Ref. Ares(2022)7255761 – 19/10/2022

D1.8 –Innovation, exploitation, communication and dissemination plan. Update 1

Due date of deliverable: 31.01.2025
Actual submission date: 18.01.2026
Start date of project: 01.10.2022
Dissemination level: Public

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Technical References

Project Acronym	HOCLOOP
Project Title	A circular by design environmentally friendly geothermal energy solution based on a horizontal closed loop - HOCLOOP
Project Coordinator	IFE
Project Duration	42 months

Deliverable No.	D1.8
Dissemination level[1]	PU
Nature[2]	R
Work Package	WP1
Task	1.4
Lead beneficiary	IFE
Contributing beneficiary(ies)	IFE
Prepared by /Author(s)	Iryna Riabchuk, & Mario Silva (IFE)
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Approved by/Coordinator	Mario Silva
Due date of deliverable	31.01.2025
Actual submission date	18.01.2026

[1] Dissemination level: PU = Public, SEN = Sensitive, R-UE/EU-R = EU classified, C-UE/EU-C = EU classified, S-UE/EU-S – EU classified
[2] Nature of the deliverable: deliverable: R = Document, report; DEM – Demonstrator, pilot, prototype; DEC – Websites, patent, filings, videos etc; DATA – data sets, microdata, etc; DMP – Data Management Plan; ETHICS; SECURITY; OTHER

Document history			
V	**Date**	**Author(s) /Reviewer(s) (Beneficiary)**	**Description**
0.1	22.12.2025	Iryna Riabchuk & Mario Silva (IFE)	First Draft
0.2	05.01.2026	Mario Silva (IFE)	First internal revision
0.3	18.01.2026	Carlos Escudero (IFE)	Peer review
1.0	18.01.2026	Mario Silva (IFE)	Final version
2.0	18.01.2026	Mario Silva (IFE)	Document uploaded

List of Abbreviations

PMP	Project Management Plan
DMP	Data Management Plan
CoP	Community of Practice
CS	Case Study
CTG	Cross Cutting Technology Group
DMP	Data Management Plan
DOI	Digital Object Identifiers
EC	European Commission
FAIR	Findability, accessibility, interoperability, and reusability
FOAF	Friend of a Friend
GA	General Assembly
GDPR	General Data Protection Regulation
ICT	Information and Communications Technology
KPI	Key Performance Indicator
OGC	Open Geospatial Consortium
PM	Person Month
SNS	Social Networking Sites
TEB	Technology Evidence Base
URL	Uniform Resource Locator
UTF	Unicode Transformation Format
WP	Work Package

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Executive Summary

This document provides an updated strategy for innovation, exploitation, communication, and dissemination activities within the HOCLOOP project, building upon the approach initially outlined in Deliverables 1.6. and updated in 1.7. This update reflects the project's current stage of implementation ensures that the HOCLOOP Consortium maintains a coherent, strategic, and impact-driven approach throughout the project's duration.

HOCLOOP aims to demonstrate a novel closed-loop geothermal solution that enables heat extraction without the need for permeable underground reservoirs. This has the potential to unlock geothermal energy in previously inaccessible regions and minimize environmental risks. The communication and dissemination strategy plays a crucial role in raising awareness, engaging stakeholders, and promoting the technology's societal, environmental, and economic benefits.

The document outlines a comprehensive framework for maximizing the visibility, uptake, and impact of the project's results. It defines the objectives of communication, dissemination, and exploitation (CDE) activities, identifies key target groups, and presents pathways for innovation and commercialization. Additionally, it details the tools and channels used to share project outcomes with scientific, industrial, and policy communities, ensuring that HOCLOOP's closed-loop geothermal technology reaches relevant stakeholders effectively.

A strong focus is placed on bridging research with industry applications, promoting knowledge transfer, and supporting market readiness. The plan also considers how HOCLOOP innovations can be integrated into existing energy infrastructures, adapted for various geological settings, and contribute to the long-term adoption of sustainable geothermal solutions.

This update includes a review of activities completed so far, such as the launch of the project video and YouTube channel, a growing LinkedIn presence, scientific publications and conference participation, and a video series highlighting women researchers. It also outlines upcoming opportunities and encourages partners to remain active in identifying and contributing to communication and dissemination efforts. The present update also includes a more detailed overview of the project's key exploitable results (KERs), state of validation, TRL reached, IPRs & ownership, and claims for exploitation as per October 2025. The long delay in the production of the present document is due to the difficulties in the project administration (amendment process abnormally time consuming) and with the deviations observed in the implementation of WPs 3 and 6, central in the production of KERs and definition of exploitation pathways.

1. Introduction

This report is the Update of the Innovation, exploitation, and communication plan for the HOCLOOP project. The purpose of this document is to refine the strategic framework originally established to guide these activities. As the project progresses, this document ensures that communication, dissemination, and exploitation efforts remain aligned with project milestones, stakeholder needs, and emerging opportunities.

1.1 Report structure

- Section 1. Executive summary and introduction to the Innovation, exploitation, and communication plan
- Section 2. The main approaches followed and rules to be observed
- Section 3. HOCLOOP Innovation and Exploitation strategy
- Section 4. HOCLOOP Communication and Dissemination strategy
- Section 5. Conclusions and expected results outlining the key achievements indicators.

1.2 HOCLOOP project overview

Geothermal energy has a large potential as a clean renewable energy source. Conventional technology is mainly based on heat extraction from hot aquifers circulating between wells in permeable geological formations. Such aquifers are hard to find, limit the applications and imply high cost and risks.

Responding to this challenge, the main objective of the HOCLOOP project ("or A circular by design environmentally friendly geothermal energy solution based on a Horizontal Closed LOOP") is to verify a novel geothermal closed loop solution for the extraction of heat from deep or shallow formation rocks. The solution is environmentally friendly and expected to improve the cost-efficiency for geothermal developments.

HOCLOOP will also enable the exploitation of geothermal energy sources in new regions with or without good hydrothermal reservoirs. Examples are low-permeability reservoirs, Hot Dry Rock and other kinds of reservoirs, such as those with high content of non-condensable gas. However, also in regions where there are hydrothermal reservoirs, the proposed system reduces the environmental impact and can prove to be preferred. The solution is expected to significantly increase the deployment of geothermal resources for trigeneration with reduced environmental impact and economic attractiveness compared to conventional geothermal plants, avoiding several issues of Enhanced Geothermal Systems (EGS). The target design is a geothermal heat exchanger that can deliver stable and cost-efficient energy for a time span of at least 50 years serving a surface district heating/cooling and power generation unit. The solution is foreseen to be integrated with other renewables to improve the reliability of the power supply and grid stability, and to be applicable to any geological structural condition and district heating.

The HOCLOOP concept is based on the use of an innovative horizontal closed loop solution for the extraction of heat from deep or shallow formation rocks. The solution derives from new drilling technology and solves the challenges of conventional construction of geothermal wells. The solution will improve the power production due to extended reach horizontal drilling with a large hole size. Further improvement is expected to be achieved by the use of alternative to water circulation fluids, such as CO2 based fluids. It is expected that the solution can reduce the LCOE compared to the conventional solution and meet the SET plan targets. The project will develop the tools to enable the proposed geothermal solution and demonstrate the technology in a full-scale test operation to TRL5. The work will cover the development and validation of models for the heat flow and investigate the possibility for improving electricity production by using alternative fluids to water. The work will also cover the investigation of potential EU pilot sites, environmental assessment, and the social acceptance of the proposed technological solution. It is expected that the solution will enable exploitation of geothermal energy sources in new regions, including the ones where hydrothermal reservoirs are absent or do not present the adequate hydraulic properties to enable the deployment of conventional geothermal

solutions. The solution is foreseen to be integrated with other renewables to improve the reliability of the power supply and grid stability, and to be applicable to a variety of geological conditions. It is also expected to solve the main issues of geothermal energy related to emissions, seismicity, and environmental aspects.

1.3 Aims and objectives

Effective communication, dissemination, and exploitation (CDE) activities are integral to any EU-funded project, ensuring that project objectives and results are widely shared while also strengthening the visibility of EU Research and Innovation funding. These activities not only contribute to raising awareness but also help bridge the gap between scientific advancements, technological developments, and public understanding.

The aim of this document is to ensure that the project's objectives, activities, and outcomes effectively reach relevant target groups, including scientific communities, industry stakeholders, policymakers, and the general public. To achieve this, the Innovation, Exploitation, and Communication Plan for the HOCLOOP project has been developed and continuously refined to align with the evolving needs of the project's implementation phases.

The main objectives of this report are to:

- Define the strategic approach for targeted engagement and outreach, ensuring that the project's key messages effectively reach identified stakeholders and target groups;
- Present the Update to Innovation, Exploitation, Dissemination and Communication Plan, detailing how project knowledge and results will be shared and utilized through various dissemination channels;
- Outline expected impacts, including how HOCLOOP's innovations contribute to the broader adoption of closed-loop geothermal technology and reinforce the project's role in the energy transition;
- Provide main conclusions, mainly in terms of expected results related to different promotion actions.

This document provides an updated framework for the promotion of HOCLOOP concepts and results, in accordance with the Description of Action (DoA) and the activities foreseen under WP1. It also details the methodology for the design, implementation, coordination, and monitoring of all dissemination and exploitation efforts, ensuring that HOCLOOP's outputs achieve maximum impact. Additionally, it evaluates progress toward key performance indicators (KPIs) to measure the effectiveness and impact of these activities, ensuring continuous refinement and improvement.

1.4 Contribution of partners

To maximize the reach of the HOCLOOP project, all partners are involved and should contribute to the Exploitation, Dissemination and Communication activity. In particular, the HOCLOOP team composition will allow different but complementary expertise and know-how, all relevant, to maximize the project impact and results. IFE, as the project coordinator, leads the Communication and Dissemination activities (WP1). The Dissemination and Communication Manager (DCM), in coordination with the

Project Manager (PM) and communication officers from partner organizations, ensures an effective outreach strategy aligned with the project's objectives.

IFE (Project Coordinator & Communication Lead)

- Coordinate the Communication and Dissemination Work Packages.
- Develop and implement the dissemination plan.
- Design, maintain, and update the HOCLOOP website.
- Manage the project's social media presence (LinkedIn, Youtube).
- Create and distribute newsletters to key stakeholders.
- Design and develop branding materials.

Consortium Partners

- Support the implementation of the dissemination plan.
- Identify and engage with relevant stakeholders and networks.
- Contribute to the development and distribution of newsletters and outreach materials.
- Promote HOCLOOP within their institutional and professional networks.
- Assist in the creation of communication materials, such as brochures, flyers, and project updates.

2. APPROACHES AND RULES

This section outlines the approach taken to identify key target audiences for communication and dissemination efforts, ensuring that project results reach relevant stakeholders across industry, academia, and policymaking. It also defines the communication and dissemination responsibilities of the consortium.

In detail, this section will:

- Identify the main Stakeholder target groups for the HOCLOOP project exploitation and communication (see Section 2.1);
- Describe the meaning of dissemination, exploitation and communication and related type of actions, distinguishing their objectives and the types of actions undertaken to maximize outreach and impact (see Section 2.2);
- Define the obligations and role of HOCLOOP partners in relation to these actions, ensuring a coordinated and effective dissemination strategy (see Sections 2.3, 2.4).

