

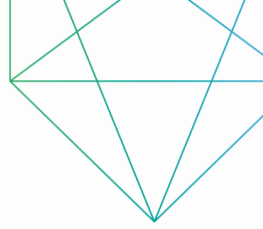
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D6.4.D&C Content Plan

ALISHA DAVIDSON

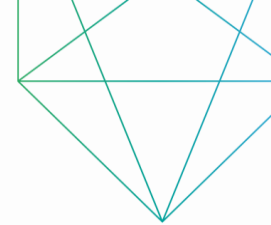
LINQ CONSULTING & MANAGEMENT





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Executive summary

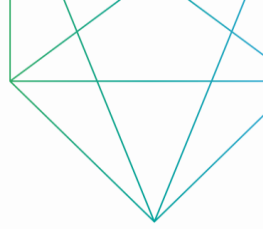
This document describes the dissemination and communication (D&C) plan to be adopted by OUTFOX, a project that has received funding through Horizon Europe's Clean Hydrogen Joint Undertaking (CHJU) programme. Linq Consulting & Management will lead work package 6 (WP6) on communication, dissemination and exploitation and will be in charge of coordinating and implementing the communication and dissemination activities throughout the project.

The main objective of the dissemination and communication activities within OUTFOX is to maximize the impact of the innovations of the project in terms of raising awareness about the potential of solid oxide electrolyzers (SOEL) for massive hydrogen production, disseminating non-proprietary results, and taking steps towards a project to demonstrate two 80 kW modules by 2027. However, the project's results will pave the way for the advancement of SOEL technology, preparing it for applications beyond 100 MW. realize The communication and dissemination plan for the OUTFOX project describes the means and the channels that will be used by OUTFOX to ensure that the project activities and outcomes are communicated in the most effective way possible to the broad range of target groups that have been identified.

This report includes a description of the strategy and processes for OUTFOX's communication and dissemination activities, including defining key messages, target audience groups, and the tools and channels that will be utilised. The dissemination tools and channels include a project website, e-newsletters, scientific papers and leaflets, social media presence, and participation in workshops/conferences.

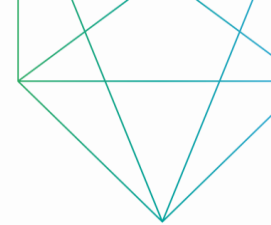
This report includes an implementation plan describing the communication and dissemination activities as stated in WP6, how these will be implemented throughout the project. The plan defines the approach to provide the primary and secondary audiences identified in the D&C strategy with science-based evidence and relevant information from the OUTFOX project. The development of a detailed D&C plan is fundamental to ensure that effective communication activities can support the consortium in engaging the target audiences and impacting the development and future deployment of SOEL technology. The implementation plan includes considerations such as timeframe, alignment with project priorities and objectives, a description of activities and objectives, expected results and impact, and key performance indicators to measure the achievement of the objectives.

This dissemination and communication plan is a working document which will be supplemented with the input and achievements of all partners and will be reviewed and updated at regular intervals throughout the project (M18 and M36) with a final D&C plan presented as Deliverable 6.8 in M48.



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1. Framing

This document presents the dissemination and communication (D&C) strategy and plan that will be implemented during the entire duration of the OUTFOX project.

Linq Consulting & Management (LINQ) will lead work package 6 (WP6) on communication, dissemination and exploitation and will be in charge of coordinating and implementing the communication and dissemination activities throughout the project.

1.1. Background and context

OUTFOX is a Clean Hydrogen Joint Undertaking (CHJU) project funded through Horizon Europe for 48 months. The project has officially started on the 1st of February 2023.

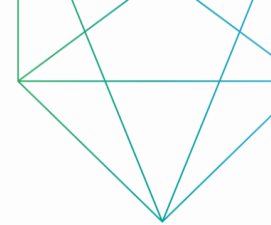
The project consortium, led by TNO, is comprised of partners with expertise along the entire solid oxide electrolysis (SOEL) green hydrogen value chain, from solid oxide cell research and development (TNO, VTT, Politecnico Di Milano (POLIMI)) to industrial validation and implementation (Elcogen OY (ELCOOY) and AS (ELCOAS), Convion (CONV), Shell Global Solutions International (SGSI)), along with end use and dissemination of the results (LINQ). The roles of each partner have been chosen to maximize their synergies and interdisciplinarity in order to realize the project objectives.

The main aim of OUTFOX is to remove scale as limiting factor in the deployment of SOEL technologies while proving their potential to become the preferred option for green hydrogen production. By combining experimental results up to 80 kW scales with identification of optimal cell and system designs, OUTFOX will prepare SOEL for industrial scale systems of 100 MW with an LCOH as low as €2.7/kg H₂ and applicability to mass manufacturing lines.

1.2. High level objectives

The consortium acknowledges the complexity of the challenge and the range of individual obstacles that must be overcome to unlock cost-effective, large-scale, renewable hydrogen production. However, their expertise, experiences and diverse perspectives are leveraged to break down the problem into a set of measurable objectives. The following objectives were carefully chosen to be achievable and relevant to the technology, while also being ambitious such that they go beyond the requirements laid out in the call.

1. Manufacturing of scaled-up cells with geometric cell areas ranging from 300 – 900 cm² representing a 2 – 6 times boost in cell area when compared with the state-of-the-art.
2. Development of an industrial scale, high throughput manufacturing process to produce ≥300 cm² cells with a reduced thickness of 300 microns and minimal total thickness variation < 25 microns.

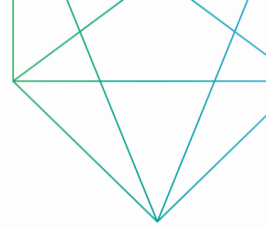


3. Demonstrate the potential for scaled-up manufacturing of the OUTFOX cells based on analysis of available production methods and associated supply chains.
4. Validate the performance of the scaled-up cells with geometric cell area of 300 – 900 cm² at the single repeating unit (SRU) and their downscaled version at short stack (15-cell) scales to show operation at high current density (> 0.85 A/ cm²) and degradation rates of <1% / kh for steam electrolysis with 6000+ hours of total operating time.
5. Determine the optimal geometric cell area based on techno-economic analysis and compatibility with at-scale manufacturing techniques and stack architectures.
6. Design and validate, through modelling, a stack architecture capable of accommodating scaled-up cells with 300 cm² geometric cell area with reduced 300 micron thickness that is compatible with low-cost manufacturing techniques.
7. Develop a computational model to characterize and evaluate stack behaviour including thermal gradients, pressure drop characteristics, reactant distribution and gas tightness
8. Design a scaled-up SOE module with enhanced power capacity per unit weight, 8 times higher per stack interface, and improved industrial usability.
9. Build and operate two 80 kW pilot modules for 4000+ total hours to show achievement of performance targets at larger scales and with operation under intermittent and other industrial operating regimes.
10. Demonstrate the impact of the SOEL technology scalability and potential to achieve an LCOH of €2.7/kg with an industrial scale plant model and techno-economic analysis.
11. Demonstrate the circularity, safety and sustainability of the stacks and stack components via a comprehensive life cycle analysis of relevant materials and processes.

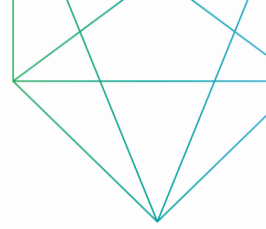
1.3. Expected public outputs, outcomes, and deliverables

The project’s results and the technology-based advancements achieved throughout the project will lead to outputs that will be disseminated towards different target audiences as explained in the following sections. These outputs include:

Deliverable	Description	Partner	Output	Month
D1.10	Report on performance and degradation results of next-generation cells	TNO	Report	30
D2.2	Report from reference stack performance (stack 1 and 2)	VTT	Report	14
D2.3	Initial delivery of stacks of reference scale thin cells for 1st phase 80 kW system prototype testing	ELCOOY	Demonstrator	18
D2.4	Second delivery of stacks of industrial scale cells for 2nd phase 80 kW system prototype testing	ELCOOY	Demonstrator	33
D2.5	Report on developed stack performances (stacks 3 – 5) at increased current densities	VTT	Report	36
D2.7	Report from upscaled stack design, modelling and simulation activities	ELCOOY	Report	36



D3.2	1st phase 80 kW SOE module delivered to WP5	CONV	Demonstrator	18
D3.3	Publishable report on modelling of upscaled SOE stacks and modules	VTT	Report	24
D3.4	Public report on system scale up and industrial requirements	CONV	Report	32
D3.5	2nd phase 80 kW SOE module with optimized cell stacks delivered to WP5	CONV	Demonstrator	36
D4.3	Report on the circularity assessment, including LCA and environmental impacts of a full-scale SOEL system	POLIMI	Report	36
D4.5	Report outlining the roadmap to full-scale SOEL, including case studies and exploitation strategy	SGSI	Report	48
D5.2	Public report on the operating results and experiences from both phases of the 80 kW SOE system prototype	CONV	Report	48
D6.1	Project branding identity, including logo and templates	LINQ	DEC	3
D6.2	Website and social media accounts live	LINQ	DEC	6
D6.3	Periodic newsletters sent to project mailing list	LINQ	DEC	9,18,27,34,41,48
D6.4	Report on content to be disseminated and communicated with an evaluation of completed activities	LINQ	Report	6
D6.5	First report on expected exploitable results and plans for IP protection or other exploitation.	LINQ	Report	6
D6.6	First version of the project Data Management Plan	LINQ	DMP	6
D6.7	Public workshop focused on setting up a follow-up demonstration project	LINQ	DEC	45
D6.8	Overview of completed communication and dissemination activities	LINQ	Report	48
D7.3	Report on gender and culture aspects of the project and developed technologies	TNO	Report	48
D7.4-7.7	Annual Data reporting for the Clean Hydrogen JU	TNO	Report	13, 25, 37, 48



2. Dissemination & communication strategy

The D&C strategy is the foundation on which the activities identified in the D&C plan are built. Developing an effective strategy is crucial for all project partners to gain a comprehensive understanding of the project's communication objectives, target audiences, key messages, and the tools necessary for reaching them. This process involves a thorough analysis of the audience's knowledge, potential impact, and motivation, ensuring that project updates are effectively conveyed to the intended stakeholders through suitable channels.

