Plan for the Exploitation and Dissemination of Results (PEDR): Update I

Action Acronym: PEACE

Action title: Project 101101343 - Pressurized Efficient Alkaline Electrolyser

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PEACE Consortium

Beneficiary name	Short name
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DE)	DLR
Materials Mates Italia SRL (IT)	MMI
Technische Universiteit Eindhoven (NL)	TU/e
Brandenburgische Technische Universität Cottbus Senftenberg (DE)	BTU CS
Grant Garant sro (CZ)	GG
HyCC B.V. (NL)	HYCC
Danmarks Tekniske Universitet (DK)	DTU

List of abbreviations

Abbreviation	Definition
AEL	Alkaline electrolysis
AWE	Alkaline Water Electrolysis
BoP	Balance of Plant
CC BY	Creative Commons Attribution International Public Licence
CC BY-NC	Creative Commons Attribution-NonCommercial
CC BY-ND	Creative Commons Attribution NoDerivs
CC0	Creative Commons Public Domain Dedication
C&D&E	Communication, Dissemination, Exploitation
CHP	Clean Hydrogen Partnership
D	Deliverable
DMP	Data Management Plan
DoA	Description of Action
EB	Executive Board
EPC	Engineering, Procurement, and Construction
EU	European Union
FMEA	Failure Mode and Effects Analysis
HAZOP	Hazard and Operability Analysis
HP	High-pressure
KER	Key Exploitable Result
KPI	Key Performance Indicator
LCA	Life Cycle Assessment
M	Month
PEDR	Plan for the Exploitation and Dissemination of Results
R&I	Research and Innovation
WP	Work Package

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1. Executive Summary

This document represents an update of the Plan for the Exploitation and Dissemination of Results (PEDR) of the PEACE project – a research and innovation action funded by the Clean Hydrogen Partnership (CHP) under the Horizon Europe programme. The PEACE project is coordinated by Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR). The main objective of the project is to reduce the levelized cost of hydrogen via the development of an innovative high-pressure alkaline electrolysis technology for hydrogen production.

This report is based on an original PEACE deliverable that was submitted to the granting authority in August 2024. It was produced by the WP6 leader (GG) as a follow-up deliverable which elaborates upon the original PEACE PEDR submitted in November 2023. The goal is to get a comprehensive communication, dissemination and exploitation strategy of a research and innovation project to support the achievement of project research targets and to boost project impact on society.

Beside outlining the project's C&D&E obligations, the report presents PEACE project C&D&E tools and pathways.

The PEDR consists of three interconnected plans. Communication Plan sets the project communication objectives and key messages to be transferred to multiple audience (defined as research communities, European institutions, industry and business, and the general public and media). PEACE communication is multifaceted, but centred on online communication sphere (website, LinkedIn, X).

Dissemination Plan introduces the principal project results and the ways of its dissemination – mostly by scientific publications and events participation.

Exploitation Plan identifies the main exploitable results to be exploited in about three-years' time after the end of the project. Most results are planned to use scientific exploitation pathways.

Overall, the PEACE PEDR strategy is on track and future performance growth is expected. The PEDR will be updated again in M26.

2. PEACE Project Summary

The PEACE project represents a challenging research and innovation action in the field of hydrogen production, using the alkaline electrolysis (AEL) technologies. AEL technologies are known for their low investment costs and excellent scalability. The PEACE project aims to further improve the levelized cost of hydrogen produced by AEL. Therefore, efforts are focused on enhancing efficiency, maximizing current densities, and enabling better integration with downstream processes. By carefully designing a high-pressure stack and system, the performance and overall efficiency of the AEL process will be significantly improved, eliminating the need for additional compression for downstream processes. This, in turn, reduces the capital and operational expenses associated with hydrogen compressors, which are a substantial part of electrolysis systems' cost.

Within the PEACE project, a demonstrator of an AEL system exceeding 50 kW, capable of operating at pressures of up to 90 bars, will be designed and developed. This is achieved through a novel concept involving two-stage pressurization. The integration of advanced components, innovative design, and optimized operation strategies will be explored through modelling and experimental testing, ultimately aiming to demonstrate a system with impressive efficiency characteristics: 70% lower heating value at a current density of 1 A/cm^2. The successful implementation of this technology promises a significant reduction in the cost of green hydrogen production.

The PEACE project scientific objectives are reinforced by a strong focus on sustainability and circularity aspects, as well as dedicated outreach activities. The consortium comprises two SMEs, four research and development centres with established expertise in alkaline stack, system, and Life Cycle Assessment (LCA), and one of the largest hydrogen production and utilization companies globally. This collaboration ensures a comprehensive approach to achieving the project's goals.

Finally, the project aims to propose use cases and the concept of an integrated plant. By combining all these developments, the goal is to achieve a technological breakthrough with a clear commercial perspective, positioning Europe as a leader in highly pressurized AEL technology within the next three years.

3. About PEACE PEDR

PEACE is a research and innovation action project funded by the Clean Hydrogen Partnership (CHP) under the Horizon Europe programme. Over the course of its 36-month implementation, the consortium will effectively communicate about the project and actively disseminate project results in order to boost their further exploitation. These activities need to be carefully planned to get the highest outcomes. Therefore, PEACE PEDR represents a strategic document explaining how the consortium will coherently promote the research and innovation action and its results towards multiple audiences in line with Art. 17 and Annex V of the project Clean Hydrogen PartnershipGrant Agreement.

Following the EC definitons, within the PEDR, by "communication" we mean to take measures in order to inform the target groups about the project and its activities, about project's further use and benefits. "Dissemination" actions are defined as public disclosure of the results by appropriate means (e.g. publications, conference presentations). By "exploitation" we mean the use of results in further research/innovation activities or results' commercial exploitation.

The original PEACE PEDR was delivered by the partner GG within the Work package (WP) 6 in November 2023. This report represents an updated and public version of the PEACE PEDR. It takes over the original Plan and updates the relevant parts. The current PEDR update is destined to aid the consortium in achieving efficient implementation of research objectives. The D6.9 main goals are to:

- Ensure project' s outreach towards general public and other target groups
- Ensure project results dissemination
- Ensure future exploitation and commercialization of the results

PEACE PEDR is a living document that will be continuously updated and expanded as necessary, with next regular update planned for M26 (D6.10). Both PEDR versions will be also published on the PEACE project website.

Beside setting the targets and introducing the project's pathways of the communication, dissemination and exploitation policy, PEDR will serve the consortium as a practical guidebook on Communication, Dissemination, and Exploitation (C&D&E) issues, including the visibility rules (Chapter 4).

Chapter 5 defines the main target groups to be reached by the C&D&E activities of the project. C&D&E tools that are used to fulfill the goals of the PEDR are presented in Chapter 6. Distinct phases of the PEDR are further presented in Chapter 7.

PEDR as a strategy is composed of three parts – the Communication Plan (Chapter 8), the Dissemination Plan (Chapter 9) and the Exploitation Plan (Chapter 10). The Communication Plan of the project sets the key communication messages and objectives. The Dissemination Plan introduces the principal dissemination results and actions. The Exploitation Plan identifies the main exploitable results for which exploitation strategies are outlined (in the sensitive version of the deliverable). Chapter 9 and 10 are based on information provided by PEACE partners within an internal project survey in M4/M5 and M14. They are followed by PEDR conclusions.

