Hydrogen Production at Very High Current Densities in Flow-Engineered Alkaline Electrolyser Stacks

D&C&E Strategy

HyFlow Deliverable 6.5 (M5)

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Notices

For information, please contact the project coordinator, Micah Asistores, e-mail: micah.asistores@stargatehydrogen.com. This document is intended to fulfil the contractual obligations of the HyFlow project, which has received funding through the Clean Energy Partnership from each consortium member's national funding agency, concerning deliverable D6.5.

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Table of revisions

Version	Date	Description and reason	Author	Affected sections
V0.1	13.04.26	First draft created	Renaud Delmelle	All
V0.2	N/A	1st internal review	N/A	N/A
V0.3	27.04.2026	Input from partners integrated	All	3. Explotation Strategy
V1.0	30.04.2026	Final review	Micah Asistores	All

List of Partners

Stargate Hydrogen Solutions OÜ (Stargate)
Université Catholique de Louvain (UCLouvain)
JEMA s.a. Belgium (JEMA)
JENTEC GmBH (JENTEC)
Fraunhofer IFAM (IFAM)

List of Abbreviations

EU – European Union

D – Dissemination

C – Communication

E – Exploitation

M – Month

SH – Stakeholder

KPI – Key Performance Indicator

AWE – Alkaline Water Electrolysis

Table of Contents

1 Objectives of the D&C&E strategy

The objective of our Dissemination strategy is to provide information of the project's knowledge and results that is available for access by the general public, including the relevant technical and scientific communities. The Dissemination Strategy supports how relevant target audiences can learn and benefit from the project results, and enables other researchers to advance, while maximising the impact and visibility of HyFlow.

The objective of our Communication strategy is to inform citizens and stakeholders about the activities of HyFlow. Communication helps reaching the appropriate audiences, raise awareness of how public funds are spent and demonstrate the success of EU collaboration.

The objective of our Exploitation strategy is to put the project results to practical use for commercial, societal, and political purposes (each partner being naturally specialised in exploiting one or more of these purposes). This essentially targets industries and public authorities, with the goal of creating tangible benefits for society and the economy. In this respect, it is worth mentioning that 3 out of 5 partners in the consortium are companies active in the industry, and therefore in a good position to put the results of this project in practical use.

2 Detailed dissemination and communication strategy

The HyFlow dissemination and communication strategy is structured as follows: scope and approach, target groups, dissemination and communication tools, and finally the KPIs associated with the latter. These elements, as well as the timeline of their deployment, have been defined as early as the writing phase of the project, and mostly set-up during its early stages (M1-M5), as described below.

2.1 Scope and approach

The HyFlow consortium is composed of three companies, one research centre and one university. Therefore, even though the process intensification of alkaline electrolysis – represented here by the modification of two pilot plants towards the next generation of electrolysis stacks points towards dissemination in industrial and economical/political audiences, its scope also reaches scientific audiences, notably because of the stack and electrode development aspects involved. It reaches the general public as well, as energy-related topics become more relevant in today's societies.

The D&C strategy described in the present deliverable is not fixed. If needed, it will be updated/revised to follow the project's evolution. The approach revolves around the 5 angles explained below.

- **WHAT FOR**: Definition of the foreseen outcomes of the dissemination and communication activities and expected impact per type of stakeholders (KPIs).
- **TO WHOM**: Identification of the target audiences to be informed and engaged in the project's activities.
- **WHAT**: The main project outcomes to be disseminated, communicated, and exploited.
- **HOW**: Type of Communication and Dissemination tools, activities and channels tailored to the intended beneficiaries.
- **WHEN**: Timeline for implementation and action plans for the consortium for each type of activity.

The four first angles are detailed in the next subsections (2.2 and 2.3). The fifth angle can be described here, as the deployment of the D&C activities, has been divided into four phases distributed along the project timeline:

- **Phase 1: Brand and online identity (M1-M5)**
  Brand identity (logo), website, social media, templates (reports, deliverables and slide shows). This phase ends with the submission of the present deliverable.
- **Phase 2: Awareness and initial engagement (M6-M12)**
  Promotion of HyFlow objectives (e.g., press release, visuals, factsheets) to raise awareness about the project and engage scientific community and wider society to follow the project activities.
- **Phase 3: Active engagement (M13-M29)**
  Active promotion of the project initial results, conferences that the consortium attends, deliverables published, consortium members etc.
- **Phase 4: Dissemination of scientific achievements and success stories (M30-M36)**
  Actively sharing the results of the project, lessons learned and potential follow-on activities.