The D&C strategy is structured as follows:

- **Objectives:** Clearly defining the goals and objectives of the D&C strategy.
- **Audience Segmentation:** Identifying and categorizing the primary and secondary audiences for targeted communication.
- **Audience Analysis:** Conducting a detailed analysis of the audience to inform the design of effective messages.
- **Key Messages:** Determining the essential messages that need to be conveyed to different audience segments.
- **Tools and Channels:** Identifying the most suitable tools and channels for disseminating the messages.

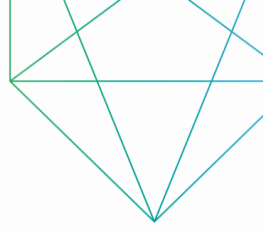
By following this structured approach, a comprehensive D&C plan will be developed, ensuring that the OUTFOX project's messages reach the intended stakeholders accurately. It is important to note that while the strategy is based on current knowledge, it remains adaptable and can be modified as per the project and consortium's specific needs.

2.1. D&C objectives

The main objective of the dissemination and communication activities within OUTFOX is to maximize the impact of the innovations of the project in terms of raising awareness about the potential of SOEL for massive hydrogen production. This includes disseminating non-proprietary results, and taking steps towards a project to demonstrate two 80 kW modules by 2027. However, the project's results will pave the way for the advancement of SOEL technology, preparing it for applications beyond 100 MW.

The specific objectives to reach this overall aim are to:

- Implement efficient strategies and instruments to facilitate and ensure identification, adequate protection, and commercial exploitation and business development of the foreground knowledge generated during OUTFOX.



- Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policy makers and citizen groups.
- Ensure efficient management of OUTFOX's knowledge including IPR and data management.

2.2. Target audience identification

OUTFOX aims to reach a diverse target audience interested in electrolyzers, sustainable technologies, green hydrogen and clean energy to promote the goals and outcomes of the project. The main stakeholders identified include the scientific research community, industrial end users, industrial supply & value chains, financial actors, policymakers and the general public.

The consortium has been able to identify and split the diverse target audiences into primary and secondary audiences according to their interests and influence on the project. This audience analysis has been developed with assumptions based on literature research and exchanges with experts.

While some types of audiences are already evident as targets of the dissemination strategy, others may emerge during the project. The following segmentation is thus based on current knowledge and will be updated at M18 of the project when the updated D&C content plan will be submitted.

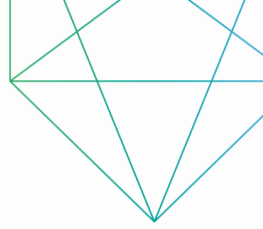
2.2.1. Primary audiences

The primary target audiences are the scientific research community, industrial end users and industrial supply and value chains.

2.2.1.1. Scientific Research Community (Universities, RTOs)

Why are they the target audience?

- The scientific research community is interested in expanding knowledge and understanding. By targeting this audience, the project can contribute to the body of scientific knowledge related to SOEL technology and its potential for hydrogen production.
- The scientific research community possesses specialized technical expertise. Researchers can provide valuable feedback, review the project's methodologies, and offer suggestions for optimization or improvements.
- Targeting the scientific research community opens doors for future collaborations and partnerships from OUTFOX's project outputs. Collaboration with scientific institutions, universities, and laboratories can accelerate research progress, facilitate knowledge exchange, and increase the project's credibility.
- This communication channel will enable the project to disseminate its findings, research papers, and technical reports to a knowledgeable audience. By sharing research outcomes, experimental data, and lessons learned, the project can contribute to the collective knowledge base. This dissemination helps avoid duplicating research efforts, fosters



collaboration, and promotes the wider adoption of SOEL technology in the scientific community.

- The scientific research community often has access to research funding and grant opportunities. By engaging this audience, the project can attract potential funding sources interested in supporting research and development efforts related to clean energy technologies.

What are their expectations?

- Evidence, information and success stories on innovative technical solutions in removing barriers to scale up and utilizing SOEL for hydrogen production, i.e., performance reports.
- Robust and reliable experimental data to validate the performance and efficiency of the developed solid oxide electrolyzers in the form of scientific publications.
- Information on the environmental sustainability of SOEL technology – how the technology will reduce carbon footprint, emissions, etc.
- Information on the cost and energy effectiveness of SOEL for hydrogen production.
- Liaising with partners to develop new projects.

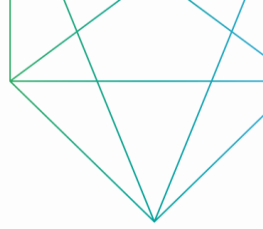
What is the key message/information to share?

- Technical developments within the OUTFOX project involving cell optimization, stack and module design and performance at high current densities.
- OUTFOX's outcomes would support the transition away from fossil fuels, not only in the energy sector through e-fuels and electricity generation, but also by enabling scaled-up green and sustainable chemical production from platform molecules.
- OUTFOX supports the transition towards climate neutrality.
- The OUTFOX project provides relevant economic and environmental advantages for utilizing SOEL for low cost hydrogen production.

2.2.1.2 Industrial End Users (energy providers, renewable energy operators, petrochemical industry, utilities, grid operators)

Why are they the target audience?

- Industrial end users are increasingly focused on decarbonization and sustainability by seeking cleaner and more sustainable energy solutions to reduce their carbon footprint and comply with environmental regulations. SOEL technology offers a pathway for producing hydrogen with low or zero greenhouse gas emissions, aligning with their sustainability goals and providing an alternative to traditional fossil fuel-based hydrogen production.



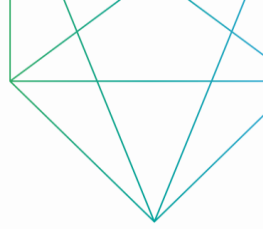
- The energy industry is undergoing a significant transition towards renewable and low-carbon energy sources. Industrial end users are looking to diversify their energy sources and reduce their reliance on fossil fuels. SOEL-based hydrogen production offers an opportunity to utilize renewable electricity, such as wind or solar, to produce clean hydrogen.
- Industrial end users, including petrochemical industry and utilities, are exploring opportunities for fuel switching and the use of hydrogen as a cleaner alternative to fossil fuels. SOEL-produced hydrogen can be utilized as a feedstock or fuel in various industrial processes, including refining, ammonia production, power generation, and heating applications.
- Industrial end users are always looking for ways to improve energy efficiency and reduce operational costs. SOEL technology offers high energy conversion efficiency in hydrogen production compared to conventional methods. By emphasizing the efficiency gains and potential cost savings associated with SOEL-based hydrogen production, the project can appeal to industrial end users seeking to optimize their operations.
- Industrial end users require scalable and reliable energy solutions to meet their production demands. SOEL technology offers the potential for scalable hydrogen production and can provide a reliable and continuous source of hydrogen. Highlighting the scalability and reliability aspects of SOEL technology can resonate with industrial end users looking for long-term, sustainable solutions.
- Industrial end users often engage in collaborations and partnerships with technology providers and research organizations. By targeting this audience, the project can foster collaboration opportunities with industrial stakeholders.

What are their expectations?

- Evidence, information and success stories on innovative technical solutions for removing the barriers to scale up and utilizing SOEL for hydrogen production, i.e., performance reports.
- Detailed information on the major industrial needs and barriers to support the up-scaling of SOEL technologies for green hydrogen production.
- Information on the environmental sustainability of SOEL technology – how the technology will reduce carbon footprint, emissions, etc.
- Information on the cost and energy effectiveness of SOEL for hydrogen production.
- Liaising with partners to develop new projects.

What is the key message/information to share?

- Exploitable results from OUTFOX including patents and knowhow brought in as background for future projects in SOEL system developments.



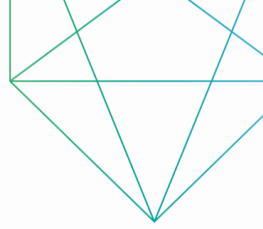
- OUTFOX's outcomes would support the transition away from fossil fuels, not only in the energy sector through e-fuels and electricity generation, but also by enabling scaled-up green and sustainable chemical production from platform molecules.
- OUTFOX supports transition towards climate neutrality.
- The OUTFOX project provides relevant economic and environmental advantages for utilizing SOEL for low cost hydrogen production.

2.2.1.3. Industrial supply and value chains (solid oxide cell manufacturers, stack manufacturers, module manufacturers)

Why are they the target audience?

- SOEL technology has the potential to revolutionize the hydrogen production industry. Manufacturers in these chains are interested in new technologies and solutions that can drive market growth, create competitive advantages, and expand their product offerings.
- Solid oxide cell manufacturers, stack manufacturers, and module manufacturers play a crucial role in the commercialization and integration of SOEL technology into practical applications. By engaging with these stakeholders, the project can foster technology transfer, collaboration, and partnerships for scaling up SOEL production and bringing the technology to market.
- Manufacturers in the supply and value chains are interested in technological advancements that can enhance their products' performance, efficiency, and reliability. By targeting these stakeholders, the project can showcase technological advancements in SOEL components, such as improved cell designs, optimized stack configurations, or enhanced module integration.
- Manufacturers are interested in technologies that offer cost competitiveness and scalability. OUTFOX will emphasize the cost-efficiency potential of SOEL technology, highlighting its ability to reduce operational costs, energy consumption, and reliance on expensive materials.
- Collaboration with manufacturers in the supply and value chains is crucial for the successful commercialization of SOEL technology. Engaging these stakeholders allows the project to explore collaboration opportunities, such as joint research and development, technology licensing, or supply agreements.
- Manufacturers have valuable market insights and customer feedback regarding hydrogen production technologies. Engaging with manufacturers allows the project to understand customer requirements, market trends, and potential application areas for SOEL technology.

What are their expectations?



- Evidence, information and success stories on innovative technical solutions for removing barriers to scale up and utilizing SOEL for hydrogen production, i.e., performance reports.
- Detailed information on the major industrial needs and barriers to support the up-scaling of SOEL technologies for green hydrogen production.
- Liaising with partners to develop new projects.

What is the key message/information to share?

- Exploitable results from OUTFOX including patents and knowhow brought in as background for future projects in SOEL system developments.
- The mature OUTFOX technology aims to provide clean energy and reduce overall CO₂ emissions to meet internationally set standards and targets – supporting transition towards climate neutrality.
- The OUTFOX project provides relevant economic and environmental advantages for utilizing SOEL for low cost hydrogen production.

2.2.2. Secondary audiences

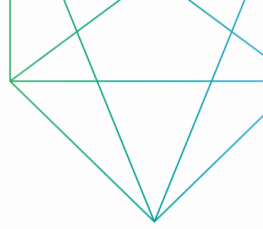
The secondary target audiences are the general public, policymakers and financial actors.

2.2.2.1. General Public

Why are they the target audience?

- The general public plays a crucial role in supporting and understanding sustainable energy solutions. By targeting the general public, the project can raise awareness about hydrogen as a clean energy source and educate people about its benefits, potential applications, and environmental impact.
- Projects related to sustainable energy often require public support and acceptance to succeed. Engaging the general public can help build trust, address concerns, and foster a positive perception of hydrogen production using SOEL technology.
- The general public's behavior and consumption patterns significantly impact energy demands. By targeting the general public, the project can promote behavioral changes, such as using hydrogen-powered vehicles, adopting hydrogen-based home energy systems, or supporting hydrogen infrastructure development.
- Engaging the general public allows for valuable feedback, suggestions, and collaboration. Public input can help refine project objectives, address concerns, and incorporate diverse perspectives.

What are their expectations?



- Information on the environmental benefits and sustainability of hydrogen production from SOEL.
- Information on the cost and energy effectiveness of SOEL for hydrogen production.
- Information regarding the safety and reliability of SOEL technology, including long term viability and scalability.

What is the key message/information to share?

- OUTFOX's technology will include more available clean energy for transport and other areas of industry and less carbon-intensive fuels needing to be produced in their place - helping to put the EU on a path to carbon neutrality by 2050.
- OUTFOX's outcomes would support the transition away from fossil fuels, not only in the energy sector through e-fuels and electricity generation, but also by enabling scaled-up green and sustainable chemical production from platform molecules.
- OUTFOX technologies will lower the cost of green hydrogen production.
- OUTFOX technologies will improve sustainability through reduction of the materials needed for SOEC

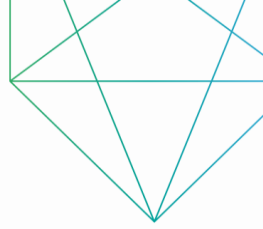
2.2.2.2. *Polymakers (Governments, EC, regulators, politicians, lobbyists, NGOs)*

Why are they the target audience?

- Public authorities, in particular the EU, have set ambitious climate change mitigation goals and energy transition targets in commitment to the Paris Agreement.
- Public authorities require innovative technologies capable of enhancing resource efficiency and fostering the development of new business models to ensure the sustainability of both the EU and national economies, in alignment with the EU Green Deal.
- EU and national authorities can promote the future utilization of SOEL technologies developed within the OUTFOX project by providing financial support to mature projects and attracting business investors.

What are their expectations?

- Detailed information on the significant industrial needs and barriers to support the scaling-up of such technologies.
- Information on the environmental and economic benefits of hydrogen production using SOEL.
- Information on the costs and technical feasibility of OUTFOX technology compared to alternative options.



- Information on the development of EU and national regulations or policies related to SOEL and hydrogen production.
- Information on how SOEL technologies and large scale hydrogen production can be integrated into the broader energy system and supply chains.

What is the key message/information to share?

- The OUTFOX project focusses on sustainable innovation for hydrogen production to lower carbon emissions and keeping global warming below 2°C.
- The mature OUTFOX technology provide the potential for clean energy, when renewable energy is used and reduce overall CO₂ emissions to meet internationally set standards and targets.
- The OUTFOX project provides relevant economic advantages for utilizing SOEL for low cost hydrogen production.

2.2.2.3. *Financial Actors (Investors, banks, fund managers)*

Why are they the target audience?

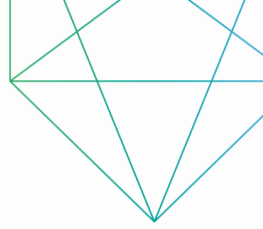
- Financial actors play a crucial role in providing the necessary funding and investment capital for projects.
- Targeting financial actors, the project can attract potential investors who are interested in supporting sustainable energy initiatives for follow up projects.

What are their expectations?

- Information on the costs and technical feasibility of the OUTFOX technology versus alternatives.
- Information on the size of the hydrogen market, the demand, and growth prospects.
- Information on the environmental and sustainability of SOEL technology – how the technology will reduce carbon footprint, emissions, etc.

What is the key message/information to share?

- Techno-economic analysis and scale-up analysis of SOE.
- Business models and market potential for SOEL
- Life-cycle and environmental performance of SOEL systems.



2.3. Audience analysis

The preliminary audience analysis indicated below is developed to identify and have a clear overview of the priority and most influencing audiences for the OUTFOX project. This supports LINQ, the WP6 leader, and the consortium to better design the messages that need to be conveyed based on those stakeholders whose actions and behaviour can impact the deployment and social and regulatory aspects of green hydrogen production from SOEL.

The OUTFOX audience analysis looks at:

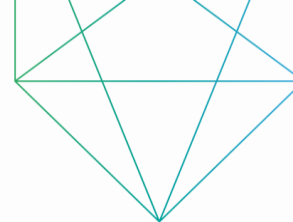
- The audience knowledge related to the subject
- The audience attitude towards the subject
- The barriers that prevent the specific audience to develop and use SOEL technologies or impact their social and regulatory aspects
- The stakeholders and or external factors the specific audience is influenced by
- The motivations which drive the audience to deploy SOEL technologies or impact their social and regulatory aspects

As a result, the audience analysis does not only determine and describe the primary and secondary audiences for the OUTFOX project but also supports the following development of key messages that lead to the achievement of the communication and dissemination strategy's goals.

2.3.1. Primary Audience Analysis

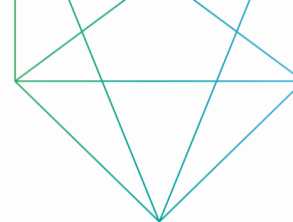
Audience	Knowledge on Subject	Attitude towards the subject	Barriers	Influenced by	Motivation
Scientific Research Community	Very high in depth technical knowledge of SOEL technologies and their application for hydrogen production.	<p>Positive towards recognizing the potential of SOEL technology for hydrogen production and are enthusiastic about technological advancements that improve the efficiency, durability, and scalability of SOEL technology.</p> <p>Additionally, the scientific community recognizes the importance of decarbonizing the energy and chemicals sectors and achieving a transition towards sustainable energy sources.</p>	<p>Funding & resources can hinder the community's ability to conduct research, development, and demonstration of SOEL technologies.</p> <p>SOEL technologies are complex and involve interdisciplinary expertise. Overcoming technical challenges can require significant research and development efforts from various fields.</p> <p>The scientific community's ability to impact the market and regulatory aspects of SOEL technologies may be limited by the readiness of the technology for commercialization and the level of industry collaboration.</p>	<p>Government agencies and funding organizations play a crucial role in shaping the research priorities and funding opportunities for the scientific community.</p> <p>Industry collaborations provide researchers with access to resources, infrastructure, and real-world applications.</p> <p>Regulatory and policy frameworks established by governments and international bodies influence the scientific community. Policies related to renewable energy, climate change, carbon pricing, and energy transition shape the research and development landscape</p>	<p>Scientists recognize the need for a global energy transition towards low-carbon and renewable energy sources.</p> <p>Motivated by the pursuit of knowledge and understanding to expand scientific knowledge in fields such as materials science, electro-chemistry, and energy conversion.</p>

Audience	Knowledge on Subject	Attitude towards the subject	Barriers	Influenced by	Motivation
Industrial End Users	Moderate – high in-depth technical knowledge of SOEL technologies and their application for	<p>Increasing positive attitude to prioritizing sustainability and environmental responsibility. They seek to reduce their carbon footprint, minimize environmental impacts, and align their operations with clean energy initiatives</p>	<p>The high upfront investment costs associated with installing SOEL systems, infrastructure modifications and integrating them into existing industrial processes.</p>	<p>The demands and preferences of their customers and consumers. As sustainability becomes a more prominent consideration for consumers, there is an increasing expectation for products and services to be environmentally friendly.</p>	<p>Increasingly motivated to reduce their carbon footprint and minimize environmental impacts.</p> <p>Motivated to comply with existing regulations and take</p>



