

# **“Assessment of the potential, the actors and relevant business cases for large scale and seasonal storage of renewable electricity by hydrogen underground storage in Europe”**



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## **Outcome of Communication and Dissemination Activities**

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## 0 Executive Summary

The purpose of this report is to outline the major objectives and deliverables achieved throughout the project cycle, to give an overview of the communication tools applied and evaluate the effectiveness of the dissemination activities in achieving the goals set in the communication strategy.

The deliverables outlined in the communication strategy have been successfully implemented throughout the project cycle. The means applied led to the establishment of a two-way communication channel between the project consortium and various stakeholder groups that ensured a continuous interaction among the different actors

The internal communication protocol, the public project website, the organisation of professional workshops and conferences, the use of printed dissemination material, the newsletter and the regular update and follow-up through a dedicated E-mail were successfully applied to mobilise the project participants and the relevant stakeholders outside the consortium, which led to interactive exchanges between the different stakeholder groups such as industry representatives, field experts, project partners, policy-makers and the general public. The wide range of dissemination activities (organisation of professional workshops, participation in international conferences, printed materials, interactive exchange through the project website, etc.) contributed to promulgating the study findings among experts and stakeholders and reaching the key targeted audiences. The organised events such as professional workshops and public conferences played an important role in outlining the study objectives and major achievements, while ensuring a constant interaction among consortium members, supporting partners, private stakeholders, policy-makers and the general audience. The visibility of the project was further enhanced through the presentation of the HyUnder findings at international conferences and networking events. As a result, the envisioned communication and dissemination activities achieved a large outreach to both the general and specialised public.

The insights gained through the project and the targeted dissemination of results have raised further discussions among policy-makers about the importance of hydrogen in the context of EU decarbonisation targets and energy security challenges.

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# 1 Introduction

## 1.1 Objectives of the communication strategy

The main objective set in the communication strategy implemented during the course of the project HyUnder was to ensure that project results are adequately disseminated among relevant stakeholders and that hydrogen storage is promoted as a solution to current energy issues. Furthermore, the strategy aimed to create a two-way communication channel between the project consortium and various stakeholder groups. Dissemination activities (events, participation at conferences, printed materials etc.) were organised and delivered with the specific purpose to foster knowledge sharing among professionals, disseminate HyUnder project results and gather expert inputs to be integrated in the study. The implementation of such dissemination activities and the continuous follow up of communication tools have ensured an active engagement of relevant stakeholders outside the project Consortium.

In line with the policy promoted by the Fuel Cell and Hydrogen Joint Undertaking, the communication strategy was also designed to promote public acceptance of hydrogen technologies by disseminating the project results at various European and international conferences.

## 1.2 Targeted audiences

The HyUnder consortium targeted key groups of stakeholders for the implementation of the various dissemination activities:

- **Supporting partners:** key partners, including mostly industry representatives and research institutes, directly involved in the preparation of the individual case studies. This category of partners has been involved in most of the communication activities implemented.
- **Public stakeholders and general public:** The project website and printed deliverables have been prepared and drafted in such a manner to be accessible to a non-specialised public. Three of the events organised were

open to the public and in two cases organised in the context of the Sustainable Energy Week.

- **Private stakeholders and field experts:** Representatives of the project consortium have regularly contributed to public conferences and events presenting HyUnder results. This has contributed to disseminating knowledge of the subject matter to specialised stakeholders from different area. Stakeholders from the power to gas field have taken part to these activities in particular.

## 2 Dissemination tools and activities

### 2.1 Internal communication protocol

The project consortium set up a communication protocol at the inception of the project that was followed up throughout the project implementation, reducing to a minimum possible frictions among participants. No complaints were raised by project participants following the implementation of any dissemination activities.

### 2.2 Public project website (project/partners description, deliverables publication, news and press releases)

The project website [www.hyunder.eu](http://www.hyunder.eu) was launched at the very start of the project on October 25<sup>th</sup> 2012. It includes a system for internal document sharing accessible only to consortium member. Please refer to Figure 1 below, which provides an overview of the home page of the project website.

