HyTechCycling

New technologies and strategies for fuel cells and Hydrogen Technologies in the phase of recycling and dismantling

Grant No. 700190

WP7 Dissemination & Exploitation

D7.4 Update 2: Dissemination and awareness plan

Status: D

(D: Draft, FD: Final Draft, F: Final)

Dissemination level: PU

(PU: Public, CO: Confidential, only for members of the consortium (including the Commission Services))

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Document Change Control

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1.1	19/04/2018	FHA	
1.2.	03/05/2018	FHA	

Executive Summary

The second update of the Dissemination and Awareness Plan (DAP) aims to describe and analyse all the communication activities that have been carried out in the second year of life of the project. The Project Grant Agreement (GA), through the Description of Action (DoA), contained the draft of the Dissemination and Awareness Plan as part of the measures to maximize the impact of the Project. The second update of the DAP describes the dissemination goals, target audience and appropriate channels to provide regular flow of information. The second update of the DAP will be followed by a final report on dissemination activities and materials by the end of the Project.

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Abbreviations

AWE	Alkaline Water Electrolyser
CA	Consortium Agreement
CRM	Critical Raw Material
DAP	Dissemination and Awareness Plan
DOE	Department Of Energy
DoA	Description of Actions
EC	European Comission
EoL	End of Life
EU	European Union
FC	Fuel Cell
FCEV	Fuel Cell Electric Vehicle
FCH	Fuel Cell and Hydrogen
FCH 2 JU	Fuel Cells and Hydrogen 2 Joint Undertaking
FHA	Fundación para el desarrollo de las nuevas tecnologías del Hidrógeno en Aragón
GA	Grant Agreement
HYTECHCYCLING	New technologies and strategies for fuel cell and HYdrogen TECHnologies in the phase of reCYCLING and dismantling
ILSSA	Industrias López Soriano S.A.
JTI	Joint Technology Initiative
JU	Joint Undertaking
IMDEA Energía	Instituto Madrileño de Estudios Avanzados en Energía
LCA	Life Cycle Assessment
PC	Project Coordinator
PEMFC	Proton Exchange Membrane Fuel Cell
PEMWE	Proton Exchange Membrane Water Electrolyser
PGM	Platinum Group Metal
REE	Rare Earth Element
SETIS	Strategic Energy Technologies Information System
SEO	Search Engine Optimization
SOFC	Solid Oxide Fuel Cell
USA	United States of America
WEEE	Waste Electronic and Electrical Equipment
WHEC	World Hydrogen Energy Conference
WP	Work Package

1. Objectives

The objective of Deliverable 7.4 is to update the information on the communicative activities carried out during the second year of the project to maximize the impact of the dissemination. The document aims to analyse the general communication tools and methods that have been accomplished by the partners of the Project to ensure a proper dissemination of the results towards the main stakeholders addressed in the project and all the interest actors involved (public and private).

The dissemination and awareness plan is an important set of tools that has to be complementary to other Project developments, having the common goal of maximising the impact. It is important to remark that the final goal of HYTECHCYLING project is to serve as a basis for future implementation of the concepts arising from it, so it must be ensured all the dedicated guidelines and recommendations reach the key stakeholders and Fuel Cell and Hydrogen (FCH) actors.

Moreover, given that the intention is that the results of the Project are also market oriented, an exploitation strategy and business plan will be also developed throughout the project. Therefore, the plan definition and the following updates have to be also dedicated to maximize the impact to the interested stakeholders according to the studies on assessment of market potential and the strategic plans for commercial exploitation of the results.

Then, it can be considered that the main objective of the plan hereby documented has to be to describe the schedule, audience, methods and tools to maximize the impact of the Project and its results.

2. Introduction

HYTECHCYLING project (New technologies and strategies for fuel cell and HYdrogen TECHnologies in the phase of reCYCLING and dismantling) is part of the European Horizon 2020 program, The EU Framework Programme for Research and Innovation. Horizon 2020 is the biggest EU Research and Innovation programme ever done, with nearly €80 billion of funding available during 7 years (2014 to 2020).

Figure 1. Horizon 2020 logo.

By coupling research and innovation, Horizon 2020 emphasizes on excellent science, industrial leadership and tackling societal challenges. The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation.

H2020 covers a large number of areas in which energy is included as a priority. The European Union has established the objective of the major "decarbonization" of its energy system by 2050. To reach this goal, fuel cells and hydrogen technologies are aimed to play a key role due to its properties of energy carriers. It will be possible to generate large quantities of “green” hydrogen from the excess energy from renewable sources for subsequent use in transport (fuel cells to power vehicles), in energy applications (re-electrification, powering stationary fuel cells in cogeneration systems, back-up systems, and the injection of hydrogen into gas systems) and industrial applications (generation of hydrogen mainly for the chemical industry).

In order to accelerate the development of these technologies in the most efficient way, the European Union has joined forces with European industry and research institutes in a public-private partnership, the Fuel Cells and Hydrogen Joint Technology Initiative (JTI), who supports numerous projects such as HYTECHCYCLING. This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking (FCH 2 JU) under agreement No 700190.

Figure 2. FCH JU logo

The topic of the FCH 2 JU in which HYTECHCYLING project is framed is **FCH-04.1-2015 Recycling and Dismantling Strategies for FCH Technologies**. The expected commercial FCH technologies are not prepared for full deployment in what regards to recycling and dismantling stage. Specifically, these devices still involve significant amounts of critical, expensive and scarce materials (e.g. platinum group metals or rare earth elements) and novel dedicated recycling processes for these FCH technologies could be applied. On the other hand, it is critical the involvement of FCH manufacturers to deliver designs looking for compatibility with new recycling processes and allowing full recovery of critical materials (this is, redesign for material compatibility at recycling and dismantling). Furthermore, there is a lack of End of Life (EoL) strategies devoted to reuse and remanufacture FCH technologies to save these materials and take advantage of still valuable components and subsystems. In this field, it is especially important to involve not only manufacturers but also end users to ensure collaboration and provision of FCH products for reverse logistics processes.

The main goal of HYTECHCYCLING is to deliver reference documentation and studies about existing and new recycling and dismantling technologies and strategies applied to fuel cells and hydrogen technologies, paving the way for future demonstration actions and advances in roadmaps and regulations.

In order to achieve the main goal, the Project must meet the following objectives:

- Identification of critical materials and components in hydrogen technology products.
- Mapping of existing and new recycling technologies applicable to these materials and components, taking into account the experiences of the different Member States in selecting the most appropriate strategies.
- Analysis of the challenges to be addressed, bearing in mind the limitation of the current situation in terms of recycling and dismantling hydrogen technology products.
- Development of new strategies and a roadmap for the implementation of recycling and dismantling of the critical materials and components of hydrogen technology products.
- Quantification of the impact of introducing these new strategies and technologies, through lifecycle analysis of a wide range of hydrogen technology products with applications in the fields of energy and transport.

- Evaluation of the needs of the different existing actors in terms of implementing these new strategies and technologies. Re-adaptation of existing recycling centres, and the organisation of demonstration events and exhibitions at a recycling centre.
- Ordering, aligning and standardising the new strategies and technologies by means of guidelines and recommendations for their introduction for all actors involved in the service life of hydrogen technology products.
- Creation of a business model to facilitate widespread implementation.

The technologies addressed in the project are Alkaline Water Electrolyser (AWE), Proton Exchange Membrane Water Electrolyser (PEMWE), Solid Oxide Fuel Cell (SOFC) and Proton Exchange Membrane Fuel Cell (PEMFC).

3. Dissemination and Awareness Plan Descriptions

The DAP, included in Work Package 7 (WP7), is one of the first documents of the Project, aimed to ensure its impact, at every level and with different focus of interest of the Project results. Once the plan for communication, awareness and dissemination is developed, it will be periodically updated according to the Plan and the DoA of the Project. The document as first DAP aims to answer the questions of "WHO?", "WHAT?", "HOW?" and "WHEN?" It therefore includes a description of the Project communication methodology (a mythological answer to "HOW?"), target groups (answers to "WHO?" and "WHAT?"), a set of communication tools (a technical answer to "HOW?") and a list of possible activities (answer to "WHEN?").

3.1 Communication management methodology

The dissemination and communication of HYTECHCYCLING to stakeholders and audiences outside the project is managed by the partners within the WP7 of the Project. Besides, all the external communication activities are monitored by the Project Coordinator (FHA), to ensure that the communication activities and methodology are in compliance with the provisions of the agreements. As a general rule, the GA will apply, but some specific provisions are agreed in the Consortium Agreement (CA).

About the dissemination of own results, the partners are committed to inform the consortium about planned publications with enough time to ensure that the results to be published are not in conflict with potential commercial exploitation activities, confidentiality and legitimate interests of the partners. In any case, the objection to any communication activity related to publication, has to be clearly justified and followed by necessary modifications to allow and not block, if possible, the publication and dissemination of results.

Besides, the Consortium is committed to cooperate in the submission, preliminary evaluation and publication of any dissertation or Master thesis related to the Project, subject to the provisions of the CA.

The tasks related to communication and dissemination in the Project involve all the members of the Consortium, so all the partners should work and contribute to dissemination tasks according to the agreements and the DoA. Nevertheless, FHA, as plan, promoting the collaboration of all the partners and finally monitoring and compiling the dissemination Project Coordinator, is the final element in charge of the dissemination, being invested in elaborating and contributing the dissemination and communication activities of the Project.

3.2 Target groups

The following section includes the total amount of the target audiences that are expected to be influenced by the development of the Project and its results. All the stakeholders and FCH actors must be identified and classified, establishing a characterization of their needs and concerns in the design of the most suitable strategy for each of them. In addition, a communication strategy must be developed for the wider public. For each of them it has been specified a series of key messages that will have to be successfully addressed during the development of the Project, always based on the rules of the GA and the CA. At the end of this section, shows, in a very schematic way, the existing relations among target groups in HYTECHCYCLING project.

To **FCH technology providers and manufacturers,** as first group of all actors involved in the life cycle of the FCH products, the message is oriented to explain all the information and results that are susceptible to be public recycling and dismantling technologies and strategies will be shared. However, among these technologies and strategies developed, those including the reduction and replacement of critical materials from the phase of design, reverse logistics and redesign for material compatibility and materials and components separation; they will have a special interest for the FCH providers and manufacturers.

To **authorized FCH distributors and logistic companies,** in a very similar way to the manufacturers, all the information and results susceptible to be public will be shared. However, the scope of action of FCH logistic companies will be more limited, not so sensitive to the new technologies but to the new strategies and the proper way to implement them. It will be important also to allude to the key role of logistic sector to achieve reusing and remanufacturing FCH technologies and to engage them in the process.

Recycling centers. All the public information and results regarding recycling and dismantling technologies and strategies for each component and subsystem of the technologies addressed, they will be shared. This will be shown by means of a range of dissemination events and showcases at ILSSA recycling center. Additionally, results about business models for recycling centers and guidelines for re-adaptation will be shared. The key messages to be transmitted involve the benefits that the FCH technology recycling and dismantling can introduce to new business models related to the recycling sector.

The main goal for the **end users of FCH products** target group will be to engage them to participate in reverse logistics strategies fostering reuse, remanufacturing and recycling of FCH technologies and close collaboration with distributors and manufacturers

The evaluation of potential markets linked to massive deployment of FCH technologies involving sector as recycling and dismantling in the near term, along with the analysis of the European standards and national

regulations will be the main input for **policy makers, regulator and public bodies** target group. All the info and results generated must aim to create awareness in needed regulation to promote FCH technologies and include specific codes or guidelines on recycling issues.

The communication efforts towards the **general public** will be focused in showing the benefits of participating in the strategies fostering reuse, remanufacturing and recycling of FCH technologies, in a very similar way to FCH products end users. The additional goal at this point is to reduce the existing resistance to these new technologies and motivating early adopters. Results from additional tasks of the Project, related to the assessment of the market potential and identification and analysis of business cases will serve as additional input to detect new target groups or stakeholders or to focus better the dissemination efforts to reach the target groups. Furthermore, the information obtained through the continuous monitoring of the external projects will also serve as feedback to define specific stakeholders from the different groups.

Post graduate/graduate students and FCH workforce will be addressed as a potential group sensitive to be moved to one of the main FCH technology direct actors (manufacturers, distributors, end users or/and recyclers). Apart of the general presentations and publications, specific training sessions in ILSSA facilities will be offered for them.

Moreover, the participation in the communication events and activities promoted by the FCH 2 JU will be of key importance to reach these stakeholders.

3.3 Communication tools

The following section describes the necessary tools to develop an efficient communication from HYTECHCYCLING Consortium to reach the expected impact towards the target groups established above. These tools involve all the graphic material that will be used for the several congress and fairs that are planned to be attended (as well as for the workshop to be celebrated) and also the digital material, understood as the website and the communications performed through social networks.

3.3.1 Project website

The Project website (www.hytechcycling.eu) aims to become the central part for the diffusion of all the information related to the Project. The website has been designed to provide a general impression of the HYTECHCYCLING's mission through the main page (Figure 3), by showing into three different paragraphs a brief description of its main topic, the partners involved in the Project and funding by the European commission.

Figure 3. HyTechCycling website homepage

For a more detailed view at the characteristics of the project, a number of sections have been implemented to provide the information in an organized way. The "Project" section continues with the development of the Project description briefly introduced at the main page, now introducing all the necessary specifications for a complete understanding of its background, objectives, procedures and other important facts.

The "Partners" section provides a complete description and background of all the companies, research centers and universities involved, including also links to their websites.

The website is completed with the sections "News" and "Downloads". The first of these sections includes all the press notes and main events related to the Project information, as well as important announcements. The 'Download' section, in the other hand, will serve as the main hosting page for all the public content generated by the Project. In this section we have uploaded **six public deliverables** (*D D1.2 – Quality Management Plan, D7.1 - HYTECHCYCLING website, D7.3 – Update 1 Dissemination and awareness plan, D4.1 - LCA approach in end of life cycle of FCH technologies, D5.1 - Report on requirements from FCH actors, D1.4 – Minutes of the First Project Meeting*), **six project presentations** (*HyTechCycling poster – III Symposium of the Spanish Network of Life Cycle Assessment (Nov 2016), HyTechCycling project presentation at FHA Board meeting (Dec 2016) (ES), HytechCycling project presentation at SEEP2017 (June 2017), HyTechCycling project presentation at Iberconappice 2017 (ES), HytechCycling project presentatino at Programme Review Days 2017 (Nov 2017), HytechCycling EHEC 2018*), the **Corporate Identity Manual for the project** and the **Press Kit and five documents (***EC –*

Report on critical raw materials for the EU (2014), EC – Towards a circular economy : A zero waste programme for Europe (2014), Guidance Document fo performing LCA on Fuel Cells, Guidance Document for performing LCA on Hydrogen Production Systems, Study on the review of the list of Critical Raw Materials)

Finally, a 'Contact' section has also been implemented to make it as easy as possible the exchange of information between the user and the Project partners. This section includes a contact form that once fulfilled automatically sends an email to the Project coordinator (FHA), as well as main contact information of the coordinator, like address, telephone number and main webpage.

HyTechCycling's website was launched at the end of October 2016, so it has been online during 6 months when this deliverable was prepared. The information regarding traffic, access and user behaviour during the visits to the site has been analysed and it is presented in this section.

The visits to the web of the project have grown exponentially having 739 users to the web with 1,200 sessions. Both figures have increased compared to the previous year by more than 200%

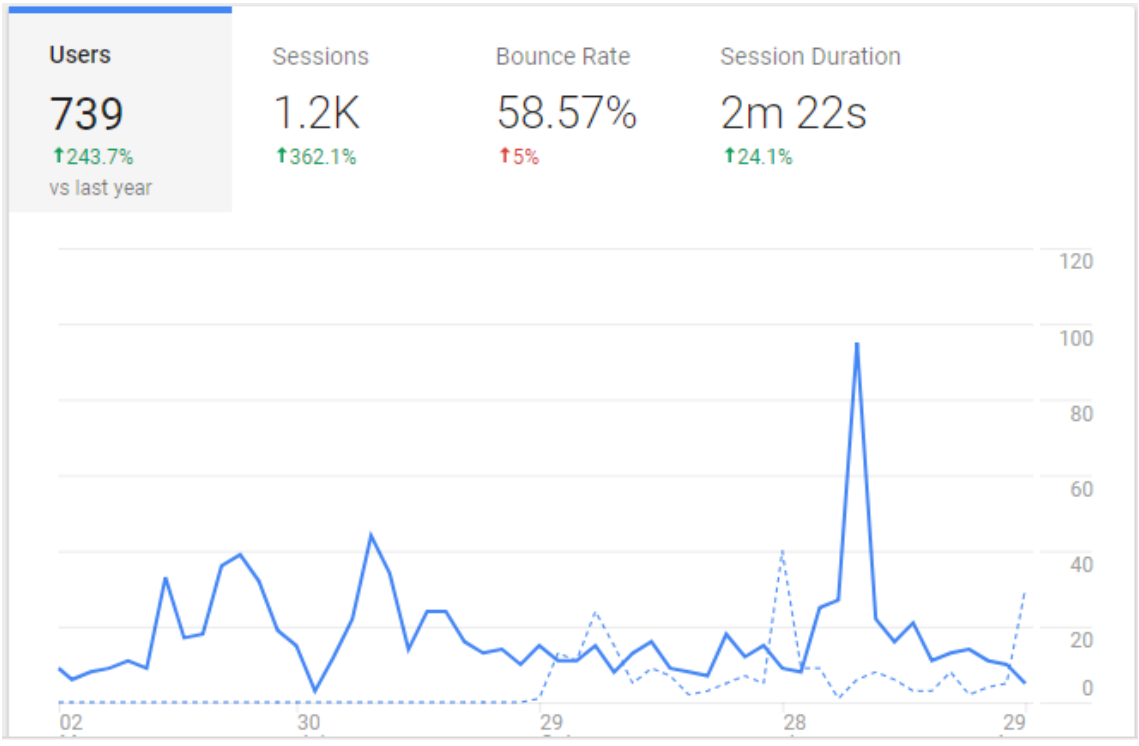


Figure 4. HyTechCycling Website Users and Sessions Overview

On the one hand, most of the users start the visit to the website in the "home" section, which is logical taking into account that most of the links in news and presentation send the user to the homepage (see Figure 5). It also appoints to the use of Search Engine Optimization systems (SEO) for the project

webpage. Unfortunately, there are still a percentage of users or at least, more than desired, that does not continue navigating the site (of 774 sessions there are 94 dropouts on the first page). Although it should be noted that these numbers are considerably lower than those of the previous period where of 230 sessions there were 124 dropouts on the first page.

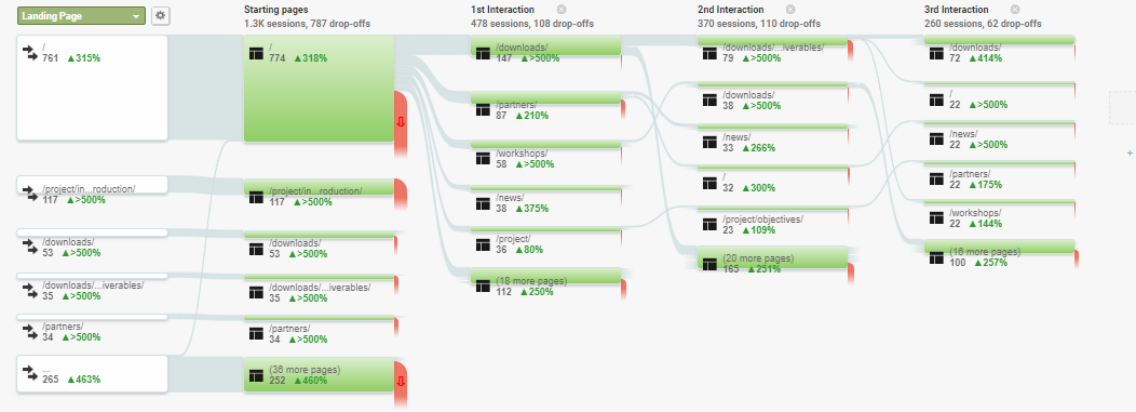
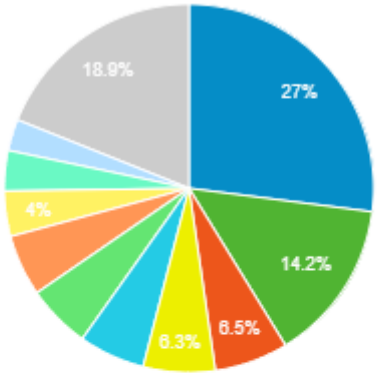


