D 6.2

Ecosystem Building Plan

APRE

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#GEOSYNPROJECT

Funded by the European Union

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Partners short names

APRE	AGENZIA PER LA PROMOZIONE DELLA RICERCA EUROPEA
UNIFI	UNIVERSITA DEGLI STUDI DI FIRENZE
COSVIG	CONSORZIO PER LO SVILUPPO DELLE AREE GEOTERMICHE
SDU	SYDDANSK UNIVERSITET
GU	NGO GEOTHERMAL UKRAINE
SINTEF	SINTEF AS
SINTEF ER	SINTEF ENERGI AS
RIVACOLD	RIVACOLD SRL
NEO ECO	NEOECO DEVELOPPEMENT
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Abbrevations

EBP	Ecosystem Building Plan
MML	Mobilisation and Mutual Learning Workshop
TES	thermal energy storage
PTES	pit thermal energy storage
DHCN	District Heating and Cooling Networks
ORC	Organic Rankine Cycle
CA	Collaboration Agreement with
MoU	Memorandum of Understanding
MoMs	Minutes of Meetings
KPI	Key Performance Indicators
MML	Mobilization and Mutual Learning online workshop
EU	European Union
EC	European Commission
GEOS-TECHIS	Geothermal Source Thermal Energy for Cooling and Heating in Industries with Steam
GEOFLEXheat	Geothermal Extraction and Upgrade with Flexible Usage for Industrial Heat Applications
FlexGeo	Shaping the future of FLEXible GEOthermal energy
USES4HEAT	Underground Large Scale Seasonal Energy Storage for Decarbonized and Reliable Heat
TREASURE	Demonstrating Large Pit Thermal Energy Storages for Sustainable District Heating Networks
INTERSTORES	International Innovation Network for the Development of Cost- and Environmentally Efficient Seasonal Thermal Energy Storages
RE-WITCH	Renewable and Waste heat valorisation in Industries via Technologies for Cooling production and energy Harvesting
URGENT	Sustainable and affordable URban Geothermal Exploration Novel Technologies and workflows
CoolLIFE	Open-Source Tools to Face the Increase in Buildings' Space Cooling Demand
HOCLOOP	A circular by design environmentally friendly geothermal energy solution based on a horizontal closed loop – HOCLOOP

Executive Summary

Deliverable D6.2 – *Ecosystem Building Plan (EBP)* – presents a structured roadmap for establishing and operationalising collaborative actions among the GEOSYN project and a curated group of related projects, particularly those funded under the Horizon Europe topic HORIZON-CL5-2024-D3-01-06 and complementary initiatives in the broader geothermal and sustainable energy domains.

The primary objective of the EBP is to create a dynamic and synergistic ecosystem—the Geo-Cluster—that promotes knowledge exchange, joint dissemination, and innovation scaling. The plan sets forth actionable strategies to align multiple projects, consolidate resources, and elevate collective impact in advancing geothermal heating and cooling solutions, particularly in industrial applications.

Through a rigorous methodology involving EC database reviews, targeted keyword searches, and direct engagement, GEOSYN has successfully identified and onboarded 10 thematically aligned projects, including GEOS-TECHIS, GEOFLEXheat, FlexGeo, USES4HEAT, TREASURE, INTERSTORES, RE-WITCH, URGENT, CoolLIFE and HOCLOOP. These cooperations are formalised through Collaboration Agreements (CAs) and Memorandum of Understanding (MoU), ensuring a shared commitment to long-term cooperation.

The EBP outlines key joint activities for 2025–2027, including organization of 3 Mobilisation and Mutual Learning (MML) workshops, joint events participation, co-authored publications, webinars, and coordinated social media campaigns.

The plan also features robust governance mechanisms, including a monthly coordination framework, shared digital infrastructure, and risk mitigation strategies to ensure continuity and effectiveness of collaboration.

By fostering a collaborative innovation ecosystem that bridges research, industry, and policy, the GEOSYN-led Geo-Cluster aims to enhance the replicability, market readiness, and societal acceptance of next-generation geothermal technologies across Europe.

1 Introduction

Deliverable D6.2 – Ecosystem Building Plan (EBP) outlines the strategy and planned activities for clustering, collaboration, and knowledge exchange between the GEOSYN project and 10 other related projects, including those funded under the Horizon Europe topic HORIZON-CL5-2024-D3-01-06: Innovative applications/integration of geothermal heating and cooling in industry. The plan also extends to creating synergies with broader initiatives in the geothermal and sustainable energy sectors.

The primary aim of D6.2 is to develop a strategic framework and actionable roadmap to guide and operationalise collaboration efforts within the geothermal innovation ecosystem. It seeks to foster collaboration, enhance synergies, and facilitate knowledge sharing between GEOSYN and other relevant projects. This collaborative approach is intended to amplify the overall impact, increase the visibility, and support the replicability and broader uptake of innovative geothermal heating and cooling solutions in industrial applications across Europe and beyond.

1.1 Objectives

This chapter outlines the key objectives of the D6.2 of the GEOSYN project. The objectives defined herein focus on:

- Establish a Collaborative Cluster called **Geo-Cluster**:

Bring together projects funded under the Horizon Europe call HORIZON-CL5-2024-D3-01-06 and related initiatives into an active ecosystem for joint activities.

