D5.2

# Report on training activities

November 2014

PAS MEERI

Co-funded by the Intelligent Energy Europe Programme of the European Union

# Contents

# 1 Introduction

The presented Report – Deliverable D5.2 summarizes the Training Workshops on geothermal district heating systems (geoDH) held in 2014 in fourteen GeoDH Project countries in frame of WP5 "Best practices and training activities" - Task 5.2 "Training courses".

The main objective of reported Workshops was to support the geoDH development by providing to key stakeholders (public and private) a background knowledge and awareness on geoDH systems, deep geothermal and its application into district heating systems. The Workshops' target groups involved the representatives of regional and local authorities in charge of regulations and local development, district heating developers, building sector, etc.

It was assumed that having better understanding of the geoDH technology and its advantages would help to develop such systems since decision makers would be more favorable to support it, simplify procedures and approve permits, while developers would be more considerate to and opt for this technology.

The Report was elaborated by PAS MEERI on a basis of national reports on Training Workshops organized by relevant Partners in the GeoDH Project countries in 2014.

# 2 Training Workshops

## 2.1 Objectives

The main objective of Training Workshops was to support the geothermal district heating systems' development by providing to the key stakeholders (public and private) in fourteen countries a basic knowledge on geoDH systems, deep geothermal and its application into district heating systems.
It was indicated that in many cases there is a lack of awareness about these technology and issues in many regions. Therefore, having better understanding of the technology and its advantages (gained thanks to the training activities):

- would help to develop geoDH system since decision makers would be more favorable to support this technology, simplify procedures and approve permits,
- developers would be more considerate to and opt for this technology.

## 2.2 Target groups

The main target groups, to whom the Workshops were oriented, involved the representatives of regional and local authorities in charge of regulations and local development, district heating developers, building sector, etc.

## 2.3 Program

The program of 1-day Training Workshops was prepared following common curricula suggested by EGEC and then the draft program defined and agreed by all Partners during the Interim Meeting in Florence, February 2014.

Particular topics which formed the inputs for the lectures were elaborated by several experts from among the Partners' teams: Annamaria Nador (MFGI – Hungary), Christian Boissavy and V. Schmidle-Bloch (AFPG – France), M. Hofmeister and S. B. Lorenzen (DGDH – Denmark), L. Angelino and P. Dumas (EGEC), E. Demollin-Schneiders (Gemente Herleen – the Netherlands), L. Torsello (CoSviG – Italy). These contributions were then collected and elaborated by PAS MEERI team as the training materials in electronic forms (ppt, pdf) while the Manual was also printed and distributed among the Partners. All training materials are available at www.geodh.eu.

A common draft agenda of the Training Workshops was as follows:

- *Session I: Geothermal technology:*
  Overview of geothermal energy
  Prospective for geothermal DH in Europe & Geothermal DH potential in Europe, web-map viewer
  Geothermal project phases and concepts
  Drilling technologies, Production, Operation and Management
- *Session II: District Heating technology:*
  Planning (existing infrastructure or new, Heat demand, Other producers, Interaction between geothermal and other producers to meet heat demand)
  DH network (transmission and/or distribution network, temperature level)
  Geothermal plant (Principal sketch with elements, Heat exchangers, heat pumps, design of plant size, water chemistry)
- *Session III: Non technical issues:*
  Regulations, standards and codes
  Environmental issues
  Risk insurance
  Financing costs and investment analysis.

The topics included, among others, first Project's results on geoDH potential, regulations and financing. In case of individual national Workshops, from among the topics covered by common draft agenda, selection of particular items were made and a focus was paid on the issues of special importance and interest of the audience, taking into account each country's circumstances and specifics. Detailed programs of national Workshops are given in individual reports.

## 2.4 Instructors

As given before, the Workshops' common agenda and training materials were prepared by several experts being the GeoDH team members. During individual Workshops (which were held in national languages mostly), particular topics were presented by instructors from local Partners' teams – due to their expertise in geothermal and geoDH-related issues. In some cases the lectures were given by EGEC experts, and by external invited speakers or associated through the Advisory Committee.

## 2.5 Training materials

The set of training materials given to each participants contained:

- WP5.2 Manual in English (CD),Ppt presentations of lectured issues (in English and in national languages – translated by particular Partners) – electronic versions on CD,

- