European Technology and Innovation Platform on Renewable Heating and Cooling

SRIA 2020 for Geothermal Topic C – Non-technical
24th September 2020

Riccardo Pasquali

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 825998. Disclaimer: The sole responsibility for any error or omissions lies with the editor. The content does not necessarily reflect the opinion of the European Commission. The European Commission is also not responsible for any use that may be made of the information contained herein.
Focus Areas

• Regulatory & Legislative Integration Public Acceptance
• Heat Market & Carbon Pricing in the Heat sector
• Integration to wider energy systems
• Resource assessment and operational data compilation
• Improve public perception & knowledge sharing
TOPIC C.1 – ENVIRONMENTAL LEGISLATION, LICENSING AND DRILLING REGULATIONS

Objectives:

• Align innovations with environmental & drilling regulation/legislation
• Licensing/permitting processes for ‘intermediate depth systems’
• NZEB and renovation in historical buildings integration
TOPIC C.1 – LICENSING & REGULATION

• Key Actions:
  • C.1.1 strategies for geothermal integration in hybrid scenarios
  • C.1.2 guidelines on design and completion of geostructures
  • C.1.3 CEN/ISO standards on intermediate depths, geostructures and standing column wells
  • C.1.4 regulations on energy storage & hybrid solutions
  • C.1.5 regulations (geotechnical, structural) on geostructures

• Key Performance Indicators
  • Adoption of innovations in existing EN/ISO standards
  • Regulations to cover intermediate depth structures
  • International best practice on the design/completion of geostructures
TOPIC C.2 – GEOTHERMAL HP INTEGRATION AND CONTRIBUTION TO LEED, BREAM & BIM DESIGN SYSTEMS & BUILDING CERTIFICATION

Objectives:

- Implementation strategies of the EPBD
- NZEB and renovation in historical buildings integration
- Building design & specific energy systems
- Energy and performance certification systems
- Streamlined integration strategies in nZEB buildings certification
TOPIC C.2 – GEOTHERMAL HP INTEGRATION

• Key Actions:
  • C.2.1 post-construction tools/strategies for system integration
  • C.2.2 lower certification ranked (historical/heritage) buildings
  • C.2.3 Improved LCA assessment methodologies
  • C.1.4 Integration with other renewables to increase system efficiency

• Key Performance Indicators
  • Increased uptake of geothermal in certification building schemes
  • Improved credit/points for energy and environmental categories
  • Increased operational efficiency in post-construction assessment
TOPIC C.3 – GEOTHERMAL RESOURCE MAPPING & STATISTICAL DATA COLLECTION

Objectives:

- Geothermal Resource Mapping
- Energy Planning Policy – Heating & Cooling Strategies
- Harmonised methodologies allowing comparable contributions
- Resource quantification methodologies
- Reporting and Performance Data collection from operating systems
TOPIC C.3 – MAPPING & STATISTICAL DATA

• Key Actions:
  • C.3.1 Harmonised geothermal system data recording
  • C.3.2 Open loop mapping parameters and the harmonisation
  • C.3.3 Closed Loop mapping potential and methodologies
  • C.3.4 Resource mapping and alignment with local energy demand
  • C.3.5 Dissemination strategies of geothermal resources
  • C.3.6 Harmonised statistical data collection methodologies

• Key Performance Indicators
  • Adoption of common resource assessment strategies
  • Increased share of identified deployable geothermal across the EU
  • Increased integration in energy policy in emerging markets
  • Harmonised SPF reporting structure for geothermal heat pumps
TOPIC C.4 - PUBLIC ACCEPTANCE AND PARTICIPATION FOR THE DEVELOPMENT OF GEOTHERMAL SYSTEMS WITH NEW BUSINESS MODELS

• Objectives:
  • Assess and improve local community opinions
  • Decrease risk perception
  • Deep and large shallow projects socio-economic impacts
TOPIC C.4 - PUBLIC ACCEPTANCE