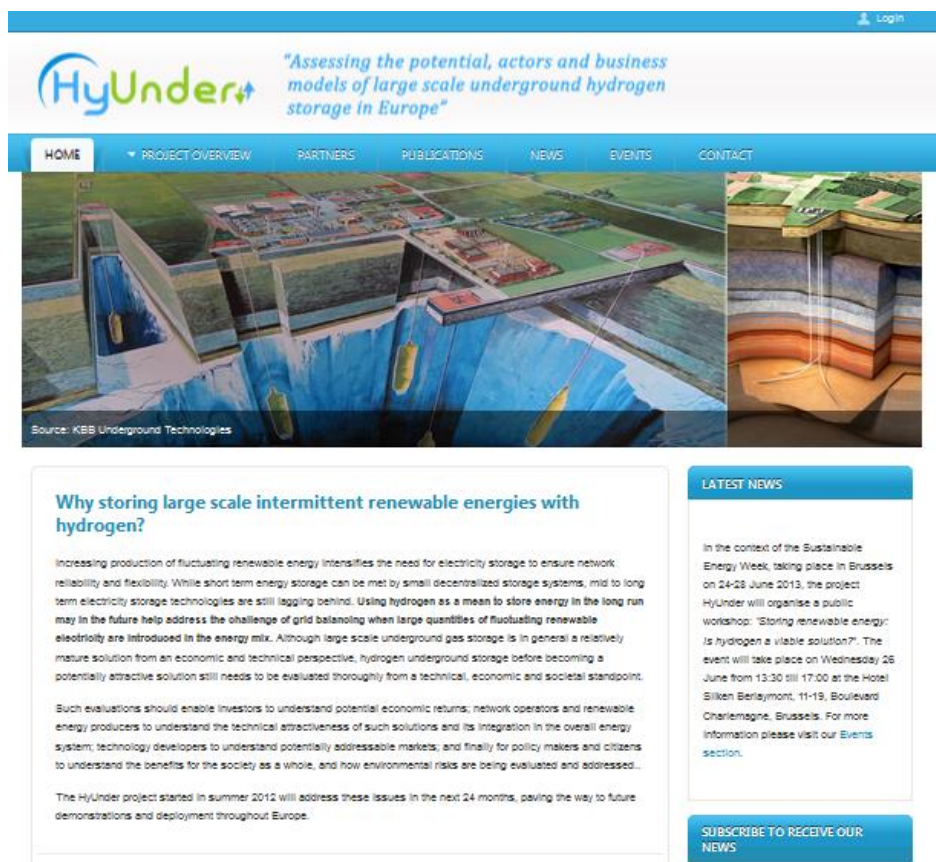


Figure 1 Snapshot of HyUnder website Home Page

The project website has been regularly updated, with news, information on upcoming and past events and publications. In particular in the section “Publication and Deliverables”, users may download:

[All public deliverables:](#)

- D2.1 Benchmarking of large scale hydrogen underground storage with competing options;
- D2.2 Update of Benchmarking of large scale hydrogen underground storage with competing options;
- D3.1 Overview of all known underground storage technologies;
- D3.3 Benchmarking of Selected Storage Options;
- D5.2 Public Perception on hydrogen storage;
- D6.2 German Case Study Executive Summary;
- D7.2 Initial Conference Fiche;
- D7.3 (2) EUSEW Workshop Fiche, and;
- D7.4 Final Conference Fiche.
- A [selection of presentations](#) given at conferences and events by HyUnder project partners (this article has been updated regularly)
- Presentations given by speakers at public events organised in the context of HyUnder.

The large amount of resources published on the project website has enabled a large outreach to both the general and specialised public.

### **2.3 Events (conferences and workshop series)**

The WP coordinator organised two conferences and four workshops for the whole project duration. For each of the events invitations were sent to potential interested stakeholders via the consortium contact list and the project website. As far as the internal professional workshops (Workshop 1, 3 and 4) are concerned, the invited participants were carefully selected according to their specific interests and technical knowledge in order to ensure they could contribute best to the event. Two of the events, namely Workshop 2 and the Final Conference, took place in the framework of the European Sustainable Energy Week, and were therefore published on the EUSEW



website, which provides the possibility to reach a large number of public stakeholders. At each event the study objectives and major achievements were presented, while ensuring strong interaction among consortium members, supporting partners and stakeholders. Each workshop was organized following the different steps of the study and work packages in order to optimize interactions between different industry and public groups of stakeholders. As a follow up to each conference, a final report with the minutes of the meeting was produced and distributed among all participants. The final conference fiches and the agenda of the meetings were also published on the project website following the events open to the public (Project launch conference, Workshop 2 and Project final conference).