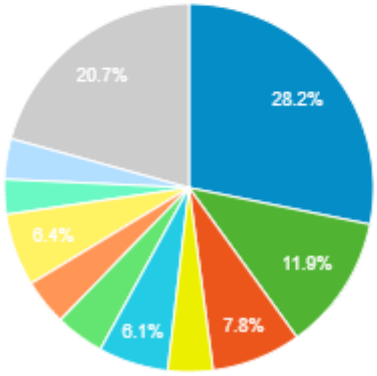
Figure 5. HyTechCycling's website user behaviour flow

The usual traffic once the visit is continued goes to the "project introduction" section. Another important amount of users selects instead of "partners" the "download" so it appoints that the users are interested in consulting the project's results and documents. On the other hand, the section "project" is also one of the preferred among the visitors of the webpage, so it appoints that the users are interested in consulting the project's results and documents. So, it is logical that most of the visits and users seem to be interested on the project and partners contributing to the development.

Apr 30, 2017 - Apr 30, 2018



Apr 29, 2016 - Apr 29, 2017



	3,447 % of Total: 100.00% (3,447)	3,447 % of Total: 100.00% (3,447)
1. /	932	27.04%
2. /downloads/	490	14.22%
3. /partners/	223	6.47%
4. /downloads/deliverables/	216	6.27%
5. /news/	200	5.80%
6. /workshops/	193	5.60%
7. /project/introduction/	186	5.40%
8. /project/	137	3.97%
9. /downloads/presentations/	122	3.54%
10. /contact/	95	2.76%

Figure 6. HyTechCycling's website: visits to sections

There are still some areas of improvement regarding the website. The content of the page has to be updated and the visitors redirected, in order to keep a high number of returning visitors to the website. The analytics show that more than half of the visits are from new visitors, so it seems adequate taking into account that the project is on its first year, but the objective is to increase not only the total visits to the website but also the number of users that return to obtain updated information of the project, which could be achieved also keeping the *"news"* and *"downloads"* sections active.

	305.85% 763 vs 188	305.85% 763 vs 188
1. New Visitor		
Apr 30, 2017 - Apr 30, 2018	757	85.63%
Apr 29, 2016 - Apr 29, 2017	188	87.85%
2. Returning Visitor		
Apr 30, 2017 - Apr 30, 2018	127	14.37%
Apr 29, 2016 - Apr 29, 2017	26	12.15%

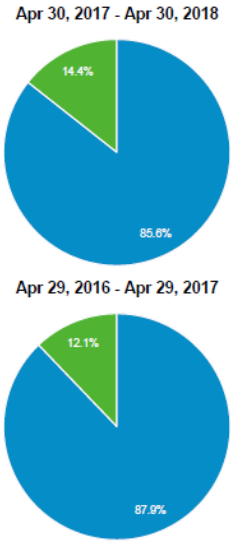


Figure 7. HyTechCycling's website new and returning users

Regarding the geographical data, there is clearly an opportunity for improvement. Most of the traffic to the website comes from Spain, which is mostly related to the extensive dissemination activity from the coordinator in Spanish media. On the other hand, it is related that most of the partners (3 of 5) are Spanish. As second country where the HyTechClycling website gets most of its traffic is Slovenia which make sense as one of our partners is the University of Ljubljana.

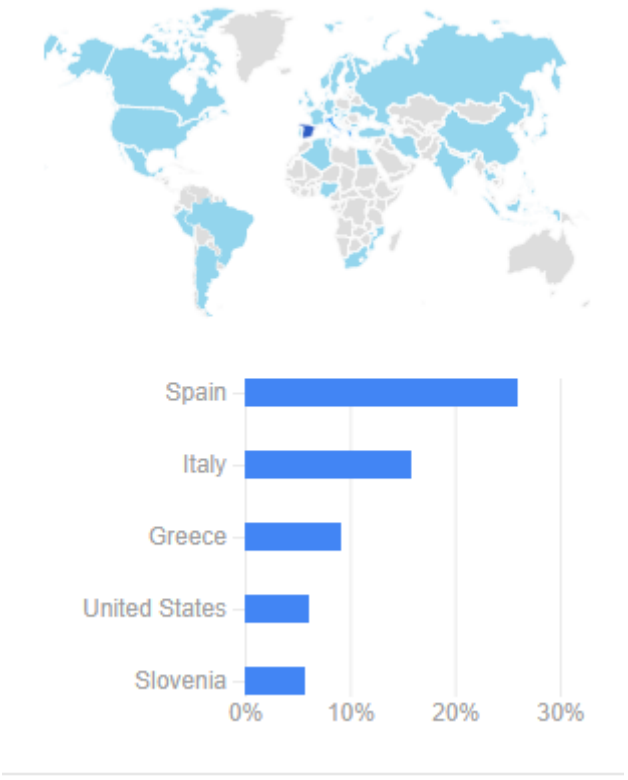


Figure 8. HyTechCycling's website: geographical information

Nevertheless, the visits from the website come from all around the world, so it clearly indicates the importance of maintaining active the website in order to maximise the impact of the project.

Therefore, there are three key activities to improve during the next months:

- Improve the involvement of the partners disseminating in order to maximise the geographical impact, especially throughout Europe.
- Improve and update the sections "news" and "downloads" of the website to keep the interest and increase the number of returning visitors.
- Keep the dissemination of the website, referring in the documents and publications to hytechcycling.eu but also promote using the corresponding links (not only homepage) to direct the traffic in the website

3.3.2 Graphic material

Different graphic materials were developed for the project and have been used during the first year, including the logotype, selection of fonts, templates for documents and slides and a poster for public

presentations. The graphic material as it has been said before is available in the HyTechCycling downloads section of the webpage. It will be also updated during the project.

Press kit

In order to help partners in the elaboration of their press releases and communications to magazines, a press kit has been developed and distributed among them. The press kit is also available in the webpage, including photos, general description of the project and the concepts related to it (Q&A document). By this it will be possible not only to homogenize all the communications made into the same style, thus promoting the chosen project image, but also to catch the general and specific magazines interest to communicate the project.