2.2 Target groups

The target groups of HyFlow are divided (and abbreviated) as follows:

- **SH1** is composed of researchers (academia, research institutions, and scientists dedicated to advancing knowledge and technology in the hydrogen sector). The HyFlow project covers various fundamental and applied domains, from electrochemistry to materials science, process engineering and fluid dynamics.

- **SH2** focuses on industry, e.g. electrolyser manufacturers/operators, renewable hydrogen technology/service providers, renewable electricity providers/producers and energy companies. In a broader sense, any company concerned with the green energy transition might be interested in our results, since hydrogen is a key (green) energy vector in this transition.

- **SH3** consists of government/public representatives such as policy makers, local and national governments, Hydrogen Europe, Hydrogen Europe Research, environmental organisations and standardisation bodies. The connection between HyFlow and such entities ensures that our activities follow the movement of decision makers, while also taking part in it, notably though the construction of test protocols.
- **SH4** is the civil society as a whole, including anyone interested in current evolutions in the European energy sector, in particular in the green hydrogen sector.

With this division of target groups in mind, the dissemination and communication tools detailed in the next subsection are associated with these groups in Table 1.

2.3 Dissemination and communication tools

All the tools which will be used in the HyFlow project are listed in the present subsection. Some of these tools are already in use, while others will be used in later stages. All tools that needed to be set-up (2.3.1-2.3.3) were built in Phase 1 according to the project timeline.

2.3.1 Brand identity

The brand identity was created at the beginning of the project to carry out the message of HyFlow. Four candidates for the project logo were created in M1 and presented at the HyFlow kick-off which took place in M2 (29.01.2026). The consortium voted for the most convincing candidate, which also went through minor modifications suggested by all partners. The result can be seen in Fig. 1.

Figure 1. (left) HyFlow logo and (right) slide from the HyFlow deck template.

This logo represents a flow-engineered 3D electrode, i.e. a complex structure through which the gas bubbles produced by the electrolyser find their way under forced electrolyte flow. This logo was used to generate a slide deck template (see Fig. 1) and a deliverable template (used e.g. for the present document).

2.3.2 HyFlow website

The project website was created as soon as M1 (in a basic form) and developed through Phase 1. The goal is to share relevant, up-to-date information with any type of visitor. Wix.com was chosen as a practical and effective website provider. The domain name hyflowh2.com was chosen by the consortium and acquired via Wix.com. A view on the site homepage can be seen on Fig. 2.

