



CO₂
Human
Emissions

Project Website

Daniel Thiemert

che-project.eu



Co-ordinated by
 ECMWF



CO₂ Human Emissions

D7.2 Project Website

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CO₂ Human Emissions

CHE: CO₂ Human Emissions Project

Coordination and Support Action (CSA)
H2020-EO-3-2017 Preparation for a European
capacity to monitor CO₂ anthropogenic emissions

Project Coordinator: Dr Gianpaolo Balsamo (ECMWF)
Project Start Date: 01/10/2017
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Table of Contents

1	Executive Summary	6
2	Introduction	6
2.1	Background.....	6
2.2	Scope of this deliverable	6
2.2.1	Objectives of this deliverables.....	6
2.2.2	Work performed in this deliverable	6
2.2.3	Deviations and counter measures	6
3	The CHE Project Website	7
3.1	Home Page.....	8
3.2	About	8
3.2.1	Introduction	9
3.2.2	Structure	10
3.2.3	Consortium	10
3.2.4	Partners	11
3.2.5	Specific Partner Pages	11
3.3	News.....	12
3.4	Events.....	12
3.5	Resources	14
3.6	Data Portal.....	14
3.7	Other aspects	15
3.8	Testing, Platforms and Tracking.....	16
4	Project Internal Pages.....	18
5	Conclusion	19

Figures

Figure 1: Home	8
Figure 2: About	9
Figure 3: Introduction	9
Figure 4: Structure	10
Figure 5: Consortium.....	10
Figure 6: Partners	11
Figure 7: Partner-specific page	11
Figure 8: News.....	12
Figure 9: Specific News Item.....	12
Figure 10: Events.....	13
Figure 11: Specific Events Page	13
Figure 12: Resources.....	14
Figure 13: Data Portal.....	15

Figure 14: Newsletter Subscription.....	16
Figure 15: Contact Form	16
Figure 16: Mobile Version of Website.....	17
Figure 17: CHE Confluence Space	18
Figure 18: Jira Issue Tracker.....	19

1 Executive Summary

As per the Dissemination and Exploitation Plan (D7.3) the project website will be a major dissemination instrument. As such, the website will be an important tool for maintaining the coherence of the full project and for promoting its progress across the many stakeholders, as well as providing a project interface to the wider public.

The CHE project website can be accessed via www.che-project.eu. It is the main dissemination tool for the project and provides project-external sections. It is to be updated regularly, both throughout the lifetime of the project and thereafter. It contains information on the project, news and events, resources (including public deliverables), data portal, amongst others.

2 Introduction

2.1 Background

CHE, as a Coordination and Support Action, is bringing together European expertise and a consolidated approach to building an operational CO₂ emission monitoring capacity. CHE partners are at the forefront of developments in the compilation of emission inventories, the observation of the carbon cycle from ground-based and satellite measurements, the process modelling of the carbon cycle, atmospheric transport modelling, and data assimilation and inversion systems. There will be four main areas of work covering: observations, emission inventories, modelling and inversion systems.

The central questions that CHE will address are:

- What does it take to have a combined bottom-up and top-down estimation system capable of distinguishing the anthropogenic part of the CO₂ budget from the natural fluxes?
- How can we make the first steps towards such a system that can use the high spatial and temporal resolution of satellite observations to monitor anthropogenic emissions at the required time scales?
- And what does it take to transform a research system into a fully operational monitoring capacity?

CHE will support a large community by providing a library of realistic CO₂ simulations from global to city scale to examine the capacity for monitoring future fossil fuel emissions and to adequately dimension space mission requirements.

2.2 Scope of this deliverable

2.2.1 Objectives of this deliverables

D7.2 outlines the structure of the CHE Project Website and provides illustration of pages which are being constructed in support of the project.

2.2.2 Work performed in this deliverable

For this deliverable, two agencies were appointed to carry out i) the design work and ii) the implementation work. Input was provided by the coordinator on the design as well as structure and content of the website.

2.2.3 Deviations and counter measures

No deviations have been encountered.

3 The CHE Project Website

As per the Dissemination and Exploitation Plan (D7.3) the project website will be a major dissemination instrument. As such, the website will be an important tool for maintaining the coherence of the full project and for promoting its progress across the many stakeholders, as well as providing a project interface to the wider public.

The CHE project website can be accessed via www.che-project.eu. It is the main dissemination tool for the project and provides project-external sections.

The website structure is as follows:

- | - Home
 - | - About
 - | - Introduction
 - | - Structure
 - | - Consortium
 - | - Partners
 - | - ECMWF
 - | - ADS SAS
 - | - ADS GMBH
 - | - CMCC
 - | - DLR
 - | - EMPA
 - | - EUMETSAT
 - | - iLab
 - | - JRC
 - | - KNMI
 - | - CEA
 - | - ULUND
 - | - MPG
 - | - NILU
 - | - SPASCIA
 - | - SRON
 - | - TAS
 - | - TNO
 - | - UEA
 - | - UB
 - | - ULEIC
 - | - WU
 - | - News
 - | - Events

- | - Resources
- | - Data Portal
- | - Contact form (with standard items and drop down menu)

All pages allow sharing via social media networks such as Facebook, Twitter, Instagram, and Google+.

In the following we will present illustrations of the various project website sections.

3.1 Home Page

The Home Page is the starting point for the project website.

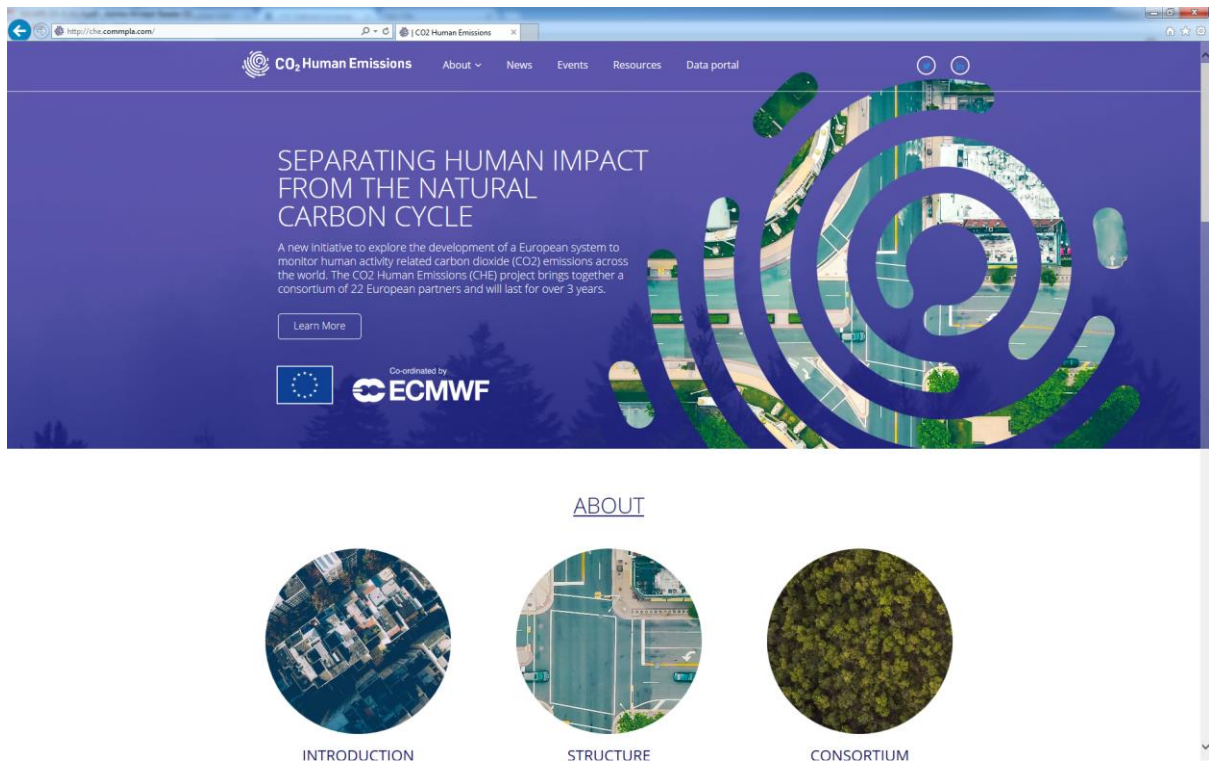


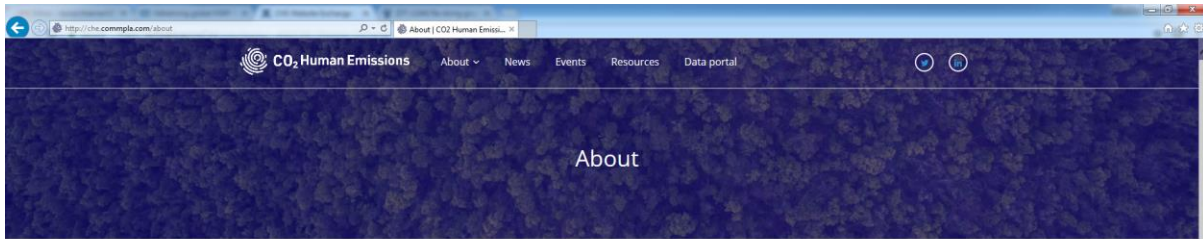
Figure 1: Home

It provides the entry points for the sections “About”, “News”, “Events”, “Resources” and “Data Portal” via the top bar, and highlights from “About”, “News” and “Events” presented on the page. In addition, a facility for newsletter subscription is provided.

3.2 About

The “About” section provides information on the project, and has the subsections “Introduction”, “Structure”, “Consortium” and “Partners”.

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CHE, as a **Coordination and Support Action**, is bringing together European expertise and a consolidated approach to building an operational **CO₂ emission monitoring capacity**. CHE partners are at the forefront of developments in the compilation of emission inventories, the observation of the carbon cycle from ground-based and satellite measurements, the process modelling of the carbon cycle, atmospheric transport modelling, and data assimilation and inversion systems. There will be **four main areas of work** covering: **observations, emission inventories, modelling and inversion systems**.

The central questions that CHE will address are:

- What does it take to have a combined bottom-up and top-down estimation system capable of distinguishing the **anthropogenic** part of the **CO₂ budget** from the natural fluxes?
- How can we make the first steps towards such a system that can use the high **spatial and temporal resolution of satellite observations** to monitor anthropogenic emissions at the required time scales?
- And what does it take to transform a research system into a **fully operational monitoring capacity**?

A mature and credible monitoring system for **anthropogenic CO₂ emissions** requires the integration of all available information streams, which is a complex undertaking, as illustrated.

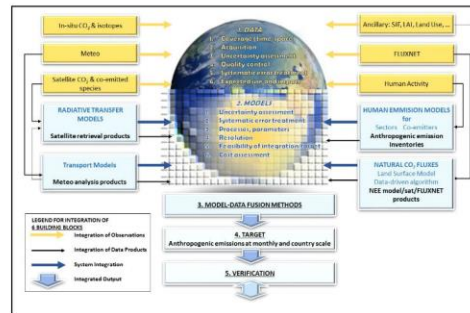
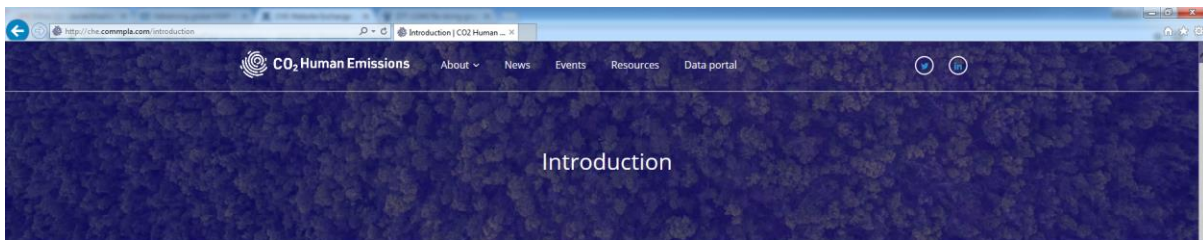


Figure 2: About

3.2.1 Introduction



ECMWF is leading a new initiative to explore the development of a European system to monitor human activity related carbon dioxide (CO₂) emissions across the world. Such capacity is vital to support Europe's leading role in worldwide action to address climate change. The CO₂ Human Emissions (CHE) project started on October 2017, bringing together a consortium of 22 European partners and lasting for over three years.



The initiative will act as a bridge between the European Commission and its CO₂ Task Forces, space agencies and related industries, the CO₂ science community, and the Copernicus Services. The project aims to bring together relevant expertise to develop the science and to scope out the necessary architecture for a European CO₂ monitoring system.

Supporting climate change policy

There is now agreement that climate change represents a very serious threat. Worldwide commitment to tackle the issue culminated in the United Nations Paris Climate Agreement in December 2016, when 195 nations signed-up to limit their greenhouse gas emissions.

However, to enable well-informed decision making for greenhouse gas emission reductions, and to monitor policy effectiveness, a comprehensive global greenhouse gas observing system is required. **Monitoring carbon dioxide (CO₂)** has drawn most attention, due to its dominant role in climate change and the strong human hand in its emissions.

The challenges of developing a CO₂ emissions monitoring capacity

In 2015, a European Commission report considered a European capacity for monitoring anthropogenic CO₂ emissions and concluded that a comprehensive observing system should be based on a combination of space-borne observations and ground-based monitoring networks.

The observing system must allow us to separate the impact of anthropogenic emissions from the effect of the complex natural carbon cycle, both affect atmospheric CO₂ concentrations.

Observations from satellites, ground-based observation networks and aircraft provide CO₂ information at specific times and locations, but alone do not constitute a continental to global monitoring capacity across different time scales. Moreover, these observations mostly measure atmospheric CO₂ concentrations, which is an indirect measure of the underlying carbon emissions or uptake. Therefore, the use of an Earth System modelling infrastructure is required to combine Earth observations (ground-based, aircraft and satellite) with detailed CO₂ emissions inventory data.

This is a very ambitious target, which is challenged by current limitations in observation availability, as well as in models and model-data fusion techniques. However, those are precisely the key system components needed to enhance our capacity to extract the anthropogenic contribution to rising CO₂ concentrations and to enable the impact and effectiveness of policy-driven changes to be monitored.

Combining top-down and bottom-up techniques to study the carbon cycle

Studies of the carbon cycle tend to fall into two categories: 'top-down' and 'bottom-up'.

In 'top-down' or 'inverse' techniques, measurements of CO₂ concentration in space and time are used to infer the large-scale uptake and release of CO₂ at the surface.

Figure 3: Introduction

3.2.2 Structure

To tackle the challenges of an integrated system on a global scale, it is paramount to identify the complementarity between observations, modelling and data assimilation methodologies by establishing their limitations and strengths. CHE will address these aspects in four work packages (WP1 - WP4) that will use existing capabilities to provide supportive datasets and assessments of the current state of affairs, while at the same time bringing innovation to the various components with an eye on overall integration in a fully comprehensive system (Scientific Layer). In addition, CHE will identify the operational aspects of all the components to ensure a realistic architecture (WPS).

Together with the capacity-building aspects (WP6) and coordination (WP7), this is summarized in Figure 3, with a work breakdown structure that illustrates the seven CHE work packages interconnected and clustered in layers. The work packages are described in the next section.

The programmatic core of the project is interlinked with the European Commission Task Forces on CO₂, and provides the vision and the key science questions. A science and data compilation layer, which consists of four work packages, aims to provide research-based answers and to propose solutions to the CHE monitoring challenges. The outer layer is the service element, where the proposed research solutions from WP1-WP4 are tested for feasibility, adapted, and integrated into an application-oriented system. The activities within this layer are expected to benefit from a strong connection to certain users of the environmental monitoring products under the Copernicus umbrella.

CHE capacity building shell

Figure 4: Structure

3.2.3 Consortium

The CHE project consortium is comprised of **22 partners from eight European countries** (United Kingdom, Netherlands, Sweden, Norway, Germany, France, Switzerland, Italy). The project reach will be further enhanced through inclusive workshops to ensure that this initiative is **truly European** and relevant capacity is built in **all regions** of Europe.

Figure 5: Consortium

3.2.4 Partners

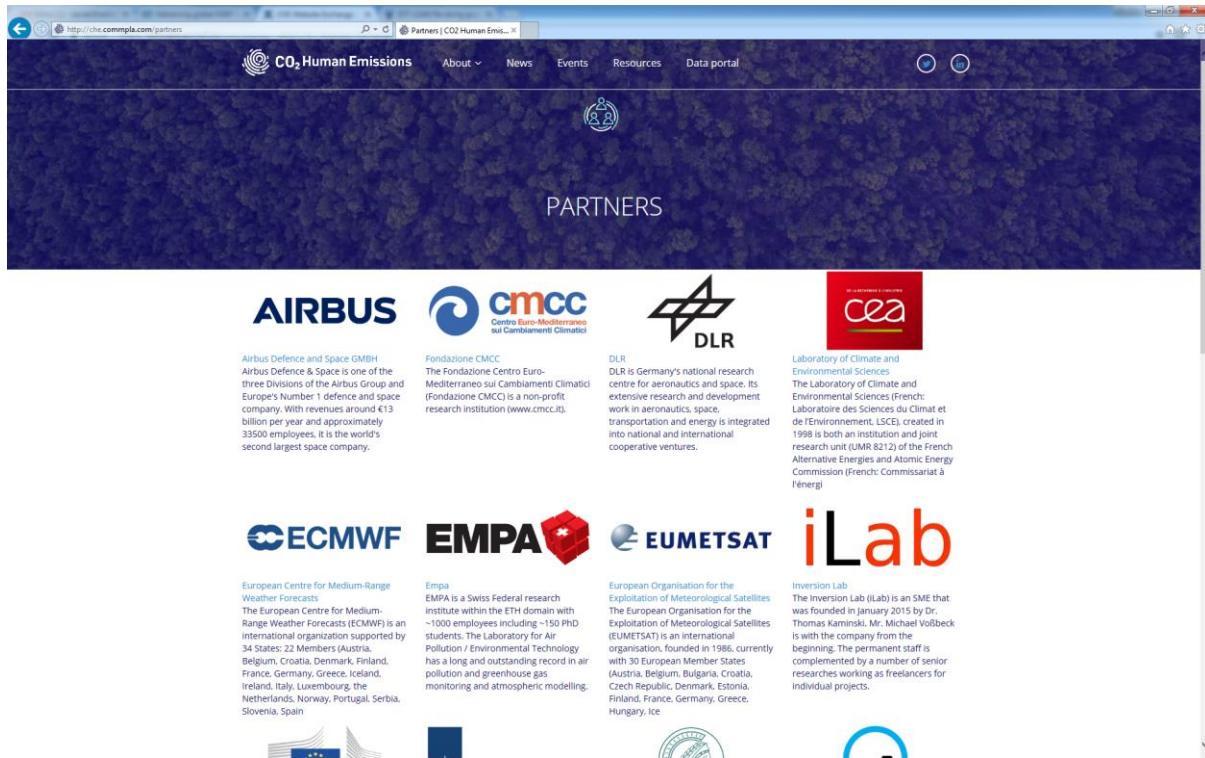


Figure 6: Partners

3.2.5 Specific Partner Pages

Each project partner has a dedicated page describing his organisation and role in the project.

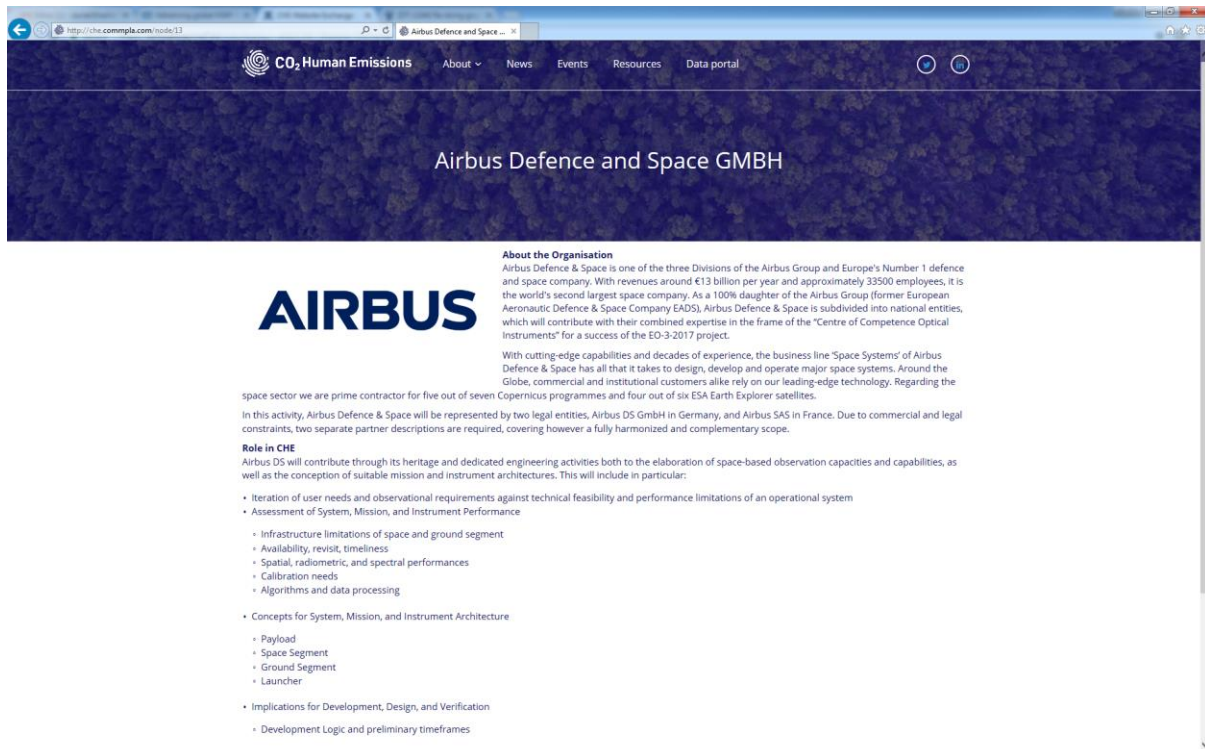


Figure 7: Partner-specific page

Project staff will be added to the individual partner pages following the release of the website.