- Create Synergies and Shared Resources:

Enable the sharing of data, dissemination materials, event participation, and best practices through shared folders, calendars, and joint working documents.

- Coordinate Joint Dissemination Activities:

Plan and implement joint workshops, conference sessions, policy briefs, and co-authored publications to promote the outcomes of each project.

- Facilitate Knowledge Exchange and Capacity Building:

Organise annual Mobilisation and Mutual Learning (MML) Workshops to support peer learning and knowledge transfer.

- Promote Innovation and Uptake:

Increase the visibility, application, and scalability of geothermal innovations developed in GEOSYN and partner projects by leveraging collective outreach.

2 Methodology

To effectively build a robust and collaborative ecosystem around the GEOSYN project, a systematic methodology was applied to identify and engage with relevant projects and initiatives. This section outlines the steps taken to map the landscape of complementary efforts and potential partners within the scope of geothermal energy, industrial decarbonisation, and sustainable heating and cooling.

To ensure a comprehensive and targeted identification of relevant projects and initiatives for collaboration, a multi-step research methodology was employed. This approach combined the use of official European Commission platforms, strategic keyword analysis, and thematic broadening to capture a wide spectrum of potential synergies. The process involved the following components:

- **Sister-projects funded in the topic HORIZON-CL5-2024-D3-01-06: Innovative applications/integration of geothermal heating and cooling in industry**

The first projects mapped and contacted were the ones funded by the topic that has awarded GEOSYN. The topic, infact, has funded additional two projects: GEOS-TECHIS and GEOFLEXheat.

- **GEOSYN Consortium Partners' Direct Participation in Other EU-funded Projects**

This cross-involvement enhances strategic alignment, facilitates knowledge transfer, and creates natural synergies for future collaboration. Several GEOSYN partners are actively engaged in EU projects as HOCLOOP (Chapter 3, Table 1) under Horizon Europe programme focused on environmentally friendly geothermal energy solutions.

- **European Commission platforms**

A systematic search was conducted using the European Commission's CORDIS database, the Funding and Tender Portal and other official EC platforms and instruments such as LIFE programmes. The objective was to identify both ongoing and recently funded projects that share thematic relevance with GEOSYN.

- **Keyword-Based Research Approach**

A targeted search strategy was employed using key terms closely related to the GEOSYN project scope. Keywords included: geothermal, heating and cooling, thermal energy storage, renewable integration, geothermal wells, waste heat, renewable heat, etc.

These keywords were used to filter projects across various funding calls that may not fall directly under the GEOSYN topic but are still relevant in terms of technologies, approaches, or sectoral focus.

In addition to projects funded directly under the GEOSYN topic, the ecosystem-building strategy was broadened to include a diverse range of initiatives tackling complementary aspects of geothermal energy and sustainable heating and cooling. This expanded scope ensures

alignment with both technological innovation and broader market, regulatory, and social factors that impact the deployment of geothermal solutions across Europe. Specifically, the broader scope includes projects and initiatives that:

- Address the pressing demand for skilled professionals in Europe's heat pump and geothermal sectors, which is critical for the upscaling of these technologies.
- Tackle the challenges of geothermal exploration using innovative, low-impact technologies specifically designed for urban environments.
- Demonstrate large-scale, seasonal thermal energy storage (TES) solutions to balance energy supply and demand and enable the efficient use of renewable heat sources year-round; develop secure and smart system integration concepts and increase the effectiveness of realizing pit thermal energy storage (PTES) technology in Europe.
- Leverage real-time monitoring data and engage market-oriented partners to overcome challenges related to financing, permitting, and social acceptance, thereby improving the replicability and bankability of geothermal projects.
- Explore heat extraction from hot permeable aquifers, offering significant potential for direct-use geothermal heating, particularly in areas with suitable hydrogeological conditions.
- Address the need for sustainable space cooling solutions, responding to the EU's growing demand for building cooling while reducing reliance on conventional fossil-fuel-based air conditioning.
- Develop, test, and validate improved drilling and completion technologies aimed at increasing the number of economically viable high-temperature geothermal wells, particularly in challenging geological settings.
- Demonstrate efficient, thermally-driven heating and cooling technologies tailored to industrial processes, contributing to decarbonisation in energy-intensive sectors.
- Deliver sustainable solutions for the optimisation and stabilisation of District Heating and Cooling Networks (DHCN) across Europe and support the commercial deployment of modular reversible Organic Rankine Cycle (ORC) systems.

This broader, cross-sectoral perspective not only strengthens GEOSYN's ecosystem but also ensures that clustering activities address both supply-side and demand-side challenges in the transition to sustainable thermal energy systems.

Following this structured approach, the following projects were identified as strong candidates for clustering: FlexGeo, URGENT, RE-WITCH, TREASURE, INTERSTORES, USES4HEAT, CoolLIFE (Chapter 3, Table 1).

This selection reflects a cross-section of projects focused on geothermal integration, industrial energy innovation, and advanced heating and cooling systems, ensuring a diverse and synergistic ecosystem for the GEOSYN clustering strategy.

2.1 Outreach and Engagement Process with Cluster Projects

Once the initial mapping and identification of thematically aligned projects were completed, a structured outreach methodology was implemented to initiate collaboration and establish the **Geo-Cluster**.

