power cycle, their images and description.
- Consortium: the sub-section consortium will offer great visibility to the CO2OLHEAT’s partners. A “showcase” page has been developed for each partner, featuring the logo/image, a short description of the organisation, the role in the project, contact persons, and the link to the website of the organisation
- Structure: This sub-section is focussed mainly on describing the structure of the ROBINSON, with a clear focus on the different Work Packages and their timelines.

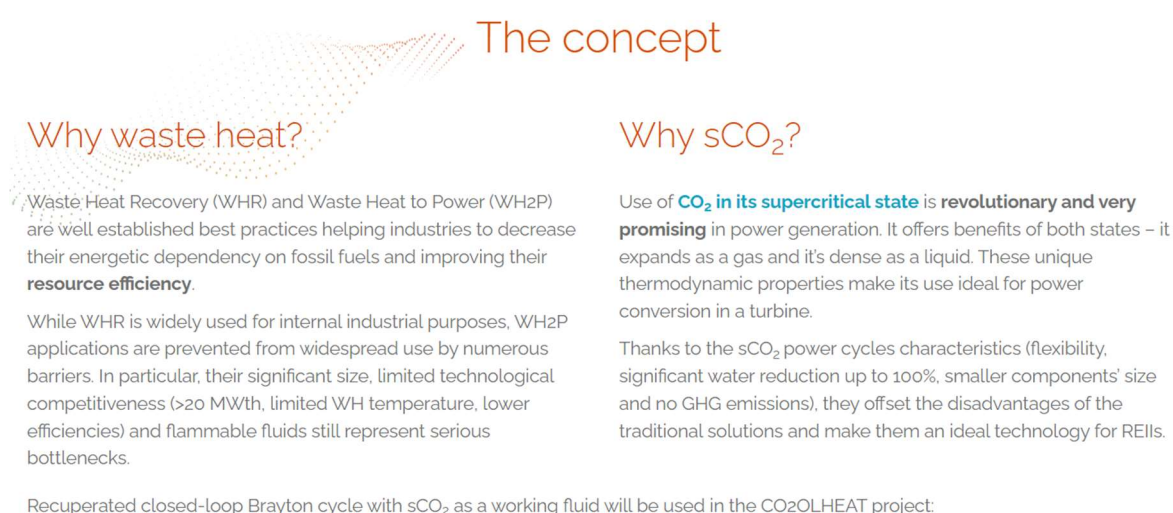


Figure 4 – Excerpt of “The concept”



## Components

Within the project, the following power block components are developed and manufactured:

Waste Heat Recovery Unit (WHRU)



► [Read more](#)

sCO<sub>2</sub> Power Turbine



► [Read more](#)

sCO<sub>2</sub> Turboexpander



► [Read more](#)

sCO<sub>2</sub> Recuperator Heat Exchanger



► [Read more](#)

Primary Heat Exchanger (PHE)



► [Read more](#)

Cooler



► [Read more](#)

Module



► [Read more](#)

Grid Oriented Controller



► [Read more](#)

Figure 5 – Example from “The Technology”

## Section “Demonstration”

This section contains information about the demonstration of the CO2OLHEAT results. As this project will be demonstrated in high technical readiness level (TRL7), there is a part related to demonstration in a real industrial environment. Another part relates to the six replication sites:

- **Demonstration site:** this sub-section describes the CEMEX cement plant demo site in the Czech Republic, Prachovice. It features technical details of the site as well as other information about the cement plant.
- **Replication sites:** this sub-section lists six replication sites, where simulations will be performed. For each site, an image and a site description is available.

### CEMEX cement plant Prachovice (CZ)

The CO2OLHEAT project will be demonstrated in a real industrial environment and in the high technology readiness level (TRL 7) in CEMEX cement plant in Prachovice (Czech Republic).

CEMEX Plant in Prachovice has a wide untapped waste heat potential amounting to approximately 16 MW with hot spots close to the kiln/preheater, bypass, and the cooling towers, with the following characteristics:

	Temperature range	Flow rate
Kiln/preheater	300-500°C	170.000-250.000 Nm <sup>3</sup> /h
Bypass	>1100°C	45.000-80.000 Nm <sup>3</sup> /h
Cooling tower	100-400°C	170.000-250.000 Nm <sup>3</sup> /h

### Şişecam, Turkey Glass Industry

Şişecam already runs four WH2P systems via different technologies, different glass production processes, and at different locations. Therefore, Şişecam has significant expertise in WH2P and aims to enlarge it thanks to the CO2OLHEAT project. The selected reference plant is located in Ankara, Turkey.