3.3 News

News items are featured on the front page and call also be accessed via the “News” section.

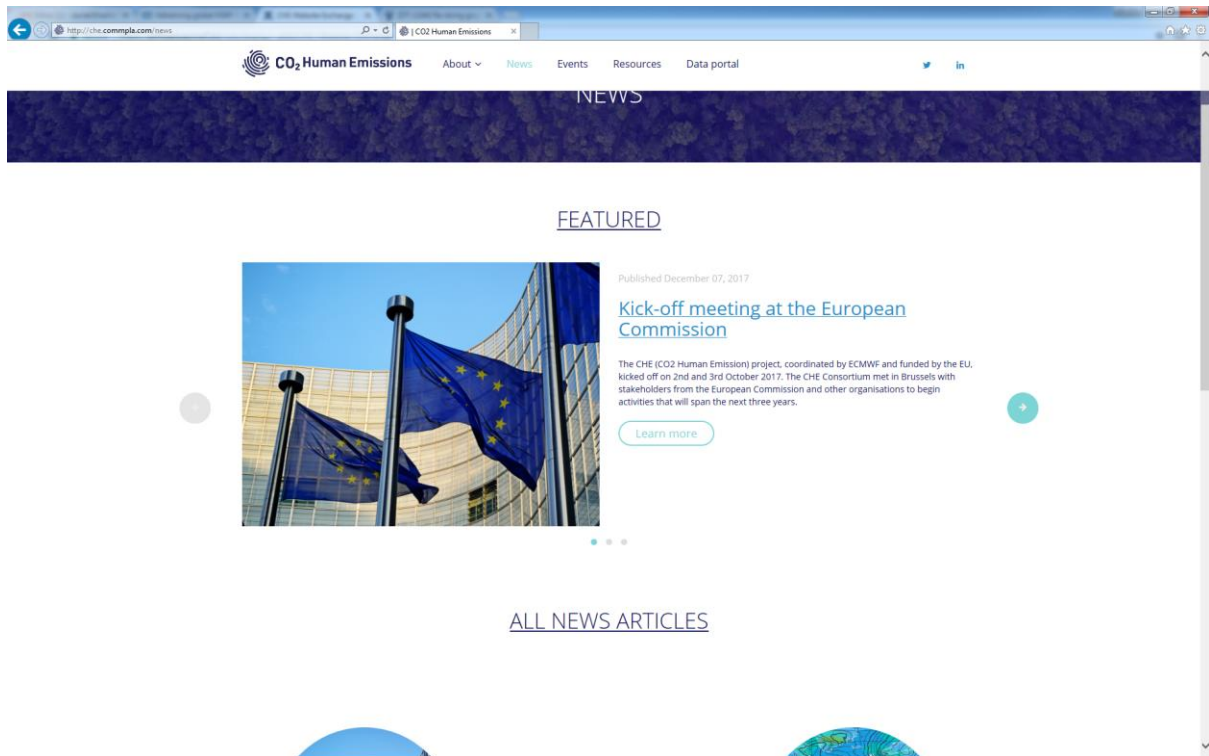


Figure 8: News

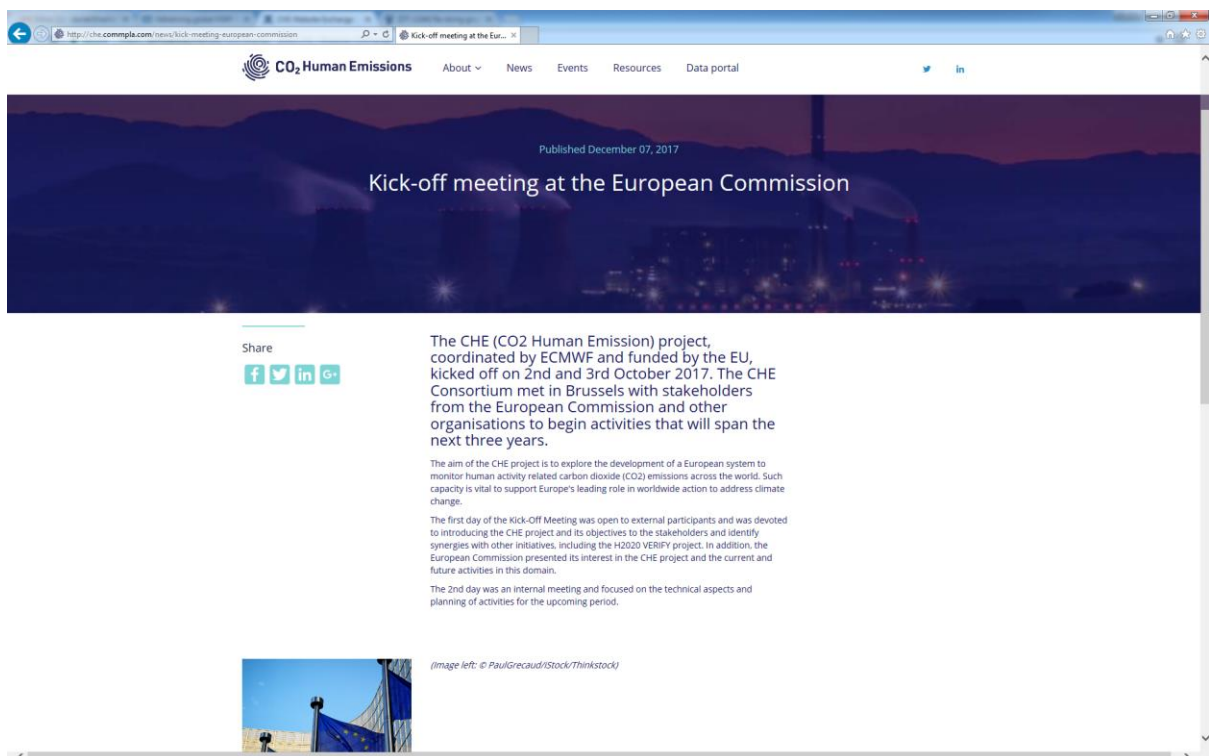


Figure 9: Specific News Item

3.4 Events

Events are featured on the front page and can also be accessed via the “Events” section.