All identified geothermal projects were contacted via email with a formal introduction to the GEOSYN project, accompanied by an informational brochure, which outlined the project's objectives, scope, partners and opportunities for cooperation. This initial communication included a formal invitation to join the Geo-Cluster, highlighting the potential mutual benefits of cross-project collaboration.

Upon receiving positive responses from the contacted projects, bilateral online meetings were scheduled and held with each consortium. These meetings provided an opportunity for mutual introductions, an exchange of technical and strategic information, and an open discussion on possible areas of synergies. The objective was to identify concrete collaboration opportunities that align with the goals of both GEOSYN and the partner projects.

Following these constructive dialogues, a Collaboration Agreement (CA) (Appendix A) and a Memorandum of Understanding (MoU) (Appendix B) were signed with each participating project. These formal agreements emphasize the commitment to cooperation within the cluster, covering joint dissemination, knowledge exchange, cross-participation in events and workshops, and alignment on key thematic areas.

This step-by-step engagement process ensured that the Geo-Cluster was not only composed of thematically relevant projects but also founded on a shared understanding, mutual interests, and formalized commitments, thereby laying a strong foundation for sustained, impactful collaboration.

The Geo-Cluster is designed to be flexible. It may be extended during the GEOSYN duration to incorporate additional geothermal topics, should new, relevant, and high-potential projects arise. This dynamic ecosystem enables the inclusion of more interested projects over time, fostering broader collaboration and knowledge exchange.

3 Identified Projects

Based on the systematic landscape mapping and outreach strategy described in the methodology (Chapter 2), a curated selection of projects was identified as prime candidates for collaboration within the GEOSYN-led Geo-Cluster. These projects represent a diverse mix of technological innovation, sectoral focus, and geographic distribution—ensuring a dynamic and complementary ecosystem aimed at accelerating the uptake of geothermal heating and cooling in industry and beyond.

3.1 Overview of Selected Cluster Projects

The following projects have been formally engaged and confirmed their participation in the Geo-Cluster initiative. Each brings specific value propositions and thematic relevance aligned with the objectives of the GEOSYN project (Table 1).

Table 1 Cluster Projects

Project Acronym & Logo	**Full Project Name** *(Grant Agreement ID)*	**Description**	**Duration: start date – end date**	**Coordinator** *(Country)*	**Website**
GEOS-TECHIS	**Geothermal Source Thermal Energy for Cooling and Heating in Industries with Steam** *(ID: №101172928)*	Offers a solution with an innovative thermal system that combines a high-temperature heat pump and a cooling unit, powered by geothermal energy. This system targets industries with moderate heating and cooling needs, aiming to cut carbon emissions by up to 75 % compared to fossil fuels.	1 October 2024 – 30 September 2027	EnginSoft SPA *(Italy)*	https://geos-techis.eu/
GEOFLEXheat	**Geothermal Extraction and Upgrade with Flexible Usage for Industrial Heat Applications** *(ID: №101172780)*	Aims to revolutionise the European geothermal energy sector through technologies that enhance the extraction, efficiency, and application of geothermal heat. The project will combine Heat Pipe Heat Exchanger, Scaling Reactor, and High-Temperature Heat Pump to improve heat recovery and deliver cost-effective high-temperature heat for industrial processes.	1 October 2024 – 30 September 2027	Brunel University London *(United Kingdom)*	https://geoflexheat.eu
FlexGeo	**Shaping the future of FLEXible GEOthermal energy** *(ID: №101147576)*	Aims to deliver sustainable solutions for the stabilization and optimization of DHCN systems across Europe and to pave the way for the market entry of commercial modular reversible ORC systems. The obtained results will significantly enhance the use of both shallow and deep geothermal energy, thereby supporting	1 June 2024 – 31 May 2028	Technical University of Munich *(Germany)*	https://flexgeo.eu/

		the European Union's efforts to achieve net-zero greenhouse gas emissions.			
TREASURE	**Demonstrating Large Pit Thermal Energy Storages for Sustainable District Heating Networks** *(ID: №101136095)*	Aims to expedite the realisation of large pit thermal energy storage systems that enable fully renewable district heating networks and industrial heating systems. Additionally, the project leverages monitoring data and market-oriented partners to address financing, permitting, and social challenges.	1 January 2024 – 31 December 2027	Aee - Institut Fur Nachhaltige Technologien *(Austria)*	https://www.treasure-project.eu/
INTER STORES	**International Innovation Network for the Development of Cost- and Environmentally Efficient Seasonal Thermal Energy Storages** *(ID: №101136100)*	The project delves into the next generation of seasonal thermal energy storage systems. The project is investigating optimal ways to construct new types of storage systems and integrate them into energy systems. The aim is to improve the utilisation and performance of thermal storage systems, reduce production costs and help the technology reach market maturity.	1 January 2024 – 31 December 2027	Martin Luther University Halle-Wittenberg *(Germany)*	https://interstores.eu/
USES4HEAT	**Underground Large Scale Seasonal Energy Storage for Decarbonized and Reliable Heat** *(ID: №101136136)*	The project will unveil two groundbreaking, cost-effective, and large-scale thermal energy storage units. These are set to transform district heating networks and industrial heat recovery. Through advanced drilling, innovative pipes, heat pumps, solar tech, and AI-based management tools, USES4HEAT promises a future of reliable, decarbonised heating with minimised environmental impact.	1 December 2023 – 30 November 2027	KTH Royal Institute of Technology *(Sweden)*	https://www.uses4heat.eu/