Implementation of the PEACE PEDR tailored actions and activities belongs to responsibilities of all project partners. The Communication Plan will be mostly put into practice by the WP6 leader (GG). Whereas dissemination and exploitation actions are to be taken by all project partners, following the agreed Plan under the guidance of the partner GG. GG also informs the consortium about the EC obligations in the area of C&D&E and prepares PEDR updates. At the partner level, the Executive Board (EB) members, who represent each partner, are responsible for addressing C&D&E issues within their teams and serve as the primary points of contact for GG in related matters. In terms of scientific content of communication/dissemination actions, the relevant WP leaders are to be approached.

4. PEACE Communication, Dissemination and Exploitation Rules

4.1. Partners' responsibility towards project promotion

In line with the the Grant Agreement, **all consortium partners ought to promote PEACE action** and its results. PEDR document elaborates upon these obligations and presents a coherent communication, dissemination and exploitation strategy with explicit description of each partner responsibilities. To sum up all partners are asked to:

- Communicate their activities through the WP6 leader
- Disseminate their results with the view to their further exploitation
- Contribute to project communication tools (newsletter, web articles, social media posts)
- Inform the WP6 leader about events they will participate at and keep track of their events attendance (archiving presentations, posters, abstracts, photos or any other materials at the internal project team site)
- Inform the WP6 leader about publications they will produce (and follow EC obligations in this respect
- Inform the WP6 leader about direct communication/networking activities they have performed and keep track of these forms of communication

Partners are also expected to **re-share PEACE posts** (produced by GG) and use **project hashtag** (#peaceh2) on X and LinkedIn, and to include **project name and EU visibility points** in their presentations and publications (see Section 4.2.).

Furthermore, if partners' C&D&E activity is expected to have a **major media impact**, the relevant partner must inform beforehand the Coordinator whose obligation is to further **notify the granting authority**.

4.2. Communication rules

- **PEACE internal communication**

The **focal point** of PEACE internal communication is the **Project Coordinator** (DLR) who is responsible for up-to-date and accurate communication within the consortium on project's status, deliverables and milestones. The Coordinator serves as an intermediary between WP leaders, who keep the Coordinator informed about the implementation of their WPs. For the purpose of internal communication and documents storage, a **project team site** (SharePoint) under the DLR server, has been created and access has been granted to all project members in M2.

The PEACE kick-off meeting was held online in M2, with all consortium members participating. The first in-person meeting of the project took place in M9 (Feb. 2024) at the DLR premises in Stuttgart.

To support an effective communication among PEACE team members, regular online meetings of each WPs take place, with the presence of the Coordinator. Minutes of these meetings are archived within the internal project team site. The above-mentioned tasks of internal communication are being carried out under WP1 "Coordination and Project Management".

Internal communication on issues related to the PEDR, is being managed by the **WP6 leader** (GG). Partner GG approaches regularly other PEACE partners and collects information on partners' actions in the field of direct networking, publications, and events to come/events attended. Moreover, GG asks partners for inputs with the view of PEACE newsletters (quarterly) and press releases preparation, if needed. Besides, WP6 online meetings are organised to discuss project current communication and dissemination issues and to set way forward for certain tasks.

All project news on the website and social media accounts issued by GG are being approved by the Coordinator. Lastly, GG supports partners in their dissemination and exploitation actions (e.g. graphic assistance and visibility items check for poster presentations).

- **Use of project's visual identity and EC/CHP visibility**

A common **visual identity** has been defined for the PEACE project, including project logo and Microsoft Word and Microsoft PowerPoint templates (for more information see D6.2 Project website and PR). All communication and dissemination outcomes should include the name (acronym) of the project and logo (if possible).

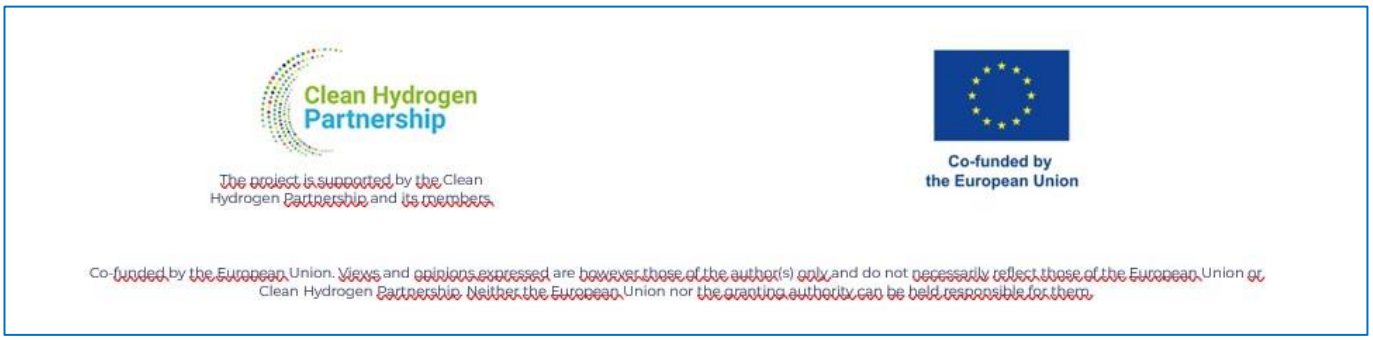
Importantly, and in line with the Grant Agreement obligations, the PEACE communication and dissemination materials will have to **acknowledge the funding of both the Clean Hydrogen Partnership (CHP) and the European Union (EU)**. The EU support must be acknowledged by the European flag (emblem) and funding statement: Co-Funded by the European Union. The Joint Undertaking's (CHP) special logo must be displayed alongside, followed by the prescribed text: "*The project is supported by the Clean Hydrogen Partnership and its members.*" (as defined in Visual Identity Guidelines of the Clean Hydrogen Partnership).

Moreover, any communication or dissemination activity will have to indicate the following disclaimer: "*Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Clean Hydrogen Partnership. Neither the European Union nor the granting authority can be held responsible for them.*"

For all C&D&E outcomes, it is recommended to consult the CHP Visual Identity Guidelines – the document can be downloaded at the internal project team site under the WP6 folder.

Obligatory visual identity items of the EU and the CHP (see Fig. 1) are stored in the form of a ready-to-paste image for project use at the project's internal team site.

Figure 1 Obligatory visual identity items



4.3. Dissemination rules

- Prior notice protocol

Dissemination of results by PEACE partners is bounded by a prior notice protocol. The consortium agreement stipulates that at least **30 calendar days before any results publication**, the partner intending to publish shall inform all PEACE partners about its publication intentions. It has been agreed that information about the planned publication is sent **via email to all EB members**, and should include name of authors, title of the publication, form of the publication, journal title, abstract, and brief description of results that will be disseminated.

Objections to the planned publication shall be made by written notice (e-mail) to the Coordinator and to partner intending to publish **within 15 calendar days after receipt** of the notice. If no objection is made within the time limit stated above, the publication is permitted.

The prior notice protocol is to be applied to all partners and all results publications. Compliance with the prior notice protocol belongs to the responsibilities of each consortium partner.

- Open Access to scientific publications

Simultaneously with the prior notice protocol obligation, **the author** is to choose the right **publication venue enabling open access** to the publication. It must be stressed that only publication fees in full open access venues for peer-reviewed scientific publications are eligible for reimbursement under the PEACE project.