	<p>hydrogen production.</p> <p>This is dependent on the specific industry's focus and engagement with clean energy technologies.</p>		<p>The cost-effectiveness of SOEL technologies in comparison to alternative energy technologies.</p> <p>The maturity and readiness of SOEL technologies.</p> <p>The accessibility of hydrogen infrastructure can be limited in certain regions.</p> <p>Industrial end users may face barriers due to limited awareness and understanding of SOEL technologies.</p>	<p>Influenced by regulatory environments and may deploy SOEL technologies to comply with regulations, access financial incentives, or align with government sustainability targets.</p>	<p>advantage of policy incentives.</p> <p>Recognize the importance of their reputation and the expectations of stakeholders such as customers, investors, employees, and local communities.</p> <p>Deploying SOEL technologies allows them to meet stakeholder demands for sustainable and environmentally friendly practices.</p>
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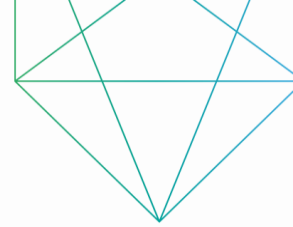
Audience	Knowledge on Subject	Attitude towards the subject	Barriers	Influenced by	Motivation
Industrial Supply & Value Chains	High in depth technical knowledge of SOEL technologies and their application for hydrogen production.	Positive in embracing the potential of SOEL technologies with the view as a viable solution for reducing carbon emissions and transitioning to a sustainable energy future.	<p>The current cost competitiveness of SOEL technologies compared to conventional alternatives can hinder their widespread adoption.</p> <p>The industrial supply and value chain require technologies that are sufficiently mature, reliable, and scalable.</p>	<p>Customers/end users of industrial products and services are influential stakeholders in the supply and value chains. Their demands, preferences and requirements can drive the adoption of SOEL technologies.</p> <p>Suppliers and manufacturers of materials relevant to SOEL technologies. Their ability to provide</p>	Industrial supply and value chains are increasingly motivated to address environmental challenges and adopt sustainable practices - reducing carbon emissions, mitigate climate change, and



			Integrating SOEL technologies into existing industrial processes and infrastructure can present technical/compatibility challenges.	<p>high-quality, cost-effective, and reliable products and services impacts the overall feasibility and competitiveness of SOEL deployment.</p> <p>Policies/regulations related to renewable energy, carbon reduction, clean technologies can influence the adoption of SOEL technologies and market viability of SOEL deployment.</p>	contribute to a cleaner and greener energy transition.
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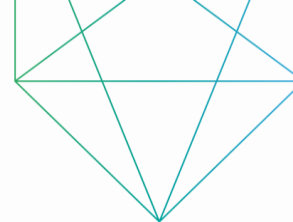
2.3.2. Secondary Audience Analysis

Audience	Knowledge on Subject	Attitude towards the subject	Barriers	Influenced by	Motivation
General Public	Very limited knowledge of SOEL technology for hydrogen production. It is not a widely recognized or understood as a potential method of utilizing renewable energy sources.	<p>Increasing concerns about climate change and the need to transition to clean energy sources could have positive impacts on attitudes towards SOEL technology.</p> <p>However, with limited awareness of SOEL specifically, it may cause indifference to the matter.</p>	<p>Lack of awareness of SOEL technologies as a potential way to use renewable energy sources to produce hydrogen.</p> <p>Concerns around cost implications of utilizing new technology.</p> <p>Difficulties in understanding science-based evidence / data / terminology.</p> <p>Fear / reluctance to new technologies.</p>	<p>Public and media pressures play a crucial role in shaping public opinion and perception.</p> <p>Supportive policies and incentives can encourage the public and specific audiences to engage with SOEL technologies.</p> <p>Concerns about climate change and sustainability leading to increased interest in the prospect of utilizing hydrogen as a clean energy carrier. This can be used in various sectors, including transportation, industry, and</p>	<p>Many individuals are motivated by the desire to address environmental challenges, such as climate change and air pollution.</p> <p>Deploying SOEL technologies can reduce the emissions of harmful pollutants and improve air quality, leading to potential health</p>



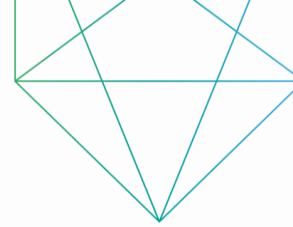
				<p>power generation, as a substitute for fossil fuels.</p> <p>Fluctuations in energy prices, concerns about energy security, and the availability of alternative energy sources can influence public attitudes.</p>	<p>benefits for communities.</p> <p>The development of SOEL technologies for hydrogen production can create new job opportunities and stimulate economic growth. Large-scale projects require skilled workers and investments, leading to job creation in manufacturing, construction, research and development, and related industries.</p>
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Audience	Knowledge on Subject	Attitude towards the subject	Barriers	Influenced by	Motivation
Policymakers	Limited – moderate understanding. Policymakers have an awareness of clean energy	A generally positive attitude that can be increased by providing science-based evidence and information on the environmental	Policymakers need to consider the economic aspects of deploying SOEL technologies. High initial costs, limited infrastructure, and potential disruptions to existing industries may pose economic challenges.	Industry stakeholders provide policymakers with insights into market trends, technological advancements, investment opportunities, and the potential impact of policies on the industry.	To address climate change and reduce greenhouse gas emissions -reaching carbon neutrality by 2050.



	and hydrogen technologies, particularly those who specialize in energy and climate change policies and regulations. However, they may not have a specific understanding of SOEL.	and climate impact of the OUTFOX solution and successful industrial stories on its implementation and upscaling.	<p>Can face a wide range of competing priorities and interests that influence their decision-making. SOEL technologies must compete for attention and resources with other energy technologies and policy objectives.</p> <p>Fragmentation of responsibilities among EU and national policymakers.</p> <p>Difficulty to identify specialists and/or experts in the field to take part in discussions.</p>	<p>NGOs play a crucial role in shaping perspectives and decisions. Environmental organizations, renewable energy advocates, and sustainability-focused groups often advocate for policies that support clean energy technologies like SOEL.</p> <p>Media coverage and public discourse surrounding SOEL technologies.</p>	By adopting and supporting these technologies, policymakers aim to position their regions as leaders in the emerging green hydrogen industry, attract investments, stimulate economic growth and create jobs.
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Audience	Knowledge on Subject	Attitude towards the subject	Barriers	Influenced by	Motivation
Financial Actors	Limited – moderate. Specialized investors in the clean hydrogen sector / hydrogen technologies	If they perceive SOEL as a promising, environmentally friendly and scalable solution for hydrogen production, they may view it positively and be more inclined to allocate funds or provide financial support.	Financial actors assess the readiness and commercial viability of SOEL technologies before making investment decisions. If the technology is still in the early stages of development or lacks proven scalability and cost-effectiveness, investors may	Consider policies related to renewable energy, clean technologies, carbon pricing, and incentives that support the development and deployment of SOEL. Clear and stable regulatory frameworks, favorable tax incentives, grants, and subsidies can attract financial actors and	<p>The potential for financial returns on their investments.</p> <p>Policies such as subsidies, tax credits, feed-in tariffs, and grants can provide</p>



	<p>may have a high level of knowledge and understanding in the field. However, not all financial actors will have this level of expertise with some relying on industrial expert consultants for technical information.</p>	<p>Additionally, if they perceive the technology as mature, with reduced technical and commercial risks, they may be more willing to invest or provide financial support.</p>	<p>perceive it as risky and be hesitant to invest.</p> <p>If there is limited or uncertain demand for hydrogen produced through SOEL technologies, investors may hesitate to finance projects. Additionally, the lack of necessary infrastructure, such as hydrogen distribution networks or storage facilities, can deter financial actors due to concerns about market accessibility and project viability.</p>	<p>influence their investment decisions.</p> <p>Financial actors consider the collaborations and partnerships formed within the industry. JV, strategic alliances, and partnerships between technology developers, equipment manufacturers, and energy companies demonstrate industry commitment and collaboration.</p>	<p>financial incentives and reduce investment risks.</p>
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2.4. Key messages per audience

The main objective of the OUTFOX project, and therefore the main message in communication activities, is to increase awareness of the SOEL potential to become the winning technology for green hydrogen production.

The key messages will emphasize the following indicative points (not listed by order of priority):

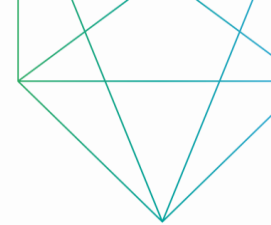
- KM1: optimal cell dimensions
- KM2: scaled-up stack and module design
- KM3: performance at high current densities
- KM4: 2000+ hour validation results
- KM5: design algorithms and methodologies
- KM6: techno-economics for multi-MW systems
- KM7: life cycle & environmental performance
- KM8: business models & market potential for SOEL
- KM9: training materials
- KM10: exploitation opportunities

As the project progresses and develops, the key messages for each audience will be updated with more specific information or information that is newly deemed to be relevant for a given audience.

2.4.1. Primary Audience Key Messages

Scientific Research Community	
Message 1	OUTFOX will produce and test cells that are significantly larger than anything currently on the market or that has been reported to date (up to 900 cm ²) while investigating their potential for high volume, high throughput manufacturing – a requirement for massive hydrogen production
Message 2	OUTFOX will highlight the possibility to operate large cells/stacks in repeat units successfully at high current density with low degradation rates over 2000+ hours with varying operating regimes (continuous, intermittent, etc.)
Message 3	Enhancing power, optimizing size, and extending cell/stack lifetimes will advance SOEL technology towards commercialization, while promoting efficient utilization of renewable energy, improving Power-to-X solutions, and reducing reliance on fossil fuels.

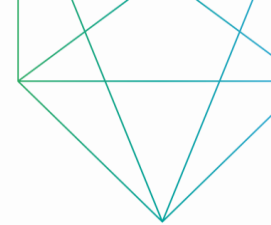
Industrial End Users	
Message 1	OUTFOX's technology has the potential to significantly increase the availability of clean energy for transportation and other industrial sectors, thereby reducing the need for carbon-intensive fuels. By adopting this innovative solution, carbon emissions can be reduced to levels well below the current standards, playing a crucial role in advancing the EU's path to neutrality by 2050. This technology not only facilitates a transition towards cleaner energy sources but also supports the production of sustainable alternatives, ultimately contributing to a greener and more sustainable future.
Message 2	The thinner cells to be scaled-up in OUTFOX will have a direct contribution to maintaining sustainability and circularity of supply chains through the reduction in the material needed to produce the cells, with a 20% improvement over the best-in-class cells.