HOCLOOP	**A circular by design environmentally friendly geothermal energy solution based on a horizontal closed loop – HOCLOOP** *(ID: №101083558)*	The project will use an innovative horizontal closed loop solution for the extraction of heat from deep or shallow formation rocks. The solution is based on 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.	1 October 2022 – 31 March 2026	Institute for Energy Technology *(Norway)*	https://www.hocloop.eu/
Cool LIFE	**Open-Source Tools to Face the Increase in Buildings' Space Cooling Demand** *(ID: 101075405)*	Aims to address the need for sustainable solutions to the EU's rising demand for space cooling in buildings. The project will develop open-source tools which encourage the consideration of green cooling solutions in public and private decision-making, planning, design, and implementation processes.	1 November 2022– 30 October 2025	Accademia Europea Di Bolzano *(Italy)*	https://coollife.revolve.media/
RE-WITCH The coolest cold from the cleanest heat	**Renewable and Waste heat valorisation in Industries via Technologies for Cooling production and energy Harvesting** *(ID: 101138697)*	Aims to develop and validate revolutionary solutions for sustainable industrial cooling and heating. These solutions will rely on adsorption and absorption processes, leveraging an optimised mix of renewable sources and low-grade waste. Additionally, the project will demonstrate these solutions through coordinated efforts at four demo sites in sectors related to heat-to-cold processes.	1 January 2024– 31 December 2027	Consiglio Nazionale Delle Ricerche *(Italy)*	https://ieecp.org/projects/re-witch/

URGENT	**Sustainable and affordable URban Geothermal Exploration Novel Technologies and workflows** *(ID: 101147467)*	Aims to develop sustainable solutions for urban geothermal exploration. URGENT will use innovative technologies to gather high-quality data, improving reservoir characterisation and enhancing drilling success. The project targets reducing exploration costs and automating fault and fracture detection through optimised survey designs and the application of AI and machine learning techniques. Furthermore, it aims to extend the lifespan of geothermal plants and increase their profitability by optimising well locations and designs.	1 June 2024– 30 November 2027	Vlaamse Instelling Voor Technologisch Onderzoek N.V. *(Belgium)*	https://urgent-project-heu.eu/

4 Planned Joint Activities

As part of the **Geo-Cluster** coordination framework, a series of joint activities will be implemented to foster collaboration, visibility, and knowledge exchange among participating projects. These actions aim to strengthen synergies, align communication efforts, and enhance the collective impact of the cluster.

The table below outlines the key planned activities, and their respective key performance indicators (KPIs).

Table 2 Key Geo-Cluster Activities

	Action	KPIs (2025-2027)	Notes
1	**Joint mobilization and mutual learning (MML) online workshop**	3 MMLs will be organized between 2025 and 2027 (at least one event per year)	To be discussed among cluster partners to finalize themes, schedules, and facilitation roles.
2	**Joint participation in Events**	Joint participation in minimum 3 events between 2025 and 2027	A List of Events is available in Geo-Cluster shared folder.
3	**Joint webinars**	At least 1 webinar will be organized between 2025 and 2027	Topics and target audience will be collaboratively defined by participating projects.
4	**Co-Authoring Publications and Papers**	At least 2 joint publications	A list of research topics and potential co-authors will be compiled and shared with cluster partners.
5	**Coordinated Social Media Campaigns**	At least 1 social media campaign jointly developed and distributed	The LinkedIn “Geo-Cluster” page has been created by the GEOS-TECHIS partners, and administrator rights have been shared among cluster projects. A content calendar has been developed, shared with all projects, and will be updated regularly.
6	**Others** **(but not limited)**	Ongoing collaboration and support mechanisms established	– Creation of a common expert database; – Collaboration on future calls for proposals;

			– Sharing requests and opportunities across partner networks; – Supporting cross-project matchmaking and joint initiatives; etc.

These joint activities will be monitored and reviewed periodically to ensure progress toward collaboration goals and continuous learning across projects.

Each action is expected to:

- outreach to broader stakeholder groups, including industry, academia, and policymakers
- Increase inter-project visibility and cooperation;
- Facilitate cross-learning and thematic alignment;
- Support outreach to broader stakeholder groups, including industry, academia, and policymakers.

4.1 Risk Management

Effective risk management is essential to ensure the successful implementation of the EBP and the achievement of its objectives. This subchapter identifies potential risks that could impact collaboration, coordination, and joint outcomes, and outlines strategies to mitigate them (Table 3).

Table 3 Risk Identification and Mitigation Strategies

Risk Identification	Risk Mitigation Strategies
Misalignment of goals or priorities among cluster projects or partners	Establishment of a dedicated coordination team with clearly defined roles and responsibilities
Delays in joint activities, lack of resources, or inconsistent participation.	Routine tracking of activity KPIs and structured feedback mechanisms to identify and resolve issues early
Miscommunication, lack of information flow, or unclear responsibilities.	Regular coordination meetings and use of clear communication Minutes of Meetings
Low participation in events, lack of commitment to co-authored outputs, or stakeholder fatigue.	Early and active involvement of cluster projects in planning to ensure commitment
Issues with digital tools, document sharing, or online collaboration platforms.	Implementation of shared communication platforms and centralized access to up-to-date documentation

Risks will be reviewed during monthly coordination meetings.