• Key Actions:
  • C.4.1 procedures acceptable for local legislation
  • C.4.2 procedures/guidelines and business models to provide long-term assurance
  • C.4.3 public engagement strategies & SEC
  • C.4.4 new business models for geothermal developers

• Key Performance Indicators
  • Increased community acceptance
  • Decrease in environmental concerns
  • Adoption of geothermal public acceptance strategies
TOPIC C.5 - DESIGN GEOTHERMAL RISK MITIGATION SCHEMES

• Objectives:
  • Create European Geothermal Risk Mitigation Scheme (RMS)
  • RMS focussed on Market maturity
  • Financial Supports
TOPIC C.5 – RISK MITIGATION SCHEMES

• Key Actions:
  • C.5.1 Analysis of EU Member States legal barriers
  • C.5.2 RMS administration for different Member States and Projects
  • C.5.3 RMS scheme launch with demonstration projects in emerging markets

• Key Performance Indicators
  • No. of MS involved in RMS projects
  • No. of Legal Barriers removed
  • RMS Sustainability - rate of financial support for 10 years operation
### Requested Funding

<table>
<thead>
<tr>
<th>R&amp;D program area acronym</th>
<th>R&amp;D program area title</th>
<th>Indicative budget*</th>
<th>Classification &amp; TRL’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO C 1</td>
<td>Environmental legislation and drilling regulations</td>
<td>40 mio €</td>
<td>Development (TRL 6 – 8)</td>
</tr>
<tr>
<td>GEO C 2</td>
<td>Geothermal HP integration and contribution to LEED, bream and BIM design systems and building certification</td>
<td>40 mio €</td>
<td>Development (TRL 7 – 9)</td>
</tr>
<tr>
<td>GEO C 3</td>
<td>Geothermal resource mapping &amp; statistical data collection</td>
<td>50 mio €</td>
<td>Development (TRL 7 – 6)</td>
</tr>
<tr>
<td>GEO C 4</td>
<td>Public acceptance and participation for the development of geothermal systems with new business models</td>
<td>30 mio €</td>
<td>Development (TRL 6 – 8)</td>
</tr>
<tr>
<td>GEO C 5</td>
<td>Design geothermal risk mitigation schemes</td>
<td>40 mio €</td>
<td>Development (TRL 6 – 8)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>200 mio €</strong></td>
<td></td>
</tr>
</tbody>
</table>
## Implementation Plan

<table>
<thead>
<tr>
<th>GEO C.1</th>
<th>GEO C.2</th>
<th>GEO C.3</th>
<th>GEO C.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>2022</td>
<td>2023</td>
<td>2024</td>
</tr>
<tr>
<td>C.1.2 Design &amp; Completion of Geostuctures</td>
<td>C.1.5 Regulations for Geostuctures</td>
<td>C.1.3 CEN/ISO Standard Recommendations</td>
<td></td>
</tr>
<tr>
<td>C.1.4 Energy Storage Regulations</td>
<td>C.1.1 Strategies for hybrid scenarios</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.2.1 Post-construction tools and strategies for geothermal system integration</td>
<td>C.2.2 Geothermal integration &amp; certification in historical/historical buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.2.3 Improved LCA Methodologies</td>
<td>C.2.4 Integration with other renewable technologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.3.2 Open Loop Harmonised Data</td>
<td>C.3.1 Harmonised Data Structures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.3.3 Closed Loop Harmonised Data</td>
<td>C.3.6 Statistical Data Collection Methodologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.3.5 Dissemination strategies for geothermal</td>
<td>C.3.4 Resource mapping and alignment to energy demand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.4.3 procedures/guidelines to provide long-term assurance to the end users</td>
<td>C.4.1 Procedures for shallow and deep legislation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.4.2 procedures/guidelines to provide long-term assurance to the end users</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.5.1 Risk Insurance Common Barriers</td>
<td>C.5.2 European Risk Insurance Scheme Administration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.5.3 Launched &amp; Active Scheme</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank you