

Smart Specialisation Platform for Energy

Thematic Partnership

Geothermal Energy 2.0 - EUGEOREG

Start Date (08/04/2019)

MONITORING PROGRESS REPORT

Reporting Period: from January 2019 to June 2019

This Report is presented to the relevant Working/Steering Committee.
It contains two parts:

- I. Management Report prepared by the Lead Region(s)***
- II. Progress Report prepared by the Lead Region(s)***

Confidentiality: this document (part I) will be made available to the public via the Partnership's web page except for chapter *II.D. Self evaluation*.

Based on the monitoring results, the European Commission will decide on the following year's support.

Executive summary (max. 250 words):

[Geothermal energy is the thermal energy generated and stored into the Earth. It is considered a renewable source, as the huge amount of thermal energy produced and stored into the underground constantly flows to the crust's surface, through groundwater and steam flowing through cracks, faults and artificial boreholes. These properties make geothermal energy a secure and stable source over time, which can be extracted and used for power generation, direct heat uses, or exchanged with shallow formations by means of ground source heat pumps (GSHP).

European Regions have created the S3 EUGEOREG Partnership to join their efforts in improving the competitiveness and innovative potential of the geothermal energy sector by addressing technological, social and environmental constraints.]

I. Management Report prepared by the Thematic Platform/Lead Regions

I.A. Partnership Action Fact Sheet

- **Partnership:** *Geothermal Energy 2.0 - EUGEOREG*
- **Partnership's web-page:** *<http://s3platform.jrc.ec.europa.eu/partnership-geothermal-energy>*
- **S3 Thematic Platform:** *Energy*
- **Objectives:**
 - *the reduction in both energy costs and GHG emissions from combustion and local pollution;*
 - *an expanded geothermal market in participating regions, with an increase in distributed generation;*
 - *new and innovative technological solutions, with increased opportunities for jobs and business, both at local and at regional level, thanks to an expansion of the whole technology supply chain.*
 - *Environmental impacts and social acceptance*

Connection with Industrial Modernisation Platform: S3 EuGeoReg is focusing mainly on energy related aspects but the addressed value-chains are extremely connected with relevant IM focus areas such as New materials (e.g. HighTemperatures, Corrosion), Advanced manufacturing (e.g. Pipelines and profiles), Chemistry (e.g. Side streams, environmental issues) and Mining Industry (e.g. Drilling, Prospections).

- **Lead Regions:** *list of regions/countries leading this partnership*

<i>Tuscany Region / Technology District for Renewable Energies (IT)</i>

- **Official partner regions:** *list of regions/countries that have officially committed to follow this partnership and have been active in the last six months.*

<i>Açores (PT)</i>	<i>Lombardy (IT)</i>	<i>Asturias (ES)</i>
<i>Scotland (UK)</i>	<i>Oulu Region (Northern Ostrobothnia - Pohjois-Pohjanmaa) (FI)</i>	<i>Borsod-Abaúj-Zemplén County Development Agency (HU)</i>
<i>Canary Islands (ES)</i>	<i>City of Groningen (NL)</i>	<i>Zafer Development Agency (Turkey)</i>
<i>Arnhem Nijmegen City Region (NL)</i>	<i>(East Netherlands (Cleantech Region) (NL)</i>	

- **Other regions:** *list of regions/countries that have expressed their interest in this partnership but have not signed a commitment letter).*

<i>Basque Country (ES)</i>	<i>Piedmont (IT)</i>	<i>Emilia-Romagna (IT)</i>
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- **Intentions to join:** *list any regional/national authorities*

- **Other participants (other than national/regional authorities):**

(Please list here all other (non-region) participants (clusters, institutes, RTOs, etc.))