5 Cluster Coordination Mechanism

5.1 Governance and Communication

To ensure effective coordination and alignment among all stakeholders involved in the ecosystem, a clear governance and communication framework of the Geo-Cluster will be established.

- **Cluster Coordination Leadership**

A Geo-Cluster Coordination Team will be designated and led by GU (lead of Task 6.2 of the GEOSYN project), operating under the strategic oversight and coordination of APRE.

Each project joining the Geo-Cluster has assigned a contact person, usually from the communication partner.

- **Geo-Cluster mailing list**

To support seamless communication, a dedicated Geo-Cluster mailing list was created. This will serve as the primary channel for information exchange, updates, and coordination among all participating projects in Geo-Cluster.

- **Monthly Coordination Meetings**

Regular monthly online meetings will be held to provide updates, discuss progress, address challenges, and align on upcoming activities. These meetings will serve as the primary forum for strategic decision-making and coordination across all participating entities.

- **Documentation Process by Minutes of Meetings**

Minutes will be taken by GU during each monthly coordination meeting to ensure clear tracking of discussions, decisions, and action items. Key Components of Minutes: date, time, and attendees; summary of updates and discussions; action items, responsible parties, and deadlines (if applicable); open issues and follow-up requirements.

Draft minutes of meetings will be shared with all attendees for review within seven (7) working days after the meeting. Finalized minutes will be stored in the shared digital folder under a dedicated subfolder for easy reference.

5.2 Shared Communication Infrastructure

A **shared digital collaboration folder** has been established on a cloud platform managed by APRE to streamline collaboration and ensure continuous access to relevant information: GEO-CLUSTER Synergies shared folder.

This centralized repository will facilitate transparent communication and knowledge sharing across the cluster and will include:

- CAs and MoUs with cluster projects;

- minutes of meetings;
- Calendar and details of upcoming events;
- List of potential publication topics and interested co-authors;
- Social Media Content Calendar for the Geo-Cluster LinkedIn page;
- Any other relevant project documentation or materials.

Access to this shared folder is provided by APRE to all designated representatives of Geo-Cluster projects. This measure aims to ensure transparency, support effective coordination, and reduce duplication of efforts. The Geo-Cluster Coordination Team will be responsible for the regular maintenance and updating of the online folder to guarantee that all information remains accurate, complete, and up to date.

Continuous Improvement: Adjustments to the communication and coordination mechanism will be made as necessary, based on cluster projects feedback and performance reviews. This ensures the system remains effective, responsive, and aligned with the evolving needs of the ecosystem.

6 Conclusions

The EBP demonstrates a comprehensive and well-structured approach to inter-project collaboration, placing GEOSYN at the centre of a growing European geothermal innovation network. It is a strategic tool to ensure that GEOSYN will maximize the value of its individual outcomes and also contribute actively to the broader European geothermal innovation community. The following key conclusions have been drawn:

Strategic Alignment and Mutual Value Creation

The identified cluster projects are thematically complementary and strategically aligned with GEOSYN's goals, ensuring shared value through collaboration, resource pooling, and joint dissemination efforts.

Operational Readiness of the Geo-Cluster

Through formal agreements, and dedicated coordination structures, the Geo-Cluster is fully equipped to function as an operational ecosystem, ready to execute the planned joint activities.

Scalable Model for Innovation Uptake

The clustering approach outlined in the EBP provides a replicable model for other EU-funded initiatives seeking to enhance impact through cooperation, particularly in the clean energy and industrial decarbonisation sectors.

In conclusion, Deliverable D6.2 establishes a strong foundation for inter-project synergy, enhancing the overall impact and visibility of GEOSYN and its partner projects. The effective implementation of this plan will serve as a catalyst for innovation, replication, and market adoption of sustainable geothermal solutions across Europe and beyond.

7 Appendixes

7.1 Appendix A: Collaboration Agreement Template & Signatures

COLLABORATION AGREEMENT

This Collaboration Agreement ('the Agreement') is made and effective on date of signature,

BETWEEN:

The **GEOSYN** project, supported by the HORIZON EUROPE of the European Commission under Grant Agreement nº 101172812, represented by APRE Agenzia per la Promozione della Ricerca Europea, as the project coordinator, located at Via Cavour 71 – 00184 Rome – Italy, represented for the purposes of signing this Agreement by Chiara Pocaterra, Head of Projects Department APRE.

AND:

The _____ project, supported by the HORIZON EUROPE of the European Commission under Grant Agreement nº_____, represented by_____, as the project coordinator, located at _____, represented for the purposes of signing this Agreement by _____.

RECITALS

The GEOSYN project aims to validate an innovative geothermal heat pump combined with a heat-powered refrigeration cycle, both using water as the working fluid. This system optimises geothermal energy for industrial applications, offering flexibility to connect to underground thermal energy storage for faster start-up times.

The _____ project aims _____.

All Parties desire to establish a collaboration in order to exploit synergies in terms of joint dissemination activities and knowledge exchange to increase the uptake and replication of potential of the projects' outputs across Europe and beyond.

NOW, THEREFORE, in consideration of the above RECITALS and the mutual promises and conditions contained in this Agreement, the Parties agree as follows:

ARTICLE 1 TERMS AND DURATION

This Agreement shall be effective commencing at the date of the signature of this contract and will be in force until the end of the respective projects.