Event name/ Date and location	Objectives	Speakers	Nr. Of Attendees	Type of stakeholders attended
<p><i>HyUnder Project Launch Conference</i></p> <p>Brussels, 30.11.2012, 09:00 – 14:00h</p>	<p>The aim of the conference was to inform participants about the current status the art of energy storage and the future need for electricity storage in Europe. The conference set the context of the project by providing a comprehensive introduction to the project HyUnder, focusing on the environmental benefits and economic opportunities related to the technology.</p>	<p><b>Michael Papapetrou</b>, <i>Coordinator stoRE Project, WIP - Renewable Energies</i></p> <p><b>Ariel Pérez and Mr Sergio Raballo</b>, <i>HYCHICO S.A.</i></p> <p><b>Luis Correás</b>, <i>Coordinator of the HyUnder project, Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón</i></p> <p><b>Hubert Landinger</b>, <i>Senior Project Manager Ludwig-Bölkow-Systemtechnik GmbH (LBST)</i></p> <p><b>Jesús Simón Romeo</b>, <i>HyUnder Technical Manager, Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón</i></p> <p><b>Olaf Kruck</b>, <i>Completion &amp; Thermodynamics, KBB Underground Technologies</i></p> <p><b>Michael Ball</b>, <i>Technology Opportunity Manager, Projects &amp; Technology, Shell Global Solutions</i></p> <p><b>Andreas Kopp</b>, <i>E.ON Innovation Center - Energy Storage, E.ON Gas Storage</i></p> <p><b>Marius Hackel</b>, <i>Group Manager, Authorized Officer Process Engineering - Syngas Production, Air Liquide</i></p>	<p>45</p>	<p>Industry organisations, consultants, research institutes, project participants</p>
<p><i>Workshop 1 – Hydrogen underground storage: geological options and</i></p>	<p>Workshop 1 was dedicated to presenting the results of WP2. Its main objective was to provide participants with the opportunity to receive feedback and discuss with stakeholders the delineation of selection</p>	<p><b>Gerard Durup</b>, <i>Independent expert</i></p> <p><b>Olaf Kruck</b>, <i>KBB</i></p> <p><b>Tobias Rudolph</b>, <i>E.ON Gas Storage</i></p> <p><b>Fritz Crotofino</b>, <i>KBB</i></p> <p><b>Daniel Albes</b>, <i>DEEP</i></p>	<p>28</p>	<p>Industry representatives, Consortium members, Supporting partners, field experts</p>

<i>mapping in Europe</i> Essen, Germany, 12.03.2013 10:00 – 16:00h	criteria for storage options and key candidates for underground hydrogen storage	<b>Max Wippichs</b> DEEP		
<i>Workshop 2: Storing renewable energy: Is hydrogen a viable solution? European potential for storing renewable energies with hydrogen: Insights into four European revolutionary projects</i>  Brussels, Wednesday 26 June 2013, 13:30/17:00	The main objective of the workshop was to collect feedback on the evaluation criteria to be developed for the assessment of European hydrogen storage capacities, notably in salt caverns. Workshop 2 gave an insight into the work of WP4 and provided consortium members with the possibility to interact with each other, with supporting partners and stakeholders on the definition of evaluation criteria for identifying storage possibilities	<b>Patrick Maio</b> , Managing director, HINICIO <b>Jyri Ylikanen</b> , <i>Principal Adviser to the Director-General, DG Energy</i> <b>Dr Luis Correas</b> , <i>Hydrogen Aragon, HyUnder Project Coordinator</i> <b>Dr Ulrich Büniger</b> , <i>Ludwig-Bölkow-Systemtechnik Gmb (DE), HyUnder consortium</i> <b>Dr Lionel Nadau</b> , <i>GDF Suez</i> <b>Pierre Serre-Combe</b> , <i>The French Alternative Energies and Atomic Energy Commission (CEA)</i> <b>Massimo Bertoncini</b> , <i>Engineering Ingegneria Informatica</i>	40	Industry organisations, consultants, research institutes, consortium members
<i>Workshop 3 on Plant Technologies and case study guidelines</i>  Shell Headquarters, The Hague (NL), 04.07.2013, 10:30-17:00h	The objective of the workshop was to gather different stakeholders to discuss safety issues, regulation code and standard and public acceptance. Due to the sensitivity of the issues raised by the topic, local government authorities and consumer associations of interested regions were also involved and required to provide their input.	<b>Michael Ball</b> , <i>Shell</i> <b>Olaf Kruck</b> , <i>KBB</i> <b>Marjolein de Best Waldhober</b> , <i>ECN</i> <b>Dr Ulrich Büniger</b> , <i>Ludwig-Bölkow-Systemtechnik Gmb (DE)</i> <b>Jan Michalski</b> , <i>LBST</i>	27	Industry representatives, Consortium members, Supporting partners, local government representatives
<i>Workshop 4 on European Case Studies</i>  Paris, France,	Workshop 4 looked at representative case Studies with a focus on salt cavern It provided opportunity for consortium members and supporting partners to discuss	<b>Jean-Christophe Lanoix</b> , <i>Hinicio</i> <b>Dr Ulrich Büniger</b> , <i>Ludwig-Bölkow-Systemtechnik Gmb (DE)</i> <b>Philippe Boucly</b> , <i>GRTgaz</i> <b>Jan Michalski</b> , <i>LBST</i>	26	Industry representatives, Consortium members, Supporting partners