<i>EGEC</i>		
<i>LE2C (IT)</i>		
<i>DTE2V (IT)</i>		

<p>Representative of Lead Region 1: (name, institution, address, phone, e-mail) <i>Edo Bernini, Director for Environment and Energy at the Regional Government of Tuscany, +390554383877, edo.bernini@regione.toscana.it</i></p> <p><i>Loredana Torsello, Manager of the Technology District for Renewable Energies of Tuscany, +39055368123, l.torsello@cosvig.it</i></p> <p><i>Enrico Mayrhofer, Head of Tuscany Region Brussels Office, +3222868562, enrico.mayrhofer@regione.toscana.it</i></p>	<p>Representative of Lead Region 2 (if applicable): (name, institution, address, phone, e-mail)</p>
<p>European Commission Coordinator: (name, e-mail) <i>Isabelle SEIGNEUR, Directorate B, Growth and Innovation. Unit 3, Territorial Development.</i> <i>S3PEnergy</i> <i>Isabelle.Seigneur@ec.europa.eu</i></p>	<p>Any other relevant information:</p> <p><i>Please enter here...</i></p>

I.B. Thematic Working Areas (WA)

• **Thematic Working Areas** (if any, please list of WAs, region(s) in charge of it, names and affiliations of involved regional/national authorities, and other actors)

Working Area	Region in Charge	Involved regions	Other actors
<i>Insert Working Area...</i>	<i>Region in Charge</i>	<i>Other involved regions</i>	<i>Other actors</i>
<i>Insert Working Area...</i>	<i>Region in Charge</i>	<i>Other involved regions</i>	<i>Other actors</i>
<i>Insert Working Area...</i>	<i>Region in Charge</i>	<i>Other involved regions</i>	<i>Other actors</i>
<i>Insert Working Area...</i>	<i>Region in Charge</i>	<i>Other involved regions</i>	<i>Other actors</i>

The S3 Partnership has not yet specified specific working areas but the following potential subcategories of activities have been identified, taking into account three different value chains belonging to geothermal sector, but referred to markets quite different, usually with different actors:

- *Power generation, including hydrothermal systems and EGS (Enhanced Geothermal System) for power generation*
- *Direct uses, including district heating and cooling systems and other systems for heating and cooling, as well as productive processes*
- *Ground coupling technologies, typically used to exchange heat or cool at shallower depths, they usually exploit the Earth's near constant subterranean temperature, often in conjunction with heat pumps.*

In order to consider different aspects related to a geothermal system, all these three working areas will take into account issues related to both surface (e.g. piping and technologies into a geothermal plant) and subsurface infrastructures (e.g. those related to wells, borehole heat exchangers, UTES and ATES), as well as challenges related to the competitiveness, sustainability and social acceptance of this resource (e.g. impacts reduction, monitoring, communication and building capacity).

I.C. Overview of partnership's activities

Past activities (past six months, the 1st half of 2019)

Past Meetings

Title	Date	Place
Kickoff meeting	19 June 2019	Brussels
Any other comments		

Past Workshops

Title	Date	Place
GEOTHERMAL ENERGY: THE REGIONAL APPROACH	20 June 2019	Brussels
Any other comments		

Past Dissemination Activities

Title	Date	Place
Web news: Workshop "Geothermal Energy: the Regional Approach"	17/06/2019	https://www.cosvig.it/workshop-geothermal-energy-the-regional-approach/
Web news: LE2C e TURBODEN partner per Geothermal Energy 2.0 - S3 Energy Partnership	03/06/2019	http://www.energycluster.it/it/news/le2c-e-turboden-partner-per-geothermal-energy-2-0-s3-energy-partnership
Web news: Geotermia 2.0, Ciuoffo: "Toscana centro di eccellenza internazionale"	11/09/2017	http://www.regione.toscana.it/pt_PT/web/toscana-notizie/dettaglio-notizia/-/asset_publisher/mk54xJn9fxJF/content/geotermia-2-0-ciuoffo-toscana-centro-di-eccellenza-internazionale-/pop_up;jsessionid=EA73325135FA593CEAC45D8971146CF4.web-rt-as01-p1?controlPanelCategory=portlet_101_INSTANCE_mk54xJn9fxJF&_101_INSTANCE_mk54xJn9fxJF_viewMode=print
Web news: Açores integram parceria que visa assegurar liderança da União Europeia na exploração de energia geotérmica	20/06/2019	http://www.azores.gov.pt/Gra/sreat-dre/conteudos/noticias/2019/Junho/acoes-parceria-UE-exploracao-geotermica.htm?lang=pt&area=ct
Presentation: Le filiere tecnologiche per l'utilizzo del calore geotermico in una prospettiva regionale ed europea: la partnership delle	21/03/2019	Name of the workshop: Second meeting on geothermal: thermal uses. Held in Milan on March the