Following the EC guidelines, if the publication is to be a **peer-reviewed** one, then open access **must be ensured**. It means that at latest at the time of publication, a machine-readable electronic copy of the published version or the final peer-reviewed manuscript accepted for publication, is deposited in a **trusted repository** for scientific publications and immediate **open access is provided** to the deposited publication via the repository. PEACE partners are recommended to choose trusted repositories via the OpenAIRE portal – preferably Zenodo repository is to be used where a PEACE project community was established in M10 (March 2024). All peer-reviewed open access publications should be published under the latest available version of the Creative Commons Attribution International Public Licence (**CC BY**) or a licence with equivalent rights. As prescribed by the EC rules, for monographs and other

long-text formats, the licence may exclude commercial uses and derivative works (e.g., CC BY-NC, CC BY-ND). The deposited publication must involve information about any research output/tool/instruments needed to validate the conclusions of the given scientific publication (i.e., detailed description of the research output/tool/instrument, how to access it, any dependencies on commercial products, potential version/type, potential parameters, etc.). Authors themselves are responsible for the choice of the publication venue and for the timely deposit of the publication within the repository and in accordance with the above-mentioned open access publication rules.

Metadata of PEACE deposited publications will be in line with the FAIR principles[1]. It will accompany all datasets and will be openly accessible under the public domain dedication **CC0**. Metadata will provide information about the following: datasets (description, date of deposit, author(s), venue and embargo); Horizon Europe funding, grant project name, acronym and number; licensing terms; persistent identifiers for the dataset, the authors involved in the action, and, if possible, for their organisations and the grant. Where applicable, the metadata will include persistent identifiers for linked publications and other research outputs. Metadata will be stored within the repositories in JSON format and will be harvestable. The authors of publications are responsible for proper metadata deposit in a trusted repository.

To sum up, the partner GG provides assistance to PEACE partners while publishing project results. However, authors themselves are responsible for the choice of the publication venue and the timely deposit of the publication and its metadata within the repository and in accordance with the above-mentioned open access publication rules.

- Open access to research data

All consortium partners must manage responsibly the digital research data generated in the action in line with the FAIR principles. They should also ensure **open access to research data via a trusted repository** (PEACE Zenodo community or partners' university repositories are to be recommended) under the principle 'as open as possible, as closed as necessary'. **Metadata** must be open under CC0 or equivalent (to the extent legitimate interests or constraints are safeguarded), in line with the FAIR principles and provide information about the licensing terms and persistent identifiers, amongst others. Research data management obligations within the PEACE project are described in more detail within the PEACE Data Management Plan.

4.4. Exploitation rules

- Obligation to exploit the result

The exploitation of results belongs to basic responsibilities of each result owners. A results ownership list will be delivered within the final periodic report. Based on the Grant Agreement, the follow-up of **exploitation activities after the project end** is an obligation. Beneficiaries must up to four years after the end of the project use their best efforts to exploit

[1] FAIR data policy principles are defined as: Findable, Accessible, Interoperable, Reusable.

their results – either directly, or indirectly by another entity (through transfer or licensing). If the results are not exploited within one year after the end of the action, the beneficiaries must use the Horizon Results Platform to find interested parties to exploit the results.

5. PEDR Target Groups

Communication, dissemination and exploitation activities defined within the PEACE PEDR are destined to **four** broadly defined **target groups**. These groups are described below and, based on their SWOT analysis, different tools and messages will be chosen to reach them.

- **Research communities** (including university students, research audience and complementary innovation projects)

Figure 2 Research communities SWOT analysis

Strengths	Weaknesses
- High level of expertise and understanding - Potential for collaboration - Exploration of synergies with complementary projects - Pool of talent	- Direct competition - Competing comitments (lack of time to follow other projects) - Lower reachability by social media campaign
Opportunities	**Threats**
- Knowledge transfer - Resource sharing - Incorporation of the PEACE knowledge to academic curricula	- IP concerns of possible collaboration with external projects - Limited funding opportunities

This PEACE target group consists of researchers, scientists, academics and university students interested in the topic of hydrogen production and electrolysis. Furthermore, hydrogen-oriented research and innovation (R&I) projects are addressed as well. This group of PEACE readers/followers gets appropriate information on the project itself and its results by newsletters, social media (LinkedIn), and more specifically through scientific publications and conferences. University students are adressed through lectures of PEACE academic partners.

- **European institutions** (including hydrogen-oriented networks)

Figure 3 European institutions SWOT analysis

Strengths	Weaknesses
- Key stakeholders for shaping policies - Provision of funding opportunities - Extensive networks to amplify the dissemination of the project	- Bureaucratic burden on processes
Opportunities	**Threats**

- Strategic partnership - Increased visibility of the project - Shaping regulatory environment	- Competing priorities - Budget constraints limiting the availibility of funding

PEACE will approach the following European institutions and initiatives/networks: Clean Hydrogen Partnership, DG Research & Innovation, DG Energy, DG Environment, Hydrogen Europe, European Clean Hydrogen Alliance in order to promote the development and get the support for hydrogen technologies, including their policy implications and environmental benefits. The communication channels used will be website, social media and press releases. Moreover, some issues of PEACE communication will be specifically targeted at the EU institutions (see more in Chapter 8.2).

- Industry and business

Figure 4 Industry and business SWOT analysis

Strengths	Weaknesses
- Commercial exploitation opportunities - New ways of funding through private sector - Accelaration of market adoption	- Confidentiality concerns - Misalignment of interests – short-term commercial interest of business vs. long-term research goals
Opportunities	**Threats**
- Technology transfer - Joint product development - Market influence	- Market competition - Regulatory barriers

This PEACE target group includes professionals and stakeholders interested in the hydrogen production (e.g. producers of electrolysers) and, on the other hand, the hydrogen users (namely the chemical industry). The project communicates benefits of the consortium composition, its technological advancements and key exploitable results. Newsletters, social media, events participation and direct communication/networking are the key communication channels.

- Public and media

Figure 5 Public and media SWOT analysis

Strengths	Weaknesses
- Growing interest in sustainable energy solutions - Wide reach of media - Media coverage can increase credibility of the project - Educative role of media (topic awareness)	- Misinterpretation or oversimplification - Limited knowledge on the subject
Opportunities	**Threats**
-Stimulation of the support for the green hydrogen economy - Media coverage may foster further collaborations - Media coverage and public support may influence policy of hydrogen production technologies	- Lack of control over the information spread - Competing priorities in the public debate

The PEACE project feels that it is essential to gain public support for the necessary industrial changes that ensure the Green Deal fulfilment. Therefore, raising public awareness on green hydrogen production is an important step on this way. With the arising PEACE results, more attention will be paid to the PEACE benefits to society.

The PEACE project approaches the public directly (website, social media) and indirectly through media (press releases). The public possibly interested in the PEACE project activities consists of citizens concerned with ecological issues, innovative technologies or renewable energy.

6. PEDR Tools

The PEACE PEDR is using a variety of C&D&E tools in order to deliver the main communication messages (see Chapter 8) and key project results (Chapter 9 and 10) to target groups defined in Chapter 5.

6.1. Visual identity

The project branding enables the consortium to promote PEACE actions and results in a uniform manner. PEACE visual identity consists of **project logo**, **typography** recommendations, Microsoft **Word template** (for PEACE deliverables), and **PowerPoint template** (for presentations). All these visual identity items are presented in detail in PEACE deliverable Project website and PR, produced by the partner GG. They are stored at the PEACE internal team site and are available to all consortium members.