The collaboration among the projects will be extended, if requested by one or all representatives of the projects, by written notice.

ARTICLE 2 OBJECTIVES

The objective of this Collaboration Agreement is to determine the basis of the cooperation among projects funded under Horizon Europe calls, in Dissemination and Communication area. In particular:

- **Organization of joint mobilization and mutual learning (MML) online workshop.**
  The Parties agree to jointly organize MML workshops aimed at promoting exchange of knowledge and mutual learning among the two (or three) projects. The exact dates and formats for these events will be determined and agreed upon separately.
- **Organization of joint webinars.**
  The Parties agree to jointly organize and facilitate webinars or training sessions aimed at communicating activities and results from the two (or three) projects for the benefit of research and industry.
- **Exploration of joint participation in Events.**
  Opportunities for collaborative participation in external events will be explored and agreed upon by the Parties. These events may include panel discussions, roundtables, or other relevant forums and fairs that align with the projects' objectives and interests.
- **Co-Authoring Publications and Papers.**
  The Parties will explore opportunities to co-author publications, research papers, or reports based on the outcomes and results of the collaborative projects. These publications will aim to contribute to the dissemination of the project results to a wider audience.
- **Coordinated Social Media Campaigns.**
  The Parties will collaborate on coordinated social media campaigns to promote the visibility of the projects, their objectives, and raise awareness among stakeholders. This will include distributing announcements about _____ and GEOSYN, and promoting them across the various social media platforms of both projects.

The above objectives will be monitored and evaluated periodically to ensure the success of the cooperation.

ARTICLE 3 CONFIDENTIAL INFORMATION AND PERSONAL DATA

For the purposes of this Agreement, by Confidential Information is meant any data or information that is proprietary to or possessed by the Parties, the Consortium partners, and the Consortium as a whole, and not generally known to the public or that has not yet been revealed, whether in tangible or intangible form, whenever and however disclosed, including, but not limited to:

e) any scientific or technical information, invention, design, process, procedure, formula, improvement, technology or method;
e) any concepts, samples, reports, data, know-how, works-in-progress, designs, drawings, photographs, development tools, specifications, software programs, source code, object code, flow charts, and databases;
e) any marketing strategies, plans, financial information, or projections, operations, sales estimates, business plans and performance results, past, present or future business activities, or those of its affiliates, subsidiaries and affiliated companies;
e) trade secrets; plans for products or services, and customer or supplier lists;

e) any other information that should reasonably be recognized as Confidential Information by the Parties and/or the Consortium.

All Parties agree not to disclose or communicate the above-mentioned information, in any manner, either during the Agreement or after the termination of the Agreement. Both Parties understand that any breach of this provision, or that of any other Confidentiality and Non-Disclosure Agreement, is a material breach of this Agreement.

To the extent the parties feel the need to disclose confidential information, they may do so only after obtaining written authorization from the Consortium.

Any personal data included in this Agreement must be processed in accordance with Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the Processing of Personal Data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation). Such data must be processed by the data controller solely for the purposes of the implementation, management and monitoring of this Agreement. This does not affect its possible transmission to bodies entrusted with monitoring or inspection tasks in application of Union law.

ARTICLE 4 TERMINATION

Each Party may terminate the Agreement at any time by giving one (1) month's written notice to the other Party, sent by email with acknowledgement of receipt. Such termination notice shall run from the end of the calendar month during which the notice of termination was received, unless otherwise agreed upon by the Parties.

Either Party may terminate the Agreement immediately if the other Party has committed a material breach of the Agreement and, where such breach is capable of remedy, has failed to remedy that breach within thirty (30) days of receipt of written notice from the first Party specifying the breach and requiring it to be remedied.

Such termination shall not prejudice any other remedy to which the terminating party may be entitled, wither by law, in equity, or under this Agreement.

Expiration or termination of the Agreement shall not release or discharge either Party from any obligation, debt or liability which shall have previously existed, and remain to be performed upon the date of expiration or termination.

ARTICLE 5 NOTICES

Any notice or communications to be given hereunder by any party to the other may be affected either by Personal delivery in writing, or by mail. Each party may change their address by written notice in accordance with this paragraph.

On behalf of GEOSYN Consortium:

Name and Surname: Chiara Pocaterra
Title: APRE Head of Projects Department
Email: pocaterra@apre.it; geosyn@apre.it

On behalf of _____ Consortium:

Name and Surname: _____
Title: _____
Email: _____

ARTICLE 6 PARTIAL INVALIDITY

If any provision of this Agreement is held by a Court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired on invalidated in any way.

ARTICLE 7 DISSEMINATION AND EXPLOITATION

This collaboration agreement must be interpreted and implemented in full compliance with the conditions established by the individual Grant Agreements (art. 16 and 17) which deal with the methods of managing background, foreground, dissemination paths and exploitation of results.

ARTICLE 8 GOVERNING LAW AND JURISDICTION

This Collaboration Agreement shall be constructed and interpreted by the laws of Belgium and the projects partners submit to the jurisdiction of the Belgian Courts.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first above written.