<i>Regioni Europee per la Geotermia nella S3 Energy Platform</i>		21 st 2019
<i>Article: Le regioni europee per la geotermia come produzione e gestione intelligente dell'energia</i>	<i>September 2017</i>	<i>QualEnergia, number 4 2017, page 56</i> <i>https://www.qualenergia.it/pr o/wp-content/uploads/2017/12/QualEnergia_4_2017.pdf</i>
<i>Webpage of the EuGeoReg initiative</i>	<i>15/05/2019</i>	<i>http://s3platform.jrc.ec.europa.eu/s3-energy-partnerships</i>
<i>Any other comments</i>		

Future activities (the next 6 months – the 2nd half of 2019)

Future Meetings

<i>Title</i>	<i>Date</i>	<i>Place</i>
<i>Partnership meeting</i>	<i>End September – early October</i>	<i>Brussels</i>
<i>Any other comments</i>		

Future Workshops

<i>Title</i>	<i>Date</i>	<i>Place</i>
<i>Any other comments</i>		

Future Dissemination Activities

<i>Title</i>	<i>Date</i>	<i>Place</i>
<i>Visual identity - Logo</i>	<i>End of July 2019</i>	
<i>Disseminating articles</i>	<i>July – December 2019</i>	<i>national and regional sector magazines</i> <i>sector websites and newsletters</i>
<i>Any other comments</i>		

II. Progress Report prepared by the Lead Regions of the partnership, describing results achieved during this period.

All items listed in Sections A, B, and C, below, must be addressed.

Additional documentation such as extended technical reports and/or proceedings of workshops may be provided separately as an annex to this report (and should be referenced in the report).

II.A. Innovative results

- Innovative results and achievements that could be attributed to the Partnership.
(Specific examples of Results vs. Objectives)

Too early to report.

- Tangible short- and medium-term socio-economic impacts achieved or expected.
(Specific examples)

Too early to report.

II.B. Inter-regional and inter-partnership collaborative results

- Additional results obtained from working *with other partnerships* under the thematic S3 Platforms.
(Specific examples)

Increased knowledge of members through the value chain analysis

- Evaluation of the *involvement of relevant business sector* (clusters, SMEs, business associations, chambers of commerce, Digital Innovation Hubs, etc.) in the Partnership activities. (Specific examples)

List of “non-institutional” participants at the workshop held on the June 20th:

- *EGEC*
- *EC consulting*
- *Rete geotermica*
- *Cleantech region*
- *Scottish Enterprise*
- *DTE2V*

- Evaluation of whether **the level of inter-regional cooperation is sufficient** to potentially provide *practical and relevant socio-economic impacts*. (Specific examples)

Too early to report.

II.C. New activities

- Involvement of regions from EU13 Member States in the Partnership, in particular with respect to scoping, mapping and/or matchmaking. *In addition, justification should be provided if no EU13 regions are involved.*

A wide number of regions aimed at promoting the development of geothermal energy was involved and invited both to joining the partnership and in participating to meetings and workshop, including EU 13 regions, as: Hungarian Eszak-Magyarország, Budapest, South East region, West Pannon, Észak-Alföld, Polish Pomorskie and Podlaskie, Slovak Trenčín and South Estonia. Within EU13, Northern

Hungary (Borsod-Abaúj-Zemplén County) is a partner region.

- Involvement of regions/countries from outside of EU28 Countries. (Number of participants from non-EU countries. Specify their contribution)

TR: West Turkish provinces (Zafer). The region has a big geothermal potential and is interested in developing local sustainable development plans based on the use of geothermal resource. Besides, they will bring their experience on heat direct uses.

- Advancement and promotion of the Partnership through publications and other communication/outreach activities. (Number of outreach activities that resulted from the Partnership. A complete list with references and web-links should be given in an annex)

- Activities and projects with partnerships working under other S3 Thematic Platforms (Agri-Food, Energy and Industrial Modernisation).

The partnership will develop actions in heating and cooling partnership, since geothermal energy has a good potential to decarbonize this sector; heating demand represents about 50% of total energy consumptions in Europe, still mostly covered by fossil fuels, despite about 25% of European citizens live in areas suitable to build geothermal district heating.