12 February 2014, 11:00-16:30	insights into the case study methodology and initiate comparison of case studies results.	<b>Marcel Weeda</b> , ECN <b>Ioan Iordache</b> , ICSI <b>Jesus Simon</b> (FHA) <b>Peter Speers</b> , Cenex <b>Florence Sulmont</b> , Storengy		
<i>HyUnder Final Conference</i>  Brussels, 26 June 2014, 09:00 – 14:00h	The goal of the final conference was to present the projects results and delineate next steps for the implementation of a complete hydrogen infrastructure in Europe. The project participants shared their learnings and exchanged their experience and best practices on hydrogen storage and production in the context of EU decarbonisation targets. The speakers outlined opportunities to create synergies between hydrogen as a storage medium and several potential applications including industrial uses, re-electrification, power-to-gas and zero-emission mobility	<b>Tudor Constantinescu</b> , Principal Advisor to the Director General <b>Dominique Ristori</b> , DG Energy, European Commission <b>Dr Ulrich Bunger</b> , Senior Scientist, LBST <b>Remco Groenenberg</b> , AkzoNobel <b>Ricardo Ariel Perez</b> , Hychico <b>Tobias Rudolph</b> , E.ON Gas <b>Jan Hentschel</b> , Volkswagen <b>Solène Valentin</b> , Air Liquide	43	Industry organisations, consultants, research institutes, project participants, NGOs

## 2.4 Printed dissemination material

### 2.4.1 Project flyer and poster

The WP coordinator ensured that projects flyers and posters were ready for dissemination by end of October 2012 and were distributed among project participants. Please refer to Figure 2 and Figure 3 below, which show a print screen of the material.



Figure 2 HyUnder project flyer side 1 (left) and side 2 (right)



Figure 3HyUnder project poster

### 2.4.2 Promotional video

A promotional video of the HyUnder project was produced to deliver the key messages of the project to the general audience, portray its broader industrial, societal, technological and environmental implications in a European context, convey the major findings from the case studies and outline its future outlook.

### 2.5 Outreach

The envisioned communication and dissemination activities (press releases, updates of project website etc.) were performed regularly by the work package coordinator. These included presentation of the project results at international conferences, interaction with the interested stakeholders through the dedicated E-mail and update of the interested audience through newsletters.

### 2.5.1 Presentation of the project at events

Please refer to Figure 4 below for selection overview of the events and conferences in Europe and outside.