SIGNATURE

On behalf of the project GEOFLEXHeat:

Name: Professor Hussam Jouhara

Job Title: Vice-Dean of Research CEDPS

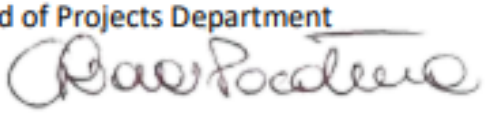
Signature:

On behalf of Party: APRE Agenzia per la Promozione della Ricerca Europea (Italy)

On behalf of the project:

Name: Chiara Pocaterra

Job Title: Head of Projects Department

Signature: 

On behalf of Project Geos-TECHIS:

Name: Nicola Gramegna

Job Title: R&D Operation Manager

Signature:

Date of signature

8 April 2025

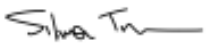
SIGNATURE

On behalf of the project USES4HEAT:

Name: Silvia Trevisan

Job Title: Assistant Professor

Signature:

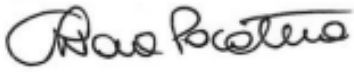


On behalf of Party: APRE Agenzia per la Promozione della Ricerca Europea (Italy)

Name: Chiara Pocaterra

Job Title: Head of Projects Department

Signature:



Date: 7 May 2025

SIGNATURE

On behalf of the project FlexGeo:

Name and Surname: Christopher Schifflechner

Title: Research Group Leader

Signature:

Technische Universität München
Lehrstuhl Energiesysteme
Prof. Dr.-Ing. Hartmut Spliethoff
Hausadresse: Boltzmannstrasse 15 - 85748 Garching
Briefadresse: 85747 Garching
Tel.: 089-289-16272 Fax: -16271 www.es.mw.tum.de

On behalf of Party: APRE Agenzia per la Promozione della Ricerca Europea (Italy)

Name: Chiara Pocaterra

Job Title: Head of Projects Department

Signature:

APRE
Agenzia per la Promozione
della ricerca europea
Via Cavour 71 - 00184 Roma

Date: 23 April 2025

SIGNATURE

On behalf of the project TREASURE:

Name: Wim van Helden

Job Title: Senior expert thermal energy storage

Signature:

On behalf of Party: APRE Agenzia per la Promozione della Ricerca Europea (Italy)

Name: Chiara Pocaterra

Job Title: Head of Projects Department

Signature:

APRE
Agenzia per la Promozione
della Ricerca Europea
Via Cavour 71 - 00184 Roma
Tel.+39.06.48930993 - Fax+39.06.48902560
segreteria@apre.it - http://www.apre.it

Date: 29 April 2025

SIGNATURE

On behalf of the project RE-WITCH:

Name and Surname: Marine Perrio
Title: Head of communications, IEECP

Signature:

On behalf of Party: APRE Agenzia per la Promozione della Ricerca Europea (Italy)

Name: Chiara Pocaterra

Job Title: Head of Projects Department

Signature:

APRE
Agenzia per la Promozione
della Ricerca Europea
Via Cavour 71 - 00184 Roma
Tel. +39.06.48939993 - Fax +39.06.4870237
segreteria@apre.it - http://www.apre.it

Date: June 6, 2025

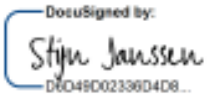
SIGNATURE

On behalf of the project URGENT:

Name: Stijn Janssen

Job Title: Program manager

Signature:



On behalf of Party: APRE Agenzia per la Promozione della Ricerca Europea (Italy)

Name: Chiara Pocaterra

Job Title: Head of Projects Department

Signature:

Date: 27 May 2025

SIGNATURE

On behalf of the project CoolLIFE:

Name: Alejadro Rodil

Job Title: REVOLVE Head of projects

Signature:

On behalf of Party: APRE Agenzia per la Promozione della Ricerca Europea (Italy)

Name: Chiara Pocaterra

Job Title: Head of Projects Department Signature:

Date: 22 April 2025

SIGNATURE

On behalf of the project HOCLOOP:

Name and Surname: Carlos Escudero
Title: Coordinator of the HOCLOOP project and Head of European Affairs at IFE
Signature:

On behalf of Party: APRE Agenzia per la Promozione della Ricerca Europea (Italy)

Name: Chiara Pocaterra

Job Title: Head of Projects Department

Signature:

APRE
Agenzia per la Promozione
della Ricerca Europea
Via Cavour 71 - 00184 Roma
Tel.+39.06.48903993 - Fax+39.06.48903550
segreteria@apre.it - http://www.apre.it

Date: 6 May 2025

7.2 Memorandum of Understanding with INTERSTORES project

Memorandum of Understanding

Between

The following Parties are signing the Memorandum of Understanding:

INTERSTORES project "International Innovation Network for the Development of Cost- and Environmentally Efficient Seasonal Thermal Energy Storages" funded under grant agreement 101136100 through HORIZON Europe, represented by **Prof. Peter Bayer, INTERSTORES Coordinator**, for the purpose of signing this Memorandum of Understanding.

GEOSYN project "Geothermal Synergy: Enhancing Industrial Energy Efficiency Through Steam High-Temperature Heat Pumps (HTHP) and Heat-Powered Cooling Systems with Operational Flexibility and Public Trust", funded under grant agreement 101172812 through HORIZON Europe, represented, represented by **Chiara Pocaterra**, Head of Projects Department APRE Agenzia per la Promozione della Ricerca Europea, GEOSYN Coordinator, for the purpose of signing this Memorandum of Understanding.