Message 3	The technologies and learnings from OUTFOX are further expected to be applicable to solid oxide fuel cell systems, one of the fastest growing alternate backup power options, primarily due to their ability to generate electricity using a variety of fuels.
Message 4	OUTFOX will produce and test cells that are significantly larger than anything currently on the market or that has been reported to date (up to 900 cm ²) while investigating their potential for high volume, high throughput manufacturing – a requirement for massive hydrogen production
Message 5	OUTFOX will highlight the possibility to operate large cells/stacks in repeat units successfully at high current density with low degradation rates over 2000+ hours with varying operating regimes (continuous, intermittent, etc.)
Message 6	Enhancing power, optimizing size, and extending cell/stack lifetimes will advance SOEL technology towards commercialization, while promoting efficient utilization of renewable energy, improving Power-to-X solutions, and reducing reliance on fossil fuels.
Message 7	OUTFOX aims to prepare SOEL for industrial-scale systems of 100 MW, achieving a Levelized Cost of Hydrogen (LCOH) as low as €2.7/kg H ₂ , a significant reduction from the current cost of about €5/kg, while ensuring applicability to mass manufacturing lines.

Industrial Supply and Value Chains

Message 1	OUTFOX's technology has the potential to significantly increase the availability of clean energy for transportation and other industrial sectors, thereby reducing the need for carbon-intensive fuels. By adopting this innovative solution, carbon emissions can be reduced to levels well below the current standards, playing a crucial role in advancing the EU's path to neutrality by 2050 . This technology not only facilitates a transition towards cleaner energy sources but also supports the production of sustainable alternatives, ultimately contributing to a greener and more sustainable future.
Message 2	The range of cell sizes investigated in OUTFOX – 144, ≥300, and 900 cm ² – will open up the design space for SOCs, such that the determination of the optimal cell size for a given application is not limited by technological barriers.
Message 3	The thinner cells to be scaled-up in OUTFOX will have a direct contribution to maintaining sustainability and circularity of supply chains through the reduction in the material needed to produce the cells with a 20% improvement over the best-in-class cells.
Message 4	OUTFOX aims to directly address the circular economy by taking into consideration minerals, metals, and critical materials throughout supply chains. The project will benchmark the overall environmental impact of SOEL against other green hydrogen production technologies, offering valuable insights to advise policy and contribute to maximizing the benefits for society.

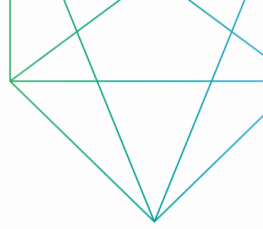


2.4.2. Secondary Audience Key Messages

General Public	
Message 1	OUTFOX's technology can provide an increase in the availability of clean energy for transport and other areas of industry and less carbon-intensive fuels needing to be produced in their place.
Message 2	OUTFOX's outcomes would support the transition away from fossil fuels.
Message 3	OUTFOX's technology has the potential to significantly increase the availability of clean energy for transportation and other industrial sectors, thereby reducing the need for carbon-intensive fuels. By adopting this innovative solution, carbon emissions can be reduced to levels well below the current standards, playing a crucial role in advancing the EU's path to neutrality by 2050 . This technology not only facilitates a transition towards cleaner energy sources but also supports the production of sustainable alternatives, ultimately contributing to a greener and more sustainable future.

Policymakers	
Message 1	OUTFOX's technology has the potential to significantly increase the availability of clean energy for transportation and other industrial sectors, thereby reducing the need for carbon-intensive fuels. By adopting this innovative solution, carbon emissions can be reduced to levels well below the current standards, playing a crucial role in advancing the EU's path to neutrality by 2050 . This technology not only facilitates a transition towards cleaner energy sources but also supports the production of sustainable alternatives, ultimately contributing to a greener and more sustainable future.
Message 2	Currently, the EU supplies 32% of the global SOEL market, worth €11 million. The combination of rapidly growing markets, existing EU supply chains, a supportive regulatory environment, and leading innovations creates the potential for European industry to dramatically profit from maintaining leadership in the SOEL market in terms of economic growth and job creation. An increase of only 5% market share by 2030 would result in an additional €345 million in market value and 1000's of direct and indirect jobs.
Message 3	For the EU, scaling up SOC technology will strengthen the position of the SOFC stack industries within Europe. Low-cost hydrogen from SOEL will thus improve the competitiveness of EU industry within the continent and overseas for both SOEL and SOFC markets.

Financial Actors	
Message 1	Currently, the EU supplies 32% of the global SOEL market, worth €11 million. The combination of rapidly growing markets, existing EU supply chains, a supportive regulatory environment, and leading innovations creates the potential for European industry to dramatically profit from maintaining leadership in the SOEL market in terms of economic growth and job creation. An increase of only 5% market share by 2030 would result in an additional €345 million in market value and 1000's of direct and indirect jobs.



Message 2	The global solid oxide fuel cell market size was valued at €255 million in 2020 and is expected to grow at a CAGR of 42.2% from 2021 to 2028, where the growing demand for unconventional energy sources is one of the key factors fostering market growth.
Message 3	Low-cost hydrogen from SOEL will improve the competitiveness of EU industry within the continent and overseas for both SOEL and SOFC markets

2.5. D&C channels

Several communication and dissemination tools and channels will be used, including a project website, newsletters, scientific papers, leaflets, social media presence, and participation in workshops/conferences.

Any dissemination activities and publications in the project, including the project website, will specify that the project has received funding from the Clean Hydrogen Joint Undertaking under the European Union’s Horizon Europe programme and UK Research and Innovation (UKRI) under the UK government’s Horizon Europe funding guarantee. The OUTFOX communication materials will include the CHJU logo, as well as the EU emblem with text stating it is co-funded by the European Union. All publications will reference the grant agreement number.

2.5.1. Description of tools and channels

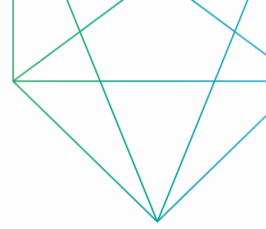
2.5.1.1. Project Branding Identity

A recognisable project identity has been developed to help increase visibility and awareness about the project. This includes creating a project logo and accompanying style guide. These will be consistently used by all project partners for the project website as well as other communication materials, such as flyers, banners, and videos; and templates such as PowerPoint, Word, posters and reports. More information regarding the project branding identity is presented in **Deliverable 6.1**.



Figure 1: OUTFOX Logo

The OUTFOX logo is presented in **Figure 1**. The logo colours are harmonised with the colours used on all project materials. The OUTFOX brand features a simple colour palette focusing on two key colours – green and cyan which fuse to turquoise centrally. Colour codes of the OUTFOX logo:



Core brand tones / OUTFOX Gradient	Pantone 355 C	Pantone 7473 C	Pantone 3025 C
	C 78 M 11 Y 76 K 1	C 78 M 11 Y 41 K 1	C 69 M 22 Y 4 K 0
	R 43 G 157 B 97	R 5 G 162 B 161	R 71 G 161 B 213
	HEX / Web #2b9d61	HEX / Web #05a2a1	HEX / Web #47a1d5
Signature	Pantone Cool Grey 6 C	C 0 M 0 Y 0 K 42	R 174 G 174 B 174
			#a6a6a6

Figure 2: OUTFOX colour palette

The project style guide informs partners of how they can use the recognisable project identity. The communication and dissemination templates ensure that the project branding is used consistently. Other graphic elements are available for project partners on the OUTFOX SharePoint.

2.5.1.2. Project Website

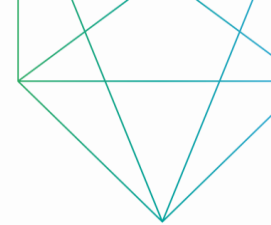
The OUTFOX website URL is: www.outfoxproject.com

The website is dedicated to the OUTFOX project and is which provides a user-friendly method for communicating general information about the project and partners, project development, and news items to all target audiences, including the scientific community, industrial end users and the general public.

All partners will contribute to the website by providing relevant project information in accessible language. All communication efforts by project partners, for example on social media, will be redirected to the OUTFOX website. Traffic to the website will be further increased by creating mutual links between the partners' websites and other relevant websites.

The project website contains:

- An overview of the project and of each of the work packages
- Details about the project partners
- Latest news about the project progress and results
- Electronic materials (e-newsletter, webinars, infographic, blog posts, articles)
- Events
- Social media links



The project website will be managed and maintained by LINQ for the duration of the project. Statistical data will be collected about the website visitors that subsequently will be analysed by log analyser software and included in the project reports. The website will be responsive, working on a variety of devices and screen sizes, such as smartphones.

The OUTFOX website will be launched in M6.

2.5.1.3. Newsletters

Electronic newsletters are to be sent out in months 9, 18, 27, 34, 41 and 48, and will include project updates, announcements, interviews, and other information related to OUTFOX. The newsletter is distributed to stakeholders and partner networks and posted on the project website. It is also posted on social media to enable sharing more easily by the project partners to their own networks.

2.5.1.4. Social Media

The project has a social media presence on Twitter, LinkedIn, and YouTube to ensure wider dissemination to different age groups and target audiences. Social media should be used as a tool to announce project developments, but most importantly to drive traffic to the project website, www.outfox-project.com, the main source of information for the project, and to build up the project mailing list.

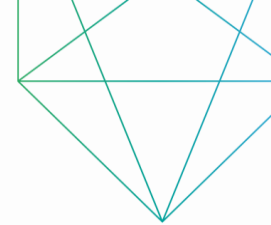
Twitter and LinkedIn accounts have been established and content related to OUTFOX will be posted regularly to increase outreach. Project video material is uploaded to YouTube before it is embedded on the project website.

OUTFOX social media accounts:

- Twitter - [@OUTFOX_EU](https://twitter.com/OUTFOX_EU)
- LinkedIn - www.linkedin.com/company/outfox-eu
- YouTube – [OUTFOX project](https://www.youtube.com/OUTFOXproject)

It is important to provide interesting content that sparks the curiosity of readers so that they not only follow our social media accounts, but also visit the project website. At the start of the project, the social media accounts will primarily share posts from other accounts working on similar topics, to build a community of interest. This will provide our current followers with interesting content, attract new followers and create good will with other accounts, increasing the likelihood that they will share OUTFOX posts when project results are available.

