



Dissemination Report

D6.6a

RecHycle

November 2023 (M18)



Centre National de la Recherche Scientifique



Document Information

Project Title	Recycling (renewable) hydrogen for climate neutrality		
Acronym	Rechycle		
Grant agreement no.	101058692		
Topic ID	HORIZON-CL4-2021-TWIN-TRANSITION-01		
EU Contribution	€ 6,226,743.00		
Coordinating entity	ArcelorMittal Belgium		
Start date	01 Jun 2022	End date	31 May 2026
Deliverable	D6.6a Dissemination & Communication Report	WP	6
Deliverable type	R	Dissemination level	PU
Lead beneficiary	AMMR		
Authors	Elena Azor Uroz, Açelya Seçer		
Contributions from	All partners		
Approved	All partners		

Disclaimer: This document and its content reflect only the author's view; therefore, the European Commission is not responsible for any use that may be made of the information it contains.



Change Records

Version	Date	Changes
Version 1	30 Nov 2023	
Version 2		

Project Summary

RecHycle's goal is to implement a gas hub capable of mixing metallurgical gases produced on-site with or without external (green) hydrogen sources. This will ultimately be fed into the Blast Furnace and a future DRI furnace to produce green steel sustainably. The project will demonstrate a cost-efficient solution to decrease carbon emissions by initiating a new industrial symbiosis between and within the steel and chemical industries and (renewable) energy sources (e.g. wind or solar to obtain green electricity or hydrogen). The project will contribute to the shift towards a circular economy where waste products are valorised to the maximum of their potential. Furthermore, the project will serve as a stepping stone towards further developing synergies between companies within the North Sea Port industrial area, thus creating new opportunities for innovation and economic activities. Challenges to be addressed are the dynamic optimisation of gas mixtures and flows, minimising risks of hydrogen on material embrittlement, ceramic feed-inlet (Tuyeres) within the furnaces and the quality of the produced steel. RecHycle will be executed through a consortium of 6 partners from 4 different countries, including the world-leading steel manufacturer and 5 research partners specialised in hydrogen-based studies.

Acknowledgement: RecHycle - Recycling renewable hydrogen for climate neutrality (grant agreement number: 101058692) is funded under the call HORIZON-CL4-2021-TWIN-TRANSITION-01-22 within Horizon Europe, the European Union's framework programme for research and innovation.

RecHycle Consortium

The following table contains information about the consortium members.

Name	Country	Contact
<p>ArcelorMittal Belgium</p> 	Belgium	<p>Project Coordinator:</p> <p>Joke Bauwens Joke.bauwens@arcelormittal.com</p>
<p>Joanneum Research Forschungsgesellschaft</p> 	Austria	<p>Participant:</p> <p>Vojislav Petrovic vojislav.petrovic@joanneum.at</p>
<p>Università Politecnica delle Marche</p> 	Italy	<p>Participant:</p> <p>Filippo E. Ciarapica f.e.ciarapica@univpm.it</p>
<p>ArcelorMittal Maizières Research</p> 	France	<p>Participant:</p> <p>Rodolfo Santos Ferreira rodolfopaulo.santosferreira@arcelormittal.com</p>
<p>Centre National de la Recherche Scientifique (CNRS)</p> 	France	<p>Participant:</p> <p>Gerard Vignoles vinhola@lcts.u-bordeaux.fr</p>
<p>IRT Saint Exupéry</p> 	France	<p>Participant:</p> <p>Laurent Ferres laurent.ferres@irt-saintexupery.com</p>

1. Executive Summary

This document serves as Deliverable D6.6 - Dissemination and Communication Report for the RecHycle Project, dedicated to advancing sustainable steel production through the implementation of a state-of-the-art gas hub. The project's primary objective is to create a versatile gas mixture, incorporating metallurgical gases generated on-site alongside external (green) hydrogen sources. The blended gases will fuel both the Blast Furnace and a prospective DRI furnace, laying the foundation to produce green steel in an environmentally responsible manner.

RecHycle's overarching goal is to showcase a cost-efficient solution that significantly reduces carbon emissions. The project aligns with the global drive towards sustainable practices through fostering industrial symbiosis among the steel and chemical industries and leveraging renewable energy sources, such as wind or solar for green electricity or hydrogen. A key innovation of RecHycle is the establishment of a circular economy paradigm, maximizing the valorisation of waste products. By addressing challenges such as dynamic gas mixture optimization, mitigating hydrogen-induced material embrittlement risks, and incorporating ceramic feed-inlets (inside the tuyeres) within furnaces, the project paves the way for high-quality green steel production.

The execution of RecHycle is entrusted to a consortium of six partners from four different countries. This consortium comprises a world-leading steel manufacturer and five research partners specializing in hydrogen-based studies. The collaboration reflects a commitment to international cooperation and the pooling of diverse expertise to overcome the multifaceted challenges in sustainable steel production.