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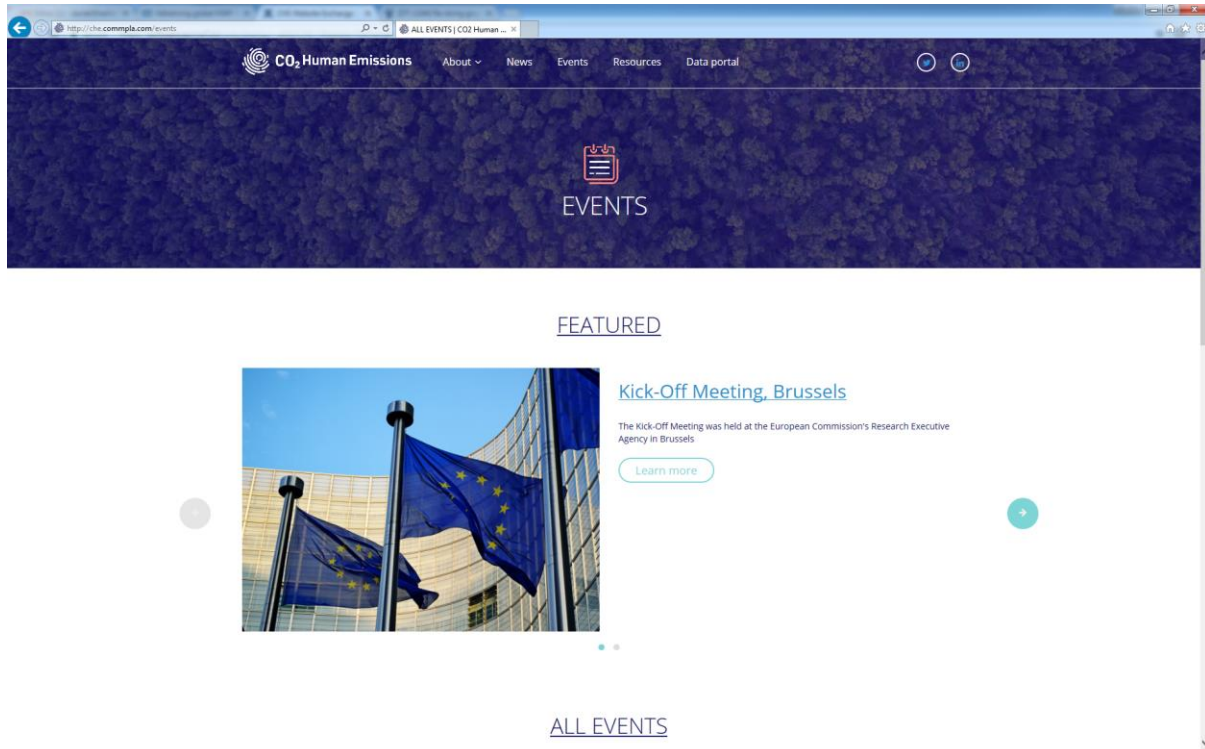


Figure 10: Events

Specific events pages allow for the integration of a Google maps widget as well as other HTML-based items.

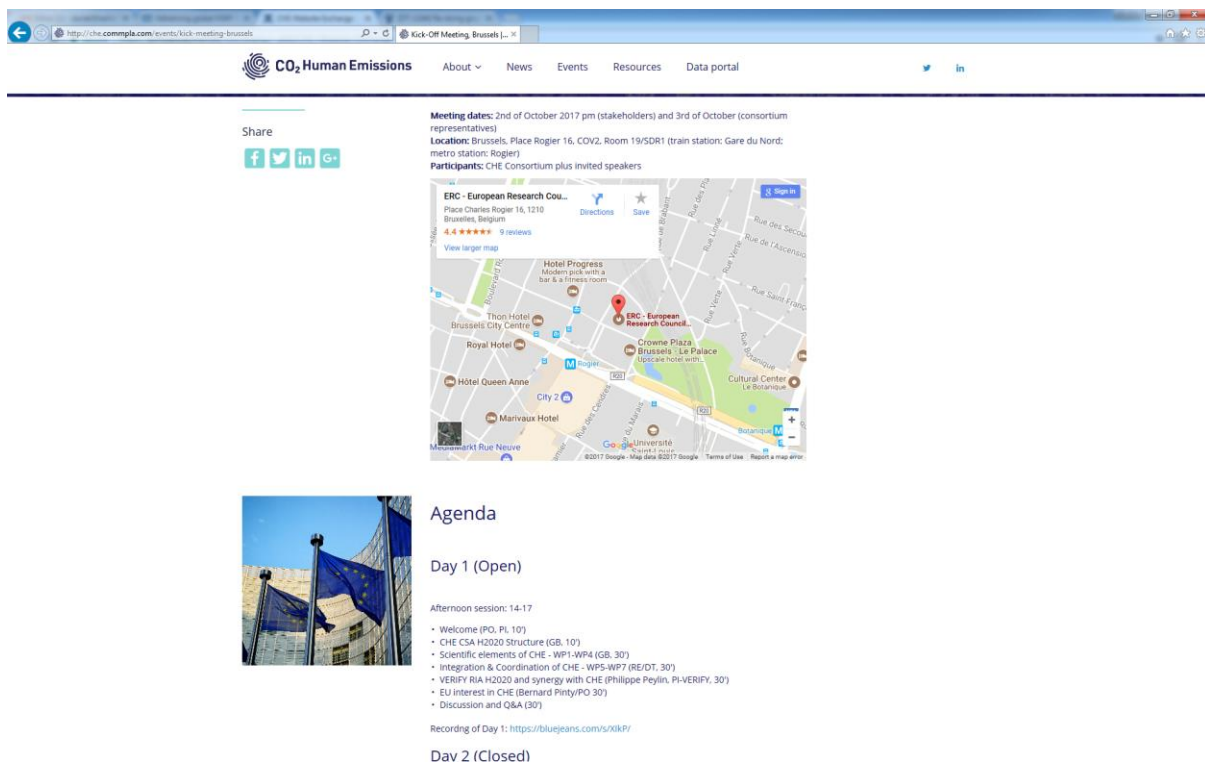


Figure 11: Specific Events Page

3.5 Resources

Resources provide the library of CHE documents including deliverables and reports, publications, and PR material. A filter option allows for selection items of interest, both in terms of type as well as topic.