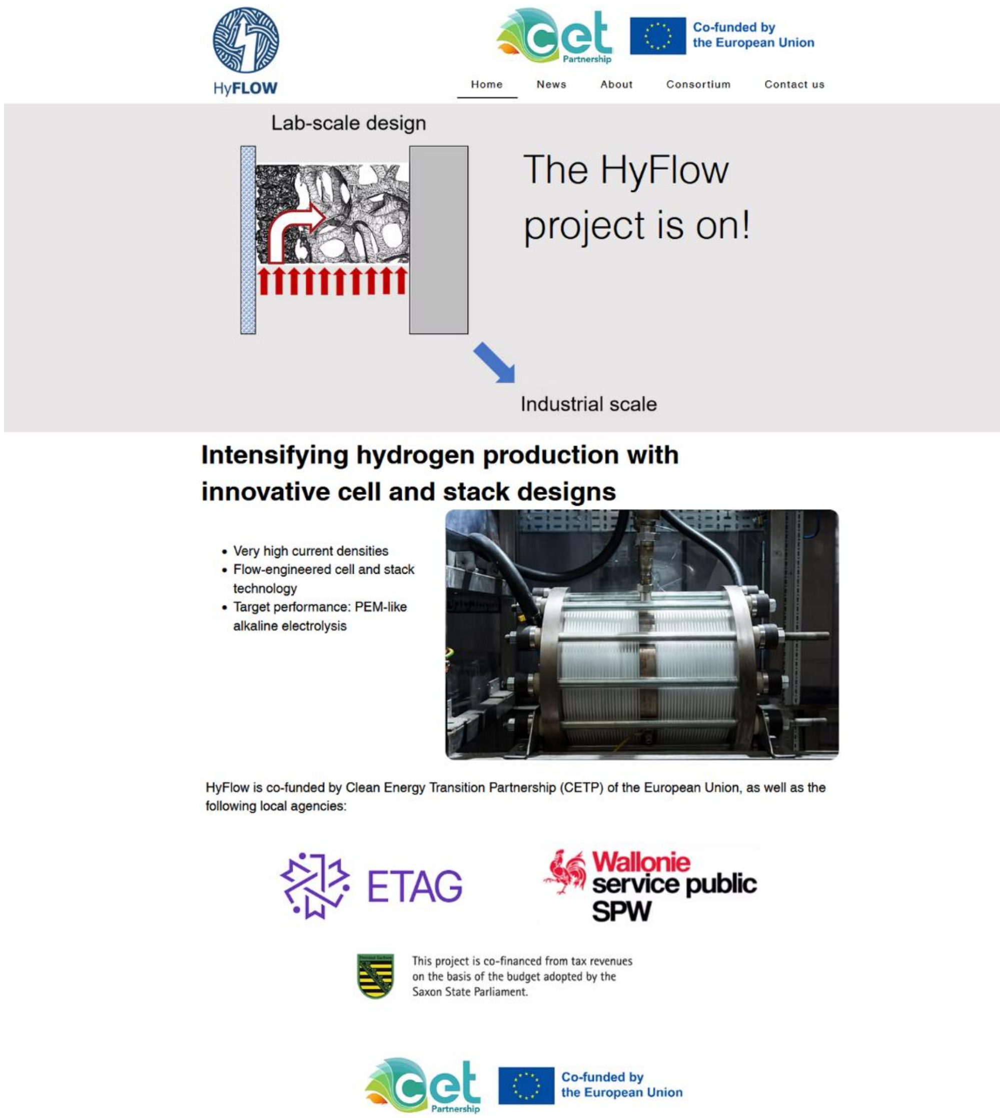

Figure 2. Homepage of the HyFlow website.

The following sections were constructed:

- Homepage section with the links to all other sections and the logos of all (local and EU) funding agencies.
- Consortium section with brief presentations of each member and the logos of corresponding local funding agencies. These brief presentations will also be posted on the HyFlow linkedin page in order to maximise the visibility of each consortium member individually.
- About section with a general description of the HyFlow project.
- News section with various, regular updates about the project activities.
- Contact us section with a form that any visitor can fill with a message.

- Download center where public deliverables and other publications of the consortium are made available to any visitor. This section will be published in M5 when the first deliverables are submitted.