It is essential to harness the collective social media presence of the consortium to jump-start the OUTFOX social media accounts. Most project partners already have an online presence, which is multiplied when you consider all the social media accounts of their employees and professional networks. Encouraging them to like and share OUTFOX posts will increase the number of people that are reached, creating a positive outcome for the project.



On social media, OUTFOX acknowledges the funding organisations Clean Hydrogen Joint Undertaking, Horizon Europe Funding for Research and Innovation and UKRI by tagging posts with @CleanHydrogenEU, @HorizonEU and @UKRI_News. The social media accounts will be managed by LINQ with support from the consortium partners. A comprehensive list of relevant hashtags, tags for social media posts and accounts to follow can be found in [Annex I](#).

2.5.1.5. Printed Material

A project brochure and poster is to be developed in accordance with the project's style guide for distribution to partner networks and at conferences, exhibitions and other events. The brochure and poster will contain general information about the research activities, participants, and expected results. An additional leaflet will be prepared later in the project to disseminate key results. The printed material will be written in accessible language to reach the widest possible audience. These promotional materials are to be distributed by all partners at events and to interested partners, customers, investors, etc.

Project partners can request translated versions of the poster and brochure in their own language if they feel this is more effective for their own use of the materials. LINQ then provide the translated documents when the partner has given their approval of the translated text.

2.5.1.6. Scientific Journals

Scientific excellence and technological advancements developed within the OUTFOX project will form the basis for scientific publications to be disseminated to the scientific community, policymakers and industry. Before the scientific partners are able to publish their findings, potential IP must be clarified with the industrial partners in accordance with the project Consortium Agreement.

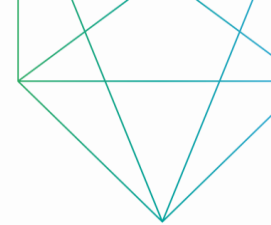
The scientific articles will be published in peer-reviewed, high impact journals. The articles will be open access to other researchers, either by self-archiving online or via open access publishing on the journal website. Examples of journals that could publish the results of OUTFOX include International Journal of Energy Research and Journal of Applied Electrochemistry

A comprehensive list of scientific journals can be found in [Annex IV](#).

2.5.1.7. Participation at Conferences, Workshops and Events

Project partners will attend sector related events, trade shows, conferences, and workshops to meet target audiences and to raise awareness about the project objectives and results. The OUTFOX partners will provide information through posters, presentations and distribution of flyers. These events provide access to target audiences at local, national, European and international levels.

A comprehensive list of events, trade fairs and conferences that may be interested in the results of the project and where project partners may undertake dissemination activities can be found in [Annex III](#). This list exemplifies the broad range of topics that have been brought together in this EU project.



2.5.1.8. Content Management System

To facilitate efficient internal communication among partners, the Project Coordinator, TNO, established a SharePoint account dedicated to OUTFOX. This user-friendly, collaborative platform is a document management system that facilitates the efficient sharing and storage of project documentation and data exchange. Consortium partners have access to a password-protected site which contains the proposal, Consortium Agreement, Grant Agreement, budget, deliverables, periodic reports, meeting and workshop reports, communication and dissemination templates, and other relevant documents. All dissemination and communication content will also be saved to the SharePoint site.

2.5.2. Channels per audience

There is a variety of channels to convey the D&C plan’s key messages to different audiences and the decision of choosing one instead of the other depends on the message itself, the audience and the desired outcome of the activity.

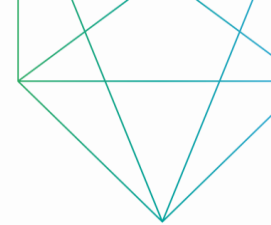
The OUTFOX consortium primarily focuses on targeted communication activities to engage with the project’s primary audience, aiming to accelerate progress towards the project’s goals. However, the consortium also acknowledges the importance of considering the secondary audience in their communication efforts.

The project partners are all involved in the communication and dissemination activities and act as multipliers. It is of critical importance that the input and contributions are interactive between the consortium and LINQ.

2.5.2.1. Primary Audiences

Scientific Research Community	
Channel 1	Conferences, thematic workshops, symposia gathering primary and secondary target audiences.
Channel 2	Reports on project’s results
Channel 3	Scientific publications
Channel 4	Website, newsletter and social media.
Channel 5	Network of project partners and External Advisory Board.

Industrial End Users	
Channel 1	Conferences, thematic workshops, symposia gathering primary and secondary target audiences.
Channel 2	Reports on project’s results
Channel 3	Scientific publications
Channel 4	Website, newsletter and social media.
Channel 5	Network of project partners and External Advisory Board.
Channel 6	Visits to project premises



Industrial Supply and Value Chain	
Channel 1	Conferences, thematic workshops, symposia gathering primary and secondary target audiences.
Channel 2	Report on project's results
Channel 3	Scientific publications
Channel 4	Website, newsletter and social media.
Channel 5	Network of project partners and External Advisory Board.
Channel 6	Visit to project premises.

2.5.2.2. **Secondary Audiences**

General Public	
Channel 1	Website and social media.

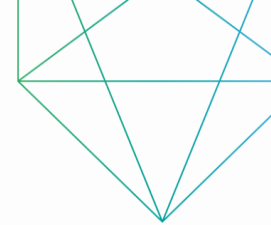
Policymakers	
Channel 1	Face-to-face meetings with key EU and national policymakers and public authorities.
Channel 2	Conferences, thematic workshops, symposia gathering primary and secondary target audiences.
Channel 3	Reports on project's results
Channel 4	Press & media
Channel 5	Website, newsletter and social media.

Financial Actors	
Channel 1	Reports on project's results
Channel 2	Website, newsletter and social media.

2.6. Role of consortium members

Every effort will be made to publicize the work of the consortium via social media, publications, conference presentations, trade fairs and workshops, as well as through the European Commission and industry bodies. Results of the project will be disseminated via newsletters, reports, scientific papers, and technical articles. All public communication, and in particular scientific publications, will be made open access to facilitate scientific exchange.

All project partners are expected to support dissemination, to ensure that stakeholders will be engaged throughout the lifetime of the project, to help evolve the key messages, and to identify key results to be broadly disseminated.



3. Dissemination & communication plan

3.1. Implementation and evaluation of results

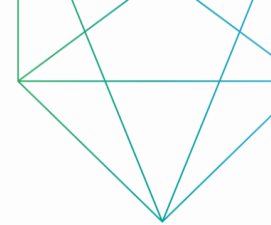
The implementation plan describes the communication and dissemination activities as stated in WP6 that will be implemented throughout the project by LINQ and the entire consortium. The plan defines the approach to provide the primary and secondary audiences identified in the D&C strategy above with science-based evidence and relevant information from the OUTFOX project. The development of a detailed D&C plan is fundamental to ensure that effective communication activities can support the consortium in engaging the target audiences and impacting the development and future deployment of SOEL technology.

The OUTFOX implementation plan looks at:

- Timeframe of the activity
- Links to the OUTFOX project’s priorities and objectives
- A detailed description of the activity and its objectives
- The expected results and impact of the activity
- Key Performance Indicators (KPIs) to understand whether the objectives of the activity have been achieved

The activities described in the implementation plan include all deliverables D6.1 - 6.9 as stated in WP6.

Activity related to Deliverable 6.1 Branding Toolkit	
Name of Activity	Timeframe (mm/yy – mm/yy)
Project Branding Identity	02/2023 – 04/2023
Target Audience	
<ul style="list-style-type: none"> • Scientific Research Community • Industrial End Users • Industrial Supply and Value Chains • Financial Actors • Policymakers • General Public 	
Associated Grant Agreement Objective for WP6	
Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policy makers and citizen groups	
Description and Objectives	
Different versions of the OUTFOX project’s logos and templates for reports and presentations are designed to support and give a visual identity to the OUTFOX process by differentiating it from similar projects and conveying its core objectives. A final version is selected by the consortium and distributed to all.	
Expected Outputs and Results/Impact	



- The branding toolkit, which will include the project logo, a graphic chart and set of templates (PowerPoint and reports).
- Different versions of the project's logos and templates for reports and presentations will be developed and sent to the consortium.
- Final versions of the templates will be distributed to all and available on dedicated project SharePoint.

Evaluation of effectiveness (Key Performance Indicators)

The consortium approves the project's logo and templates by M4 and uses them broadly.

Activity related to Deliverable 6.1 Branding Toolkit

Name of Activity	Timeframe (mm/yy – mm/yy)
General marketing materials	02/2023 – 07/2023

Target Audience

- Scientific Research Community
- Industrial End Users
- Industrial Supply and Value Chains
- Financial Actors
- Policymakers
- General Public

Associated Grant Agreement Objective for WP6

Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policy makers and citizen groups

Description and Objectives

General marketing materials will be set up by M6 and will include a general project poster and project flyer utilising the established brand identity of the project. The first version of the materials will be produced at M6 and updated at regular intervals.

Expected Outputs and Results/Impact

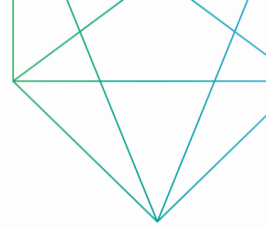
- A general project poster and project flyer will be produced for distribution at events.
- The poster/flyer will be updated as the project progresses.
- All documents will be made available on the dedicated project SharePoint.

Evaluation of effectiveness (Key Performance Indicators)

The consortium approves the poster/flyer by M6 and uses them at events.