1.1 Main stakeholders and target groups

For an effective realization of each strategy, it is crucial to know who the subjects for the promotion are. In general, target groups could be entities and/or individuals that can potentially benefit from the project results. As far as the HOCLOOP project is concerned, the identified users and stakeholder clusters are presented in Table 1, with examples and motivations.

Table 1. Target groups.

TARGET GROUP	Examples	Motivations
Scientific community and other projects	• Academia • Research organisations, research councils, research funding agencies • Universities, think tanks, etc.	• Scientific • Dissemination • Ad-hoc communication • Exploitation actions • Cross-domain collaboration/cooperation at national, European and international level
Geothermal industry	• Operators, consultants, investors, project developers, auditors (resource assessment community), technology developers, start-ups, service companies (e.g., engineering firms)	• Ad-hoc communication • Exploitation actions • Technology transfer • Customised services
Other industries and investors	• Oil & gas companies, electricity providers and producers. • Mining, equipment suppliers, banks, financiers, insurance companies	• Invest money to accelerate the market entry of green innovations and make long-term gains
Public authorities and lobby groups	• EU policy makers, national governments, regional institutions, local communities, NGOs, journalists, influencers	• Dissemination (popular science). • Ad-hoc communication • Exploitation actions • Activities focused on standards and protocols
End-users	• Users of HOCLOOP geothermal solutions. • Users of scientific and industrial tools and services developed in the project	• Reduction of energy costs. • Increased use of renewable energies • Reduction of environmental impact • Increased social acceptance.
General public	• Journalists, influencers, the citizens • Citizens and local stakeholders involved in co-creation processes as well as social innovation initiatives. • Associations/NGOs focused on environmental aspects and supporting the net-zero emission goals	• Be informed about latest technological trends and improved quality of life/health. • Ad-hoc communication awareness • Cost-benefits presentations

A coordinated approach that leverages the HOCLOOP consortium network has been set in place to reach all relevant stakeholders and decision makers, including renewable energy market players, to make them aware about the project, its development, and results. To achieve such goal and to maximize the visibility of the project, various activities and dissemination events are being set in place, (e.g., briefings, webinars, conferences).

2.2 Dissemination, exploitation, and communication type of actions

The European Commission (EC) sets a clear distinction between dissemination, exploitation, and communication. These activities shape the core part of a comprehensive promotion system, but with three different scopes and objectives, i.e.:

- **Dissemination** is the public disclosure of the results of the project in any medium. Disclosure may sound passive, like a shop opening up, but it is an activity, like a shopkeeper attracting customers. It is a process of promotion and awareness raising right from the beginning of a project. It makes research results known to various stakeholder groups (like research peers, industry, and other commercial actors) in a targeted way, to enable them to use the results in their own work. In line with the EC definition, dissemination is considered here the set of actions aimed at increasing awareness and involving key user and stakeholder groups in a targeted way. Moreover, dissemination actions are considered mainly “one-way” actions, i.e., activities with few or specific feedback coming from the audience.
- **Exploitation** is the use of the results during and after the project’s implementation. It can be for commercial purposes but also for improving policies, and for tackling economic and societal problems. In line with the EC definition, exploitation of results is considered here the set of actions aimed at reaching key actors in the market, such as for examples decision-makers or European institutions, to foster the solution adoption (e.g., lobbying/networking activities).
- **Communication** means taking strategic, targeted actions to promote the project and its results to a broad range of audiences, including the media and the public, with the aim of reaching society as a whole and highlighting how EU funding addresses societal challenges. In line with the European Commission’s definition, communication refers to actions directed at the general public—beyond specific user groups—using both traditional and digital tools. These actions are primarily “two-way,” fostering information exchange and dialogue between the consortium and various audiences, and encouraging engagement and discussion, for example, via social media.

2.3 Communication and dissemination obligations

The legal documents signed by members of the consortium, the Grant Agreement, and the Consortium Agreement, contain obligations related to communication, dissemination, and exploitation. This section presents the rules to be followed regarding communication and dissemination.

2.3.1. Informing the granting authority when planning high impact actions

According to article 17.1 of the Grant Agreement, beneficiaries must promote the action and its results by distributing target information to multiple audiences. If they engage in communication and dissemination actions expected to have major impacts, they should inform the granting authority in due time.

2.3.2. EU support acknowledgement and disclaimer

To ensure visibility and transparency, all recipients of EU funds have the legal obligation to explicitly acknowledge that their action has received EU funding (see article 17.2 of the Grant Agreement). The obligation requires all beneficiaries, managing authorities and implementing partners of EU funding to acknowledge the support from the European Union on all communication materials. Therefore, the European Union emblem and the funding statement must be displayed prominently on all printed and digital products, websites, social media channels and other communication products:

Funded by the European Union

Acknowledgement:

"This project has received funding from the European Union's Horizon Europe research and innovation program under grant agreement No 101083558."

Furthermore, any communication or dissemination action must use factually correct information. It must indicate the following disclaimer (see article 17.3 of the GA):

"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them".

2.3.3. Prior notice of any planned publication and dissemination activity

According to article 8.4.2.1 of the Consortium Agreement, prior notice of any publication activity shall be given at least 45 calendar days before the intended publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement by written notice to the Coordinator and to the Party or Parties proposing the dissemination within 30 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted. If no objection is made, the dissemination activity is permitted.

2.3.4. Prior approval before dissemination

According to article 8.4.5 of the CA, a party shall not include in any dissemination activity another party's results or background, names, and logos without their prior written approval.

2.4 Compliance with Open science practices

2.4.1. Open science practices in Horizon Europe projects and expected benefits

Open Science is defined by Horizon Europe as an approach to the scientific process based on open cooperative work, tools, and knowledge diffusion. Open Science includes open access to scientific publications, research data management and the active engagement of society, as well as optimal dissemination and exploitation of knowledge. In this way the advancement of knowledge can be accelerated by making it more reliable, efficient, and accurate, more easily understood by society and responsive to societal challenges.

By making project results and data accessible to all societal actors, other researchers, innovators, and the public can find and re-use these for their own specific needs. In this way, further research is encouraged, novel solutions can be found, and complex challenges can be tackled. The benefits of open science include[1]:

- Increased visibility of research, enhanced reputation and better understanding and support (also financially), by presenting research and its results not only to the scientific community, but also to potential industrial partners, policymakers and society at large,
- Exchange of knowledge on cross-sectoral and interdisciplinary levels will help discover novel approaches and solutions,
- Knowledge transfer, uptake and commercialization of novel technologies and results by industry, decision makers and the scientific community will strengthen Europe's research and innovation landscape,
- Making project results openly available and searchable will spread knowledge and allow that knowledge to be built upon.

Providing open access to peer-reviewed publications resulting from the project is mandatory for Horizon Europe funded projects. This includes articles and long-text formats, such as monographs and other types of books. Immediate open access is required i.e., at the same time as the first publication, through a trusted repository, and using specific open licenses (a Creative Commons license). Open access is encouraged for those publications that are not peer reviewed. Beneficiaries should also ensure open access to research data via a trusted repository under the principle 'as open as possible, as closed as necessary'. The Open Research Europe (ORE) platform, set up by the European Commission in 2020 can be used as an open access platform for scientific publications to fulfil the open access requirements.

2.4.2. HOCLOOP's Open science strategy

HOCLOOP conforms to the Horizon Europe open science policy[2] and will ensure open access of scientific results generated by the project to interested stakeholders. HOCLOOP will implement different actions to cope with the open science practices:

[1] European Commission, European Innovation Council and SMEs Executive Agency, Scherer, J., Weber, S., Alveen, P., et al., European IP Helpdesk: successful valorisation of knowledge and research results in Horizon Europe : boosting the impact of your project through effective communication, dissemination and exploitation, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2826/437645

[2] European Commission, Directorate-General for Research and Innovation, Horizon Europe, open science: early knowledge and data sharing, and open collaboration, Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2777/18252

a) Disseminate project deliverables and results – as soon as possible – through appropriate means, including their diffusion via scientific publication (Article 17 of the Model Grant Agreement),
b) Ensure open access (online access to research outputs provided free of charge to the end- user) to all peer-reviewed scientific publications relating to its results (Article 17 of the Model Grant Agreement),
c) Manage the digital research data generated in the action responsibly, in line with the FAIR (Findable, Accessible, Interoperable and Reusable) principles (Article 17 of the Model Grant Agreement),
d) In order to provide clarity in intellectual property and assets management and to allow the European Commission to follow up and provide help when needed, the beneficiaries must indicate the owner(s) of the results (Results Ownership List) in the final periodic report (Article 16 of the Model Grant Agreement).

A Data Management Plan (D1.1) will provide further information on data and publications to be disseminated in an open science manner. It will help planning and structuring the research data management, to ensure that the relevant data is findable, accessible, interoperable and reusable ("FAIR"), as well as define the procedures involved in capturing, handling and managing the research data throughout the project's life cycle and beyond. Open Science should not affect the IP generated by the project's research results and is based on an adequate management of IP. The DMP is aligned with the CDE plan.

2.5 Compliance with overall gender strategy

Gender issues in European project dissemination and communication activities are a complex and multifaceted problem that requires a comprehensive approach to overcome. The EU has made considerable progress in promoting gender equality in various fields, including research and innovation. However, gender inequalities persist in project dissemination and communication activities, which can negatively impact the effectiveness of these activities.

The EU Gender Action Plan III calls for a gender equitable world and provides a strategic, ambitious policy tool that sends a clear message of the EU's commitment to gender equality and women's empowerment in all areas of its external action4.

In line with the EU's Gender Action Plan (GAP), the HOCLOOP project supports gender equality in three main areas:

a) Advancing equal participation and leadership. Women are and will be included in the project work, both as researchers, administrative personnel, and work package/task leaders.
b) Strengthening economic and social rights and empowering women and girls. By encouraging women to take leading roles in HOCLOOP, the project will support women's career advancement, equal access to employment and financial opportunities.
c) Combatting gender-based violence. HOCLOOP Gender Action Plan will take steps to ensure that actors involved in the project follow a code of conduct prohibiting all forms of sexual harassment and other forms of gender-based violence.

When it comes to the dissemination and communication activities, to make sure that all processes are inclusive, a specific action plan, with main procedures has been set in place to address possible gender issue(s). In carrying out the activities we specifically pay attention to:

- Gender-neutral / sensitive wording: Gender-impartial language is implemented in the communication and dissemination activities. Our messages are structured to possibly avoid any bias towards a particular sex or social gender. When reporting informative data, this is reported in a gender-sensitive way.
- Gender-neutral images: As images can speak louder than words, we are attentive in selecting appealing images (especially for communication purposes). This means that the images used in our communication materials do not reinforce gender stereotypes and include a wide mix of people in different environments. Once both these criteria are met, the dissemination and communication processes are allowed to move forward.

In conclusion, overcoming gender issues in project dissemination and communication activities requires a comprehensive approach that addresses gender stereotypes and biases, promotes gender-sensitive language and visuals, and evaluates project dissemination and communication activities from a gender perspective. By taking these steps, we can create more inclusive and effective activities that promote gender equality and advance the EU's goals of innovation and sustainability.

3. INNOVATION AND EXPLOITATION STRATEGY

The main objective of this section is to provide insight into the first steps taken to develop the strategy for the innovation and exploitation of HOCLOOP results. It provides the guidelines to build the strategic exploitation plan. The innovation and exploitation strategy furthermore identifies the key exploitable results (KER) and the potential beneficiaries, determines the concrete business plan, and analyses associated IPR issues, as well as potential risks.