2.3.3 Social media

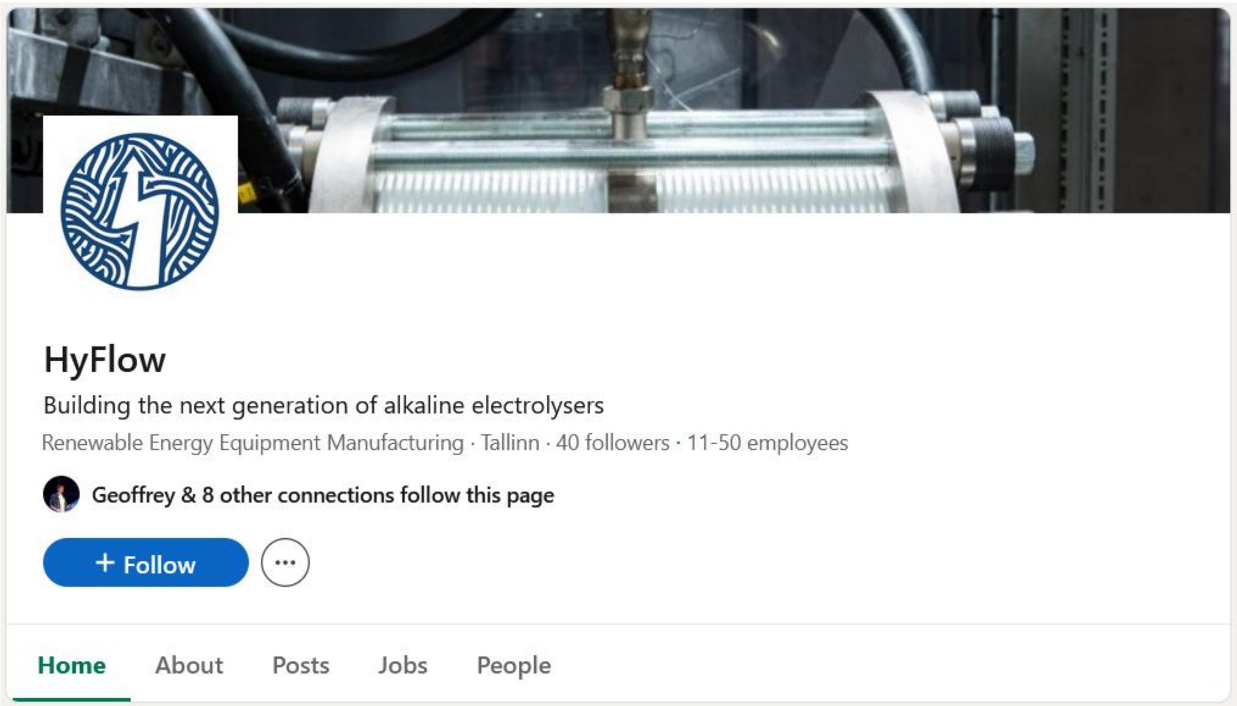

Figure 3. HyFlow Linkedin page. https://www.linkedin.com/company/hyflowh2/.

The HyFlow Linkedin page, showed in Fig. 3, was also created in M1. It is used to communicate the project activities, as well as each partner's existing social media channels, like their respective Linkedin pages, which regularly repost the HyFlow posts. The consortium members have strong existing social media presence and relatively high following numbers on LinkedIn: Stargate Hydrogen with 15k followers; IFAM Fraunhofer with 11k followers; UCL with 174k followers; and JEMA with 1k followers.

2.3.4 Factsheets and infographics

Factsheets and infographics are a creative and efficient way to share the main activities of the project and convey a clearer message about the innovation that may be of interest to industry professionals, including a wider audience outside of the industry. These tools are shared on social media and used while attending conferences or events and introducing the project via other digital channels. 1 factsheet was created at the beginning of the project on the DISCCO portal to give an overview of its general aim and activities.

1 factsheet will be created in the end of the project to communicate the project results. Infographics will be made based on the main milestones of the project.

2.3.5 Press releases and blog posts

Press releases and blog posts are another measure that help raise general knowledge and awareness. The blog posts will be posted on the project website. They will cover the work ongoing in the project and important results achieved. There will also be some more generalist blog posts about hydrogen production and electrolysis. Press releases will be used to share bigger achieved milestones.

2.3.6 Scientific publications and patents

All scientific findings will be published in renowned international journals. These publications will improve the credibility of the HyFlow technology on the market and lead to increased scientific cooperation, knowledge transfer, and greater spill-over effect.

Examples of Scientific Journals: The Proceedings of the European Electrolyser and Fuel cell Forum; International Journal of Hydrogen Energy, Journal of Physics: Energy, Solid State Ionics, Journal of Power Sources, Electrochimica Acta, Journal of Applied Electrochemistry, Nature Energy, etc. It is very likely that the project will create patentable results as well. We aim to file at least 1 patent.

2.3.7 Techno-economic feasibility study

A techno-economic feasibility study will be carried out to evaluate the influence of forced flow technology in relation to a faster market uptake of hydrogen (Task 6.1, with corresponding Deliverable D6.1). This study will be published at the end of the project, which will help further distribute the project results and potential of the results. It will be shared with key players in the industry and distributed via industry associations such as Hydrogen Europe, Clean Hydrogen Partnership, Hydrogen Europe Research, and European Clean Hydrogen Alliance. An informative event in collaboration with an industry association will be held to share the results of the project and the study.

2.3.8 Conferences and events

Being present in leading industry events will enhance visibility and give the chance to engage with potential customers and conduct demos for better overview of the future alkaline electrolysers, using the HyFlow outcomes and capabilities.

We will present project results in events such as:

- Connecting Green Hydrogen Europe.
- Hydrogen Europe Flagship Event.

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- European Hydrogen Week.
- European Hydrogen Forum.
- European Electrolyzer and Fuel Cell Forum.