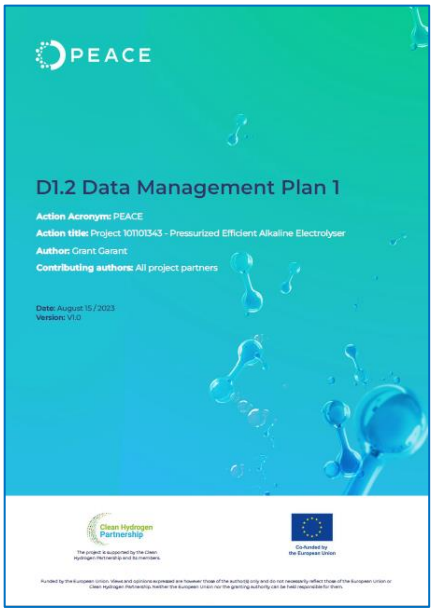
a) **PEACE logo** (see Fig. 6)

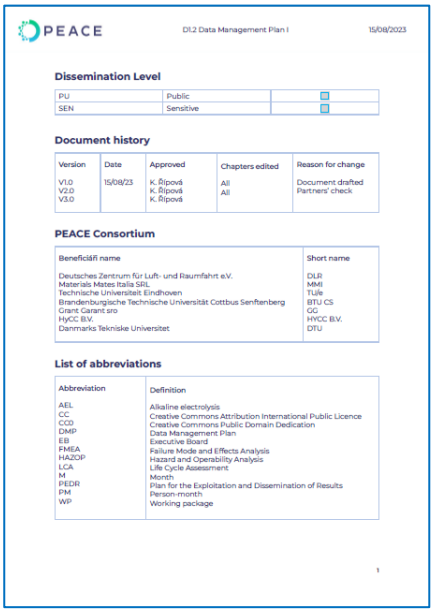
Figure 6 PEACE logo

b) **Typography** recommendations are summarised in an internal manual

c) Microsoft **Word template** for PEACE deliverables (see below title page and page 2 preview)

Figure 7 PEACE Deliverable template preview





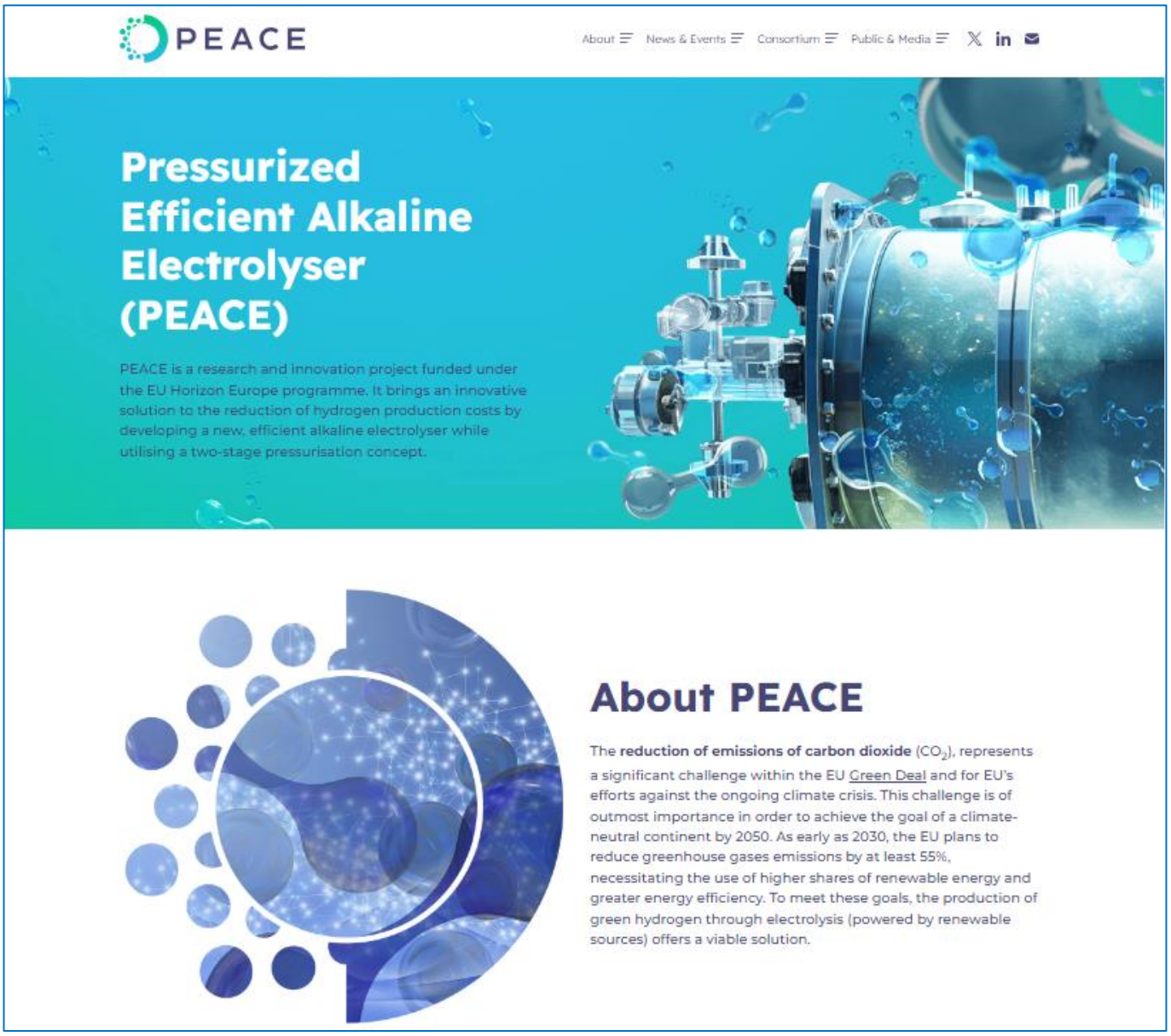
d) Microsoft **PowerPoint template** (see the opening and closing slide below)

Figure 8 PEACE PowerPoint presentation template preview

6.2. Website

The PEACE project website https://www.h2peace.eu/ belongs to one of the pillars of the PEACE communication plan. It is the most important project promotion tool and as such, enormous work effort has been targeted to its establishment, design and content. It includes sections on project objectives and workplan and presents all consortium members. A special section for Public and Media is delineated, introducing basic facts about the project and representing space for all project communication and dissemination outcomes (flyer, press releases, newsletter, publications, reports). Importantly, a sub-page is dedicated to project news, including events to be visited/hosted by PEACE team members. The website has been created and it is run by GG. Its details are presented in PEACE deliverable D6.2 Project website and PR. The PEACE website was created in M2 and after several rounds of internal controls, checks and all consortium approval went public in M6.

Figure 9 PEACE website homepage preview



6.3. Info-flyer

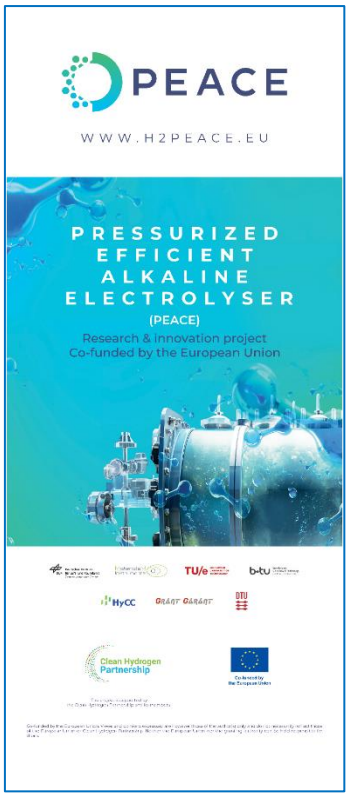
A project info-flyer has been created by the partner GG. A trifold flyer with basic facts about the PEACE project is prepared in a ready-to-be-printed format. It can be downloaded directly from the PEACE website and is stored at the PEACE internal team site. The flyer is presented in detail in PEACE deliverable D6.2 Project website and PR.