The thematic working area on direct uses will liaise with the agrifood platform, to find activities to be carried out in partnership, aimed at using the geothermal resource in agri-food sector. There are indeed many applications of geothermal heat in agrifood sector and this resource has a good potential to decarbonize this sector, as stated in 2015 by the FAO's report on "Uses of geothermal energy in food and agriculture – opportunities for Developing Countries", complemented by IRENA (International Renewable Energy Agency) in 2019, with the report "Accelerating geothermal heat adoption in the agri-food sector – key lessons and recommendations". Moreover, research projects on particular kind of cultivations are being carried out with geothermal energy, such as that aimed at testing the technical and economic feasibility of cultivating vegetables and microalgae with "wastes" from geothermal power production, as low temperature heat and CO₂.

Platform on Industrial Modernization also has areas of interest for the geothermal partnership, such as partnerships on advanced manufacturing, efficient and sustainable manufacturing and SMEs to the Industry 4.0.

III.A Your Partnership and the UN 2030 Sustainable Development Goals (SDGs)

The EU has a strong position when it comes to sustainable development and is also fully committed to be a frontrunner in implementing the UN's 2030 Agenda¹, together with its member countries and regions. Many interregional partnerships under the thematic S3 Platforms contribute strongly to the attainment of these 17 goals.

Please indicate to which Sustainable Development Goals and to what extent your thematic Partnership contributes?

Your Partnership and Sustainable Development Goals						
Goals to which your partnership (can) contribute:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not applicable
Goal 1. End poverty in all its forms everywhere	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 2. End hunger , achieve food security and improved nutrition & promote sustainable agriculture	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 3. Ensure healthy lives & promote well-being for all at all ages	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Goal 5. Achieve gender equality & empower all women and girls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Goal 6. Ensure availability and sustainable management of water and sanitation for all	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 8. Promote sustained, inclusive and sustainable economic growth , full and productive employment & decent work for all	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 9. Build resilient infrastructure , promote inclusive and sustainable industrialisation & foster innovation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 10. Reduce inequality within and among countries	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 11. Make cities & human settlements inclusive, safe, resilient and sustainable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 12. Ensure sustainable consumption & production patterns	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 13. Take urgent action to combat climate change and its impacts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 14. Conserve and sustainably use the oceans, seas & marine resources for sustainable development	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems , sustainably manage forests , combat desertification , halt and reverse land degradation and halt biodiversity loss	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal 16. Promote peaceful & inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Goal 17. Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

¹ The 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), adopted by the United Nations (UN) in September 2015, gave a new impetus to efforts to achieve sustainable development.

III.B Your Partnership and the UN 2030 Sustainable Development Goals (SGDs)

The S3 Platform is currently considering carrying out a study which would feature how selected thematic S3 Partnerships are contributing to the Sustainable Development Goals.

Would you be interested to have your partnership to be considered to be included in this study? (Please feel free to put us in touch with a different region/colleague.).

The partnership can be considered for the study and can contribute in achieving UN 2030 SGDs.

Geothermal energy is a renewable energy source, sustainable, stable and safe. It can be used also to compensate fluctuations in grid networks, contributing to the prevention of potential problems caused by fluctuating renewables as solar, wind, ocean energy, etc.

Geothermal energy is a resource closely connected to territories and to their peculiarities. It can therefore be a key factor to promote local development and new jobs, both in energy sector and in industries using geothermal heat (or other elements as CO₂) for their productive processes.

As reported in several reports on agrifood productions with geothermal heat², geothermal energy can contribute in reducing hunger and ensuring the food security, in development countries too. Nevertheless, geothermal heat and elements contained into fluids can be used also in other non-food productive processes.

Finally geothermal energy can be used in Heating and cooling sector, reducing the consumption of fossils and emissions of pollutants in cities.

² reports on agrifood productions with geothermal heat:

- [FAO - Uses of geothermal energy in food and agriculture](#)
- [EGEC - Geothermal use in agriculture](#)
- [IRENA - Accelerating geothermal heat adoption in the agri-food sector: Key lessons and recommendations](#)