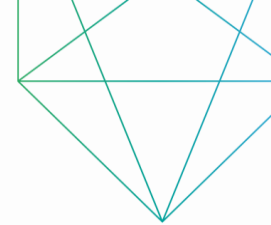
Activity related to Deliverable 6.2 Online Presence

Name of Activity	Timeframe (mm/yy – mm/yy)
Website design, management and development	04/2023 – 01/2027



Target Audience
<ul style="list-style-type: none"> • Scientific Research Community • Industrial End Users • Industrial Supply and Value Chains • Financial Actors • Policymakers • General Public
Associated Grant Agreement Objective for WP6
Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policy makers and citizen groups
Description and Objectives
A dedicated website containing relevant information about OUTFOX's goals, scope, focus, and work progress, as well as consortium members and relevant news or other initiatives, featuring infographics and videos.
Expected Outputs and Results/Impact
<ul style="list-style-type: none"> • A user-friendly project website is live by M6. • Publications on the website of news about the project, its development, and any other major updates relevant to clean hydrogen production and SOEL technologies. • The OUTFOX project's homepage will be implemented with facts, figures, and infographics from the project's partners and relevant stakeholders. • Videos and public deliverables will be uploaded under a Resources page.
Evaluation of effectiveness (Key Performance Indicators)
At least one update per month. From 10 hits/month in year 1 to 40 hits/month in year 4.

Activity related to Deliverable 6.3 Newsletters	
Name of Activity	Timeframe (mm/yy – mm/yy)
OUTFOX Newsletters	09/2023 - 01/2027
Target Audience	
<ul style="list-style-type: none"> • Scientific Research Community • Industrial End Users • Industrial Supply and Value Chains • Policymakers 	
Associated Grant Agreement Objective for WP6	
Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policy makers and citizen groups.	
Description and Objectives	
Regular newsletters will be sent out to target recipients in order to create a direct channel of communication with the audience interested in the developments and outcomes of the OUTFOX	



project. This will include project updates and milestones achieved, interviews with members of the consortium, relevant publications from the consortium and news of upcoming events/seminars.

Expected Outputs and Results/Impact

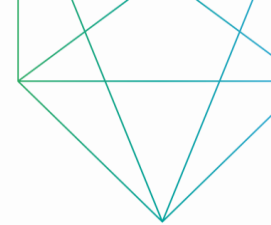
- A newsletter will be released at regular intervals throughout the project (M9, 18, 27, 34, 41, 48).
- These will be disseminated to those who have subscribed to the mailing list as well as on social media channels (LinkedIn, Twitter) and uploaded to the project website.
- Members of the consortium will be encouraged to share with relevant parties.

Evaluation of effectiveness (Key Performance Indicators)

- Regular newsletters are to be released throughout the project.
- Analytics such as open rate, click rate etc. will be monitored for each newsletter.
- The number of subscribers to the newsletter should increase steadily throughout the project.

Activity related to Deliverables 6.4 D&C Content Plan and 6.8 Final D&C Plan

Name of Activity	Timeframe (mm/yy – mm/yy)
Development of the D&C Content Plan	04/2023 – 01/2027
Target Audience	
<ul style="list-style-type: none"> • Scientific Research Community • Industrial End Users • Industrial Supply and Value Chains • Financial Actors • Policymakers • General Public 	
Associated Grant Agreement Objective for WP6	
Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policymakers and citizen groups	
Description and Objectives	
Report on content to be disseminated and communicated with an evaluation of completed activities. The D&C content plan will be updated as necessary. The Clean Hydrogen JU may require the submission of an updated D&C content plan on an annual basis.	
Expected Outputs and Results/Impact	
<ul style="list-style-type: none"> • Developing a D&C content plan to set the direction so that all communication activities work in harmony to best disseminate the project's results. • A final D&C plan giving an overview of completed communication and dissemination activities will be presented in M48 (project conclusion) 	
Evaluation of effectiveness (Key Performance Indicators)	
<ul style="list-style-type: none"> • A D&C content plan is developed by LINQ with the support of the consortium and approved by the consortium by M6 of the project. 	



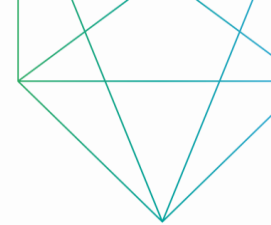
- A final D&C plan (deliverable 6.8) giving an overview of completed communication and dissemination activities will be presented in M48 (project conclusion)

Activity related to Deliverable 6.4 D&C Content Plan and 6.8 Final D&C Plan

Name of Activity	Timeframe (mm/yy – mm/yy)
Scientific Publications	07/2023– 01/2027
Target Audience	
<ul style="list-style-type: none"> • Scientific Research Community • Industrial Supply and Value Chains • Industrial End Users 	
Associated Grant Agreement Objective for WP6	
Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policymakers and citizen groups	
Description and Objectives	
Disseminate and publish the OUTFOX results in peer-reviewed international scientific journals. The open-access principles (combination of gold and green) will be followed for all scientific publications. Any pertinent data that is not IP-protected will be deposited as FAIR data in open access repositories.	
Expected Outputs and Results/Impact	
<ul style="list-style-type: none"> • All OUTFOX results will be disseminated among the most relevant audience and published in the most relevant journals. • Ensuring the promotion of these articles to a broad audience through website, social media channels and project newsletters. 	
Evaluation of effectiveness (Key Performance Indicators)	
<ul style="list-style-type: none"> • Minimum 10 peer-reviewed scientific publications in total over the duration of the project. • Minimum 10 citations per paper 12 months after publication. 	

Activity related to Deliverable 6.4 D&C Content Plan and 6.8 Final D&C Plan

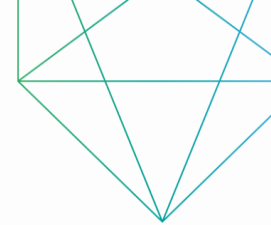
Name of Activity	Timeframe (mm/yy – mm/yy)
Online media publications	07/2023– 01/2027
Target Audience	
<ul style="list-style-type: none"> • Scientific Research Community • Industrial End Users • Industrial Supply and Value Chain • Financial Actors 	
Associated Grant Agreement Objective for WP6	



Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policymakers and citizen groups
Description and Objectives
Share results through range of online media platforms with both general and targeted content.
Expected Outputs and Results/Impact
<ul style="list-style-type: none"> All OUTFOX results will be disseminated among the most relevant audience and published in the most relevant journals. Ensuring the promotion of these articles to a broad audience
Evaluation of effectiveness (Key Performance Indicators)
At least 3 result-focussed online publications (articles, videos etc.) over the duration of the project.

Activity related to Deliverable 6.4 D&C Content Plan and 6.8 Final D&C Plan	
Name of Activity	Timeframe (mm/yy – mm/yy)
Popular science and press articles	07/2023– 01/2027
Target Audience	
<ul style="list-style-type: none"> Scientific Research Community Industrial End Users Industrial Supply and Value Chain Financial Actors 	
Associated Grant Agreement Objective for WP6	
Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policymakers and citizen groups	
Description and Objectives	
Share results through range of online media platforms with both general and targeted content.	
Expected Outputs and Results/Impact	
<ul style="list-style-type: none"> OUTFOX results will be communicated to a broad audience through popular science articles and/or press releases. Promotion of these outputs will be communicated through OUTFOX website and social media channels. 	
Evaluation of effectiveness (Key Performance Indicators)	
At least 3 popular science articles or press releases.	

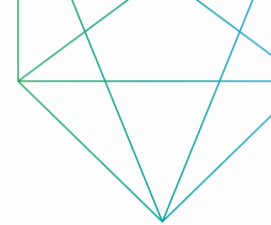
Activity related to Deliverable 6.4 D&C Content Plan and 6.8 Final D&C Plan	
Name of Activity	Timeframe (mm/yy – mm/yy)
Attendance at events	07/2023– 01/2027
Target Audience	
<ul style="list-style-type: none"> Scientific Research Community Industrial End Users Industrial Supply and Value Chain 	
Associated Grant Agreement Objective for WP6	



Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policymakers and citizen groups.
Description and Objectives
Attendance and presentations at industry body events, write articles for newsletters and promotion of learning materials. A strategy will be agreed together with the consortium partners in the next face-to-face consortium meeting to cover most relevant & important events to the OUTFOX project.
Expected Outputs and Results/Impact
<ul style="list-style-type: none"> Attendance at events that are important and relevant to the OUTFOX project, presenting project results including scientific conferences, exhibitions or trade shows.
Evaluation of effectiveness (Key Performance Indicators)
<ul style="list-style-type: none"> Presentations in at least 6 events in total over the duration of the project.

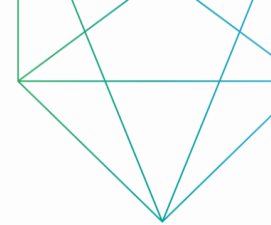
Activity related to Deliverable 6.4 D&C Content Plan and 6.8 Final D&C Plan	
Name of Activity	Timeframe (mm/yy – mm/yy)
Promotion to professional bodies	07/2023– 01/2027
Target Audience	
<ul style="list-style-type: none"> Scientific Research Community Industrial End Users Industrial Supply and Value Chain 	
Associated Grant Agreement Objective for WP6	
Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policymakers and citizen groups.	
Description and Objectives	
Attendance and presentations at industry body events, write articles for newsletters and promotion of learning materials. A strategy will be agreed together with the consortium partners in the next face-to-face consortium meeting to cover most relevant & important events to the OUTFOX project.	
Expected Outputs and Results/Impact	
<ul style="list-style-type: none"> Attendance at industry specific events or a workshop for an industry association that are important and relevant to the OUTFOX project. Writing articles for industry association newsletters. 	
Evaluation of effectiveness (Key Performance Indicators)	
<ul style="list-style-type: none"> Presentation to at least 4 events. 	