Event	Location	Presenter	Company	Date
Hypothesis	Edinburgh (UK)	Jean-Christophe Lanoix, Senior Consultant	Hinicio, WP7 leader	11-12 June 2013
World Hydrogen Technology Conference	Shanghai (China)	Jean-Christophe Lanoix, Senior Consultant	Hinicio, WP7 leader	25-28 September 2013
Hydrogen & Fuel Cells Energy Summit	Berlin (Germany),	Jean-Christophe Lanoix, Senior Consultant	Hinicio, WP7 leader	4-5 December 2013
EHEC	Seville (Spain)	Jean-Christophe Lanoix, Senior Consultant; Dr Ulrich Bunger, Senior Scientist, LBST	Hinicio, WP7 leader LBST, German Case Study Coordinator	12-14 March 2014
Fuel Cell and Hydrogen Joint Undertaking Water Electrolysis Day	Brussels (Belgium)	Dr Ulrich Bunger, Senior Scientist, LBST	LBST, German Case Study Coordinator	3 April
International Discussion on Hydrogen Energy and Applications	Nantes (France)	Jean-Christophe Lanoix, Senior Consultant	Hinicio, WP7 leader	12-14 May 2014
World Hydrogen Energy Conference	Gwangju (South Korea)	Jean-Christophe Lanoix, Senior Consultant ; Dr Jesús Simón Romeo, HyUnder Project Coordinator; Dr Ulrich Bunger, Senior Scientist, LBST	Hinicio, WP7 leader HyUnder Project Coordinator LBST, German Case Study Coordinator	15-20 June 2014

Seminar on Hydrogen and Industry hosted by Iberdrola	Bilbao (Spain)	Dr Jesús Simón Romeo, HyUnder Project Coordinator	Fundación del Hidrógeno en Aragón (FHa), HyUnder Project Coordinator	6 February 2014
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## 2.5.2 Emails and Newsletters

Interaction with interested stakeholders was managed through the dedicated email: [info@hyunder.eu](mailto:info@hyunder.eu). Questions submitted by interested parties through the project websites were forwarded to the relevant parties within the consortium.

Throughout the project implementation subscribers via the project website received regular newsletter providing information on events and projects, please refer to the table below for more information.

**Table 1 Overview of newsletters impact and outreach**

Campaign title	Date	Recipients	Open rate	Click rate	Top locations by opens
Kick Off Meeting	Tue, 10 September 2012	65	n.a <sup>1</sup>	n.a	n.a
HyUnder Project Launch Conference and Website	Tue, 22 October 2012	95	n.a. <sup>2</sup>	n.a.	n.a.
HyUnder First Workshop	Fri, Mar 29, 2013 02:25 pm	109	45.1% (Industry av. 17%)	15.7%	France - Netherlands
HyUnder Workshop EUSEW	Thu, May 30, 2013 10:04 am	113	39.4%	15.2%	Netherlands - France
HyUnder Public Deliverables	Tue, Oct 22, 2013 10:11 am	151	43% (Industry av. 17%)	26.7%	Germany - France

<sup>1</sup> Online tool Mailchimp had not been set-up at the beginning of the project.

<sup>2</sup> Online tool Mailchimp had not been set-up at the beginning of the project.



HyUnder Final Conference Press Release	Tue, May 13, 2014 04:12 pm	175	46.6% (Industry av. 16%)	15.2%	France – Germany
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The template in use for the newsletter is presented in the image below.



Figure 4 Snapshot of HyUnder newsletter for promotion of the Open Workshop during the Sustainable Energy week

### 3 Conclusions

The deliverables outlined in the communication strategy have been successfully accomplished throughout the project cycle. The project set up a two-way communication channel between the project consortium and various stakeholder groups. A wide range of dissemination activities (organisation of professional workshops, participation in international conferences, printed materials, interactive exchange through the project website, etc.) were organised to promulgate the study findings among experts and stakeholders, to foster knowledge sharing and reach the key targeted stakeholder groups. The application of a broad set of communication tools have ensured an active engagement of relevant stakeholders outside the project Consortium and an interactive exchange between the different stakeholder groups such as industry representatives, field experts, project partners, policy-makers and the general public.

The organised events served to present the study objectives and major achievements, while ensuring strong interaction among consortium members, supporting partners and stakeholders. Each workshop was organized following the different steps of the study and work packages in order to optimize interactions between different industry and public groups of stakeholders. This approach led to in-depth discussions and interactive dialogue among the consortium members, the supporting partners and the wider group of stakeholders. Moreover, the project participants presented HyUnder findings at international conferences and energy events, which led to a greater visibility of the project and reached a broader audience of international experts in the field. To wrap up, the envisioned communication and dissemination activities achieved a large outreach in terms of targeted audiences and different communication and interaction platforms.

The news insights gained through the project and the targeted dissemination of results have stimulated further discussions among policy-makers about the importance of hydrogen in the context of EU decarbonisation targets and energy security challenges.