Figure 10 PEACE Info-flyer

6.4. Roll up banner

A PEACE roll up banner (see Fig. 11) represents an item of the project promotion kit. It is prepared in a ready-to-be-printed format and is destined for PEACE promotion at events and conferences. The banner is available for download to consortium members at the PEACE internal team site.

Figure 11 PEACE Roll up banner

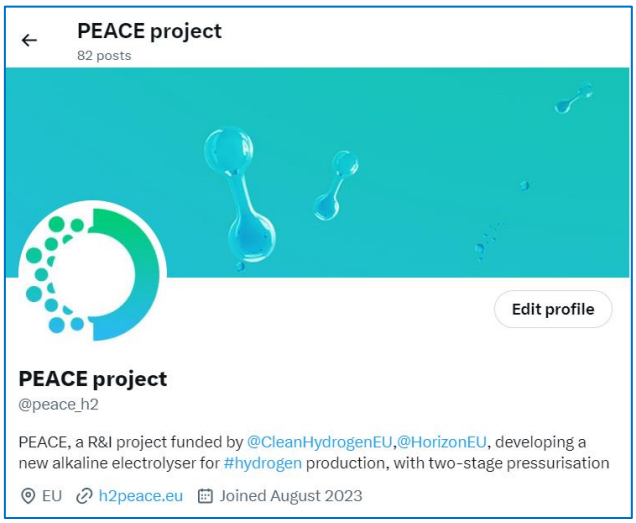


6.5. Social Media profiles

Social media are valuable communication channel for the PEACE project. Regular posting by the WP6 leader (after Coordinator's approval) is taking place. PEACE consortium agreed to use two project social media profiles – one on X, and one on LinkedIn.

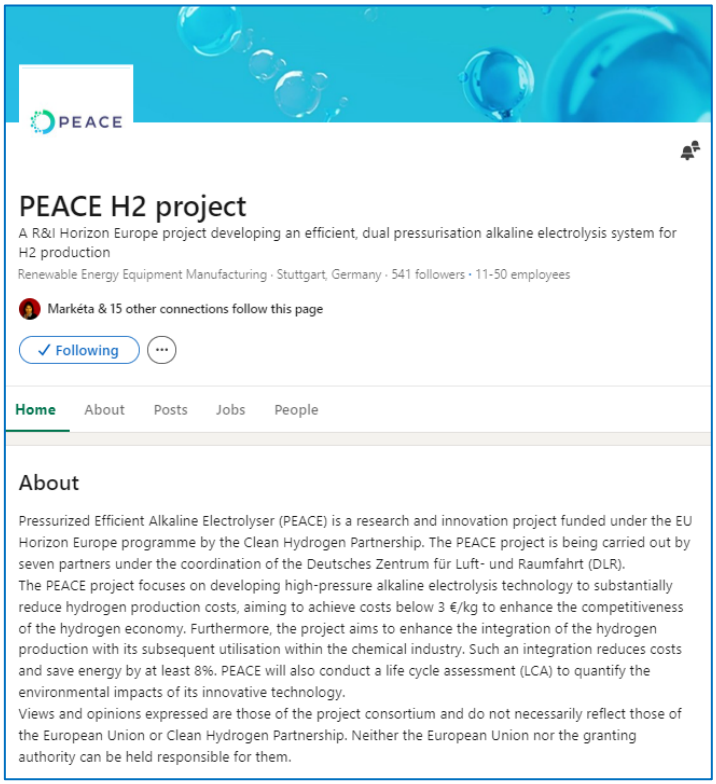
WP6 leader (GG) has established PEACE project account on X (username: @peace_h2) and is responsible for posting messages related to the PEACE project. All posts are to be approved by the Coordinator. X posts will be mainly used to deliver the key messages to the public and media.

Figure 12 PEACE X profile preview



Simultaneously, PEACE project profile is run on LinkedIn (@peaceh2) by the WP6 leader. Posts are targeted more towards scientific and industrial community.

Figure 13 PEACE LinkedIn profile preview



More details on PEACE social media accounts are to be found in the deliverable D6.2 Project website and PR.

6.6. Newsletter

PEACE project information will flow to multiple audience through its quarterly newsletter. **Twelve newsletter issues** are planned to reach readers by emailing (a subscription form is available on the project website), through social media posting and through the downloadable website version. All consortium partners are assumed to distribute the newsletter within their institutional and professional networks. PEACE newsletter will be produced by the partner GG based on inputs from relevant consortium partners (upon demand of GG). PEACE newsletter will mainly present information about the project and its results, including an editorial of the Coordinator, accompanied by news within the world of hydrogen production and consumption, and by hydrogen-related upcoming events. Final section of the newsletter will be dedicated to prospective funding opportunities for hydrogen project proposals, to stimulate potential collaboration among PEACE consortium and other entities.

Approximative plan of issues assumes (the list is indicative and subject to change):

- No. 1 “PEACE project at a glance”
- No. 2 “Meet the PEACE”
- No. 3 “PEACE DMP”
- No. 4 “PEACE PEDR”
- No. 5 News of the PEACE research
- No. 6 PEACE industry-research cooperation + networking projects (targeted on European institutions)
- No. 7 designing cell and stack components – people and places
- No. 8 Special issue on results - Cell and stack components design, short-stack assembly and testing, BoP definition, Annual data reporting for the Clean Hydrogen JU 2
- No. 9 PoC demonstrator assembling and preparation before operation + Clean Hydrogen Partnership presentation
- No. 10 Special issue on results – PoC stack ready, HAZOP, FMEA analysis, test protocols definition
- No. 11 Simulation model
- No. 12 Special issue on results – LCA, optimized operation strategy, process design for downstream integration, Annual data reporting for the Clean Hydrogen JU 3, way forward.

So far, four PEACE newsletter issues have been published (see the title page preview below).

Figure 14 PEACE Newsletter title page preview

6.7. Press releases

Project press releases will be produced by the WP6 leader, based on inputs from relevant consortium partners (upon demand of GG). About **six press releases** is assumed to be circulated.

6.8. Scientific publications

Dissemination of the project results will be performed directly by individual consortium partners through scientific publications. PEACE project will deliver about ten scientific publications. Currently it is presumed that **seven** publications will take form of a **peer-reviewed article** in open access – the journals to be considered: Energy & Environmental Science, Joule, ChemElectroChem, ACS Applied Energy Materials, Electrochimica Acta, AIChE Journal, Chemical Engineering Research and Design, Journal of Power Sources, International Journal of Hydrogen Energy, The International Journal of Life Cycle Assessment (or any other respectable journal with project topic relevance).

Moreover, **two** publications will be published as **conference proceedings**, and **one thesis/dissertation** will be produced under the PEACE project.

6.9. Events/exhibitions

PEACE consortium members will actively promote the project and its results on scientific events and exhibitions. These social events will be also used for direct communication and bilateral meetings with relevant stakeholders and for networking within the research community. It is assumed that, at least, twelve events attendance will be achieved, mostly in

the second half of the project implementation (2025/2026) due to results availability. The following **events** are assumed to be attended: European Hydrogen Week, Hydrogen Dialogue, Hannover Messe, World Hydrogen Summit, SETAC, Annual International Society of Electrochemistry Meeting, World Hydrogen Energy Conference, International Conference on Electrolysis, European Fuel Cell Forum (or any other respectable conference/event/workshop with project relevance).