Activity related to Deliverable 6.4 D&C Content Plan and 6.8 Final D&C Plan	
Name of Activity	Timeframe (mm/yy – mm/yy)
Linking with other EU and regional initiatives	07/2023– 01/2027
Target Audience	
<ul style="list-style-type: none"> Scientific Research Community Industrial End Users Industrial Supply and Value Chain 	



<ul style="list-style-type: none"> • Policymakers
Associated Grant Agreement Objective for WP6
Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policymakers and citizen groups
Description and Objectives
Establishment of contact with other related projects, setup of cross promotional materials, co-organization of events.
Expected Outputs and Results/Impact
Organization and participation in other EU regional initiatives.
Evaluation of effectiveness (Key Performance Indicators)
<ul style="list-style-type: none"> • At least 2 joint events with other projects organised and completed • Presence in at least 6 events organised by other projects

Activity related to Deliverable 6.5. First Exploitation Plan and Deliverable 6.9 Final Exploitation Plan	
Name of Activity	Timeframe (mm/yy – mm/yy)
Development of the exploitation plan	04/2023 – 01/2027
Target Audience	
<ul style="list-style-type: none"> • Consortium 	
Associated Grant Agreement Objective for WP6	
Implement efficient strategies and instruments to facilitate and ensure identification, adequate protection, and commercial exploitation and business development of the foreground knowledge generated during OUTFOX	
Description and Objectives	
First report on expected exploitable results and plans for IP protection or other exploitation. The exploitation plan should be updated as necessary. The Clean Hydrogen JU may require the submission of an updated exploitation plan on an annual basis.	
Expected Outputs and Results/Impact	
<ul style="list-style-type: none"> • A general exploitation strategy of the project is released and submitted. • Analysis and reporting on exploitation are updated annually. • A final exploitation plan will be produced at the end of the project in M48 (deliverable 6.9). 	
Evaluation of effectiveness (Key Performance Indicators)	
<ul style="list-style-type: none"> • An exploitation plan is developed by LINQ with the support of the consortium and approved by consortium by M6 of the project. • Updates to the exploitation plan will be made in M18 and M36 of the project. The updates will include the following sections: i) exploitable knowledge and its use, where partners will identify all the exploitable results arising from the project and their intentions for use; ii) key performance indicators; iii) exploitation of foreground IP, where partners will establish a timeline for further development. 	



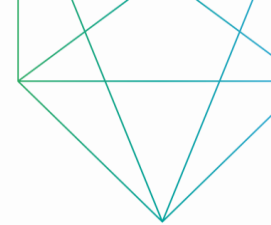
- A final exploitation plan will be produced at the end of the project in M48.

Activity related to Deliverable 6.6 Data Management Plan

Name of Activity	Timeframe (mm/yy – mm/yy)
Development of the data management plan	02/2023-07/2023
Target Audience	
<ul style="list-style-type: none"> • Consortium 	
Associated Grant Agreement Objective for WP6	
Ensure efficient management of OUTFOX’s knowledge, including IPR and data management.	
Description and Objectives	
<p>Within the first 6 months of the project, a Data Management Plan will be established to identify what non-commercial research data can be freely distributed through the project website and other channels. In addition, consideration will be given to making research data as open access as possible. Where appropriate, open access peer-reviewed publications will be made available with a combination of gold and green open access. The DMP will be continuously reviewed and updated at least annually during the General Assembly meetings</p>	
Expected Outputs and Results/Impact	
Developing a data management plan for the project in partnership with the full consortium.	
Evaluation of effectiveness (Key Performance Indicators)	
<ul style="list-style-type: none"> • A data management plan is developed by LINQ with the support of the consortium and approved by consortium by M6 of the project. • Reviewed and updated at least annually during General Assembly Meetings. 	

Activity related to Deliverable 6.7. Final Stakeholder Workshop

Name of Activity	Timeframe (mm/yy – mm/yy)
Final Stakeholder Workshop	09/2026 – 11/2026
Target Audience	
<ul style="list-style-type: none"> • Scientific Research Community • Industrial End Users • Industrial Supply and Value Chain • Financial Actors • Policymakers 	
Associated Grant Agreement Objective for WP6	
Develop and implement efficient strategies and instruments for wide communication, education, and dissemination of the OUTFOX outputs to relevant stakeholders and targeted groups, including the scientific community, industry, policy makers and citizen groups.	
Description and Objectives	
A final workshop explaining the progress and key outcomes will be organized towards the end of the project and targeted to involve stakeholders that could be involved in a follow-up demonstration	



project. The location will be determined closer to the workshop data and will be as strategic as possible to, e.g., include a tour of facilities being used in the project.

Expected Outputs and Results/Impact

- A final conference will be organised along with the consortium to present all aspects of the most relevant results of the OUTFOX project to a variety of experts, stakeholders and policymakers.
- A final conference working group will be established. The working group will include the WP6 leader (LINQ), the project leader (TNO), and representatives from the project partner hosting the event on its premises. The working group will meet regularly online ahead of the final conference to summarise the current state of the art.
- Linq is responsible for the practical organisation of the event, meeting agenda, speaking invitations, meeting invitation, promotional materials, and press and media activities. The conference invitation will be disseminated among project partners, stakeholders and EU and national policymakers 6 weeks before event.
- More details on the final event will be included in the update of the C&D plan at M18.

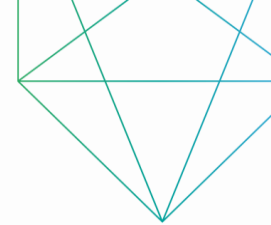
Evaluation of effectiveness (Key Performance Indicators)

Minimum 50 attendees at the final stakeholder event.

3.2. Implementation plan timeline

The implementation plan timeline aims to offer LINQ and the consortium a chronological overview of the described communications and dissemination activities to be implemented throughout the project.

Activity	Timeframe	Deliverable
Project Branding Identity	02/2023 – 04/2023	6.1
General marketing materials	02/2023 - 07/2023	6.1
Website design, management and development	04/2023 – 01/2027	6.2
Social media management and development	04/2023 – 01/2027	6.2
Development of the D&C content plan	04/2023 – 01/2027	6.4
Development of the exploitation plan	04/2023 – 01/2027	6.5
Data Management Plan	04/2023 - 01/2027	6.6
Scientific Publications	07/2023-01/2027	6.4
Online media publications	07/2023-01/2027	6.4
Popular science and press articles	07/2023 - 01/2027	6.4
Attendance at events	07/2023 - 01/2027	6.4
Promotion to professional bodies	07/2023 - 01/2027	6.4
Linking with other EU and regional initiatives	07/2023 - 01/2027	6.4
OUTFOX Newsletters	09/2023 - 01/2027	6.3
Stakeholder Workshop	09/2026 – 11/2026	6.7



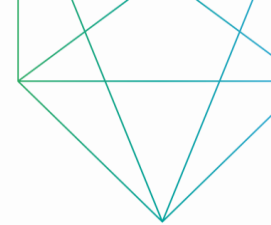
3.3. Tasks and responsibilities

LINQ is the designated work package lead for WP6 Dissemination, Exploitation, and Outreach, overseeing each task within the work package. Their role involves collaborating with partners to create content and ensuring that KPIs are met. They will also assist in identifying project results that should be presented, published, or disseminated to the appropriate channels.

In the dissemination efforts, partners play a vital role. They contribute by authoring scientific articles and preparing presentations for conferences and events. It is their responsibility to inform LINQ about any communication and dissemination activities they engage in and provide the necessary metrics for evaluation.

LINQ can offer support in the design of presentations and posters, providing feedback and assistance as needed. They will maintain statistics on project communication and dissemination activities, enabling the evaluation of their effectiveness. If required, LINQ can propose changes to the consortium's communication strategy based on the evaluation results.

It is crucial for all consortium partners to actively engage in project communication. This collective effort ensures that all partners are involved in each communication task, maximizing the project's outreach and impact.



Annex I – Relevant hashtags and tags for social posts

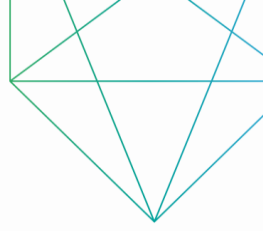
Project Hashtags	Twitter Tags	Accounts to follow on LinkedIn and Twitter
#greenhydrogen #hydrogen #cleanhydrogen #sustainability #SOEL #SOE #Scale-up #SolidOxideElectrolyzer #Power-2-Hydrogen #electrochemistry #electrolysis #EU #renewables #energytransition #cleanenergy	@CleanHydrogenEU @TNO_Research @VTTFinland @ConvionFuelCell @ElcogenEU @polimi @LinqConsulting @VoltaChem_ @H2Europe	Clean Hydrogen Partnership LinkedIn Hydrogen Europe LinkedIn Hydrogen Europe Research LinkedIn VoltaChem LinkedIn VoltaChem (@VoltaChem_) / Twitter VTT LinkedIn Hydrogen Council European Electrolyser and Fuel Cell Forum The Electrochemical Society The BotH2nia network IREC Hydrogen Insight H2 View H2 Bulletin

Annex II – Relevant networks and associations

- European Energy Research Alliance
- European Materials Research Society
- EuroScience
- Hydrogen Europe
- European Materials Characterization Council

Annex III – Events, conferences & trade fairs

- Hydrogen Technology Expo Europe 2023



- The Electrochemical Society — 244th ECS Meeting October 2023
- The Electrochemical Society — 245th ECS Meeting 2024
- European SOFC & SOE Forum (EFCF 2024)
- Connecting Green Hydrogen Europe 2024
- International Society of Electrochemistry 37th Meeting - Electrochemical Energy for a Greener and more Sustainable Future Society 2024
- The Electrochemical Society — PRiME 2024
- 52nd Gordon Research Conference (GRC) on Electrochemistry 2024
- Hydrogen _ Fuel Cells EUROPE – Hannover Messe 2024
- SOFC-XIX — 19th International Symposium on Solid Oxide Fuel Cells 2025

Annex IV – Relevant scientific journals

- International Journal of Hydrogen Energy
- Journal of Electrochemical Society
- Journal of Power Sources
- Electrochimica Acta
- Solid State Ionics
- International Journal of Energy Research
- Electrochemical Society (ECS) Transactions
- Journal of Materials Chemistry A
- ACS Energy Letters
- RSC Energy & Environmental Science
- Journal of Applied Electrochemistry
- Journal of Electroanalytical Chemistry
- Electrochemical Science Advances
- ECS Journal of Solid State Science and Technology

Annex V – Trade magazines

- The Hydrogen Europe Quarterly
- Electrochemical Society Interface