CO2OLHEAT solution could recover the energy from melting furnace flue gases. The amount of available waste heat seems relevant – at 20-25 MW<sub>th</sub>. Potentially installed WHRU would valorise flue gases from the production furnace with temperature 450-580°C and flow rate 90.000-120.000 Nm<sup>3</sup>/h. It is relevant to highlight that the flue gases must be conveyed back to the manufacturing plant at 180°C.



Figure 6 – Examples from “Demonstration”

## Section “Documentation”

The section “Documentation” has been designed with the aim to provide to the visitor material related to the project. The section is constituted by the following sub-sections:


- Public project deliverables: in this sub-section, all the public deliverables of the CO2OLHEAT project will be shared and downloadable
- Dissemination materials: this sub-section contains downloadable files of the projects’ communication material developed within D8.1 (e.g. leaflet, poster, roll-up, etc.) This material will be openly accessible to visitors.
- Media: this sub-section features high-resolution project logo package, press releases, newsletters and media articles about the project
- Scientific publications: this sub-section will be the main publicly accessible repository of the scientific publications produced by the CO2OLHEAT’s consortium. All the publications will be listed and linked for easy public access.



Figure 7 – Dissemination materials

## Section “News & Events”

The section “News & Events” will provide a comprehensive overview on the communication and dissemination activities of the project, including external events (e.g. dissemination events, stakeholders workshop, conferences, fairs etc.). More specifically, this section will feature updates and articles on the activities carried out by the consortium (section “News”), and an overview of events where CO2OLHEAT is featured/presented (section “Events”).




### News

**CO2OLHEAT Consortium proposes recognising WH2P activities as sustainable under the EU Taxonomy framework**

27 Sep 2021

The CO2OLHEAT Consortium, supported by a number of other companies, responded to the call for feedback on the Sustainable Finance Platform’s criteria, that will completing the EU Taxonomy.

[Read more](#)




### Events

**CO2OLHEAT will be presented during the ORC Munich 2021**

11 Oct 2021 - Online

CO2OLHEAT will be presented during the 6th international seminar on ORC Power Systems. The project presentation will be part of the keynote “sCO2 for Power Systems” by Siemens.

[Read more](#)



**CO2OLHEAT will be featured at the International Gas Turbine Conference**

11 Oct 2021 - Online

CO2OLHEAT will have its booth at the 10th International Gas Turbine Conference. More information here.

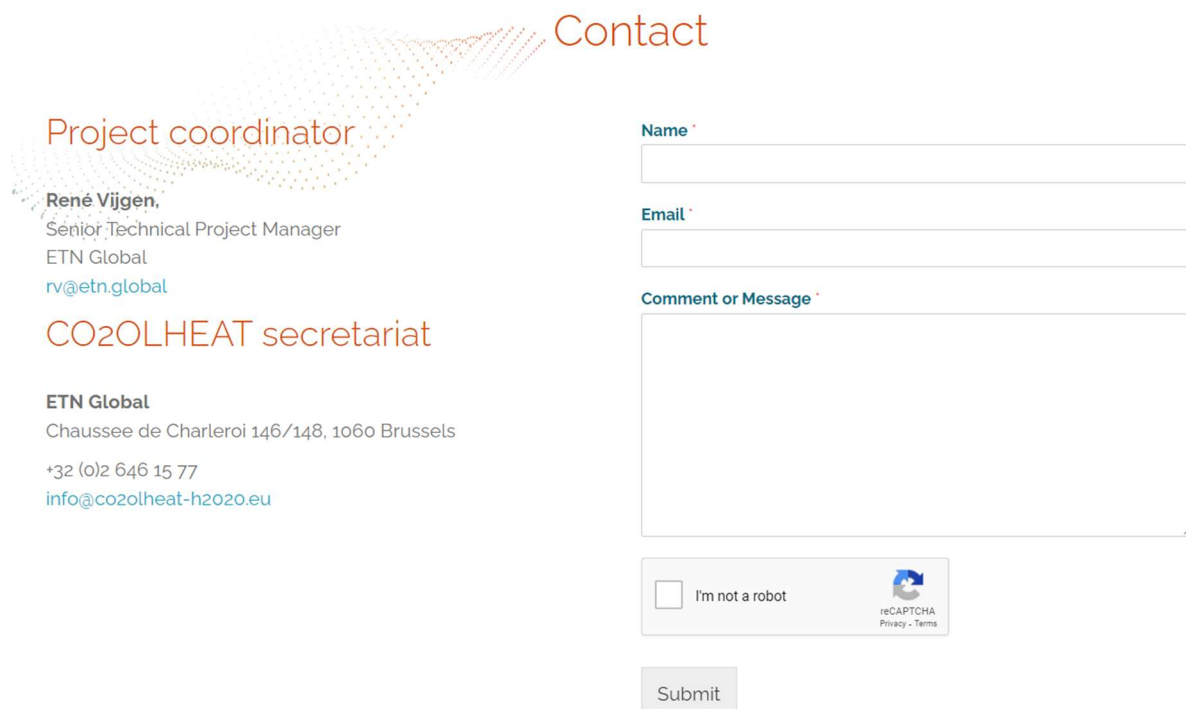
[Read more](#)