2.3.9 Collaborations

The collaboration activities aim to give directions for on-going and future policy making as well as a base for other research projects that might grow out of developed components and knowledge. The collaborations might include sister projects receiving funding from the same call or other related projects funded by Horizon Europe and the Clean Hydrogen Partnership. HyFlow will also leverage knowledge exchange and generation between all CETPartnership funded projects by actively attending the CETPartnership Knowledge Community activities and contributing to the organisation of these activities. This can include introducing the project in the beginning, its main results during the duration of the project and the Techno-economic feasibility study and results achieved at the end of the project.

2.4 Dissemination and communication KPIs

The KPIs related to the D&C tools presented above are listed in Table 1, and connected to the corresponding stakeholders from section 2.2.

Table 1. D&C tools, associated with the corresponding stakeholders and KPIs.

D&C Tools	Stakeholders addressed	KPIs
Brand Identity	All	1 logo, 1 slide deck template, 1 deliverable template, 1 reporting template
HyFlow Website	All	1 website, >10000 visits, >25 countries reached
Social media	SH1, SH2, SH4	>1 post per month per partner
Factsheets and infographics	SH2, SH4	2 factsheets, 4 infographics
Press releases and blog posts	SH1, SH2, SH4	>8 informative blog posts, >3 press releases
Scientific publications and patents	SH1	>3 publications, 1 patent
Techno-economic feasibility study	SH2	1 techno-economic feasibility study, 1 informative event
Conferences and events	SH1, SH2, SH3	>5 presentations

Collaborations	SH1, SH2, SH3	>4 collaboration activities, >2 co-creation activities with CETPartnership Knowledge Community

3 Exploitation strategy

3.1 General exploitation strategy

The outcomes of the HyFlow project will mostly revolve around the development of commercial products on the one hand, and technology transfer on the other hand. While IFAM and UCLouvain are naturally inclined to take the first route, the second one will be followed by Stargate, JEMA and JENTEC. Commercialisation is the key word here, as both routes lead to this objective using different paths.

Indeed, the HyFlow consortium collectively aims to advance and commercialise innovative AWE technology by leveraging each partner's expertise and market position. The exploitation strategy focuses on scaling up from lab-scale to industrial-scale applications, ensuring technology transfer, commercialisation, and further research to drive widespread adoption of cost-effective green hydrogen production. By combining expertise in advanced materials, stack design, system integration, and commercialisation pathways, the HyFlow consortium ensures that its technological advancements contribute to the broader deployment of efficient and cost-effective alkaline electrolysers.

Each partner's individual exploitation plan has been discussed at the beginning of the project and can be seen in the next subsection. Regarding the outcomes of the project at the end of its timeline, the Key Exploitable Results and their target societal, market, and commercial readiness will be assessed in detail and included in Deliverable D6.3 "Sustainability and Exploitation Strategy". The market uptake of the HyFlow technology will also be the object of Deliverable D6.1 in the form of a techno-economic feasibility study (see subsection 2.3.7).

3.2 Individual exploitation plans

3.2.1 Stargate

Stargate will exploit the results beyond this project for the product development and commercialization of alkaline electrolysers in industrial applications.

Short-term: Stargate will integrate the improved electrode coatings and forced flow design into its next-generation electrolysis stacks, validating them in pilot projects and customer demonstrations to enhance performance at high current densities.

Medium-term: Leveraging the project's advancements, Stargate will scale up production to offer more efficient and cost-competitive alkaline electrolysers for industrial applications and targeting large-scale hydrogen hubs.

3.2.2 IFAM

As a non-profit organisation, the Fraunhofer IFAM will attempt to apply the results in cooperation with industrial partners, in line with the Fraunhofer mission of ‘applied research’. To this end, expertise and knowledge will be contributed at all levels of the necessary development stages and, where appropriate, know-how/IP will be marketed via licences. The following exploitation plan is envisaged:

Short-term: Validate the Hyflow concept for AEL with partners on a larger stack scale (pre-industrial). One transfer project to next-HyFlow AEL (to TRL 7/8) and one transfer project to related electrochemical processes. Know-how/IP contracts with partners.

Medium-term: Supporting industry in the final commercialization with accompanying research. Spin-off of the atmospheric HyFlow AEL variant with industry partners. 2 funded projects to transfer the technology to other electrolysis technologies (e.g. AEMEL, separator-free electrolysis). Offering of the IFAM test infrastructure for industrial R&D topics.