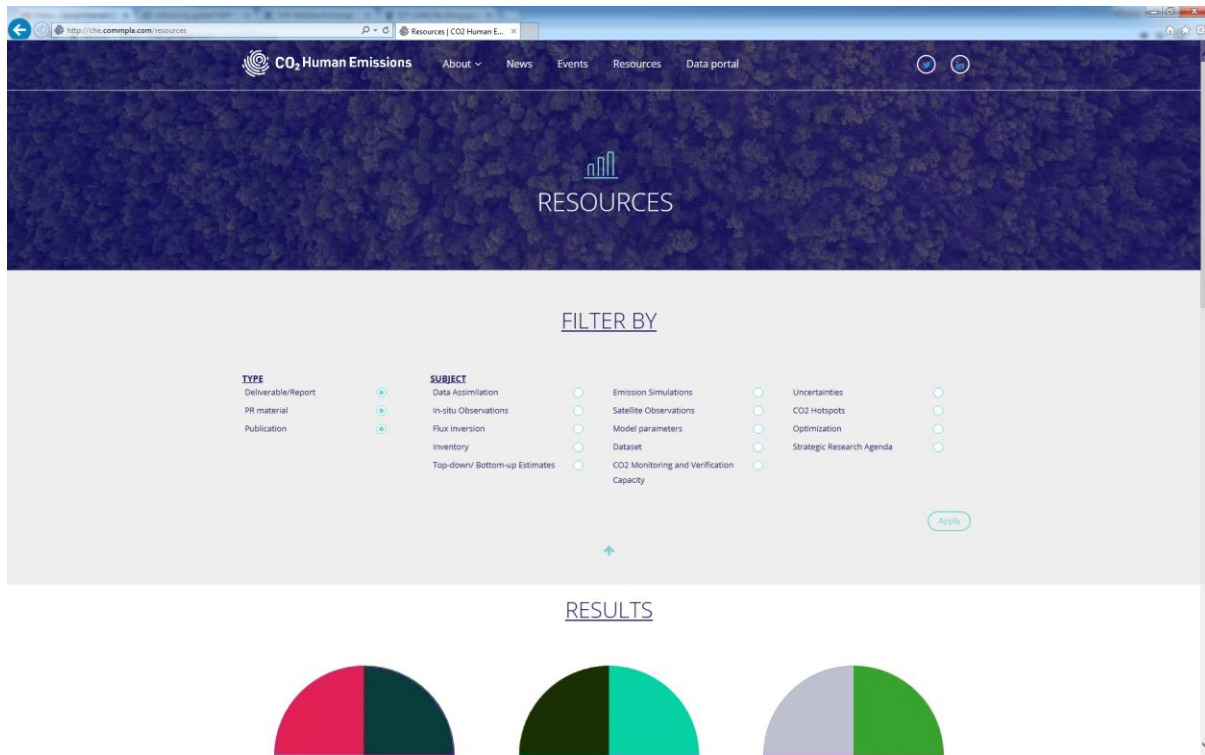


Figure 12: Resources

The resource page will become available as soon as the first resources have been added.

3.6 Data Portal

The data portal will provide the interface to the distributed data sets made available by the CHE project. This will become available by March 2018, and therefore at the time of writing is only a placeholder.

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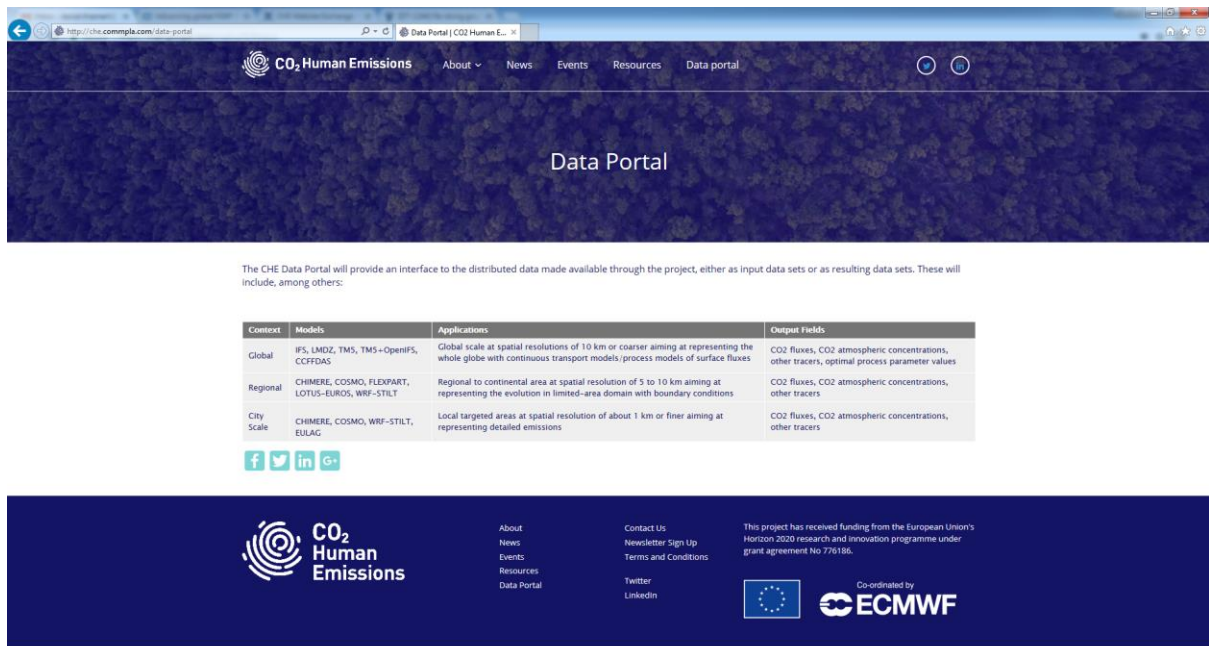


Figure 13: Data Portal

3.7 Other aspects

The website links directly to the project's Twitter feed¹ and LinkedIn group². As mentioned before, newsletter subscription is available via the front page.

¹ https://twitter.com/che_project

² <https://www.linkedin.com/groups/13565423>

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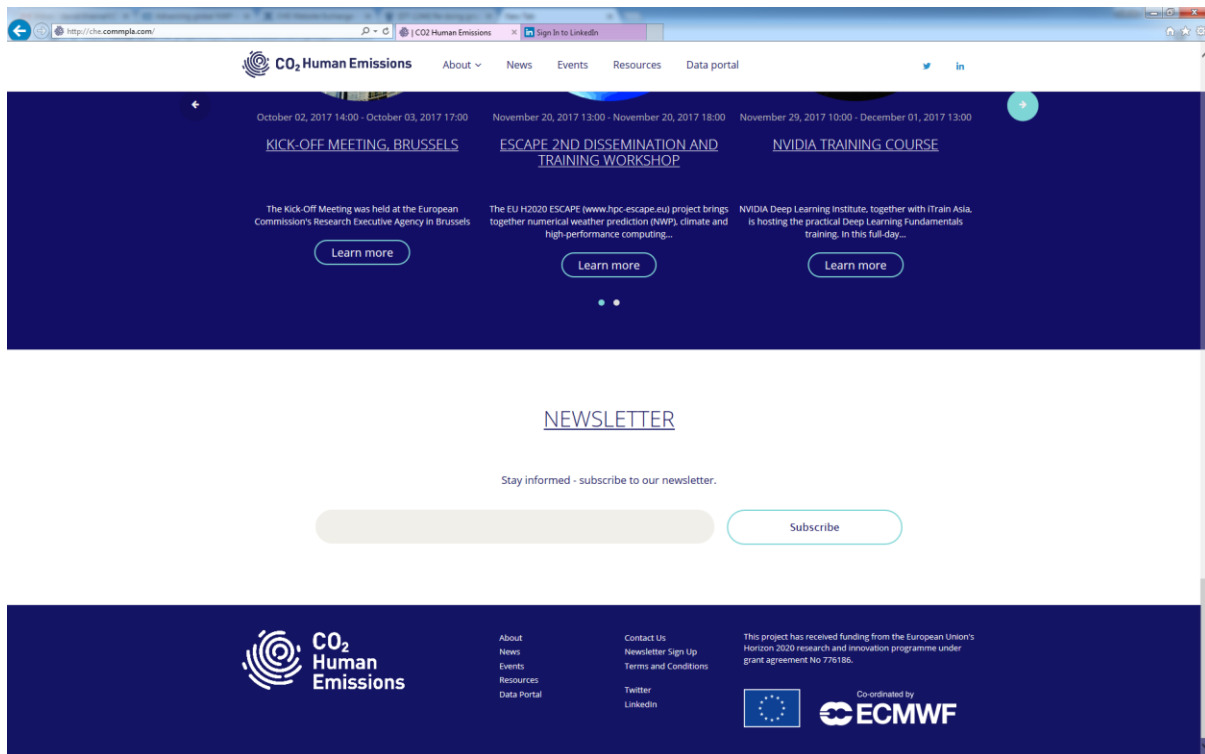


Figure 14: Newsletter Subscription

A contact form allows sending messages to the coordination team.