Leaflet

The project has developed and designed two versions of the brochure.

Figure 9. First leaflet version outside

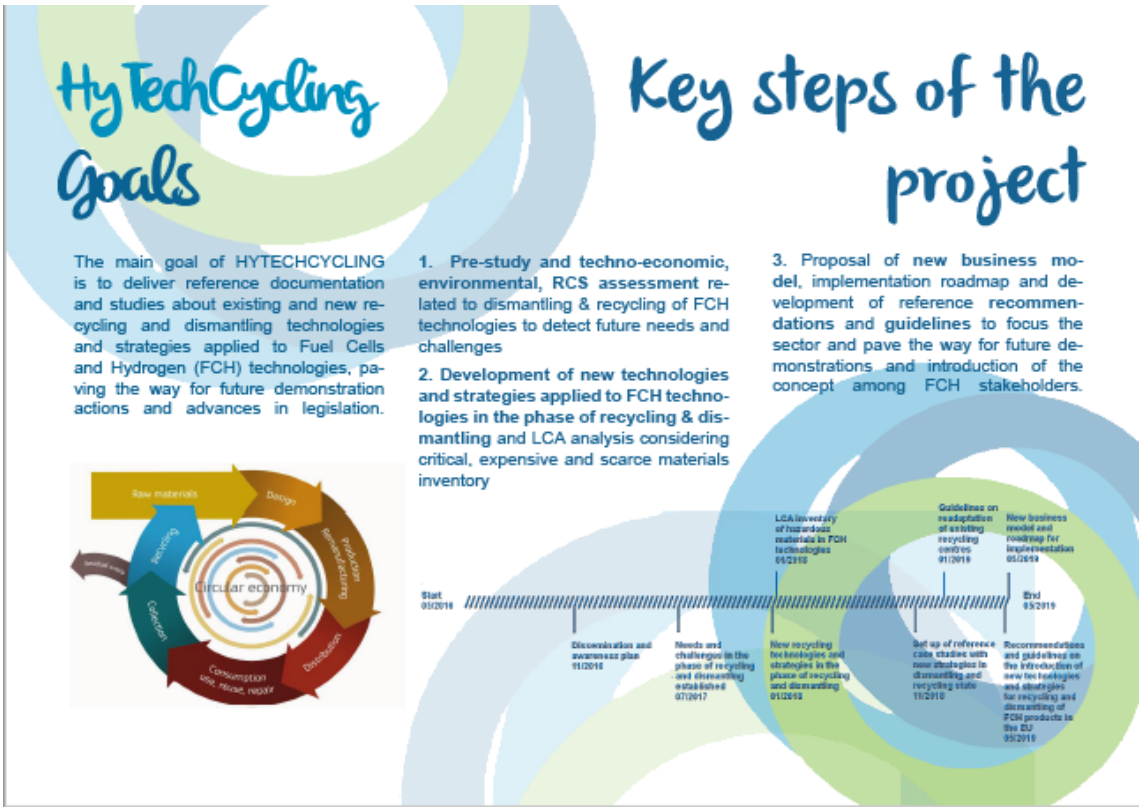


Figure 10. First leaflet version inside

Video

At the time of finalization of the project, a video will be released including the main public results and impact of the HyTechCycling project. This video will be shared through press release and it will be posted at the project's main website. The aim of the video will be to serve as the global final message of the project, and to provide a general view of the work performed.

3.3.3 Social and professional networks

The use of social media and social and professional networks will be also a key communication tool to disseminate information about the Project, events and Project results. Partners will use their own accounts in the social/professional networks to contribute to the Project dissemination and to create open debates and detect future industrial investors from other cities in Europe. The main social networks considered for the dissemination of the Project communications and recommendations on how to use each of them according to their unique characteristics are detailed below:

LinkedIn: A Project LinkedIn page has been created and shared with all the partners. Each participant on the Project of every partner has been able to post. The average visitor to the HyTechCycling project is a

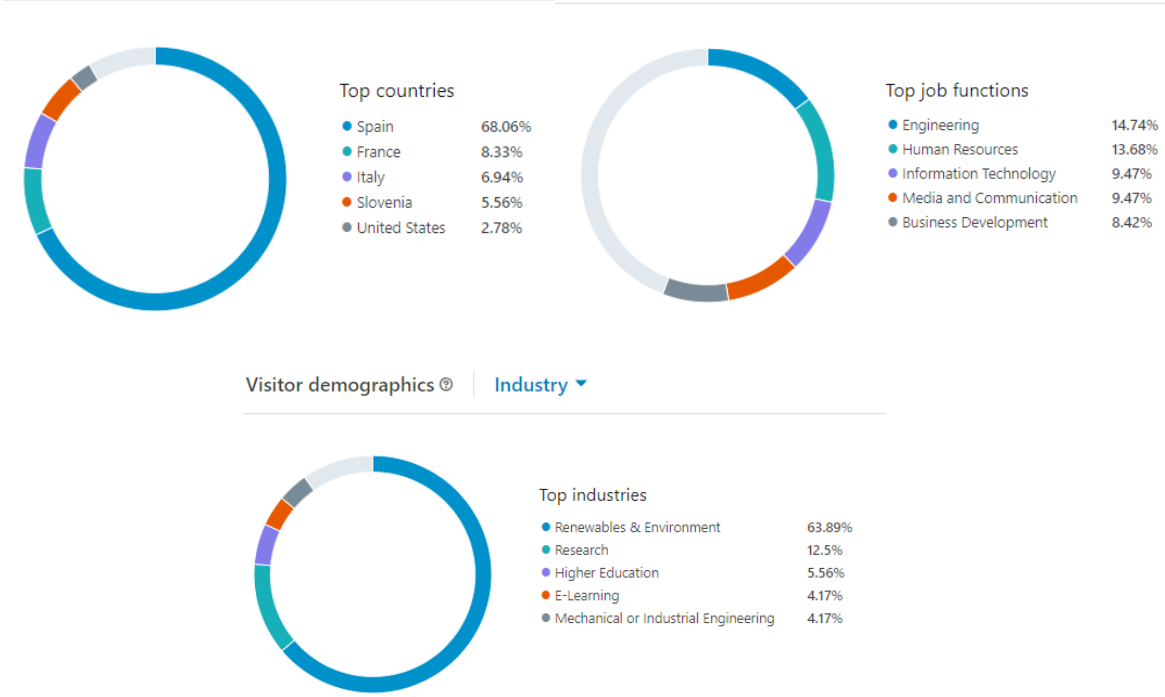


Figure 11. LinkedIn User Information

Spanish engineer from the renewable and environment sector.

Twitter: The partners must echo the Project events and press releases through a brief message or tweetable fact using the hash tag #HyTechCycling in the account holder language and also in English, redirecting to the main press release, linking to the new or event published in the Project website.