3.1 Innovation and exploitation strategy

The consortium's expertise will be optimally used to disseminate the project and its results towards the scientific community, actors on remediation and environmental agencies. Before any dissemination activity, relevant project results will be assessed for commercial potential by the Exploitation Board and protected as appropriate before disclosure.

Publications: Scientific publications and conference presentations are strongly supported by all partners who benefit from the quality assurance that comes with peer review of project results. We anticipate that breakthrough results will be targeted to high impact publications including Science, Nature and PNAS. Most publications on novel heat fluids for geothermal use will combine results from across WPs due to the interdisciplinary and interlinked nature of the research. Partners will also target specialized journals according to the scientific impact of their results.

Exploitation plan: The main goal of the exploitation plan is to effectively use the project's results through scientific, economic, political or societal exploitation routes, aiming to turn R&I actions into concrete value and impact for society and the industry. All Consortium partners as well as potential external exploitation partners will actively contribute to technology and knowledge transfer to enhance the exploitation potential of HOCLOOP's key exploitable results (KERs). In the first year, a preliminary exploitation plan will be developed with the partners, and it will be regularly updated to integrate new KERs and details on IPRs. The final exploitation plan will be finalized in M42 and it will report all the

KERs and agreed exploitation routes. The project will potentially deliver the following KERs, as described in the Table 3.

Table 2. Key exploitable results

Key exploitable result	Potential users	Routes to exploitation	IPR strategy: patent, trade secret
Performance improvement of alternative CO2 based fluids and their engineering potential	Geothermal operators and stakeholders, smart grids and district heating/cooling networks, heat exchangers and fluid machinery manufacturers, research institutions working on the assessment of innovative fluid properties	Publications in scientific journals, articles in sectorial magazines (geothermal, energy, renewables, powerplants), pilot applications in geothermal, heat transfer, heating/cooling and powerplant industry	Engineering service sale: thermo fluid dynamic design and optimization of the horizontal borehole with alternative CO2 based mixtures customized on different geothermal and surface conditions. Patents on effective mixtures and the related engineering techniques. Patented Micro finned tubes with sCO2/ILs heat transfer enhanced features
Drill Heat String	Geothermal operators and stakeholders as above.	Pilot applications to verify performance. Publications and marketing.	Several patents around the DualPipe technology and the vacuum insulated string.
Modelling tools	Geothermal operators and stakeholders as above.	Publications and marketing. Case studies as a service.	Interest in the technology will generate need for improved models and work related to further developments.
Software for heat transfer optimisation	Heat exchanger (including borehole HX) designers and manufacturers	Contract research and software licensing	Own code development protected by software code protection.

3.2 Exploitation management structure

The main goal of the innovation and exploitation strategy is to turn the project results into value that impacts the society. Open science practice will be implemented in the HOCLOOP project and proper protection of results will be ensured before any disclosure. The Exploitation Board will evaluate the commercial potential of results before any dissemination activity and proper protection of the results will be ensured prior to any disclosure.

The intellectual property manager (IPM) will manage the execution of the overall exploitation plan of the project and support the partners in setting up their individual business plans to exploit the results of HOCLOOP. The IPM will also ensure that partners assess opportunities for applying for patents or declaring copyrights. In general, the IPM will ensure that partners respect the GA and CA in terms of IP.

3.3 Management of intellectual property rights (IPR)

The knowledge generated in HOCLOOP, and the respective intellectual property rights will be governed by the terms of the Grant Agreement (GA) and the Consortium Agreement (CA), both agreements based on the DESCA HEU model. All partners have signed the CA in order to ensure proper management of the generated knowledge, this includes ownership of results, transfer of results, dissemination, access rights to identified background, implementation and exploitation of results.

A summary of the IP management within the project is given in Figure 1. This includes a series of workshops to evaluate the outcomes and the potential exploitation pathways. More information about the defined workshops is given Figure 1.

Important questions to consider when evaluating the potential exploitation pathways are:

- What is the exploitable result?
- Can it be commercialized?
- Should the result be intellectually protected?
- Who is the target audience?
- Who is the owner of the results, one or more project partners?
- What is the time to market?

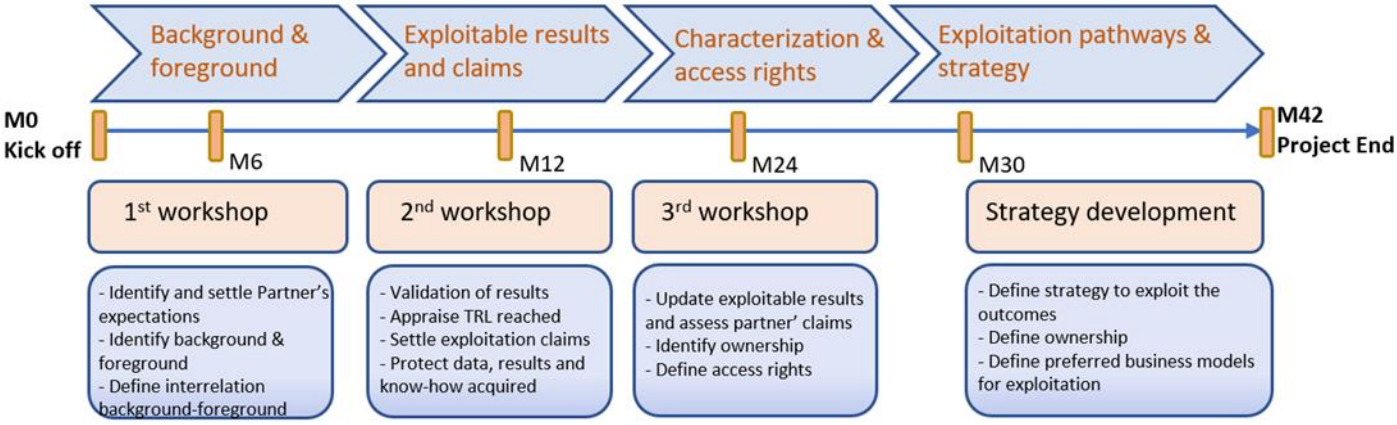

Figure 1. IP management within the HOCLOOP project.

Background and foreground

"Background" means any data, know-how or information, including any rights such as intellectual property rights, that is (a) held by the beneficiaries before they acceded to the CA and (b) needed to implement or exploit results. Partners may add additional background during the project period as long as they give written notice to the other partners and gets approval of the General Assembly.

"Foreground" means data, knowledge or IP produced during the project period. A partner is entitled to foreground when they have carried out the work generating the results.

The Partners have identified and agreed on background knowledge to ensure good and trustful cooperation during the project. The background for each Partner was first defined in "Attachment 1: Background included" in the Consortium Agreement.

The first **Innovation and Exploitation seminar** took place during the first GA Meeting of the Consortium, held in Darmstadt, Germany, on 30-31 October 2023. During this seminar, all partners identified and settled expectations related to their participation in the project, as well as defined background and foreground, and interrelation between the defined background and foreground. The second innovation and exploitation seminar was performed together with the GA meeting in October 2025 at the University of Florence in Italy. One of the key outcomes of the HOCLOOP, the company "Geotherma AS" (GEO) was included in the project as "affiliated entity" of beneficiary 2, Reelwell. However, the administrative process to formalize this was abnormally time consuming, which lead the Innovation and Commercialization board (ICB) of the project to delay the second Innovation and Exploitation seminar.

3.4 Exploitable results and access rights

KERs are continuously updated and refined during the implementation of the HOCLOOP and thus conditioned by the development of the project. During this process the project partners will gather information about the results and develop a characterization table for each KER. This process is for the partners to identify know-how, technologies and services that can be commercialized by the end of the project and to identify the main ideas about ownership, possible markets, and suitable exploitation strategies. Naturally, the ICB, follows and guides this activity with the partners. Table 4 lists the main results, TRL status, IPRs, ownership status, and access rights identified in the innovation and exploitation seminar held on October 2025 in Florence.

Table 3 .Characterization table of HOCLOOP's exploitable results, as per October 2025.

Partner	Result (s)	TRL reached	IPR status	Ownership	Access rights	Exploitation pathway
1/IFE	Simulator	7	GPL license	IFE	Open source	n.a.
	Publication	n.a.	n.a.	IFE, IFPEN, VITO	Open Access	n.a.
2/RW	Geotherma AS	n.a.	Yes	RW	Commercial company	Under definition
2.1/GEO	DHS completion	5	Yes (RW owned)	RW/GEO	Commercial services	Under definition
	Tools and installation	5	Under patenting	RW/GEO	Commercial services	Under definition
	Drill in option for DHS	3 (under development)	Yes (RW owned)	RW/GEO	Commercial services	Under definition

3/UNIFI	BH heat model simulation	7	GPL license	UNIFI	Open access	
	New Peclet number vs heat conduction correlation	5	Yes, scientific publication	UNIFI	Open access	
	CO_2 Hub	Under construction, 5 when ready	n.a.	UNIFI	UNIFI's personnel and students, future R&D collaborators, ECCSEL network.	Under definition.
4/VITO	"Swirl concept" patent	5	Yes	VITO	VITO	Under definition
	Platform for heat exchanger optimization	4	Yes	VITO	VITO	Under definition
	Publication	n.a.	Yes	VITO, IFE, IFPEN	Open access	n.a.
5/IFPEN	Simulator	5	Yes	IFPEN	IFPEN, commercial/R&D services	Under definition
	Loop workflow optimization method	6	Yes	IFPEN	IFPEN, commercial/R&D services	Under definition
	Publication	n.a.	Yes	IFPEN, VITO, IFE	Open access	n.a.
6/TUDa	Dataset from demo site	6	Yes	TUDa	Open access	n.a.
	Publication	2	Yes	TUDa	Open access	n.a.

7/VAASA	Publication	5	Yes	VAASA	Open access	n.a.
8/UNIBA	Dataset for Italian sites	n.a.	Yes	UNIBA	Open access	n.a.
9/NORCE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10/AGH	Publication	n.a.	Yes	AGH	Open access	n.a.
	Numerical model for heat exchanger	5	Yes	AGH	Open access	n.a.
	Surface integration model	5	Yes	AGH	Open access	n.a.

The commercialization pathways for the KERs in table 4 are under development with the partners who claim ownership and will be settled in a final Innovation and Exploitation workshop to be held on a date to be defined in the summer 2026.

3.5 Strategy development

The last stage of the innovation and exploitation process is the commercialization strategy development for each KER. At this point the final strategy for exploitation of results will be settled together with defined ownership and preferred business models for exploitation.

Business models from the defined KERs should include the information listed in Table 5.

Table 4. Overview of content of a business model

Business model content
▪ Key partners ▪ Key activities ▪ Key resources ▪ Value propositions ▪ Customer relationships ▪ Customer segments ▪ Communication and marketing channels ▪ Cost structure ▪ Revenue streams ▪ Risk analysis

4. COMMUNICATION AND DISSEMINATION STRATEGY

This section outlines the overarching strategy guiding HOCLOOP's communication and dissemination (CD) activities. It defines the purpose, aims, and objectives of the strategy, and details the tools, channels, and activities used to reach key stakeholder groups. The strategy will be regularly monitored and updated to ensure it remains relevant, effective, and responsive to project developments.