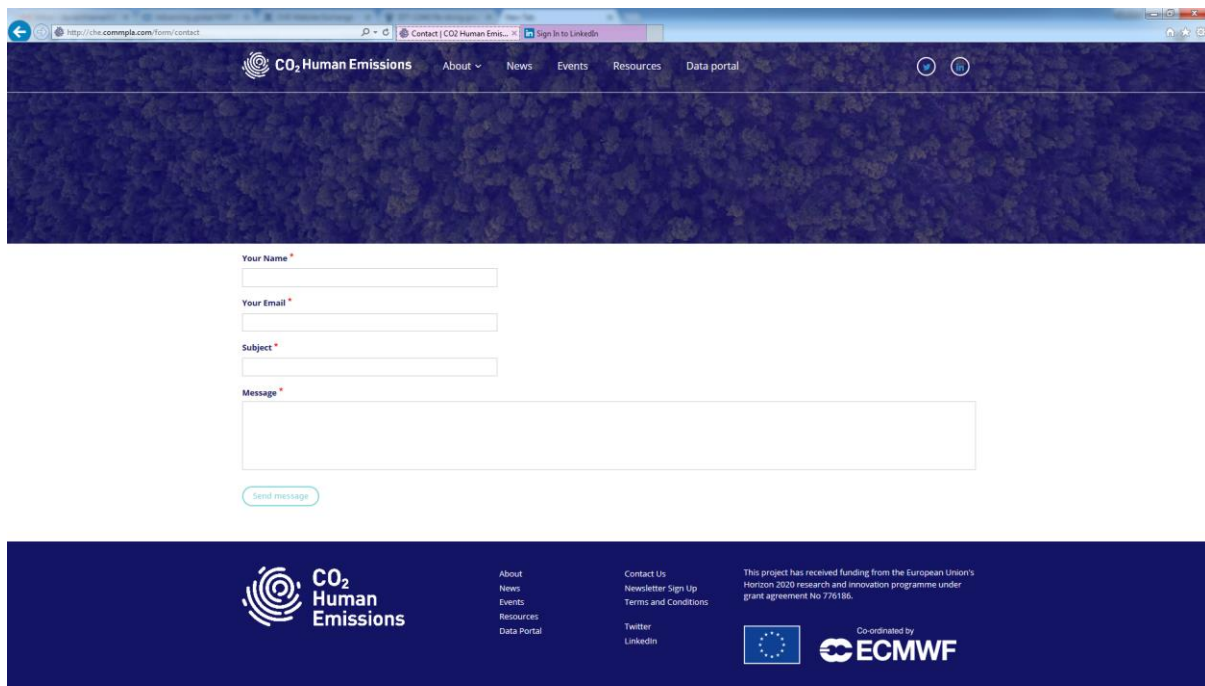


Figure 15: Contact Form

3.8 Testing, Platforms and Tracking

The website has been tested on different platforms and devices, including Windows, Linux, as well as mobile platforms such as iOS and Android. Various browsers have been tested including Firefox, Google Chrome and Internet Explorer.

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The website has been developed in such a way as to be compatible with mobile devices (see Figure 16 for iOS example).

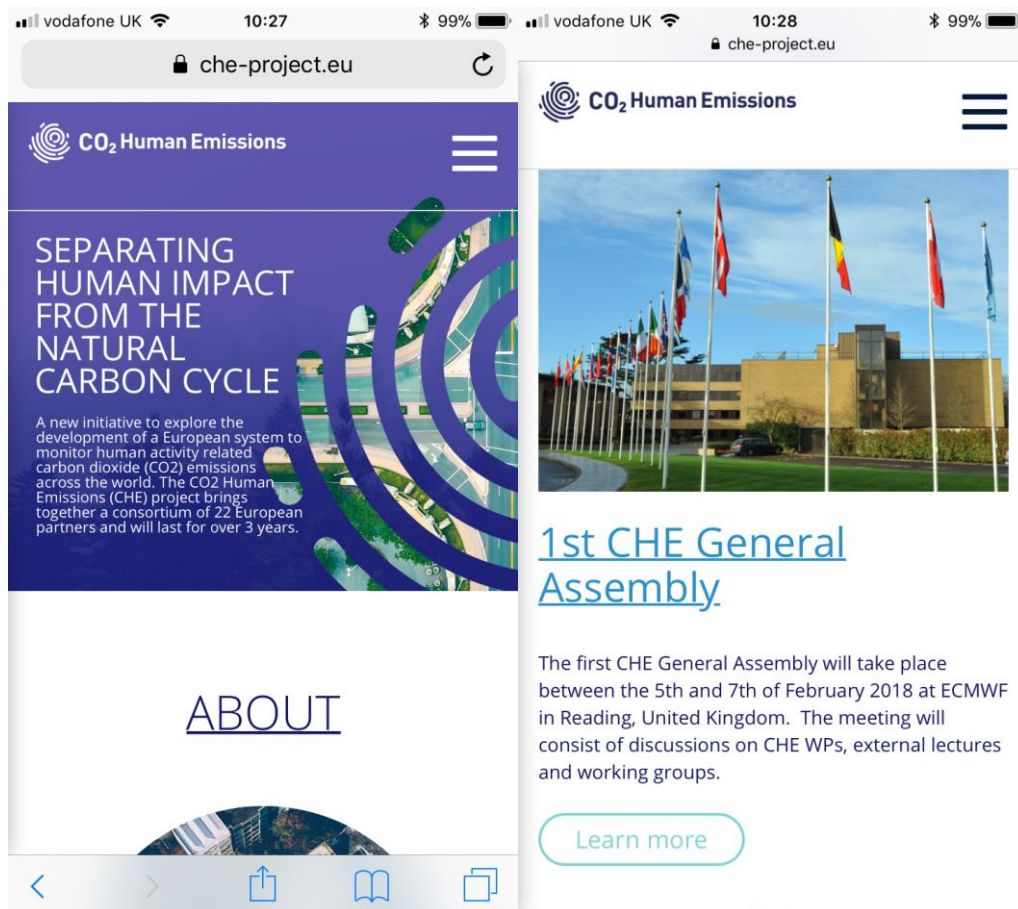


Figure 16: Mobile Version of Website

Visitor tracking is realised via Google Analytics.

4 Project Internal Pages

The CHE project utilises Confluence and Jira for internal communication and co-development. Confluence is a wiki-style tool that allows for co-editing of information.