3.2.3 UCLouvain

UCLouvain has already parallel projects running to further advance the envisioned HyFlow technology, both using other types of 3-D electrodes and different electrochemical reactor configurations.

Short-term: A running PhD has started as of April 2024 within the regional Walloon Win4Excellence project TiNTHyN (https://www.tinthyn.be/en/these/phd-1) with the objective to develop flow-engineered 3-D printed Raney-Ni electrodes on the lab-scale (4x4 cm2). Once validated, these electrodes will then also be tested on the UCLouvain pilot-scale unit developed within the HyFlow project.

Medium-term: In case the 3-D printed flow-engineered electro-catalytic electrodes can be successfully demonstrated on the pilot-scale, UCLouvain already intents to futher push this technology to the market through the creation of a Spin-off (in fact, this is also one of the objectives of the Win4Excellence call). UCLouvain also prepared a portfolio of follow-up projects within the 2025 EIC Pathfinder Challenge call to further push the forced flow technology in rotating electrolyser configurations (including electrochemical vortex chambers and fluidised bed reactors).

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3.2.4 JEMA

JEMA will build upon the results of this project for the development of power supply solutions with performance monitoring capabilities for electrolysers in hydrogen production. This includes the further development, prototype validation, and subsequent commercialization of the developed technologies, adapted to specific application requirements. In addition, JEMA will investigate the potential for applying these developments to advanced galvanic bath power supply systems.

Short-term: JEMA will integrate diagnostic systems into power supplies for electrolysers to provide added value through enhanced performance monitoring, supporting hydrogen production projects across various power levels, including pilot installations and related applications.

Medium-term: JEMA will extend its offering to potentially improved electrode manufacturing processes as well as other galvanic bath applications via health monitoring systems. In parallel, JEMA will provide advanced power supplies for large scale hydrogen production, including health monitoring of electrolyser systems at cell and/or stack level.

3.2.5 JENTEC

As a manufacturer of process plants in the field of specialised machinery, JENTEC will use the results of this project to expand and further develop its own capabilities and expertise and to establish and strengthen further relationships with partners in research and industry.

Short-term: Process-related adaptation of the existing plant at IFAM to implement the HyFlow concept. This will involve deepening the existing cooperation with the IFAM research institute.

Medium-term: The aim is to apply the knowledge gained in further projects and to generate further business relationships in the market.

4 Conclusion

The D&C strategy described here focuses on 9 specific communication tools (subsections 2.3.1-2.3.9). Three of these tools (2.3.1-2.3.3) needed set-up during Phase 1 (M1-M5) before being used. As Phase 1 closes with the present deliverable, these 3 tools have been set-up according to the plan. With Phase 2, the D&C tools will be employed by the consortium in order to progressively gain visibility. Contributions from all partners will be collected throughout the project schedule with a dedicated document on the HyFlow sharepoint. The template of this document can be seen in Annex 1.

The exploitation strategy described here was constructed at the beginning of the project timeline. Like the D&C strategy, it will be adapted to the project evolutions when judged relevant.

Therefore, the present deliverable is met with no delays to report.

Annex 1 – Tables for D&C collection

1. Scientific and technical publications

List of published articles							
No.[1]	Title	Partners involved	Journal	Year	DOI	Open access (if yes: type)[2]	Repository link
1							
2							
3							
4							
List of planned articles							
P							
P							
P							

1: P = planned; 2: gold, green, diamond, etc.

2. Participations to scientific and technical events

List of performed event activities (conferences, workshops, fairs, etc.)							
No.[1]	Title	Partners involved	Contribution type[2]	Title and location of the event	Date	Audience type[3]	Audience size
1							
2							
3							
4							
List of planned event activities (conferences, workshops, fairs, etc.)							

P							
P							
P							

1: P = planned; 2: talk, poster, flyer, stand, etc.; 3: general, academia, industry, policymakers, etc.

3. Communications to the public and policymakers

List of performed public communication activities (press articles, conferences, workshops, fairs, etc.)							
No.[1]	Description[2]	Title	Partners involved	Title and location of the event[3]	Date[3]	Audience type[4]	URL[3]
1							
2							
3							
4							
List of planned public communication activities (press articles, conferences, workshops, fairs, etc.)							
P							
P							
P							

1: P = planned; 2: news article, interview, networking events, social media, etc.; 3: if applicable; 4: general, academia, industry, policymakers, etc.

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