On the other hand, the Coordinator (DLR) will organize two PEACE project workshops. One will be internal consortium workshop (possibly in M20/M21) summarising results of the ongoing project, with presence of selected experts from the scientific community and industry. The second workshop (M35) will be open for external scientific audience (about 30 attendees are expected) and will serve as the project main dissemination outcome, presenting all PEACE results gained.

6.10.University lectures

Enrichment of university curricula with PEACE results is expected. Partner TU/e will use its capacity as a university lecturer and will actively incorporate new PEACE knowledge within the Electrochemical Engineering MSc source of its education curriculum. Simultaneously, partner MMI will incorporate its PEACE know-how within the course on chemistry of catalysers at University Milano Bicocca Dip. Scienza dei Materiali.

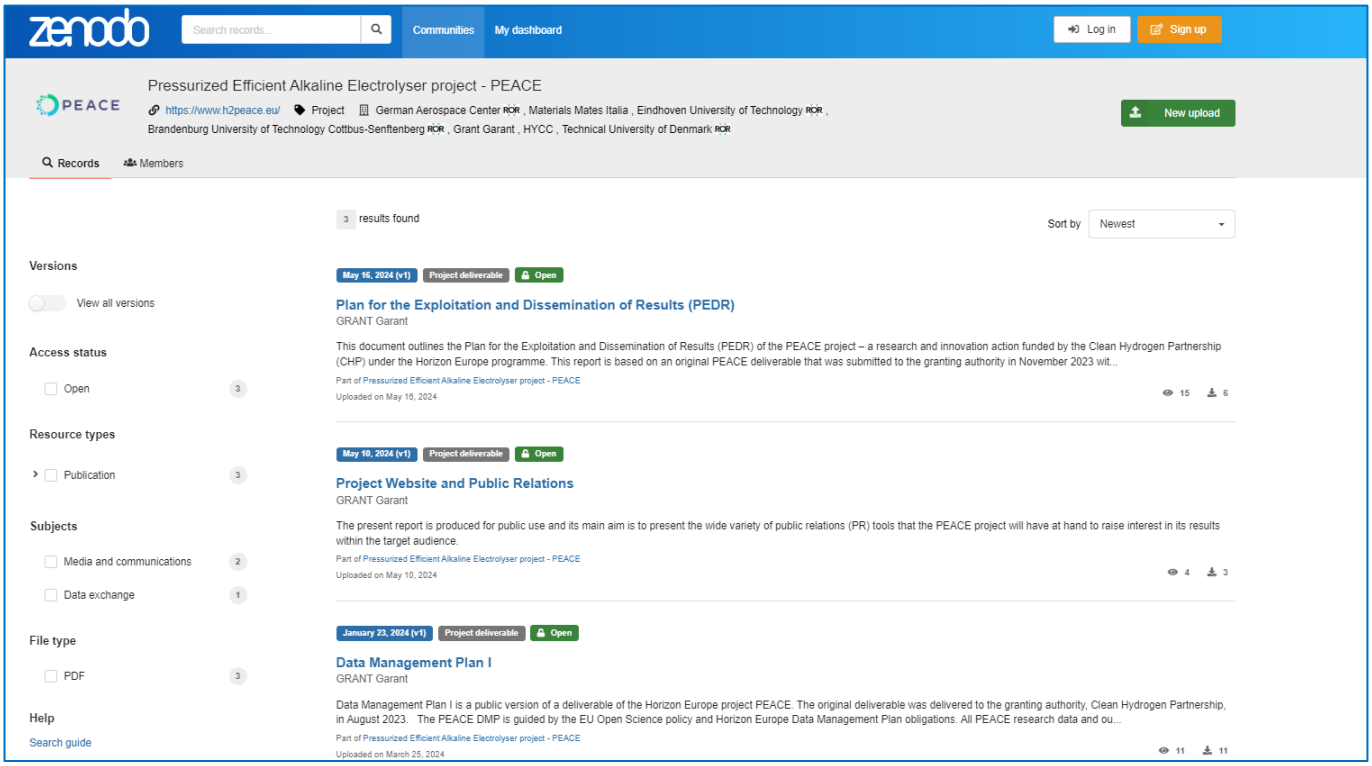
6.11. Other C&D&E tools

Simultaneously, the PEACE project might be using other supporting C&D&E tools. First**, social media profiles of PEACE team members** might come into play. PEACE members are expected to share project communication items prepared by the WP6 leader. However, their personal activity on social networks with respect to the PEACE project can be assumed.

Second, PEACE team members join actively **hydrogen industry associations** (e.g. Hydrogen Europe) and their long-term effort has been targeted to promote hydrogen as an enabler of a zero-emission society. Their active engagement and **direct communication** with leading stakeholders in the hydrogen sector represents a valuable contribution for PEACE promotion. The PEACE project imprints within their professional links and networks are expected and even policy position papers might be directly influenced by PEACE outcomes.

Third, PEACE Zenodo community has been established in M10 (see Fig. 15) which might serve as a long-term and widely accessible platform for PEACE publications, datasets and other research outputs.

Figure 15 PEACE Zenodo community page preview



Fourth, the PEACE project has started an active **networking** initiative to gain fruitful relations of cooperation with R&I projects in the hydrogen sector aiming at cross-promotion, attending of mutual events, or even launching more extensive scientific collaborations. So far, five science projects were selected by the PEACE team and will be addressed by the PEACE Coordinator with a networking invitation.

Finally, **media appearance** of PEACE leading researchers might be envisaged as a subsidiary tool of C&D&E.

7. Phases of the PEDR

Following the development of PEACE research and innovation activities and especially the production of PEACE results, the PEDR is divided to three distinct phases.

I. Project Awareness phase (M1-M20, June 2023 – January 2025), currently ongoing, is centered on rich project communication and the construction of the pool of followers. The aim is to raise the interest about the project and its expected outcomes among the stakeholders. Visual elements of the PEDR have been established and got operational. PEACE starts gaining the audience through the implementation of the communication plan (see further), including cooperation with other relevant R&I platforms. Furthermore, project communication will gain inputs from deliverables that will be produced within this period. Especially, at the end of phase I, first scientific results on cell and stack components will be issued.

II. Components dissemination phase (M21-M30, February 2025 – November 2025) will encompass communication as well as dissemination activities as the project will generate scientific results mostly in the area of the PEACE stack components. At the end of the period, the PEACE AEL demonstrator will be finished which will open the way for testing its behaviour in phase III. The aim of the phase II is to enrich the communication channels with first results - boosting the interest for PEACE dissemination activities (publications and conference presentations).

III. Demonstrator dissemination and exploitation phase (M31-M36, December 2025 – May 2026) will be mostly dedicated to rich dissemination activities in the field of PEACE AEL demonstrator simulations, optimization of components and of the opearation strategy for the demonstrator. PEACE LCA as well as the PEACE stack integration with downstream processing will represent further principal outcomes to be used for dissemination and exploitation.

8. Communication Plan

The objective of communication measures is to reach out to society and show the impact and benefits of PEACE by addressing and providing possible solutions to propelling global carbon neutrality by accelerating the European hydrogen industry. Communication measures inform about and promote the project and its results to multiple audiences. The target groups are reached with a recognisable, clear and effective messages on the project's vision, its achievements and with a view to support the interest in hydrogen technologies. Partner GG is responsible for implementation of the communication plan. GG addresses the target groups with key messages. The background scientific material is to be supplied by relevant partners.

8.1. Objectives and key messages

The communication strategy of the PEACE project has set its objectives in four areas of interest:

I. Topic awareness raising: The PEACE project aims to communicate the benefits of high-pressure alkaline electrolysis in terms of clean energy, climate change mitigation, and energy transition. PEACE objective is to raise awareness about the role of hydrogen in the process of decarbonisation and about benefits provided by the PEACE innovative technology.

Key messages to be communicated:

- Hydrogen role in decarbonisation (Green Deal relevance)
- Green hydrogen production by AEL
- Subsequent use of hydrogen produced by HP AEL

II. Project awareness raising: PEACE communicates essential information on the R&I action, including WHAT, WHY, and HOW is being worked upon, WHO is working on the project and WHO funds it. The aim here is to promote PEACE project unique characteristics, its actors and development of project activities implementation. Inseparably, PEACE main results are communicated in a user-friendly way to reach non-scientific audience.

Key messages to be communicated:

- PEACE actors
- PEACE HP AEL benefits
- PEACE HP AEL innovations in hydrogen production (stack components, dual-stage pressurization concept, BoP optimization, demonstrator simulation results)
- PEACE LCA
- PEACE integration concept with downstream chemical plants
- PEACE reduction of the levelized costs of hydrogen

III. Promoting EC and Clean Hydrogen Partnership funding of R&I: PEACE promotes the EC and Clean Hydrogen Partnership funding of green hydrogen technologies and the added value brought by combining private funds with the EC support.

Key messages to be communicated:

- EC/Clean Hydrogen Partnership support of hydrogen production

IV. Promoting research and business collaboration, including the promotion of networking and new opportunities for collaboration: Promoting fruitful cooperation in research and innovation activities between research circles and business entities belongs to one of the areas of interest of PEACE communication. PEACE will promote networking which offers new opportunities for further research outputs production.

Key messages to be communicated:

- Benefits of collaboration between industry and research
- Identification of topics for further research cooperation

8.2. Communication of key messages to different target groups

PEACE communication strategy is differentiated on the basis of the target group characteristics of the SWOT analysis (Chapter 5). For each of the four target groups, different key messages are delivered by diverse communication tools.

a) Research communities

PEACE communication towards researchers is centred upon:

- PEACE HP AEL innovations in hydrogen production (stack components, dual-stage pressurization concept, BoP optimization, demonstrator simulation results)
- PEACE LCA
- EC/CHP support of hydrogen production
- Benefits of collaboration between industry and research Identification of topics for further research cooperation

The scientific community (including university students and R&I projects) is served messages focused on project's added values in terms of methodology and technology, and on PEACE team's further aims to stimulate possible future cooperation. The role of EU/CHP in project funding is highlighted. PEACE uses X posts, and more so **LinkedIn posts**. However, such scientific posts will be produced especially in phase III.

Moreover, the PEACE project generates **newsletters** - with three special issues (No 8, 10, 12) dedicated to main scientific results which aim specifically on research community.

Otherwise, information on PEACE project will be communicated during scientific **events** attended by PEACE researchers (in phase II and III). To a lesser extent, university lectures held by PEACE members (e.g., TU/e) will be used.

b) European institutions

PEACE key messages to this group will focus on:

- Subsequent use of hydrogen produced by HP AEL
- PEACE HP AEL benefits
- PEACE integration concept with downstream chemical plants
- PEACE LCA
- Benefits of collaboration between industry and research

PEACE communication towards European institutions emphasises project's objectives and results and the PEACE approach of industrial partners direct involvement in the innovation development. To reach the stakeholders in question PEACE uses its **social media** posts, **newsletters** and **press releases** (similar as for research communities and media/public group). However, certain pieces of communication will be specifically targeted at EU institutions (e.g., press release No. 5 on LCA results, newsletter No. 6 on industry-research cooperation and networking projects). Moreover, the key messages will be communicated directly during PEACE members' attendance at various scientific events.

c) Industry and business

Industry and business stakeholders are communicated the given key messages:

- PEACE HP AEL innovations in hydrogen production (stack components, dual-stage pressurization concept, BoP optimization, demonstrator simulation results)
- PEACE reduction of the levelized costs of hydrogen
- PEACE LCA
- PEACE integration concept with downstream chemical plants
- EC/CHP support of hydrogen production
- Benefits of collaboration between industry and research

PEACE business audience is presumed to involve, on one hand, producers of electrolysers, and on the other, hydrogen users in chemical industry. Potential PEACE business partners will be targeted mostly in phase II and III – at a stage where (exploitable) results will be produced. Towards this group, PEACE shall promote the advantageous collaboration of research and business funded by the EU/CHP to stimulate possible further cooperation. More specifically, PEACE communication will concentrate on key exploitable results presented in **newsletters** and on the **website**. Importantly, during industry **events and the final workshop** the consortium will actively engage in discussions with a number of original equipment manufacturers and Engineering, Procurement and Construction Partners that have the potential to further scale up the technology and bring it to the market.

d) General public and media

Communication towards public and media focuses namely on the following messages:

- Hydrogen role in decarbonisation (Green Deal relevance)
- Green hydrogen production by AEL

- PEACE actors
- PEACE HP AEL benefits
- EC/CHP support of hydrogen production
- Benefits of collaboration between industry and research

PEACE communication towards this group concentrates more on basic facts with a focus on the topic in general. The emphasis is put on explanation of WHY is PEACE work important, what are the benefits it brings, and the role of the EC/CHP in R&I funding. To reach the audience, PEACE **website** is used. Besides information on the project structure and consortium, special Public and media page is provided where targeted information is stored. A project flyer has been produced and enabled for download there. All major PEACE results will be informed upon (mostly in phase III) through the website by the WP6 leader (based on inputs from relevant partners). The "News & Events" page of the website will also encompass all invitations for events where PEACE researchers might be directly tackled by the media (mostly in phase II and III).

X posts are used to deliver the key messages to the public and media. Regular posting is conducted to ensure fresh and interesting information flow. In phase II and III, basics of project results will be communicated through this channel.

Topic specific **press releases** (distributed throughout all three phases), elaborating on recent project development, will serve as communication channels for the media.

Furthermore, the public/media group is targeted during PEACE presence at fairs/exhibitions where distribution of **flyers** is assumed.

8.3. Summary of the communication plan

The following figure clearly summarizes the main communication tools and their timing vis-à-vis the outlined target groups.

Figure 16 Summary of the Communication plan

Target Group	Tools	Timing
Public and media	Website	M6-M36
	X	M6-M36
	Flyer	mostly phase II and III
	Press releases	M6-M36
	Project posters	*mostly phase II and III*
	Newsletter	*M6-M36*
Research communities	LinkedIn	M6-M36 (mostly phase I)
	Newsletter	M6-M36
	Events participation	mostly phase II and III
	Direct communication	mostly phase II and III
	Website	*M6-M36*
	Flyer	*mostly phase II and III*
	X	*M6-M36 (mostly PH I)*
	University lectures	*mostly phase II and III*
EU institutions	X	M6-M36 (mostly phase I)
	LinkedIn	M6-M36 (mostly phase I)
	Newsletter	M6-M36
	Direct communication	mostly phase II and III
	Press releases	M6-M36
	Website	*M6-M36*
	Flyer	*mostly phase II and III*
	Project posters	*mostly phase II and III*
Industry and business	Website	M6-M36
	Newsletter	M6-M36
	Events participation	mostly phase II and III
	Direct communication	mostly phase II and III
	X	*M6-M36*
	Flyer	*mostly phase II and III*
	LinkedIn	*M6-M36*
	Project posters	*mostly phase II and III*

9. Dissemination Plan

The objective of the PEACE dissemination plan is to maximise project impact on the society by promoting PEACE results and their use. Dissemination measures will spread project results to defined target groups. Implementation of the dissemination plan is monitored by WP6 leader. Dissemination of results as such (in line with the EC obligations as mentioned in Chapter 4), belongs to responsibilities of each PEACE partner who produces the result. However, as the PEACE newsletter and press releases are concerned, both will be prepared by the partner GG based on inputs of relevant WP leaders.

9.1. PEACE results for dissemination

For the dissemination purposes, main PEACE project results have been identified, along with their authors, within an internal project survey in M4/M5 and updated in M14. The results are planned to be disseminated to various targets groups, using different dissemination channels as summarised in Fig. 17.

Figure 17 PEACE Results and their dissemination

PEACE result	Authors	Dissemination action (number of actions)	Target group
1. High performance stack components	DLR	Peer-reviewed article (1)	Research communities
		Conference presentation (2)	Research communities Industry and Business European institutions
	MMI	Integration within education courses (2)	Research communities
	TU/e	Thesis[2] (1)	Research communities
		Peer-reviewed articles (2)	Research communities
		Conference presentation (2)	Research communities Industry and Business European institutions
		Integration within education courses (3)	Research communities
2. Stack design and BoP optimization	MMI	Conference presentation (1)	Research communities Industry and Business European institutions
	BTU CS	Peer-reviewed article (2)	Research communities
		Conference presentation (2)	Research communities Industry and Business European institutions
3. Safety concepts	DLR	Conference presentation (1)	Research communities Industry and Business
	MMI	Conference proceedings (1)	Industry and Business
		White paper for ETB test stations customers (1)	Research communities Industry and Business
	BTU CS	-	-

[2] A PEACE project thesis will be worked upon at TU/e, however, it is assumed to be delivered after the project end as it is assigned for a 4-years PhD program, starting in M4.

PEACE result	Authors	Dissemination action (number of actions)	Target group
4. Demonstrator in operation	DLR	Peer-reviewed article (1)	Research communities
		Conference presentation (2)	Research communities Industry and Business European institutions
	MMI	Peer-reviewed article (1)	Research communities
		Conference presentation (1)	Research communities Industry and Business European institutions
	BTU CS	Peer-reviewed article (1)	Research communities
		Conference presentation (1)	Research communities Industry and Business European institutions
5. Performance and durability assessment data of HP-AEL system demonstrator	DLR	Conference presentation (1)	Research communities Industry and Business European institutions
	BTU CS	Peer-reviewed article (1)	Research communities
		Conference presentation (1)	Research communities Industry and Business European institutions
6. Simulation algorithms	DLR	Peer-reviewed article (1)	Research communities
		Conference presentation (2)	Research communities Industry and Business European institutions
7. Integration concept	HYCC	Peer-reviewed article (1)	Research communities
		Conference presentation (1)	Research communities Industry and Business European institutions
8. LCA	DTU	Thesis (1)	Research communities
		Peer-reviewed article (1)	Research communities
		Conference proceedings (1)	Research communities
		Conference presentation (1)	Industry and Business
9. Test protocols for cold start, dynamic operation, warm standby, shut down	DLR	Peer-reviewed article (1)	Research communities

Beside the dissemination actions taken directly by authors of research results, the WP6 leader (GG) will disseminate the PEACE results within project **press releases** and the **newsletter**, to reach as well the audience from public and media. Lastly, it needs to be stressed that all the above-mentioned results will be disseminated through the **PEACE final workshop** that will be held by the Coordinator (DLR) in M35/M36. About 30 participants across all target groups are expected to take part.

10. Exploitation Plan

The objective of the exploitation plan is to turn PEACE R&I actions into concrete value and impact for society. The technology developed in the PEACE project has the potential to significantly reduce levelized costs of hydrogen, thus stimulating the demand for hydrogen and hydrogen economy. The PEACE project will undertake commercial and scientific exploitation pathways to succeed and to fulfil its grant obligations. Currently, it is presumed that PEACE partners will exploit the results directly themselves or through their institutional channels (licenses etc.). However, the use of Horizon Results Platform will be considered. The responsibility of the results exploitation lies on individual partners. The WP6 leader will aid partners with their particular exploitation strategies and monitor their efforts for project continuous reporting and PEDR updates.

In Fig. 18 the PEACE project key exploitable results (KER) are summarised, based on internal survey of PEACE consortium partners in M4/M5. For each KER, its principal author has in an M14 project screening outlined a notion of the KER's exploitation in a 3-years' time after the project end. However, these particular exploitation plans are not presented within this public report due to protection of legal interests of the authors.

Figure 18 PEACE Key exploitable results overview

KER	Principal Author
KER1: Qualification and selection of cell and stack components for high-pressure, high-performance electrolysis	DLR
KER2: Test protocols for dynamic operation	DLR
KER3: Increased human resources capacity	DLR
KER4: Extension of the modelling database	DLR
KER5: Layouts for integrated plants	DLR + HyCC
KER6: Validated simulation model for pressurized electrolyser operation	DLR
KER7: Stack components design	MMI
KER8: HAZOP / FMEA ANALYSIS	MMI
KER9: Improved small-scale cell for alkaline water electrolysis (AWE)	TU/e
KER10: Testing service for high pressure AEL components	BTU CS
KER11: Life cycle inventory data	DTU

For all KERs, some form of IPR protection is envisaged. The project will support patenting effort of its members to gain **about 1 to 3 patents** (the details will be clarified in the second update of the PEDR in M26).

11. Conclusions

The present PEDR update (in M15) has been produced by the WP6 leader (GG) as a follow-up report which elaborates upon the original PEDR delivered in November 2023. The goal is to get a comprehensive communication, dissemination and exploitation strategy of a research and innovation project in the area of hydrogen electrolysis production. The overall objective of D6.9 is to aid to the achievement of project research targets and to boost project impact on society, and more specifically on the defined target groups (i.e., general public and media, research communities, European institutions, and industry and business).

Beside setting the targets and planning the project's C&D&E pathways, this report serves the consortium as a practical guidebook on C&D&E issues, summarising basic rules to follow and presenting partners' obligations with respect to PEDR actions in the frame of Horizon Europe programme setting. The PEACE PEDR will be updated again in M26 (D6.10).

To deliver the key messages and results to its audience, PEACE is using a wide variety of tools, starting with an elaborated visual identity (logo, Word and PowerPoint templates) that is well manifested at PEACE project website. The website together with PEACE profile on X and LinkedIn platforms represents the main pillar of communication. These tools are supported by a flyer, roll up banner, press releases and a newsletter. Scientific publications represent an important dissemination tool. Project promotion and results dissemination will also take oral forms – by events attendance (conferences, workshops, exhibitions) and university lecturing.

The PEACE PEDR strategy has three distinct parts. Communication Plan sets the project communication objectives and key messages to be transferred to multiple audience. Four types of objectives have been delineated – topic and project awareness raising, EC and Clean Hydrogen Partnership funding for R&I project promoting, and lastly, research and business collaboration promoting. PEACE communication is multifaceted with respect to various target groups, using different tools to reach them.

Second, Dissemination Plan introduces the principal project results and the ways of its dissemination - the main dissemination tool being the publications, along with events participation.

Third, Exploitation Plan identifies the main exploitable results of the project. Most KERs are planned to use scientific exploitation pathways.

Overall, the PEACE PEDR strategy is on track, with a strong foundation laid for future growth and engagement.

12. References

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