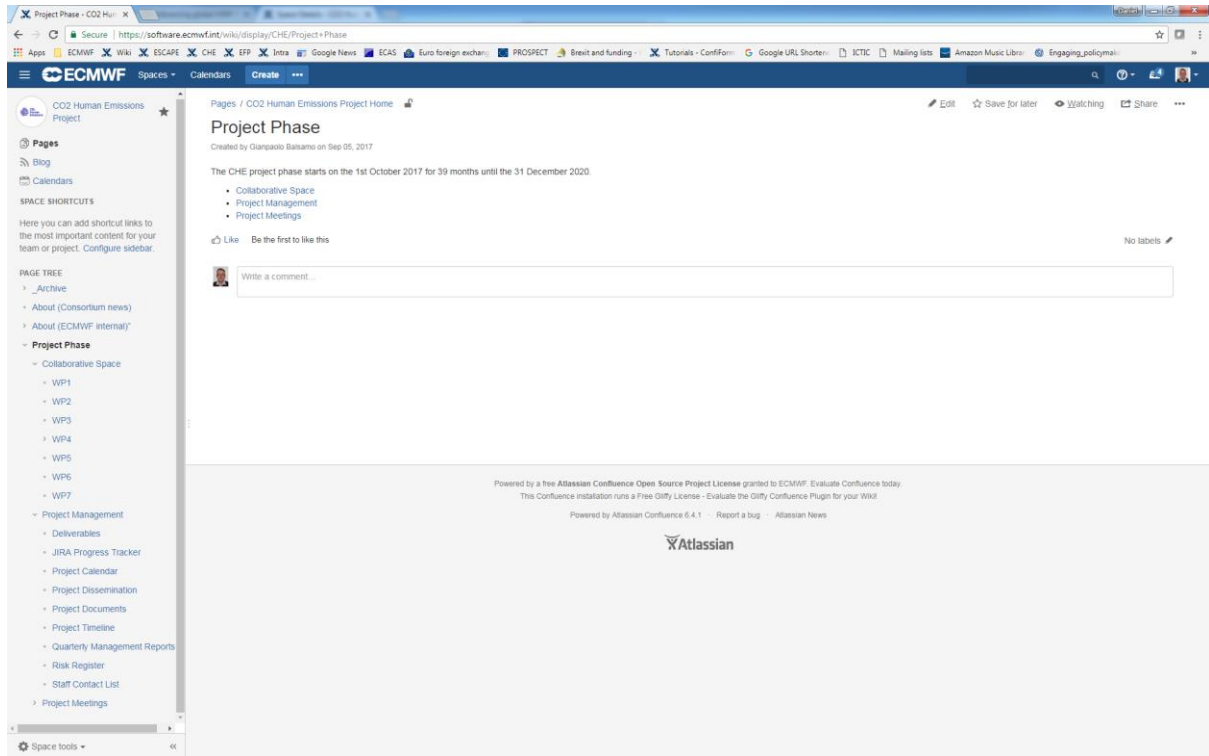


Figure 17: CHE Confluence Space

The CHE Confluence provides collaborative spaces for each work package in addition to project management information.

The Jira issue tracker allows for the assignment of tasks and deadline to specific project partners and provides an easy overview of project deadlines and tasks.

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The screenshot shows a Jira issue tracker for the 'CO2 Human Emissions Project'. The page title is 'JIRA Progress Tracker' and it was created by Daniel Thiemeert. Below the title, there is a table of issues. The table has the following columns: Key, Summary, T, Created, Updated, Due, Assignee, Reporter, P, Status, and Resolution. The issues listed are:

Key	Summary	T	Created	Updated	Due	Assignee	Reporter	P	Status	Resolution
CHE-138	D7.8 Review by EUMETSAT	✓	Nov 06, 2017	Nov 06, 2017	Mar 16, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-137	D7.9 Review by EMPA	✓	Nov 06, 2017	Nov 06, 2017	Mar 16, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-136	D7.7 Review by EMPA	✓	Nov 06, 2017	Nov 06, 2017	Dec 11, 2020	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-135	D7.7 Review by ADS SAS	✓	Nov 06, 2017	Nov 06, 2017	Dec 11, 2020	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-134	D7.6 Review by DLR	✓	Nov 06, 2017	Nov 06, 2017	Jun 14, 2019	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-133	D7.6 Review by ADS GMBH	✓	Nov 06, 2017	Nov 06, 2017	Jun 14, 2019	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-132	D7.5 Review by ADS SAS	✓	Nov 06, 2017	Nov 06, 2017	Mar 16, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-131	D7.5 Review by TAS	✓	Nov 06, 2017	Nov 06, 2017	Mar 16, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-130	D7.4 Review by UEA	✓	Nov 06, 2017	Nov 06, 2017	Jan 16, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-129	D7.4 Review by KNMI	✓	Nov 06, 2017	Nov 06, 2017	Jan 16, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-128	D7.3 Review by ILab	✓	Nov 06, 2017	Nov 06, 2017	Dec 15, 2017	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-127	D7.3 Review by SPASCIA	✓	Nov 06, 2017	Nov 06, 2017	Dec 15, 2017	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-126	D7.2 Review by CMCC	✓	Nov 06, 2017	Nov 06, 2017	Dec 15, 2017	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-125	D7.2 Review by TAS	✓	Nov 06, 2017	Nov 06, 2017	Dec 15, 2017	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-124	D7.1 Review by KNMI	✓	Nov 06, 2017	Nov 17, 2017	Nov 16, 2017	Daniel Thiemeert	Daniel Thiemeert	🟢	DONE	Fixed
CHE-123	D7.1 Review by SRON	✓	Nov 06, 2017	Nov 17, 2017	Nov 16, 2017	Daniel Thiemeert	Daniel Thiemeert	🟢	DONE	Fixed
CHE-122	D6.6 Review by JRC	✓	Nov 06, 2017	Nov 06, 2017	Mar 16, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-121	D6.6 Review by EMPA	✓	Nov 06, 2017	Nov 06, 2017	Mar 16, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-120	D6.5 Review by JRC	✓	Nov 06, 2017	Nov 06, 2017	Dec 13, 2019	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-119	D6.5 Review by NILU	✓	Nov 06, 2017	Nov 06, 2017	Dec 13, 2019	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-118	D6.4 Review by ULEIC	✓	Nov 06, 2017	Nov 06, 2017	Dec 10, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-117	D6.4 Review by TNO	✓	Nov 06, 2017	Nov 06, 2017	Dec 10, 2018	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved
CHE-116	D6.3 Review by UB	✓	Nov 06, 2017	Nov 06, 2017	Dec 11, 2020	Daniel Thiemeert	Daniel Thiemeert	🔴	to do	Unresolved

Figure 18: Jira Issue Tracker

5 Conclusion

This document, D7.2, provides a high-level description of the CHE project website. It presents details on the structure of the website. The website (accessible via www.che-project.eu) is to be updated regularly, both throughout the lifetime of the project and thereafter. It contains information on the project, news and events, resources (including public deliverables), data portal, amongst others.

Document History

Version	Author(s)	Date	Changes
0.1	Daniel Thiemert (ECMWF)	08/12/2017	Initial Version
1.0	Daniel Thiemert (ECMWF)	18/12/2017	Final Version incorporating reviewers comments

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Internal Reviewers	Date	Comments
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Dario Parpale (CMCC)	09/12/2017	Approved with Comments

Estimated Effort Contribution per Partner

Partner	Effort
ECMWF	0.2
Total	0.2

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