The purpose of the communication and dissemination strategy is to maximize the visibility, understanding, and impact of the HOCLOOP project among targeted stakeholders across scientific, industrial, policy, and public audiences, and to support the broader uptake of project results.

4.1 Communication aims and objectives

Communication activities will aim to:

- Raise awareness of HOCLOOP's innovative closed-loop geothermal solutions.
- Reach the broadest audience of interested stakeholders (academic, industry and professional) and the public.
- Present the project's results in accessible, engaging ways, while protecting the IPR generated for future commercial exploitation.
- Support knowledge transfer and capacity building, especially among early-career researchers and students.

To support these aims, communication departments at IFE and RW, together with IFE's Business Development Unit, provide dedicated support to project partners. Outreach activities include press releases, articles, photography, interviews, and other promotional materials, produced collaboratively by consortium members and disseminated through project's and partners' institutional channels.

The project's communication and dissemination strategy has the following main objectives:

- Raise visibility of HOCLOOP technologies among industry, research institutions, policymakers, and society.
- Engage relevant stakeholders through scientific conferences, industry events, and policy dialogues.
- Disseminate results through open-access publications, targeted media, and digital channels.
- Promote industrial relevance and potential use cases of the HOCLOOP solution.
- Establish mechanisms for stakeholder feedback to align project outcomes with societal and market needs.
- Facilitate market uptake by highlighting the economic, technical, and environmental benefits of HOCLOOP innovations.
- Foster collaboration and knowledge exchange through clustering with related Horizon Europe projects.

The following sections provide an overview of the key messages and channels as well as activities to be used to achieve these objectives. The results of the communication and dissemination strategy will be constantly monitored to assess its effectiveness, progress, and to implement changes where necessary.

4.2 Key messages

To ensure a focused and consistent communication and dissemination strategy, a core set of key messages and priority topics has been defined. These will guide all HOCLOOP outreach activities and ensure alignment across channels and audiences.

The following key topics are the most common and relevant for the project and will constitute the backbone of the HOCLOOP communication activities:

- Renewable energy and the green transition
- Closed-loop geothermal systems
- Heat extraction from geological formations
- Drilling and well construction technologies
- Modelling of heat transfer and fluid dynamics
- Alternative working fluids (e.g. CO_2) for geothermal energy
- Integration of geothermal energy in electricity production and industrial applications

Key messages should be direct, simple, clear, action-oriented concise and consistent. The following key messages are identified to be communicated:

- HOCLOOP enables lower Levelized Cost of Energy (LCOE) by introducing an innovative closed-loop horizontal well design for the extraction of heat from deep or shallow formation rocks.
- The solution avoids hydraulic fracturing and associated seismic risks, improving social acceptance and environmental performance.
- Advanced models and simulation tools are being developed to predict heat extraction and optimize performance across diverse geological settings.
- Using alternative fluids like CO_2 enhances heat transfer and increases the efficiency of geothermal energy systems.
- HOCLOOP supports the integration of renewable heat into industrial processes, contributing to EU energy resilience and decarbonisation.
- The project promotes reliable and stable power supply, especially when combined with other renewable sources.
- HOCLOOP contributes to making EU electricity production more cost-efficient and competitive through improved geothermal solutions.
- It enables the integration of renewable energy sources into industrial applications, reducing reliance on fossil fuels and supporting the green transition.

4.3 Communication channels and tools

In order to engage with the target groups presented in Section 2.1., HOCLOOP will use a large variety of channels and tools in order to communicate and disseminate the project's outcomes. Furthermore, the project will operate as a communication channel to support relevant European Commission Energy Directives and legislation.

Communication and dissemination materials related to the project activities are based on the HOCLOOP Corporate Identity (CI) toolkit, which is being developed in Task 1.4 (Task 1.4. Innovation Management, communication, and dissemination) together with a professional design agency. The CI toolkit comprises the project logo, a color palette, fonts, key visuals and templates for Power Point and Word templates (e.g. for deliverables, press releases and articles). All elements of the CI toolkit are accessible to the project partners via the project SharePoint repository.

In the following, tools and channels used for the project communication and dissemination are presented.

4.3.1. Project logo

The HOCLOOP logo has been designed to provide an immediate and visual indication of the project. The project logo must be placed on all published materials (Figure 2). This includes not only promotional material, but also deliverables, event announcements, factsheets, infographics, presentations, or agendas.

Figure 2. HOCLOOP logo

4.3.2. Colour palette

The color palette is a key element of HOCLOOP's visual identity, ensuring a consistent and professional appearance across all communication and dissemination materials. It forms the foundation for the project's branding, helping to create a cohesive and recognizable presence in both digital and printed formats.

The chosen color scheme aligns with the geothermal energy sector, reflecting heat, energy and technological advancement. It will be applied across the project website, social media graphics, presentations, reports, factsheets, and promotional materials to maintain a unified visual identity.

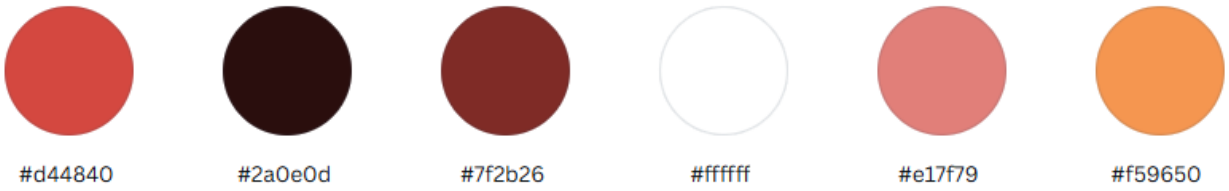

Figure 3. HOCLOOP color palette

4.3.3. Project Website

The project website is one of the main communication tools for EU funded projects. The HOCLOOP project website was published by M6 and is accessible under https://www.hocloop.eu/. The HOCLOOP website includes the following content:

- Project Homepage - General overview of the project,
- In a nutshell - Background, Objectives, Concept, Impact,
- Our partners - Short descriptions of the project partners, their contribution to the project and contact information,
- Implementing HOCLOOP – Project implementation plan,
- News & events – News about the project,
- Deliverables & Library– Public deliverables, communication materials,
- Contact page.

The website is administrated and maintained by project coordinator IFE and is updated on a regular basis with the latest results and news concerning the project. Additionally, it will be maintained for at least 2 years after the project.

The main target audience of the website are industrial stakeholders and research organizations working on projects and topics related to the geothermal energy industry and, to a lesser extent, people interested in these topics in general. The expected key performance indicator (KPI) for this channel is 100 visits per month, 20% returning visitor rate and 20 downloads once public reports are uploaded.

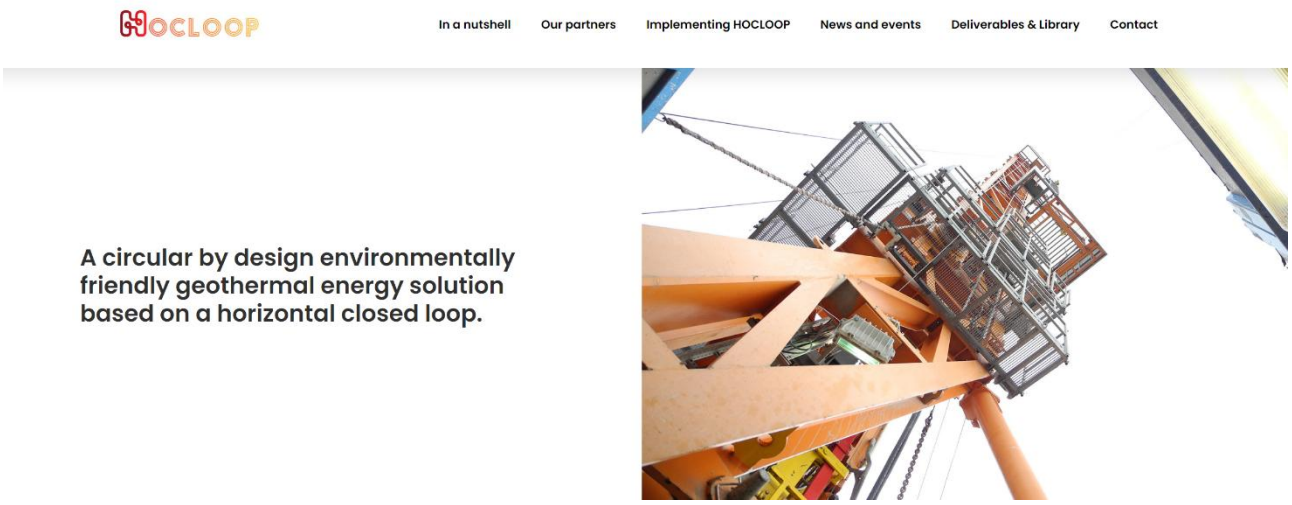

Figure 4. HOCLOOP website: Homepage

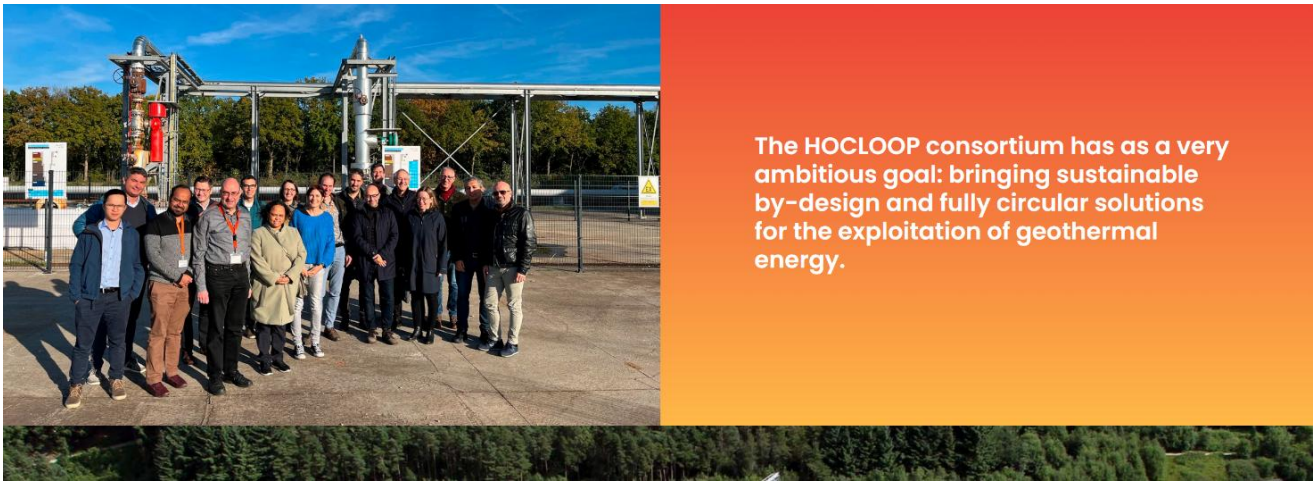

Figure 5. HOCLOOP website: Homepage (2)

The website remains also the major way to communicate information about HOCLOOP. The link to this webpage is regularly mentioned on social media accounts and promotional materials as part of a strategy to increase the number of visitors. By M29 the project website reached almost 4000 views and 1300 visitors.

	Page title and screen class	↓ Views	Active users	Views per active user	Average engagement time per active user
	Total	3,848 100% of total	1,348 100% of total	2.85 Avg 0%	2m 04s Avg 0%
1	Home - HOCLOOP	2,045 (53.14%)	1,156 (85.76%)	1.77	1m 44s
2	In a nutshell - HOCLOOP	458 (11.9%)	253 (18.77%)	1.81	1m 12s
3	Our partners - HOCLOOP	390 (10.14%)	245 (18.18%)	1.59	52s
4	Deliverables & Library - HOCLOOP	232 (6.03%)	150 (11.13%)	1.55	25s
5	Implementing HOCLOOP - HOCLOOP	215 (5.59%)	149 (11.05%)	1.44	23s
6	News and events - HOCLOOP	175 (4.55%)	108 (8.01%)	1.62	20s
7	Contact - HOCLOOP	113 (2.94%)	88 (6.53%)	1.28	11s
8	HOCLOOP Project Progress: Full-Scale Pilot Test Preparations Underway - HOCLOOP	42 (1.09%)	34 (2.52%)	1.24	25s
9	HOCLOOP Project General Assembly Meeting in Darmstadt - HOCLOOP	32 (0.83%)	28 (2.08%)	1.14	13s
10	HOCLOOP project kicked-off at VITO in Belgium - HOCLOOP	31 (0.81%)	25 (1.85%)	1.24	21s

Figure 6. HOCLOOP website analytics

4.3.4. Social media channels

Social media channels have become an effective way to expand reach and foster stakeholder engagement and interactive communication. Two social media channels were set up in September 2023 to support the HOCLOOP communication and dissemination activities:

LinkedIn profile: https://www.linkedin.com/company/hocloop-project/, @HOCLOOP Project

Twitter profile: https://twitter.com/hocloop, @HOCLOOP

So far LinkedIn has been the most successful communication channel for the HOCLOOP project. The account is very active, with high frequency of posts and re-posts. Being a professional platform, most of the stakeholders are present there and therefore can be reached easily. Furthermore, HOCLOOP can benefit from the existing LinkedIn networks and communities involved in the area of geothermal solutions. By M29 the project's LinkedIn page reached 15,000 impressions and 580 reactions.

At the same time, it was decided to stop using Twitter profile, since it was not reaching a lot of traction and the recent changes in ownership and policy negatively impacted the reputation of this social network as well as made analytics a paid service, making it impossible to measure pages outreach without additional investment in subscription.

In 2024 project's YouTube channel was created to be used as video repository for project related video content: https://www.youtube.com/@HOCLOOP_project.

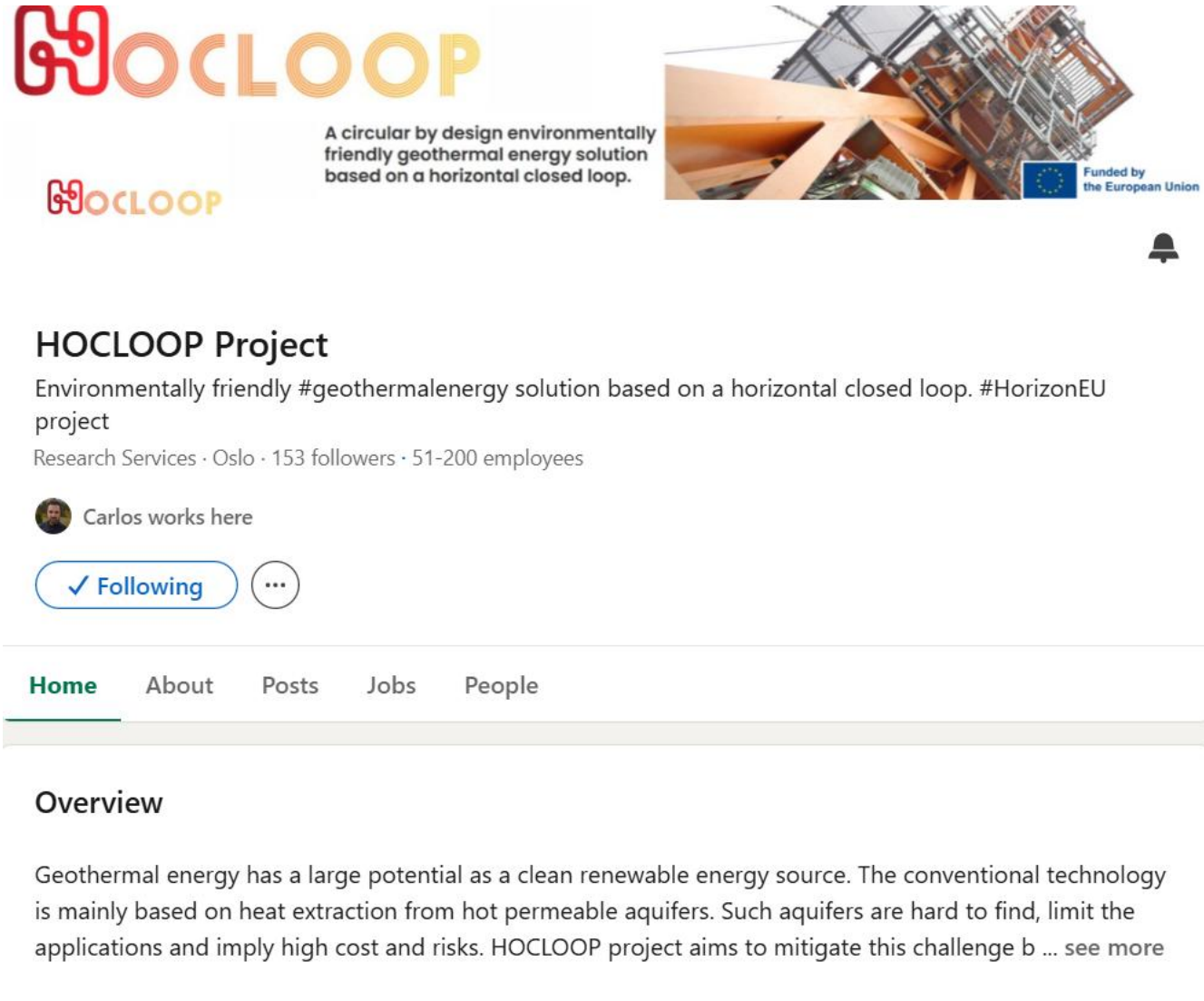

Figure 7. HOCLOOP LinkedIn profile

The accounts are managed by the project coordinator IFE. They are regularly updated with general information on the project, participation in events, updates on the project advancement, etc. The consortium will support IFE and provide inputs. Moreover, all partners will contribute to giving the project more visibility via their own channels by following, likes and shares of the posts to disseminate them as widely as possible, including in their national languages. When referring to the project in other social media, partners are encouraged to use hashtags and mention the project by using its handle.

For this purpose, a preliminary list of hashtags to be regularly used has been defined:

#HOCLOOP

#geothermal

#geothermalfluids

#HorizonEU

#renewables

#renewableenergy

Also, more Research-oriented social media, such as ResearchGate (https://www.researchgate.net/), could be leveraged as well, through the activity performed by the HOCLOOP researchers.

4.3.5. Promotional videos

Videos have become a crucial tool in the communication activity of individuals, businesses, and organizations. The relevance of videos can be attributed to their ability to convey messages in a visually appealing and engaging manner. Videos have the power to capture the attention of the audience and retain it for longer periods, making them an effective medium for storytelling, marketing, and education. They are often shared on social media platforms to reach a larger audience and can be shared across multiple platforms, making them a powerful tool for communication. Videos can effectively convey the unique selling proposition of a product or service and generate interest among potential customers. Therefore, to showcase the progress of HOCLOOP project, two (2) short videos will be created and released respectively in M26 and M40. These will be published on YouTube and crosslinked with the HOCLOOP website. They will be used across social media, as well as a supporting video material during HOCLOOP showcases and presentations during events and conferences.

The first project video explaining the concept and introducing the consortium was released at M26 and distributed via project own and partners digital channels. By M29 the video got almost 700 total views on both Youtube and LinkedIn. The second video is planned to be created close to the end of the project to demonstrate the outcomes and results.

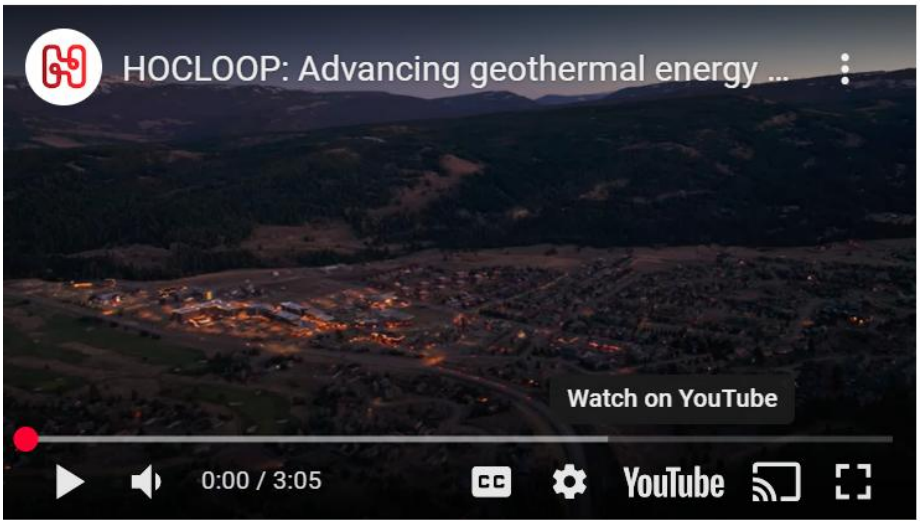

Figure 8. HOCLOOP Project video

4.3.6. E-newsletter

To ensure regular updates and engagement with stakeholders, HOCLOOP will publish a LinkedIn Newsletter once the project's LinkedIn page reaches 150 followers. This newsletter will serve as a key communication tool, providing updates on project milestones, events, research findings, and stakeholder engagement opportunities.

Unlike traditional email-based newsletters, the LinkedIn Newsletter format will allow for broader reach, easy sharing, and increased interaction with industry professionals, policymakers, and researchers already engaged in the geothermal sector.

All published newsletters will also be archived and accessible on the HOCLOOP project website, ensuring continued access to past editions.

4.3.7. Press releases

Press releases will be issued to highlight HOCLOOP's key achievements, breakthroughs, and milestones, ensuring broad visibility across scientific, industrial, and policy sectors. They will be published online and in printed magazines, uploaded to the HOCLOOP website, and disseminated via the project's social media channels.

Each project partner will further amplify dissemination by sharing press releases through their institutional websites, social media platforms, mailing lists, and local/national media outlets. All partners will disseminate non-confidential information of the project in their national language to local/regional newspapers and media. Given the diverse target audiences for press releases, the distribution channels will be tailored to each announcement, ensuring maximum reach and impact among relevant stakeholders.

By M29 two press releases were shared: one at the beginning of the project and another at the beginning of the pilot test for HOCLOOP solution at NORCE in October 2024 (see Annex I).

4.3.8. Other communication channels

4.3.9. KPIs for Communication

To quantify and track the effectiveness of communication activities, some Key Performance Indicators (KPIs) have been identified:

Table 5. Communication KPIs

Item	Goal	#	KPI	Progress
Logo	To grab attention and make a strong first impression and reach the widest audience	1	Logo ready	Logo ready
Website	Create a user-friendly website	1	Website launched	Website launched and maintained
Exploitation of website	Reaching the widest audience possible, by using the website for promotional activity and regularly update it with news related to the project development and achievements	5000 20	5,000+ unique views 20 news on the website	14 news on the website, 3800 unique views
Social media channels	Channels/ profiles to increase exposure of the project and create a large online community of interested parties.	2	2 channels, 500 followers, 7000 impressions	2 channels created, 155 followers, 15000 impressions, 580 reactions
Videos	Outreach wide audience	2	500+ views	1 video published, 700 views
Other communication channels	Spreading HOCLOOP results on traditional mass media (via press releases and participation in radio, newspapers, magazines at local and regional level and TV)	4	4 media appearances, 200k people reached[3]	In progress, 2 press releases shared

4.4 Dissemination actions

Numerous dissemination and communication activities will be carried out within the HOCLOOP project to engage with stakeholders and promote the project's outcomes. In the following sections the different activities are described in more detail.

4.4.1. Dissemination goals and activities

A set of dissemination and communication activities will be performed to ensure the maximum impact of the project on industry, the research community, and the whole society through high transparency and as wide as possible dissemination of the research results. The main objectives of the dissemination activities for HOCLOOP include:

- Promoting scientific excellence and innovation, targeting the developments for geothermal applications.

[3] C. 50,000 people impacted per media appearance is estimated for traditional mass media channels.

- Technology transfer of the R&D+I results to the industry, environmental consultants, stakeholders, renewable energies, raising awareness of the usefulness of the developed methodologies, for a better understanding of geothermal exploitation resources.
- Generate market demand for the technologies and products developed, to increase the exploitation.
- Retaining Europe at the international leading edge of research by developing breakthroughs concepts and exploiting platforms in geothermal energy.
- Contributing to knowledge exchange and mutual learning, and encouraging talented students, scientists, and engineers to join our partner institutes and enterprises.
- Fostering public awareness, engagement and understanding of science and technology energy-resources related, as well as drawing the attention of national governments and regional authorities.
- Attract the interest of potential partners and public or private investors.
- Enhance partners' reputation and visibility at local, national, and international level.

4.4.2. Project flyers and brochures

Several specific project brochures/leaflets will be prepared and released in English and translated to different languages (e.g. Norwegian, French). This will allow to support the overall project dissemination activities by providing information about the HOCLOOP's objectives, achievements, and expected results, and will be updated accordingly throughout the duration of the project. These promotional materials will be made available to the HOCLOOP Consortium partners for workshops, participation at conferences and events, and they will also be available on the project's website. The first two HOCLOOP flyers have been prepared and released. They are going to be used as shareable materials for social media, and for dissemination purposes during events, as well as downloadable from the website.

The release of further project brochures and materials has been already planned across the 42 months of the project. However, to address specific timing needs – should it be the case – the release of such materials may change to serve specific events, conferences, etc.

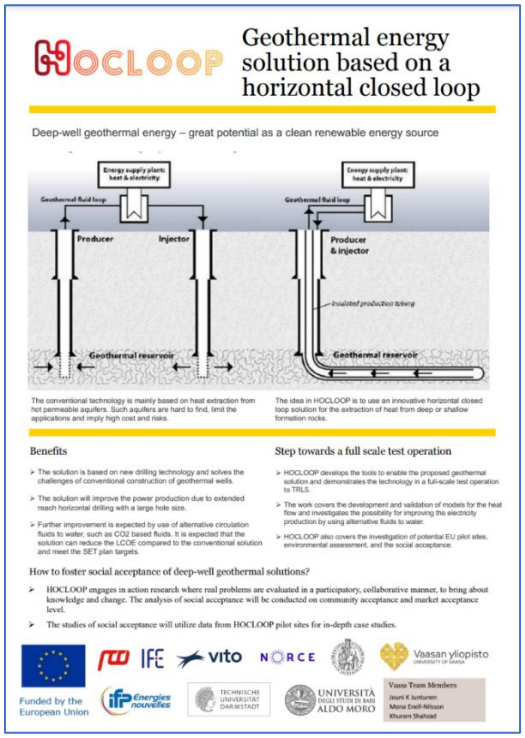

Figure 9. HOCLOOP flyer

Figure 10. HOCLOOP brochure

4.4.3. Publications

In view of the dissemination activity, HOCLOOP will target the production of high impact contributions to be disseminated through peer-reviewed publications. The publications will be made available Open Access by using the Golden Route, in which the publications will be made available Open Access directly at the Publisher. The articles and results will also be published on Open Research Europe to provide free and full access to the research. Potential journals for publications are listed in the SCI with an impact factor higher than 1.0, such as Renewable Energy; Renewable & Sustainable Energy Reviews; IEEE Transactions on Power Systems; Applied Energy; Energy; Energy Economics, Joule, Sustainability; Energies; Earth System Science Data; Geothermics etc.

To facilitate the uptake of HOCLOOP's results in research and ensure knowledge and technology transfer HOCLOOP will publish at least 15 scientific publications. As a first step the partners identified possible publication topics (see Table 6). Table 6 will be refined and updated during the project duration, as the project partners achieve results and have more precise plans regarding their planned publications. Researchers will upload publications in openAIRE, the online repository Zenodo and on the project public website.

Table 6. Potential publication topics

LEADING PARTNER	Potential topic
IFE	Heat transport modelling: 3-D visualization tools of the rock temperature and the heat flow based on the geological characteristics of the formation for arbitrary well-geometries and paths. Development of benchmarking tests to validate the numerical temperature solutions for the rock. Novel businesses for geothermal energy exploitation.
UNIFI	Characterization of CO2 and CO2-based fluid mixtures as heat carriers in geothermal heat extraction in closed-loop systems. Thermodynamic properties of CO2-based fluids. Modelling the heat transfer, natural circulation and pressurization features of CO2 and other CO2 based SF and ILs in the borehole and at surface.
VITO	Impact assessment of heat extraction from horizonal closed wells on Geo-thermal power plants. Case-study of the application of the HOCLOOP concept at the Balmatt plant based on the results of the simulations underground and possible surface integration.
IFPEN	Simulation of water and CO2 as thermal carrier fluids in the closed loop system considering the natural flow of water in the rocks. Optimization of the design of the closed loop system by simulations based on the relevant parameters for its performance: fluid flow rate, injection temperature and well geometry, etc. Integration of the surface modelling in the subsurface heat transfer flow model to improve the design of both the underground loop and the above ground energy system.
TUDa	Evaluation of the HOCLOOP solutions in comparison with the vertical borehole heat exchanger scenario. Conceptual pre-designs of both the underground loop and the above ground energy system for each of the pilot sites evaluated. Modelling data and step-by-step tutorials for analysis of deployment of the HOCLOOP concept.
VAASA	Analysis and in-depth evaluation of the acceptance of geothermal exploitation based on the HOCLOOP concept on the societal level (considering the perceived risks of conventional geothermal exploitation and the mitigations presented by HOCLOOP),

	and on the market level.
UNIBA	Characterization of novel ionic liquids as heat carriers in geothermal heat extraction in closed-loop systems as an alternative to water. Thermodynamic properties and behaviour of ionic liquids used as thermal fluids. Analysis of the impact of a closed loop system for geothermal heat extraction on seismicity-driving parameters. Minimization of seismicity in the exploitation of geothermal sources using the HOCLOOP concept.
NORCE	Technical details of field-pilot deployment of a closed-loop system for extraction of geothermal heat. Evaluation of performance and techno-economic feasibility of real exploitation.

A list of scientific journals that support open access publication is given in the following table.

Table 7. List of potential open-access publication platforms to be used for HOCLOOP's publications

NAME OF JOURNAL	Editor	Area of interest
Open Research Europe **Weblink**	European Commission	All
IEEE Open Access Journal of Power and Energy **Weblink**	EEE journals	Renewables
European Journal of Operational Research **Weblink**	Elsevier	Methodology of operational research and the practice of decision making
Renewable Energy **Weblink**	Elsevier	Renewables
Energies **Weblink**	MDPI	Renewables
Renewable and Sustainable Energy Reviews **Weblink**	Elsevier	Renewable and Sustainable Energy
Joule **Weblink**	Elsevier	Sustainable energy
Geothermics **Weblink**	Elsevier	Geothermal Research and its Applications
Energy Economics **Weblink**	Elsevier	Energy economics and energy finance
Energy **Weblink**	Elsevier	Energy engineering and research
Applied Energy **Weblink**	Elsevier	Energy
Frontiers in Energy Research **Weblink**	Frontiers	Energy
Procedia CIRP **Weblink**	CIRP	High quality proceedings from CIRP conferences
Expert System with Applications **Weblink**	Elsevier	Expert and intelligent systems applied in industry, government, and universities worldwide

The first article "The HOCLOOP Project: Tools to model heat extraction from horizontal closed wells" was published within the framework of 4th EAGE Global Energy Transition Conference and Exhibition - GET2023 by IFPEN, VITO, and IFE in November 2023.

4.4.4. International conferences and fairs

Together with the publication of results in scientific and industrial publications, the visit of international conferences and fairs will be a crucial lever to disseminate the project' findings to a scientific and technical audience. This way, the partners will facilitate the market uptake of the HOCLOOP solutions, connect with stakeholders, enhance knowledge transfer, and exploit synergies with other EU & international projects. Partners of the HOCLOOP project plan to participate in at least ten exhibitions, scientific conferences, workshops or industrial events. Scientific conferences will offer a further opportunity for partners to present results in the form of papers and posters.

The following table lists events, relevant to the HOCLOOP topics, that project partners attended or plan to attend to disseminate results and connect with the main target groups.

Table 8. International conferences and fairs

EVENT NAME	Date and location	Website
Energy Week	Tbd, March 2026 Vaasa, Finland	Weblink
GeoEnergy 2025	11-12 November 2025 Bergen, Norway	Weblink
EAGE GET 2025	27-31 October, Rotterdam, the Netherlands	Weblink
ENLIT Europe	18-20 November 2025 Bilbao, Spain	Weblink
World Sustainable Energy Days	26-27 February Wels, Austria	Weblink
All-Energy Exhibition and Conference	13–14 May 2026 Glasgow, UK	Weblink
The Smarter Europe	22–23 June 2026 Munich, Germany	Weblink
11th International Conference on Smart Energy Systems (SESAAU2025)	16-17 September 2025 Copenhagen, Denmark	Weblink
Sustainable Places Conferences	8–10 October 2025 Milan, Italy	Weblink
European Sustainable Energy Week	June 2026 Brussels, Belgium	Weblink

As of June 2025, HOCLOOP partners participated in several key international conferences and exhibitions, including the 85th EAGE Annual Conference & Exhibition (Oslo, 2024), the 4th EAGE Global Energy Transition (GET2023) Conference, ECOS 2024 (Rhodes), and SDEWES 2023 and 2024. Project results were also shared at more targeted geothermal venues such as the European Geothermal Workshop 2024 (Stavanger), the 50th Stanford Geothermal Workshop, and the European Geothermal PhD Days 2024 (Delft). In addition, HOCLOOP was featured at the Vaasa EnergyWeek 2024, a prominent Nordic energy event that attracted over 8,000 visitors from 45 countries.

4.4.5. Synergies/interactions with other projects and initiatives

Projects under the same call often share goals and aim at similar audiences. Connecting and clustering with likeminded beneficiaries e.g., by following their social media channels, can attract each other's followers, enlarging the community of interested individuals and organizations.

HOCLOOP aims to actively build synergies with and share knowledge with similar R&D projects and networks/clusters. The Consortium will make use of the up-to-date knowledge and outcomes from other Geothermal projects in which one or more partners were involved: GEOENVI, GECO, GEMex, REFLECT, GEOSMART.

Possible synergies are:

- Exchange of knowledge through workshops and participation in EU networks,
- Build on experience gained during the implementation of the projects,
- Joint communication activities (e.g., common participation in events and joint presentations/workshops, common newsletter articles, etc.),
- Cross-feeding of social media channels.

The project has joined recently established Geo-Cluster alongside 9 EU projects that are involved in geothermal research. Cooperation with Geo-Cluster will be focused on identifying synergies, planning joint activities, and exploring opportunities for collaboration in dissemination and communication activities.

To engage the geothermal industry, national geothermal associations serve as key facilitators in bridging research with industry, disseminating project results, and fostering collaborations within the sector. Below is the updated list of geothermal associations for potential dissemination and outreach activities.

Table 9. Geothermal associations

Geothermal Association	Country
Norsk Geotermisk Forening (Norwegian Geothermal Association)	Norway
Associazione Nazionale Impianti Geotermia Heat Pump (AnigHP)	Italy
COSVIG - Consorzio per lo Sviluppo delle Aree Geotermiche	Italy
Rete Geotermica	Italy
Unione Geotermica Italiana (UGI)	Italy
Association Française des Professionnels de la Géothermie (AFPG)	France
Syndicat des Énergies Renouvelables (SER)	France
Bundesverband Geothermie e.V	Germany
Geothermal Platform of Belgium (Flemish & Walloon Geothermal Associations)	Belgium
Finnish Geothermal Energy Association (Suomen Geotermisen Energian Yhdistys)	Finland
Polish Geothermal Society (Polskie Stowarzyszenie Geotermiczne, PSG)	Poland

Also, ETIP-Geothermal was identified as a platform of high relevance and interest that aims to precisely identify the RD&I needs of the European geothermal industry and propose pathways to act on them.

Alongside this objective HOCLOOP will co-organize and participate in joint workshops and networking sessions. More EU projects and possible clusters for collaboration are going to be further identified together with partners.

4.4.6. Publication of a project guidebook

The project guidebook will be one of the most important dissemination tools of HOCLOOP. This guidebook will contain a short presentation of challenges faced by the geothermal energy sector in the EU, a detailed presentation of key exploitable results of HOCLOOP, and a description of newly produced training materials. This guidebook will be written in an easy and accessible way to be suitable for as many target groups as possible. It will be made available to the general public for download on the project webpage and a few printed copies will be handed to project partners to foster the uptake of results.

4.4.7. Final event

Final Event Presenting the outcomes of the HOCLOOP project, a Final Event is envisaged in M42. This event will bring together all the partners, the stakeholders and citizens, to show the project's achievements and showcase the strength of the network but also to disseminate target audiences and raise awareness.

4.4.8. KPIs for Dissemination

To quantify and track the effectiveness of dissemination activities, some Key Performance Indicators (KPIs) have been identified:

Table 10. KPIs for Dissemination

ITEM	Goal	#	KPI	Progress
Project flyer/brochure	To reach a large audience. These include flyers, brochure/leaflets and banners, for distribution at conferences and trade shows as well as networking activities/events	5	4 project leaflets 1 banner Expected reach 1000+ people	1 project leaflet created and distributed
Scientific publications	Articles in scientific journals and posters, spreading HOCLOOP scientific results to the scientific audience. (Impact factor of publications higher than 2.0)	15	2000+ views	11 publications, including posters
Conferences	Participation in key events, international conferences and events dedicated to RI showcasing	12	200+ attendees per event	11 presentations delivered
Project guidebook	To disseminate project results among stakeholders and wide audience	1	1000+ copies distributed	In progress
Final event	Organisation of a final event	1	150+ attendees	In progress

4.5 Monitoring of communication and dissemination activities

The communication and dissemination activities are continuously monitored to evaluate their effectiveness, ensure alignment with project objectives, and implement improvements where necessary. Regular assessments help identify successful approaches, areas for improvement, and adapt the strategy in response to evolving project needs or external developments.

To support this, Key Performance Indicators (KPIs) have been defined (see Sections 4.3.9 and 4.4.8) and are used to measure progress in terms of outreach, stakeholder engagement, content production, and impact across various channels.

In addition to KPI tracking, a dedicated Communication and Dissemination Monitoring Tool has been developed and shared with all consortium partners. This tool allows partners to systematically record their communication and dissemination actions, such as events, publications, presentations, and social media activities, and supports efficient reporting and coordination across the consortium.

Moreover, data from key analytics platforms, such as LinkedIn, YouTube, and Google Analytics, will be regularly collected and reviewed. These analytics provide insight into audience reach and engagement, helping to fine-tune messaging and content distribution over time.

Periodic internal reviews of communication efforts, including qualitative feedback from partners, will also contribute to refining the approach. Where relevant, feedback from stakeholders (e.g. via workshops, surveys) may be used to adapt messaging and channels more effectively.

Figure 11. Communication and dissemination monitoring tool

5. CONCLUSIONS

This document outlines the updated strategy for innovation management, exploitation, communication, and dissemination within the HOCLOOP project. It reflects both the activities completed during the first phase and the initiatives planned for the remainder of the project timeline.

Dissemination remains a central pillar in promoting HOCLOOP's novel geothermal solution. Given that the concept and resulting technologies are not yet widely known outside specialized circles, early awareness-raising activities are essential. Key dissemination channels include the project website, social media platforms, and active participation in international conferences and sector events. These are designed to ensure the project reaches relevant scientific, industrial, and policy audiences.

While broader communication actions are also planned, they play a complementary role, aligned with the project's more targeted focus on professionals and technical stakeholders rather than the general public. When appropriate, these activities will support public understanding and awareness of HOCLOOP's environmental and energy transition benefits. All communication and dissemination efforts follow a gender-sensitive approach, ensuring inclusive language and visibility. This allows to ensure that the gender dimension is integrated as a transversal issue in the HOCLOOP project activities.

This plan will continue to be revised and adapted as the project progresses, ensuring alignment with evolving project needs, stakeholder input, and emerging opportunities to maximize HOCLOOP's visibility, impact, and long-term adoption.

With the exception of all possible KERs arising from WPs 3 and 6 (due to the delays observed in the implementation of these two WPs), all other KERs are now identified by the partners, together TRLs achieved, IPRs status, Ownership definition, and Access rights. Commercialization strategies are under construction and will be defined by the project's end.

6. ANNEXES

Annex 1. Social media and website analytics
Annex 2. Press Release on pilot test

D.1.8 Annex 1. Social Media and Website Analytics

LinkedIn and Google Analytics report

The HOCLOOP website continues to serve as a primary communication hub for sharing information about the project's progress and results. By M29, the site has recorded 3,848 views and 1,348 active users, with the homepage receiving over 2,000 visits. The most viewed pages include "In a nutshell," "Our partners," and "Deliverables & Library," indicating strong interest in the project's objectives and contributors.

	Page title and screen class	↓ Views	Active users	Views per active user	Average engagement time per active user
	Total	3,848 100% of total	1,348 100% of total	2.85 Avg 0%	2m 04s Avg 0%
1	Home - HOCLOOP	2,045 (53.14%)	1,156 (85.76%)	1.77	1m 44s
2	In a nutshell - HOCLOOP	458 (11.9%)	253 (18.77%)	1.81	1m 12s
3	Our partners - HOCLOOP	390 (10.14%)	245 (18.18%)	1.59	52s
4	Deliverables & Library - HOCLOOP	232 (6.03%)	150 (11.13%)	1.55	25s
5	Implementing HOCLOOP - HOCLOOP	215 (5.59%)	149 (11.05%)	1.44	23s
6	News and events - HOCLOOP	175 (4.55%)	108 (8.01%)	1.62	20s
7	Contact - HOCLOOP	113 (2.94%)	88 (6.53%)	1.28	11s
8	HOCLOOP Project Progress: Full-Scale Pilot Test Preparations Underway - HOCLOOP	42 (1.09%)	34 (2.52%)	1.24	25s
9	HOCLOOP Project General Assembly Meeting in Darmstadt - HOCLOOP	32 (0.83%)	28 (2.08%)	1.14	13s
10	HOCLOOP project kicked-off at VITO in Belgium - HOCLOOP	31 (0.81%)	25 (1.85%)	1.24	21s

Figure 12. HOCLOOP website page views

User acquisition analysis shows that referral traffic is the dominant source of website visits, suggesting strong performance of partner-driven outreach, shared links in external channels, and event-driven traffic spikes. Direct traffic and organic search follow as secondary sources. Social traffic, however, remains low, indicating a continued need to strengthen the conversion from social posts to actual website visits.

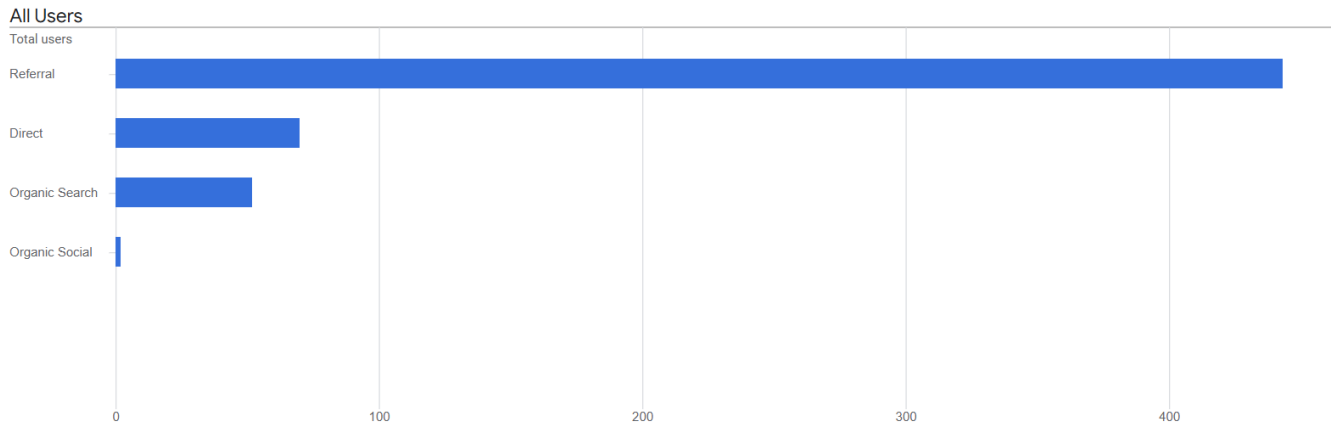

Figure 13. HOCLOOP website traffic sources

Audience distribution by country shows that the largest share of users comes from the United States, Norway, and Italy, with other visitors from key partner countries like Germany, Poland, and Belgium.

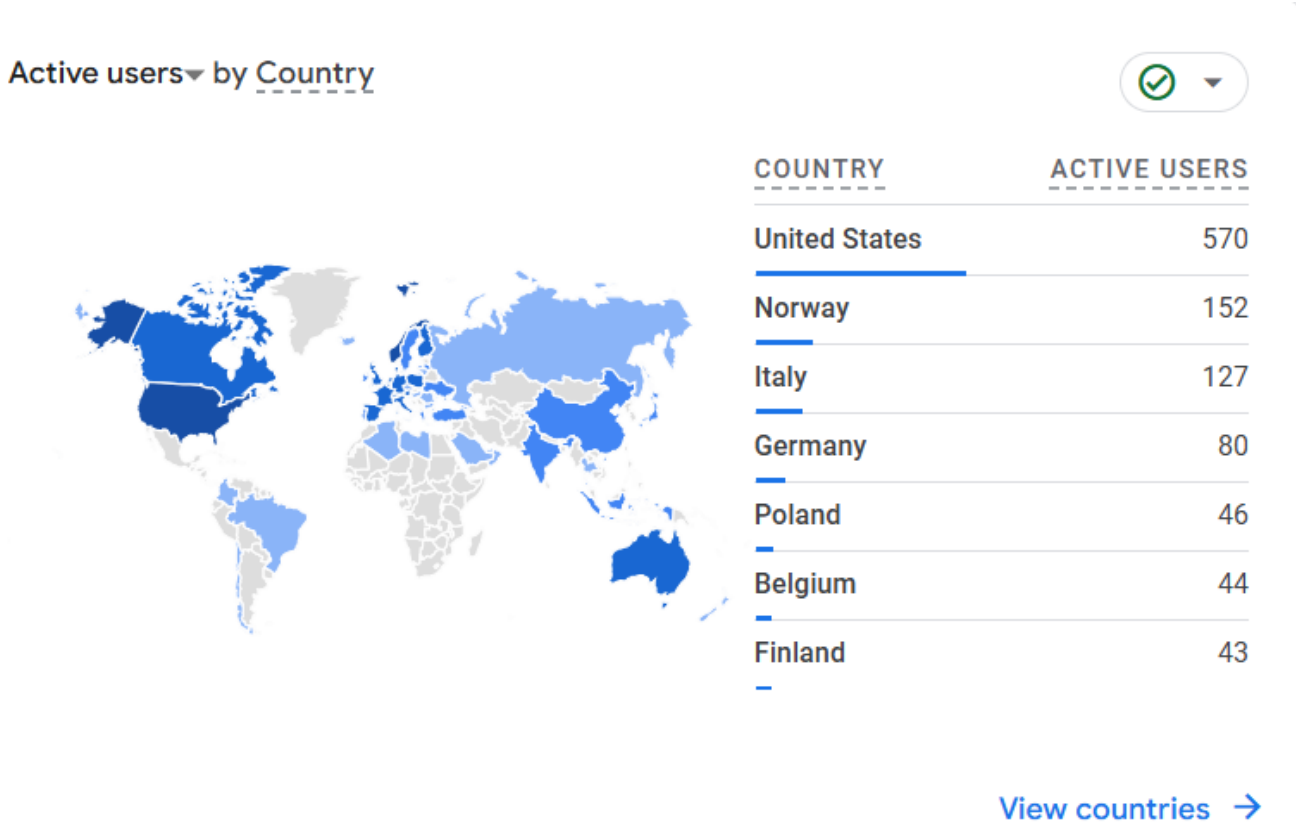

Figure 14. HOCLOOP website audience distribution

So far LinkedIn has been the most successful communication channel for the HOCLOOP project. The account is very active, with high frequency of posts and re-posts. Being a professional platform, most of the stakeholders are present there and therefore can be reached easily. Furthermore, HOCLOOP can benefit from the existing LinkedIn networks and communities involved in the area of geothermal solutions. The account grew to 157 followers by June 2025, with 89 new followers gained over the reporting period.

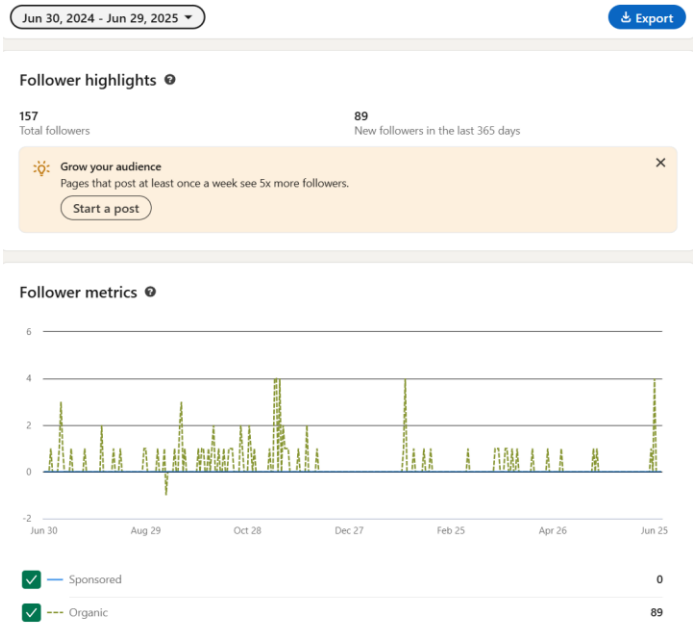

Figure 15. HOCLOOP LinkedIn followers

Visitor engagement reached 317 page views and 188 unique visitors, with a balance of mobile and desktop usage, peaking in autumn 2024, when the pilot test communication campaign was ongoing.

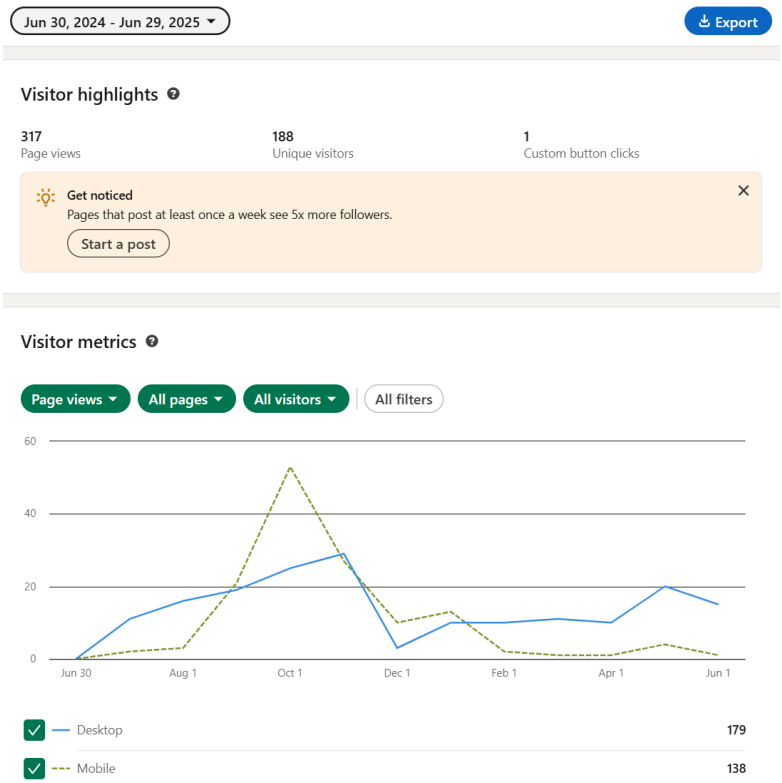

Figure 16. HOCLOOP LinkedIn followers

The project's visibility has been boosted by active content sharing. Between June 2024 and June 2025, the LinkedIn page generated 15,187 impressions, 579 reactions, and consistent engagement across posts.

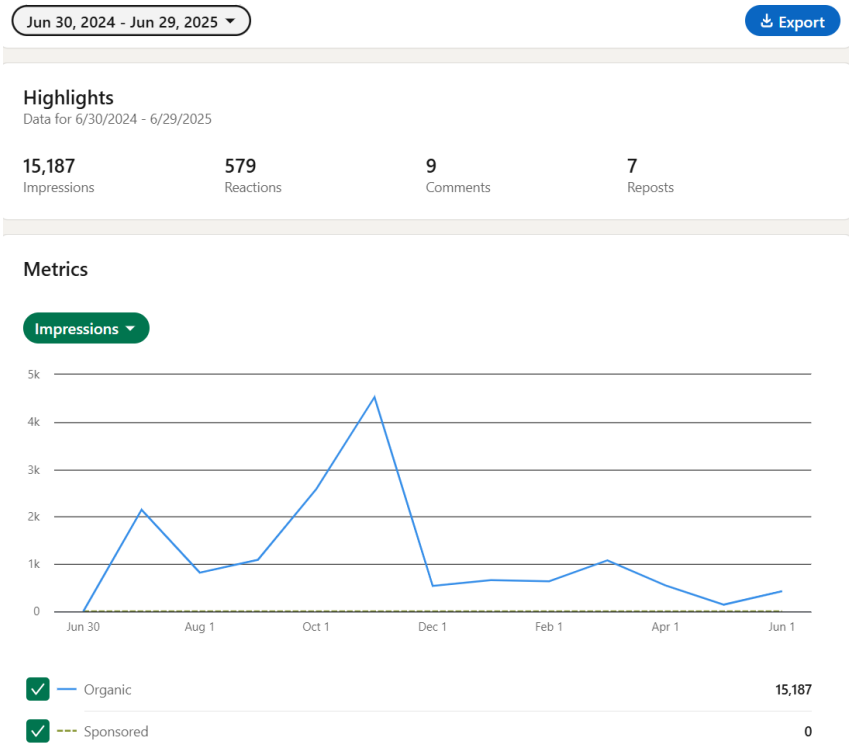

Figure 17. HOCLOOP LinkedIn impressions

Together, these channels continue to support the project's visibility, stakeholder engagement, and knowledge dissemination across Europe and beyond.

D1.8 Annex 2. Press Release on pilot test

Press Release: HOCLOOP Project Marks Key Milestone in Geothermal Innovation with the Full-Scale Testing of Technology

Stavanger, Norway – 12 November 2024

The HOCLOOP project has reached an exciting new phase: the launch of a full-scale pilot test to validate its closed-loop geothermal technology, which harnesses geothermal heat efficiently, safely, and sustainably. On 11 November 2024, Reelwell completed the installation of this advanced heat extraction technology at the Ullrigg Test Centre in collaboration with NORCE and IFE, which managed the surface equipment for thermal testing.

Thermal Testing Underway

The system's thermal performance and durability will now be thoroughly analyzed. These tests are essential for validating the technology to TRL 5, a readiness level indicating that the system is proven in a relevant real-world environment. With this full-scale pilot, the team will meticulously analyze the thermal performance and system durability, marking a crucial step towards the large-scale deployment of the technology.

HOCLOOP's innovative approach has the potential to unlock geothermal energy from both wet and dry reservoirs, offering a path toward safer, more efficient, and eco-friendly energy. The collaboration among project partners has pushed the boundaries of geothermal energy accessibility, with the ultimate goal of widespread adoption across diverse climates and geological landscapes.

The HOCLOOP project's vision extends beyond research and development; the goal is to enable broader adoption of geothermal energy by improving the safety, efficiency, reliability, and environmental sustainability of geothermal heat exploitation. HOCLOOP's innovative technology will pave the way for future applications across varied global climates and geological landscapes.

Further results from the present phase of the project will be instrumental in optimizing the system's design and preparing for future commercial applications. As the project advances, HOCLOOP continues to engage with stakeholders, industry leaders, and regulatory bodies to ensure the seamless integration of this technology into the energy sector.

About HOCLOOP:

The HOCLOOP project is a Research and Innovation Action under the Horizon Europe program (project number 101083558) coordinated by IFE, and dedicated to advancing geothermal exploitation technology, bringing together top energy and engineering experts to develop innovative methods for efficient and sustainable geothermal heat extraction.

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