Figure 8 – Examples from the “News & Events” section



## Section “Contacts”

This section enables to retrieve information on how to contact the coordinator of the project, contact details of the project (i.e. specific info email account) and the contact details of the project secretariat (ETN), including physical address of the association. A contact form has been created to directly address specific questions on the project. The contact form is optimised with Captcha technology to avoid spam, phishing emails and, generally, lower the risks of cyberattacks.



The screenshot shows a web page titled "Contact" with a decorative background of orange dots. On the left, contact information for the Project coordinator (René Vijgen) and the CO2OLHEAT secretariat (ETN Global) is listed. On the right, there is a contact form with fields for Name, Email, and a large text area for Comment or Message. Below the form is a reCAPTCHA "I'm not a robot" checkbox and a Submit button.

**Project coordinator**

René Vijgen,  
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ETN Global  
[rv@etn.global](mailto:rv@etn.global)

**CO2OLHEAT secretariat**

**ETN Global**  
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+32 (0)2 646 15 77  
[info@co2olheat-h2020.eu](mailto:info@co2olheat-h2020.eu)

**Name \***

**Email \***

**Comment or Message \***

☐ I'm not a robot

reCAPTCHA  
[Privacy](#) - [Terms](#)

Submit

Figure 9 – Section “Contact”



## Privacy policy and GDPR compliancy

CO2OLHEAT's website is GDPR compliant. A website section has been dedicated to description of the website's terms of utilization with a precise legal disclaimer about the website's Terms of Use (ToU) and one section has been dedicated to privacy policy: both these sections describe and guarantee how personal data and cookies are used by the project website manager (ETN).

## Regular updates

CO2OLHEAT's website will be updated regularly to reflect the current state of the project's progress.

Additionally, the updating of the social media profiles will take place regularly by the authorised members of ETN and other involved beneficiaries and keep the followers/friends/connections up-to-date regarding the CO2OLHEAT innovations and findings.

The texts for the website were drafted in a journalistic, easy-to-read style so that non-experts can also understand what the project is about. Illustrations and pictures, as well as short texts with bullet points and emphasised text parts were favoured over long descriptions.

Moreover, the website provides downloadable content, such as communication materials and the public project deliverables.

In order to keep the website up-to-date and relevant, all the partners will deliver without delays every piece of information that should be featured on/added to the website.

## Data and analytics

ETN will track the performances of the website through tools such as Google Analytics or any other comparable tracking tool. Performance review will be based on the set project's KPIs regarding website visits and public deliverable downloads (over the lifespan of the project).

Channel	KPI	Target
Project website	visits	10.000
	Material downloads	200 downloads 1 year after the project end



## Conclusions

The CO2OLHEAT website has been designed to be a versatile and useful tool in the communication and dissemination efforts of the project. Not only it will work as a public repository, but it also featured key information to gain a comprehensive overview on CO2OLHEAT and its goals.

Finally, the integration between the website and the project official social media channels will guarantee an interactive and all-round communication, aligned with the communication and dissemination strategy.

ETN will regularly update the pages of the website, upload relevant material and publish new items (such as news and public deliverables) as well as external events and project events.

Next steps on the website include:

- Populating the news, articles, publications, and events section;
- Regular upload of public project deliverables;
- Create a database for the distribution of the newsletter;
- Regular update of the information featured on the website.