Figure 12. Twitter Captions

Facebook: The partners will echo the Project achievements in the same way as in the twitter case, although the platform characteristics will allow posting a more detailed message for each communication.

Figure 13. Facebook Captions

YouTube: The channels of the partners involved in the Project will be useful to make a better diffusion of the promotional videos made during the development of the Project (like the final video regarding the results obtained) as well as of any appearances of the partners on television.

3.4 Communication activities

3.4.1 Identification of ongoing projects for Project coordination

Possible paths of collaboration in public workshops and seminar will be explored by the Consortium when it is considered suitable and of interest for the Project and the partners. The assessment of the collaboration will be studied case by case taking into account the goals of the Project and partners involved. Moreover, once the Project is concluded, the partners will be encouraged to show the results

obtained at conferences, fairs and events related to the Project targets. The identification for Project coordination is challenging due to the almost non-existence of ongoing projects specifically focused on FCH recycling and dismantling. Therefore, the scope must widen till some of the main topics treated on HYTECHCYCLING such as FCH technologies life cycle and political framework analysis or metal and Waste Electronic and Electrical Equipment (WEEE) recycling. There is listed below some ongoing projects that could be related with HYTECHCYCLING in some of their aspects.

Fuel Cell Recovery project (funded by Innovate UK) The project aims to create knowledge on PEMFCs recovery from FCEVs at their EoL. The objectives of the project are: develop new design guidelines for FC recovery, new remanufacturing and recycling process design to facilitate recovery and new 'circular' business models.

CERTIFHY (funded by FCH 2 JU) The development of hydrogen as an energy carrier will be dependent upon the capacity of the market to offer low-carbon or carbon-free hydrogen to end-users and consumers. The objectives of the CertifHy project are to assess the necessary market and regulatory conditions, develop the complete design and initiate a unique European framework for green hydrogen guarantees of origin. It includes a Life Cycle Assessment (LCA) of hydrogen producing process from green energy sources, thus using electrolysers and including technological factors and regulatory framework in the assessment.

CRMRecovery project (funded by LIFE 2014) Each year around 9.9 million tonnes of WEEE is generated in the EU. Due to poor collection and recycling rates and processes that can only recover a small number of materials, many critical and valuable materials are lost from the system.

The Critical Raw Material Recovery project is working to ensure that a wider range of mineral and metals are recovered during recycling of WEEE in Europe. The project will fund a series of WEEE collection and reprocessing trials, and deliver a European policy and infrastructure plan.

Projects developed by ElectroCat (funded by USA Department of Energy - DOE) The Electrocatalysis Consortium (ElectroCat) are an initiative to accelerate the development of catalysts made without PGM for use in automotive fuel cell applications. It is co-led by Argonne National Laboratory and Los Alamos National Laboratory.

ElectroCat aims to bring together a network of enduring tools and expertise across the National Laboratory network (USA) under a streamlined, single point of contact interface that makes it easy for industry and academic partners to quickly gain access to the Consortium.

3.4.2 Publications and Dissemination activities

The target set for this project is to publish a minimum of 4 publications in scientific journals including OpenAIRE during the time of its development.

It is expected the publication of at least 6 publications in regular magazines, newspaper, webzines, etc. informing about the development of the Project and the milestones achieved.

It is planned to produce a number of different press releases linked to the most important milestones of the Project, such as, but not precluding: launching of the Project, general progress announce by Midterm Review meeting, dissemination of the different workshops organized and final Project announce and general results. The Project coordinator will be the partner in charge of the main dissemination of the press note, including any event being attended by the partners of the Project.

Conference, congress, etc.	Name of the publication	Date of issue	Place	Author(s)	Target	Scope	No. People attending	Brief description
III Symposium of Spanish Life Cycle Assessment Network	Towards a robust life cycle assessment of end-of-life strategies for fuel cells and hydrogen technologies	04/11/2016	Escuela Técnica Superior de Ingeniería Agronómica y del Medio Natural, Universitat Politècnica de València (SPAIN)	IMDEA Energía. Antonio Valente, Mario Martín-Gamboa, Diego Iribarren, Javier Dufour		National (SPAIN)		Poster presentation
HYPOTHESIS XII	Revisting end-of-life technologies for fuel cells and hydrogen products	28-30/06/20174	Siracusa (Italy) 28-30 Junio 2017	IMDEA Energía. Antonio Valente, Mario Martín-Gamboa, Diego Iribarren, Javier Dufour		International (ITALY)		Oral Contribution
World Hydrogen Technology Convention 2017	Harmonised cumulative energy demand of renewable hydrogen	9-12/07/2017	Prague (Czech Republic) 9-12/07/2017	IMDEA Energía. Antonio Valente, Diego Iribarren, Javier Dufour		International (CZECH REPUBLIC)		Oral Contribution

SEEP 2017	Assessment of Critical Materiasl and Components in FCH Technologies to Improve LCIA in End of Life Strategy	27-30/06/2017	Bled (Slovenia)	UL - FHA. Andrej Lotrič, Rok Stropnik, Boštjan Drobnič, Boštjan Jurjevčič, Mihael Sekavčnik, Mitja Mori, Ana María Férriz Quílez		International (SLOVENIA)		Oral Contribution
CONAPPICE 2017	Materiales críticos y estrategias de reciclado actuales en las tecnologías del hidrógeno y las pilas de combustible.	17-20/10/2017	Huesca (Spain)	FHA - IMDEA - UL - EP. A. M. Férriz, M. Zarzuela , J. Dufour , D. Iribarren, M. Mori, S. Fiorot		National (SPAIN)		Oral Contribution
EHEC 2018		16/03/2018	Málaga (Spain)	FHA		International (SPAIN)		

Figure 14. List of Dissemination Activities: Congress, events, etc.

Press Name	Date of issue	Author(s)	Target	Scope	Brief description	Link
Aragon hoy	08/05/2016	FHA	General Public	National (SPAIN)	KOM 160505	http://aragonhoy.aragon.es/index.php/mod.noticias/mem.detalle/area.1348/relmenu.4/id.180208
El periodico de la Energía	08/05/2016	FHA	General Public	National (SPAIN)	KOM 160506	http://elperiodicodelaenergia.com/tag/hytechcycling/
Exportar en Aragón	08/05/2016	FHA	General Public	National (SPAIN)	KOM 160510	http://exportarenaragon.es/la-fundacion-del-hidrogeno-coordinara-proyecto-europeo-hytechcycling/
Heraldo de Aragón	09/05/2016	FHA	General Public	National (SPAIN)	KOM 160504	http://www.heraldo.es/noticias/aragon/2016/05/08/la-fundacion-del-hidrogeno-coordinara-proyecto-europeo-hytechcycling-847363-300.html
Finanzas	09/05/2016	FHA	General Public	National (SPAIN)	KOM 160507	http://www.finanzas.com/noticias/empresas/20160508/aragon-coordinara-proyecto-europeo-3405128.html

El Periódico de Aragón	09/05/2016	FHA	General Public	National (SPAIN)	KOM 160508	http://www.elperiodicodearagon.com/noticias/economia/aragon-coordinara-proyecto-hidrogeno_1108987.html
Diario del Alto Aragón	09/05/2016	FHA	General Public	National (SPAIN)	KOM 160509	http://www.diariodelaltoaragon.es/Movil/Noticia.aspx?Id=994720
Diario aragonés	09/05/2016	FHA	General Public	National (SPAIN)	KOM 160511	http://www.diarioaragones.com/previo/mediodia/92329-la-fundacion-del-hidrogeno-coordinara-un-proyecto-europeo-sobre-reutilizacion-del-hidrogeno.html
Retema	09/05/2016	FHA	General Public	National (SPAIN)	KOM 160512	http://www.retema.es/noticia/arranca-el-proyecto-hytechcycling-sobre-reciclaje-y-reutilizacion-de-las-tecnologias--963f5
NoticiasHuesca	10/05/2016	FHA	General Public	National (SPAIN)	KOM 160513	http://noticiashuesca.com/la-fundacion-del-hidrogeno-coordinara-el-proyecto-europeo-hytechcycling/
FuturENVIRO	11/05/2016	FHA	Recycling centres (among others)	National (SPAIN)	KOM 160514	http://futurenviro.es/la-fundacion-del-hidrogeno-coordinara-proyecto-europeo-hytechcycling/
Diario del Alto Aragón	16/05/2016	FHA	General Public	National (SPAIN)	KOM	http://www.diariodelaltoaragon.es/Movil/Noticia.aspx?Id=994720
Prensa Unizar	18/05/2016	FHA	General Public	National (SPAIN)	KOM	http://www.diarioaragones.com/previo/mediodia/92329-la-fundacion-del-hidrogeno-coordinara-un-proyecto-europeo-sobre-reutilizacion-del-hidrogeno.html
Diario del Alto Aragón	20/06/2017	FHA	General Public	National (SPAIN)	Premio Empresa 2017	15006DA17062038 (Z:\16_01_HYTECHCYCLING\Proyecto\Difusión\Artículos)
Aragón Hoy	15/10/2017	FHA	General Public	National (SPAIN)	FIRST WORKSHOP 170926	http://www.aragonhoy.net/index.php/mod.noticias/mem.detalle/id.206536
Aragón digital	15/10/2017	FHA	General Public	National (SPAIN)	FIRST WORKSHOP 170926	12023AD17101616 (Z:\16_01_HYTECHCYCLING\Proyecto\Difusión\Artículos)
El Periodico de Aragón	16/10/2017	FHA	General Public	National (SPAIN)	FIRST WORKSHOP 170926	12024PA17101623 (Z:\16_01_HYTECHCYCLING\Proyecto\Difusión\Artículos)
Diario del Alto Aragón	17/10/2017	FHA	General Public	National (SPAIN)	FIRST WORKSHOP 170926	12004DA17112707 (Z:\16_01_HYTECHCYCLING\Proyecto\Difusión\Artículos)
Aragón digital	17/11/2017	FHA	General Public	National (SPAIN)	PRD 2017	12002AD17112712 (Z:\16_01_HYTECHCYCLING\Proyecto\Difusión\Artículos)

El Periódico de Aragón	17/11/2017	FHA	General Public	National (SPAIN)	PRD 2017	12003PA17112730 (Z:\16_01_HYTECHCYCLING\Proyecto\Difusión\Artículos)
Diario del Alto Aragón	17/11/2017	FHA	General Public	National (SPAIN)	PRD 2017	12006DT17112711 (Z:\16_01_HYTECHCYCLING\Proyecto\Difusión\Artículos)

Figure 15. List of Dissemination Activities: Press Release

Magazine Name	Date of issue	Author(s)	Target	Scope	Brief description	Link
FuturENVIRO	07/07/2016	FHA	Recycling centres (among others)	International	Introduction of the Project	http://futurenviro.es/digital-versions/2016-07/index.html#70
Fuel Cells Bulletin	01/08/2016		FCH stakeholders	International	Introduction of the Project	http://www.sciencedirect.com/science/article/pii/S1464285916302218

Figure 16. List of Dissemination Activities: Magazine Publications

Date of issue	Author(s)	Brief description	Link
08/05/2016	FHA	KOM 160504	http://hidrogenoaragon.org/es/la-fundacion-del-hidrogeno-coordinara-el-proyecto-europeo-hytechcycling/
30/05/2017	FHA	1st PM 170609	http://hidrogenoaragon.org/es/hytechcycling-celebra-un-ano-de-trabajo/
30/05/2017	EP	1st PM 170609	http://www.envipark.com/2017/06/08/hytechcycling-procedono-gli-studi-sui-sistemi-smaltimento-delle-tecnologie-allidrogeno/
	FHA	EL PROYECTO HYTECHCYCLING CELEBRA SU SEGUNDO WORKSHOP	http://hidrogenoaragon.org/es/el-proyecto-hytechcycling-celebra-su-segundo-workshop/
	FHA	LA FUNDACIÓN HIDRÓGENO ARAGÓN PARTICIPA EN EL EUROPEAN HYDROGEN ENERGY CONFERENCE – EHEC2018	http://hidrogenoaragon.org/es/la-fundacion-hidrogeno-aragon-participa-ehec2018/
29/11/2017	FHA	LA COMISIÓN EUROPEA PONE COMO MODELO A CINCO PROYECTOS DE LA FUNDACIÓN HIDRÓGENO EN EL PRINCIPAL ENCUENTRO DEL SECTOR	http://hidrogenoaragon.org/es/comision-europea-pone-como-modelo-a-cinco-proyectos-de-la-fundacion-hidrogeno/
28/09/2017	FHA	EL PROYECTO HYTECHCYCLING CELEBRA SU PRIMER WORKSHOP	http://hidrogenoaragon.org/es/hytechcycling-celebra-su-primer-workshop/
09/06/2017	FHA	EL PROYECTO HYTECHCYCLING CELEBRA SU PRIMER AÑO DE	http://hidrogenoaragon.org/es/hytechcycling-celebra-un-ano-de-trabajo/

Figure 17. List of Dissemination Activities: Partner Media

3.4.3 Identification of Conference, Events and Fairs

World Hydrogen Energy Conference, WHEC - Biennial- Being considered the world's most well-known conference in the field of hydrogen energy and fuel cells applications of the International Association for Hydrogen Energy (IAHE), WHEC (World Hydrogen Energy Conference) was first held in Miami, Florida in 1976. Since then, it has been held every two years at different locations around the world, corresponding the next edition to Rio de Janeiro in 2018.

WHEC 2018 will be an opportunity to share and exchange scientific information among participants, exhibitors and sponsors who are global leaders in businesses, governments, and scientific communities.

Group Exhibit Hydrogen + Fuel Cells + Batteries Hannover Messe (DE) - Yearly - The Group Exhibit Hydrogen + Fuel Cells + Batteries is Europe's largest and most important H2+FC+BAT exhibition dating back to 1995. It will take place from 24 to 28 of April 2017 in the Energy trade fair of HANNOVER MESSE setting the participants at the centre of the world's largest event for industrial technology.

Through more than 150 exhibitors from 25 countries (e.g.: International corporations, SMEs and research institutions), it showcases the full spectrum of hydrogen and fuel cell-related technology and batteries, becoming the primary location for finding top manufacturers, distributors, consultants, developers and suppliers.

World Hydrogen Technology Convention, WHTC - Biennial- The 7th World Hydrogen Technologies Convention (WHTC), a leading technical and commercial event for the global hydrogen energy and fuel cell community, will be held in Prague from 9 to 12 of July 2017, and hosted by the Czech Hydrogen Technology Platform (HYTEP).

Iberconappice (ES) –Biennial- Under the name of Iberoamerican Congress on Hydrogen and Fuel Cells (Iberconappice), the Spanish Fuel Cells Association organizes a series of conferences with the aim of facilitating dissemination of the progress made in Hydrogen and Fuel Cell technology from different areas (e.g. university, research centres, technology centres, companies and governments). Despite its original national character, it has been an increase in the participation at international level, providing the opportunity to establish valuable partnerships beyond Spain and its borders.

International Electronics Recycling Congress, IERC -Yearly- IERC is the recycling industry's most important event, bringing together over 500 producers, recyclers, equipment manufacturers, recycling associations, refurbisher, standards bodies, NGOs, regulators and many more. The international experts

use this platform to discuss the latest recycling technologies, regulations, manufacturing processes and value of raw materials.

Going Green – CARE INNOVATION -Biennial- The Going Green – CARE INNOVATION 2018 conference and exhibition on Electronics and the Environment will take place in Schoenbrunn Palace Conference Centre Vienna (Austria) from 26 to 29 of November 2018. This Symposium is the main platform for presenting the up-to-date progress on sustainable development and the development of eco-efficient electronic and automotive products.

The conference will provide a platform to discuss the latest progress on: Resource Efficiency and Circular Economy; Beyond Legal Compliance and Global Harmonization; Sustainable Products and Services and Leading Edge Technologies; Corporate Social Responsibility and Management; and Energy-efficiency and Climate Change.

All companies in the electronics, automotive, solar and PV, chemical and recycling industry, power suppliers, electricity generators and distributors, contract manufacturers, material and component suppliers, service and logistic companies, collective systems, academia, consulting and public authorities (local, regional, international) are invited to attend and contribute.

World Congress and Expo on Recycling –Yearly- The 4th edition of World Congress and Expo on Recycling will take place during July 27-29, 2017 in Rome. It will be based on the theme "Recycle today for a better tomorrow" which extensively covers all aspects on scientific and technical advances in the field of recycling and its allied areas from the integration of instruments, methodologies and technologies to their use environmental engineering and other sciences. The event will target thorough recycling associations recycling associations, industries and researchers; business entrepreneurs; environmental academia's; ecologists; training institutes; chemical engineers; environmental engineers; and waste management associations

3.4.4 Workshops

Two workshops have been carried out so far. The first workshop It was dedicated mainly to the potential agents involved in the recycling of hydrogen technologies as manufacturers of batteries and electrolysers, end users and recycling centers. That is the main objective of HyTechCycling, anticipating the deployment of hydrogen technology addressing existing and future actions of recycling and its necessary legislative accompaniment. In this first meeting the members of the consortium presented the results achieved so far in the study of the components of hydrogen batteries and the various existing recycling technologies, but also proposals to facilitate their implementation in companies and recycling centers which will be responsible for the classification and treatment of materials.

During the workshop, advances were made in the study of the Life Cycle Analysis (LCA) of fuel cells and electrolysers and of the various auxiliary elements that are necessary for their optimum operation. This identification is the key both to characterize how clean these technologies are and to understand more clearly which the most harmful components for the environment are.

The second workshop was dedicated to the communication and dissemination of the project. It was held in Móstoles (Madrid) on March 20. The main objective of this workshop was to present the new technologies in the recycling phase of fuel cells and hydrogen technologies. In addition, the results of the LCA, the information obtained from different members of the life cycle of the FCH and the general information on the project will be presented. The contributions and feedback of those attending the event will be the basis for the development of a business model, seeking an adaptation to all the needs and knowledge of FCH.

4. Conclusions

The present document constitutes the main guide to be followed for any communication activity related to the HYTECHCYLING project. It contains all the necessary information in relation to the target groups, how to reach them and which are the necessary tools to perform these tasks, as well as a selection of potential partners within Europe and conferences, congress and fairs that are suitable for the dissemination of the results of the Project.

The main target groups identified are the public regulator bodies, the hydrogen technology actors: manufacturers, distributors and end user; the recycling centers and, of course, the general public too. The ways of reaching these audiences are different for each of them, but in any case, the website of the Project is meant to be the central point of information related to the project, as it will contain all the public documents generated during the Project, as well as a 'News' section to gather all the important updates on the Project. During the time of execution of the Project, the partners will have to make use of their institutional accounts in social networks (Twitter, Facebook, LinkedIn, etc.) to promote the work performed in the Project.

A set of graphic materials has been prepared to unify the corporate image of any work performed under HYTECHCYLING and to help the diffusion of the Project and its presence in fairs, congress, etc. These include the logo and a press kit, between other materials. Overall, they serve as the main support material to introduce the Project to both technical and non-technical audiences.

At the same time, a search between other European projects has resulted in a selection of ongoing projects approaching any of the main topics addressed by HYTECHCYCLING, in a more or less detailed level. Collaborations with some of the participants of these projects might ensue in the near future.

The report also includes an extensive list of many congresses and fairs to be celebrated in Europe during the time of execution of the Project that will serve as scenarios for the showcasing of the Project, as well as very good networking opportunities.

Finally, the list of planned workshops is introduced. These workshops are planned to be carried out close to the ending of the Project, targeting both the general public and more specific audiences that will have more interest in the Project results.

The main opportunities to improve awareness are also identified as follows:

1. Improve involvement of partners to increase awareness in Europe
2. Send press kits to specific, technical and general magazines
3. Reach the conferences and fairs during the next years to increase impact

4. Identify synergies for workshops and networking

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