This Dissemination and Communication (D&C) Report, covering the initial eighteen months of the RecHycle Project, outlines the proactive communication and dissemination activities undertaken in alignment with Deliverable D6.1 - Dissemination & Communication Plan. This report provides insights into the strategic dissemination efforts undertaken to engage stakeholders, share project outcomes, and pave the way for further innovations.

Table of Contents

1. Executive Summary	6
2. Introduction.....	8
2.1 Dissemination Objectives	8
3. Dissemination Activities.....	10
3.1 Dissemination and Communication Plan (DCP)	10
3.2 Project Logo and Website	10
3.3 VR Video Communication for TV Media Distribution	11
3.4 Conferences	12
3.5 Workshops & Seminars.....	13
3.6 Scientific Journals and Academic Publications.....	15
3.7 B2B Meetings	15
3.8 B2G Meetings.....	16
a. Stakeholder Events	17
3.9 Other Events.....	19
4. Impact of Communication Activities	21

List of Tables

Table 1. WP6 Deliverable List.....	10
<i>Table 2. Blog Post Calendar</i>	<i>11</i>
Table 3: Conference List	12
Table 4. Workshop & Seminar List.....	13
Table 5. Meetings between AMB and potential partners on hydrogen supply	15
Table 6. Hydrogen Stakeholder Events	17
Table 7.Taskforces that have taken place involving members working on the Rechycle project.....	20
Table 8. Communication KPIs.....	21
Table 9. Communication Management Information Systems (MIS)	22

List of Figures

Figure 1. Belgian Hydrogen Council Board members	20
--	----

2. Introduction

The establishment of a dissemination and communication strategy, along with its corresponding procedures, is part of the Work Package 6 (WP6) “Valorisation, Exploitation, Dissemination & Joint Activities”. WP6 aims to:

- Set up targeted communication and dissemination products: Develop a diverse array of communication and dissemination products and activities tailored to address specific target audiences (stakeholders).
- Interact with relevant stakeholders: Foster meaningful interactions with pertinent stakeholders to facilitate the exchange of knowledge and information.
- Build synergies: Establish synergies with crucial project environments to enhance collaboration and information exchange.
- Prepare business plan and exploitation strategy: Develop a robust business plan and exploitation strategy to commercialize project results and stimulate large-scale replication in other geographical locations.

Showcasing the project results and infrastructure is crucial, especially during the demonstration at the ArcelorMittal Ghent site. This milestone will bring together various actors in the value chain, fostering collaboration and marking the first step towards an open-access cross-border hydrogen transport backbone between Belgium and the Netherlands. The potential for multiple alternative routes in the existing chemical and steelmaking cluster underscores the significance of strengthening industrial networks and communication channels among RecHycle’ s industrial partners.

In conclusion, the RecHycle Dissemination and Communication (D&C) Report evaluates the Dissemination & Communication Plan created during month 10 of the project. This deliverable establishes a strategic framework to ensure the effective flow of information, foster collaboration, and achieve the project's ambitious goals.

2.1 Dissemination Objectives

The main objectives of the dissemination strategy of RecHycle are:

R – Reach stakeholders that can best make use of the results and knowledge produced.

E – Engage with various dissemination target audiences through the appropriate channels and receive feedback to complement learnings.

C – Consolidate results into clear, concise, and user-tailored material for dissemination purposes

H – Harness lessons learned and transfer the knowledge obtained to replicate the project outcomes in other geographies and industries.

Y – Yield maximum impact of research and findings.

C – Continue efforts to ensure that outputs will be sustained after the end of the project.

L – Leverage existing partners' links and networks to extend the spread of project results.

E – Evaluate and continuously monitor the effect of dissemination activities.

3. Dissemination Activities

Table 1 enlists the WP6 deliverables and their status.

Table 1. WP6 Deliverable List

No.	Deliverable	Month due	Lead beneficiary	Status
D6.1	DCP	9	AMMR	Submitted
D6.2	Logo and Website	9	AMMR	Submitted
D6.3a	Knowledge & Data Plan	24	AMMR	Pending
D6.3b	Knowledge & Data Plan	48	AMMR	Pending
D6.4a	Exploitation and Business Plan	24	AMB	Pending
D6.4ab	Exploitation and Business Plan	36	AMB	Pending
D6.5	Virtual Reality 3D Video	10	AMMR	Pending
D6.6a	Dissemination Report	18	AMMR	Submitted
D6.6b	Dissemination Report Update	36	AMMR	Pending
D6.6c	Final Dissemination Report	48	AMMR	Pending

3.1 Dissemination and Communication Plan (DCP)

The purpose of the D&C plan is to formulate a detailed plan outlining the dissemination and communication activities, providing a strategic roadmap for effective information flow. This document was submitted during M10 of the project, and it can be found here: [Dissemination Communication Plan RecHycle.pdf](#).

A Brand Kit was also created, containing the logo, the colour palette, the fonts, the brand archetype, and the storytelling of the RecHycle's brand identity. The RecHycle's visual identity can be found here: [Brand Identity RecHycle.pdf](#).

The one-pager was produced at M9. Later, as more progress is made within the project, an updated version will be published to communicate important progress and to disseminate further project results. The one-pager was printed out and available on the website for download. This can be found here: [One Pager RecHycle.pdf](#).

Lastly, a PowerPoint presentation deck was produced. This is available in electronic format and on the project website. The purpose is to use it to present the project, e.g., in digital graphic displays at conferences, events, or one-on-one meetings with industry players and other key stakeholders. The presentation can be found here: [Presentation Deck RecHycle.pdf](#). All these deliverables have helped us create coherent storytelling to create awareness about the project.

3.2 Project Logo and Website

The establishment of an online presence through the development of a project website and logo serves as a key element in communicating the project's identity and objectives. The website and the logo were

submitted during M10 of the project, and it can be found here: [D6.2 Project Logo and Website RecHycle.pdf](#).

The official RecHycle project website, www.rechycle.eu and www.rechycle.be, has been live since April 26, 2023. This dynamic digital platform plays a crucial role in enhancing the visibility of the project's outputs and serves as the primary information resource for stakeholders and the public. Moreover, a series of blog posts will be regularly posted on the website to answer the questions of our audience. Here is the document with the final draft of the posts: [Blog Posts RecHycle.docx](#). Table 2 shows the topics of these posts and their status. As the RecHycle project progresses, the website will continue to evolve, reflecting ongoing achievements and contributing to the project's mission of advancing sustainable steel production.

Table 2. Blog Post Calendar

Publication month	Title	Input from	Status	Link
M15	How is green steel made?	AMB	Published	https://www.rechycle.eu/what-is-green-steel/
M17	What is green hydrogen?	AMMR	Published	https://www.rechycle.eu/what-is-green-hydrogen/
M18	How is green hydrogen produced?	AMMR	Published	https://www.rechycle.eu/how-is-green-hydrogen-produced/
M20	Benefits of green hydrogen	AMMR	Pending	
M22	Green hydrogen uses	AMMR	Pending	
M24	Green steel products	AMB	Pending	
M28	Collaborators	AMMR	Pending	
M30	Hydrogen storage and its impact on materials	JR	Pending	
M34	Green Steel and EU Green Deal	AMB	Pending	
M38	What does an integrated sustainable steel mill look like?	AMB	Pending	
M42	Green steel, LCA and GHG reduction	UPM	Pending	
M46	Green steel and green hydrogen market outlook	AMB	Pending	
M48	Lessons learned	All partners	Pending	

3.3 VR Video Communication for TV Media Distribution

Moreover, a virtual reality (VR) video will be created to enhance outreach and facilitate TV media distribution, providing an immersive experience for a broader audience. A first simple animation to introduce the project (screenshots) has been prepared. As the project would be more advanced, a more professional video would be done showing what the project would look like. Here are the screenshots of the first draft of the video: [RecHycle Introductory Video Screenshots](#)

3.4 Conferences

Conferences have been used to actively engage with the wider community, fostering knowledge exchange and enhancing the project's visibility. By participating in conferences, our consortium not only shares key insights and developments but also contributes to shaping industry discourse. Through these collaborative forums, RecHycle seeks to catalyse discussions, forge valuable connections, and stay at the forefront of advancements in sustainable steel production. Table 3 shows the conferences organized by the RecHycle partners:

Table 3: Conference List

Conference	Dates	Location	Partner Attending	Website Link
KCersS Spring '23 meeting	12/03/2023	Jeju (Korea) - virtual	CNRS	http://kcersmeeting.or.kr/future_08.asp
HT-CMC11 Congress	27/08/2023 - 31/08/2023	Jeju (Korea)	IRT	https://www.ht-cmc11.org
HT-CMC11 Congress	27/08/2023 - 31/08/2023	Jeju (Korea)	CNRS	https://www.ht-cmc11.org
Zukunft Konferenz	15/11/2023	Graz (Austria)	JR	https://zukunftskonferenz.ioanneum.at/

In the following points, more information about the conferences is provided:

- HT-CMC11 Congress: M. Dupont (IRT Saint Exupery, France) has delivered a 20-min lecture at the symposium 13: "CMC applications II (Power Generation Systems, Combustion Environment)", during the 11th International Conference on High Temperature Ceramic Matrix Composites, Jeju, Korea, on August 31st, 2023. The attendance was around 50 people. The abstract is the following:

H₂ rich gases for the steel industry: new opportunities of applications for CMCs?

The steel industry generates a large quantity of CO₂, estimated to be 7% of the global emission. The need for steel is not going to decrease, so making it greener to produce is a major concern to achieve climate neutrality. One way to reduce significantly these emissions is the use of H₂ or H₂ rich gases as a reducing agent of the iron ore.

In this context, the EU-funded RecHycle project will recycle metallurgic gases produced on site with or without external green hydrogen sources. The product will be fed into a blast furnace and a future direct reduced iron furnace leading to sustainably produced green steel.

One of the most critical technical barriers is the metal performance at high temperature in hydrogen environment. To address this barrier, LCTS and IRT are working on the development of CMC part to protect metal from this new environment (thermal and/or chemicals conditions). This study includes all the manufacturing steps: computer-assisted calculation, design, material choice, characterization, and proof of concept. The CMC insert nozzle will be set up and tested directly in a production blast furnace.

The aim of this presentation is to present the approach of this project and to discuss about the CMC's interests for the steel industry: new applications, new constraints.

- Zukunft Konferenz 2023: Participation of the RecHycle project in the competition Best Performance Award – the proclamation of best projects, articles or other scientific achievements in the previous year.

Forty-three scientific achievements participated – being expressly nominated by the Institutes – in the Best Performance Award and competed in the category of different institutes (DIGITAL, MATERIALS, LIFE, HEALTH, ROBOTICS, POLICIES and COREMED). The project RecHycle was presented in the category of MATERIALS projects, where it ended up in the finals among 10 candidate achievements, finishing as the runner-up.

The presentation of the project in the conference can be found on the following link: https://drive.google.com/file/d/1o1ovc28HhIZkuXl1-AwtF7-9dXQBU30C/view?usp=drive_link

3.5 Workshops & Seminars

RecHycle's commitment to knowledge dissemination extends to workshops, where focused discussions amplify the impact of our project. Through workshops, we aim to enrich perspectives, garner insights, and fortify collaborative networks within the scientific and industrial communities. The workshops are strategically aligned with the objectives of Work Packages 2, 3, and 4. These interactive sessions play a pivotal role in disseminating project outputs, reaching enablers, and engaging target audiences. By showcasing our advancements, we not only invite valuable feedback from stakeholders but also create spaces for policy discussions and collaborative brainstorming. In a concerted effort to fortify the project's impact and pave the way for broader replication, RecHycle extends invitations to other ArcelorMittal sites. Table 4 shows the list of workshops and seminars in which the RecHycle partners participated.

Table 4. Workshop & Seminar List

Workshops	Dates	Location	Partner Attending
French Group of CMC	09/11/2022	Pessac, France	CNRS
ICACC '23 ACerS	24/01/2023	Daytona Beach, FL, USA	CNRS, U. Bordeaux
KCerS Spring '23	12/04/2023		CNRS, U. Bordeaux
Seminars	Dates	Organiser/Location	Partner Attending
Decarbonizing Production Strategies	09/11/2023	University – KULeuven – Faculty Economics/ Leuven, Belgium	AMB

In the following points, more information about the workshops & seminars are provided:

- Workshop of the French Group of CMCs (GDR (CMC)²): “Hydrogen and CMCs”, Pessac, France, November 9, 2022: M. Dupont and G. L. Vignoles have delivered a 20-min joint lecture: “Projet Horizon Europe RecHycle : injection d'hydrogène « vert » dans les hauts-fourneaux sidérurgiques “. The attendance was 52 people.

- ICACC '23 ACerS meeting: Pr. G. L. Vignoles (CNRS, U. Bordeaux) has delivered a 25-min invited lecture at the Honorary symposium: "Emergent Materials and Sustainable Manufacturing Technologies in a Global Landscape - International Symposium in Honor of Dr. Tatsuki Ohji", during the 47th International Conference on Advanced Ceramics and Composites (ICACC), Daytona Beach, FL, USA, on Jan. 24th, 2023. The attendance was around 50 people. The abstract is the following:

Opening new perspectives for Ceramic-Matrix Composites in seldom explored application sectors:

Long fiber-reinforced Ceramic-Matrix Composites have been historically developed for space and military applications because of their outstanding high-temperature thermal and structural performances; their application range has broadened to friction components (brakes, clutches, etc.) and to industry (casings, heat exchangers, etc). They also are developed in the frame of nuclear fission and fusion technologies. Nonetheless, they are still often expensive materials because their production volume is not large. Finding new markets for CMCs is therefore an important objective for their development.

This presentation will discuss three cases of potential uses of CMC in economic areas in which they were scarcely present. These incoming opportunities for CMCs are fed by evolutions in the energy market and by its shift towards the use of more hydrogen and "green fuels". Examples of ongoing prospective works in steelmaking and in nuclear waste storage engineering will be discussed in this talk.

The author thanks the European Commission for grants to the projects « CEM-WAVE » n° 958170 and « RecHycle » n° 101058692 and the French agency ANDRA for grant n° 20081163 to the project "C3N".

- KCerS Spring '23 meeting: Pr. G. L. Vignoles (CNRS, U. Bordeaux) has delivered a 30-min invited lecture online as a webinar on April 12, 2023, at the 2023 Spring Meeting of the Korean Ceramic Society. The attendance was around 150 people (online). Here is the abstract of the presentation:

New applications of Ceramic-Matrix Composites in seldom explored sectors:

Long fiber-reinforced Ceramic-Matrix Composites have been historically developed for space and military applications because of their outstanding high-temperature thermal and structural performances; their application range has then broadened to friction components (brakes, clutches, etc.) and to industry (burners, casings, heat exchangers, etc). They also are being developed in the frame of nuclear fission and fusion technologies. Nonetheless, they are still often expensive materials because their production volume is not large. Finding new markets for CMCs is therefore an important objective for their development.

This presentation will discuss three cases of potential uses of CMC in economic areas in which they were scarcely present, i.e., steelmaking and nuclear waste storage engineering. These incoming opportunities for CMCs are fed by evolutions in the energy market and by its shift towards the use of more hydrogen and "green fuels" and towards better energy efficiency.

The author thanks the European Commission for grants to the projects « CEM-WAVE » n° 958170 and « RecHycle » n° 101058692 and the French agency ANDRA for grant n° 20081163 to the project “C3N”.

- A seminar on Decarbonizing Production Strategies was held at KU Leuven's Faculty of Economics. The event, attended by 70 participants, featured presentations on various aspects of decarbonization.

The Decarbonizing Production Strategy of AMBelgium, encompassing the RecHycle project, was presented by Philippe Alboort during the seminar. Additionally, Engie presented its perspective on decarbonization efforts. Throughout the session, there were engaging and insightful exchanges focusing on the economic challenges associated with the hydrogen economy.

3.6 Scientific Journals and Academic Publications

RecHycle is dedicated to sharing its academic achievements with the global community through rigorous channels. Academic results will be disseminated via peer-reviewed publications in renowned scientific journals, as well as through conference papers or posters. This approach aligns with RecHycle's dedication to maintaining the highest standards of academic excellence and fostering impactful contributions to the field. In this stage of the project, no publications have been made yet.

3.7 B2B Meetings

RecHycle's strategic outreach includes targeted Business-to-Business (B2B) meetings, spearheaded by AMB. These sessions will connect product users of XCarb™ green steel, ethanol, and hydrogen with relevant suppliers, including those of critical equipment such as compressors and electrical gas balancing technologies. The aim is to foster collaborations, share knowledge, and forge partnerships within the supply chain. By bringing together key stakeholders, these B2B meetings are pivotal in advancing RecHycle's objectives and fostering sustainable practices across the steel, ethanol, and hydrogen industries.

ArcelorMittal Belgium has organized following B2B meetings during the first 18 months of the project (Table 5). The main agenda points with the Parties mentioned in the table below were the sourcing of renewable hydrogen related to the RecHycle project. Due to confidentiality the name of the partners cannot be mentioned, therefore they are mentioned in the list below as Party A, B, etc.

Table 5. Meetings between AMB and potential partners on hydrogen supply

Date of meeting	Party	Location
28.09.2022	Party A	Online
03.10.2022	Party D	Online
21.12.2022	Party G	Online
25.01.2023	Party A	Online
16.02.2023	Party E	Online
31.03.2023	Party B	Ghent

19.06.2023	Party G	Online
14.07.2023	Party C	Antwerp
05.07.2023	Party E	Online
08.09.2023	Party G	Online
13.09.2023	Party C	Ghent + online (hybrid meeting)
29.09.2023	Party C	Ghent + online (hybrid meeting)
27.10.2023	Party F	Ghent
31.10.2023	Party G	Online
08.11.2023	Party E	Online
17.11.2023	Party E	Online
17.11.2023	Party F	Online
21.11.2023	Party E	Brussels

3.8 B2G Meetings

RecHycle recognizes the importance of engaging with governmental authorities and policymakers to foster sustainable innovations. All partners, with a primary focus on AMB, will actively participate in Business-to-Government (B2G) meetings at both national government and European Union levels.

These interactions are designed to facilitate direct dialogue, ensuring that the unique insights and advancements of RecHycle are communicated effectively to key decision-makers. Through these B2G meetings, we aim to contributing to shape the policies that support and encourage sustainable practices in the realms of green steel, ethanol, and hydrogen production. This proactive engagement aligns with RecHycle's commitment to driving positive change on both a regional and EU-wide scale. The B2G meeting where RecHycle partners did directly meet the representatives of the governments are:

- 11.10.2023: ArcelorMittal Belgium invited the CREG (commission for the regulation of electricity and gas) to speak about hydrogen. The CREG is from July 2023 also responsible for the regulation of transport of hydrogen. They are involved in certification, market development & investment plans, tariff methodology & validation, etc. The CREG presented their key ambitions for the use of hydrogen in Belgium. Following AMB presented their roadmap including, but not limited to, the RecHycle project.
- 07.11.2023: ArcelorMittal Belgium had a meeting with the cabinet of Energy regarding the use of renewable hydrogen on site of ArcelorMittal Ghent. ArcelorMittal Belgium addressed the fact that support is needed in order to make renewable hydrogen feasible.
- Flemish taskforce regarding hydrogen. Topics: hydrogen vision, academic research regarding hydrogen, status report regarding hydrogen, etc. Discussions with cabinet of economy and innovation, EWI, VLAIO...
 - 26/4/2022 Joke Bauwens (AMB)

- Flemish taskforce Klimaatsprong (climate jump) with several topics: climate transition, hydrogen infrastructure, etc. (this taskforce allows for intense direct interactions in the presence of cabinet minister Demir (minister of energy, ...), department environment, VLAIO, VITO, etc.)
 - 5/5/2023 Philippe Alboort (AMB)
 - 6/6/2023 Philippe Alboort (AMB)
 - 13/6/2023 Philippe Alboort (AMB)
 - 20/6/2023 Philippe Alboort (AMB)
 - 19/10/2023 Philippe Alboort (AMB)
 - 6/11/2023 Philippe Alboort (AMB)
 - 9/11/2023 Philippe Alboort (AMB)

In general ArcelorMittal Belgium has meetings with different cabinets on a regular basis to discuss the roadmap to net zero, including but not limited to, the use of hydrogen.

a. Stakeholder Events

These occasions stand as critical junctures where industry leaders, experts, and stakeholders converge to partake in discussions, share insights, and foster collaborations within the ever-evolving landscape of hydrogen applications.

Table 6. Hydrogen Stakeholder Events

Event	Dates	Location	Partner Attending
H2BE-stakeholder event	14/06/2023	Belgium	AMB
As-a-Service Model for Green Transition	26/06/2023	Belgium	AMB
Hydrogen Accelerate-stakeholder event	18/09/2023	Belgium	AMB
Joining forces on Hydrogen – Belgium, Benelux and its neighbours	16/10/2023	Belgium	AMB
Hydrogen Academy	24/10/2022 23/10/2023	- Belgium	AMB

- The H2BE stakeholder event marked a significant milestone, bringing together 100 participants to discuss the collaborative efforts of Engie and Equinor in building an ultra-low carbon hydrogen plant.

At this event, Manfred Van Vlierberghe, the CEO of ArcelorMittal Belgium, took the stage to present the climate plan of ArcelorMittal, with a particular focus on the hydrogen component. The Rechycle project took center stage, highlighting its importance as the first initiative to incorporate a high percentage of hydrogen in the blast furnace. This event provided a platform for insightful discussions on advancing

sustainable practices within the industry, emphasizing the crucial role of hydrogen in achieving carbon reduction goals.

- "As-a-Service Model for Green Transition" event convened 200 participants, providing a platform for insights and discussions on innovative approaches to facilitate environmentally conscious transformations.

Philippe Alboort (AMB) presented the comprehensive climate plan of ArcelorMittal Belgium, with a particular emphasis on the RecHycle project and other initiatives developed under the as-a-service model. The presentation delved into the strategic integration of this service-oriented framework, shedding light on its role in advancing sustainability objectives and fostering a green transition within ArcelorMittal Belgium's operations. This event not only underscored the commitment to environmental stewardship but also highlighted the significance of adaptable and sustainable business models in driving the broader green agenda.

- On 18 September 2023, Fluxys hosted the Hydrogen Accelerate event as part of its NextGrid initiative, focusing on the future of the Belgian hydrogen network to facilitate the decarbonisation efforts of industrial players. The event included sessions on various aspects, including the status of the Fluxys Hydrogen Network, an overview of hydrogen production and import projects, end-user panels and an exploration of the decarbonisation framework.

With over 70 key stakeholders from across the hydrogen value chain in attendance, speakers from notable organisations such as Equinor, Engie, PlugPower, Lhyfe, ArcelorMittal, HNS, GRTGaz and OGE shared their insights. Philippe Alboort, representing ArcelorMittal Belgium, outlined the climate plan and emphasised the role of hydrogen within it. The RecHycle project was highlighted as a crucial first step in the hydrogen journey.

A key takeaway from the event was the strategic planning of hydrogen production and import projects, both from the Netherlands and overseas, together with the development of the Belgium/Netherlands backbone. This comprehensive approach positions the industry to go beyond RecHycle and to take subsequent steps to advance hydrogen-related initiatives.

- "Joining forces on Hydrogen – Belgium, Benelux and its neighbours": Organized under the umbrella of the Belgian Hydrogen Council (BHC), WaterstofNet, and Cluster Tweed, a high-profile event took place, attracting 300 participants. The gathering facilitated the participation of prominent industry stakeholders in a robust debate.

AMB, Ineos, Engie, Fluxys, Air Liquide, North Sea Port, and Virya engaged in a high-level discussion centered around the theme "Belgium as an important H₂ consumer, developing its supply chain – Facilitating the transition of our industry towards sustainable hydrogen." "The discourse delved into critical aspects of the hydrogen supply chain, identifying bottlenecks, barriers, market dynamics, and the expected/needed H₂ price. Throughout the debate, a consensus emerged on the challenges facing the hydrogen economy, particularly in alignment with Ineos, with whom significant parallels were

observed. This alignment prompted further "one-to-one" discussions with Ineos regarding the utilization of hydrogen.

- **Hydrogen Academy:** Organized by Waterstof.net, the Hydrogen Academy drew 200 participants, providing a platform for insightful discussions on hydrogen applications. Presentations on H₂ application in industry and power/heat were delivered by TotalEnergies, BASF, Siemens Energy, and Remeha, each offering unique perspectives.

During the event, H₂ applications in the steel industry were expounded upon, with a particular focus on presentations detailing the RecHycle project alongside the DRI project. The discourse featured extensive interactions with fellow presenters and the audience. Notably, the Siemens Energy presentation contributed valuable insights into the specifics of H₂, including its impact on flame temperature and flame front dynamics. Additionally, security topics surrounding hydrogen applications were thoroughly examined and discussed during the event.

3.9 Other Events

RecHycle partners actively leverage their participation in diverse events such as webinars, panels, trade shows, policy discussion platforms, and those promoting Horizon Europe. This multifaceted engagement serves as an additional opportunity for partners to forge synergies with initiatives sharing a similar scope, including other projects under the Clean Steel program and relevant institutions or agencies. By actively contributing to these events, partners aim to extend the reach of RecHycle's impact, fostering collaboration and knowledge exchange on a broader scale. Each partner, drawing from their field of expertise, actively seeks out major events to contribute to and reports these valuable contributions to the coordinator. This approach ensures that RecHycle remains intricately connected with the wider scientific, industrial, and policy landscapes, maximizing the project's potential for positive influence and lasting impact.

ArcelorMittal Belgium for example is a member of the Belgian Hydrogen Council (BHC), which was launched early 2023. The goal of the Belgian hydrogen council is not only promoting the Belgian hydrogen industry, but also acting as a spokesperson for Belgian hydrogen ecosystem equivalent to national hydrogen organisations in neighbouring countries, advising Belgian policy makers on the roll-out of Regional and Federal hydrogen strategies, etc.

ArcelorMittal Belgium is a member of the board of the BHC. The board does not only include industry, but includes 7 companies and one research centre, representing following fields: production of hydrogen, hydrogen technology, infrastructure, ports & import, hydrogen used in industry (2x), hydrogen used in mobility and research. The members of the board are presented in Figure 1.

BHC Board

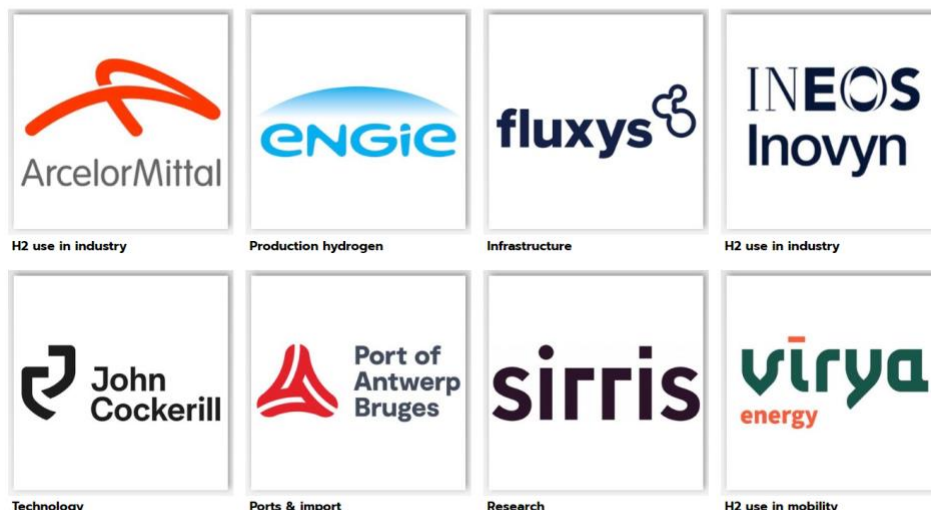


Figure 1. Belgian Hydrogen Council Board members

Not only is AMB a member of the board, but it also participates in several taskforces such as the taskforce 1 regarding policy & certification and taskforce 2 tackling the infrastructure that is needed to use hydrogen at a large scale. The taskforces are held bi-monthly either online or in Brussels. Each taskforce identifies at the beginning of the year issues that need to be solved and key-elements that should be part of the solution. During the year the members of the taskforces work on potential solutions and provide position papers to the different governments. A list is provided below on the taskforces that have taken place involving members working on the RecHycle project:

Table 7. Taskforces that have taken place involving members working on the RecHycle project

Date	Meeting	Location	Participant
08.02.2023	BHC taskforce 1	Brussels	Joke Bauwens (AMB)
08.02.2023	BHC taskforce 2	Brussels	Joke Bauwens (AMB)
17.03.2023	BHC board meeting	Brussels	Philippe Alboort (AMB)
24.04.2023	BHC board meeting	Brussels	Philippe Alboort (AMB)
28.04.2023	BHC taskforce 2	Brussels	Joke Bauwens (AMB)
05.05.2023	BHC taskforce 1	Brussels	Joke Bauwens (AMB)
05.06.2023	BHC board meeting	Brussels	Philippe Alboort (AMB)
28.06.2023	BHC board meeting	Brussels	Philippe Alboort (AMB)
13.07.2023	BHC (data collection meeting to prepare memorandum)	Online	Joke Bauwens (AMB) Philippe Alboort (AMB)
04.09.2023	BHC board meeting	Brussels	Philippe Alboort (AMB)
16.09.2023	BHC taskforce 1	Brussels	Joke Bauwens (AMB)
16.09.2023	BHC taskforce 2	Brussels	Joke Bauwens (AMB)
02.10.2023	BHC board meeting	Brussels	Philippe Alboort (AMB)
06.11.2023	BHC board meeting	Brussels	Philippe Alboort (AMB)

Besides ArcelorMittal Belgium has a collaboration agreement with the university of Gent to work on common topics and to give opportunities for master's regarding internships and theses. Every year a visit is organized for students:

- 15/12/2022 16h-19h Visit University of Gent - Thermal Installations
- 14/12/2023 16h-19h Visit University of Gent - Thermal Installations.
- General presentation of ArcelorMittal Belgium climate plan including RecHycle.
- Visit installations of ArcelorMittal Gent – part of project RecHycle in the hot strip mill.

4. Impact of Communication Activities

To assess the effectiveness of the RecHycle's communication strategy, a framework for systematic data collection and reporting at predetermined intervals has been established, aligning with project deliverables and EU reporting schedules. This proactive approach ensures a continuous evaluation of our communication efforts against key performance indicators (KPIs), enabling us to identify the most impactful activities and implement necessary adjustments. Table 8 shows the project's KPIs.

Table 8. Communication KPIs

Dissemination item	Action	Target	Reached by
Project website	Number of unique site visitors	100.000	M48
Project documentation	Presentation downloads	1.000	M48
	Number of views of the video	80.000	M48
Publications	Press releases	3	M10, M18, M32
	Blog posts	10	Shown in Table 2
	News and project output announcements	10	M48
	External parties' online mentions	25	M48

Our Communication Management Information Systems (MIS) will play a pivotal role in systematically tracking and monitoring all dissemination activities. As outlined in Table 9, this includes comprehensive documentation and links to various relevant documents. To maintain transparency and align with project timelines, reporting of our actions to the European Commission will be conducted biannually, integrated with the activities of other work packages. This monitoring process facilitates real-time adjustments and ensures the continual success of our communication strategy.

Table 9. Communication Management Information Systems (MIS)

D&C MIS	Content	Type of document	Link
Blog Posts	1. Blog post calendar 2. Blog post text	Word file	Blog Posts RecHycle.docx
D&C Process and Trackers	1. Communication KPI's	Excel file	D&C Progress and Activities Tracker RecHycle.xlsx

Annexe 1: General Data Protection Regulation (GDPR)

Any D&C activity involving personal data recompilation will be accompanied by the following message:
About RecHycle and joining RecHycle Stakeholder Group:

RecHycle is an EU-funded project that investigates the use of green hydrogen and recycled metallurgical gases in steelmaking. These gases are H₂-rich and produced onsite. They will be injected into the blast furnace to replace coke and pulverised coal. This will help minimise CO₂ emissions and sustainably produce green steel. By joining RecHycle Stakeholder Group, you will learn more about the project, which is one of the most innovative projects towards climate neutrality in the steel sector. At the same time, you will be contributing to shaping the research work and project priorities. The project constitutes an important investment in developing green strategies to offset the footprint of steel manufacturing processes.

Confidentiality of data:

Your data and responses will be protected according to the European Regulation of Data Protection (EU) 2016/679 (GDPR). The data of the participants in the RecHycle Stakeholder Group will be held exclusively for the purposes of the project and will be kept confidential. All the data files will be destroyed 5 years after the completion of the project. The data of the person who does not wish to be part of the RecHycle Stakeholder Group will be deleted immediately.

Withdrawing from the RecHycle Stakeholder Group:

You have the right to withdraw from the Stakeholder Group and the project activities at any time for any reason. Contact the coordinator of the D&C activities of the project, Rodolfo Santos Ferreira, at rodolfopaulo.santosferreira@arcelormittal.com from ArcelorMittal Maizières.