1. Purpose

The signing Parties aim to foster a connection, enhance coordination, and identify mutual interests through bilateral actions. These include establishing collaboration to leverage synergies in joint dissemination activities and knowledge exchange, with the goal of increasing the uptake and replication of the project's outputs across Europe and beyond.

The collaboration is to improve promotion, cooperation, knowledge exchange, and sharing of best practices while avoiding duplication or inconsistencies.

This Memorandum of Understanding is intended to serve as a guideline for both Parties to enhance their relationship for mutual benefit, establishing the mutual and individual scope of interest and developing closer coordination between the Parties.

This document is to enable both Parties to pursue their respective goals and to help avoid any unnecessary duplication or inconsistency of work and publications.

Prior to engaging in a collaborative activity, the Parties shall stipulate the terms and conditions for the work to be performed, as well as the financial arrangements of any such collaborative work through a separate written agreement. This document may be annexed to detail ownership of intellectual property rights and the aforementioned annexes shall be signed by authorized representatives of each Party.

2. Pursuit of shared objectives

Parties agree to the following terms:

- Display the link and logo of **GEOSYN** on the **INTERSTORES Website**, and **INTERSTORES** on the **GEOSYN Website**, specifically in a designated sub-category within the menu, such as "similar projects" or "collaboration with other projects" or other agreed upon separately.
- The Parties will collaborate on coordinated social media campaigns to promote the visibility of the projects, their objectives, and raise awareness among stakeholders. This will include distributing announcements about **INTERSTORES** and **GEOSYN** and promoting them across the various social media platforms of both projects. Engagement will involve liking, sharing (reposting, retweeting, etc.), and commenting on their posts.
- Collaborate on the preparation of policy briefs/white papers, with joint efforts from both **INTERSTORES** and **GEOSYN**.
- Collaborate between Parties to jointly create events, such as workshops, webinars, training sessions or roundtable discussions involving relevant stakeholders. Ensure that any collaborative activities comply with the confidentiality and intellectual property provisions outlined in the Consortium Agreement of both Parties. All shared information or results during these events must respect the ownership rights and avoid any unintended obligations.
    - At least 1 webinar will be organized between 2025 and 2027.
- Explore opportunities for joint participate in events, particularly organized by each of the Party, and organize mobilization and mutual learning (MML) online workshop, joint sessions or panel discussions at conferences, with careful coordination to ensure that any dissemination of results is in full compliance with the confidentiality obligations and intellectual property rights as stipulated in the Consortium Agreement of both Parties, ensuring no performance obligations or liabilities are unintentionally created.
- Enable online and on-site meetings to expand cooperation.
- The Parties agree to share relevant information from each project with their respective networks, helping to broaden outreach and impact.

3. Funding

The Parties may jointly or independently mobilize resources for any activity, project, or program under this agreement.

The Parties especially acknowledge that this agreement does not entail any funding obligation.

4. Monitoring and evaluation

The Parties will schedule consultations to collaborate, coordinate strategically, and achieve the objectives outlined in this document. These meetings will focus on reaching agreements and formulating an action plan for effective implementation.

5. Intellectual property rights and publications

Both Parties are responsible for providing their technical elements and image rights. They can include each other's logos in their networks.

Any publications from this collaboration must acknowledge the joint efforts of both Parties.

Any employees or volunteers of **GEOSYN** and **INTERSTORES** shall not be entitled to any remuneration or other benefits respectively from **INTERSTORES** and from **GEOSYN**.

6. Relationship

The Parties will maintain separate identities and can collaborate freely with others. They won't act as each other's agents or make commitments on behalf of the other Party. This non-binding and non-exclusive agreement will in no way hinder the ability of either Party to work with any other person, or organization, in whatever scope.

Given the separate relationship, neither Party shall hold itself as a representative of the other Party, enter any arrangement or transaction with third Parties on behalf of the other nor in any way pledge or bind the credit of the other Party.

If new cooperations or associations arise as a result of this document, the activities must be established in the form of a (separate) joint (association) agreement. This must be approved (i.e., signed) by the Chancellor of MLU, to follow the formal process and requirements to be effective.

Funded by the European Union

7. Termination

Memorandum of Understanding shall become effective upon signature by the authorised officials from both Parties and will be in force until the end of the respective projects.

Each Party may terminate the agreement at any time by giving one (1) month's written notice to the other Party, sent by email with acknowledgement of receipt. Such termination notice shall run from the end of the calendar month during which the notice of termination was received, unless otherwise agreed upon by the Parties.

On behalf of MLU for the INTERSTORES Consortium

Von-Seckendorff-Platz 3,
06120 Halle (Saale),
Germany
Name: **Peter Bayer**
Title: Project Coordinator

Halle (Saale), Date: dd/05/2025
Signature:

On behalf of GEOSYN Consortium

via Cavour n. 71,
00184 (RM), Rome
Italy
Name: **Chiara Pocaterra**
Title: Project Coordinator

Rome, Date: 13/05/2025
Signature:

APRE
Agenzia per la Promozione della Ricerca Europea
Via Cavour 71 - 00184 Roma
Tel.+39.06.48939993 - Fax+39.06.48902550
P.IVA e C.F. 03929151003

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FORMAGGERIA TOSCANA

www.geosynproject.eu

info@geosynproject.eu

#GEOSYNPROJECT

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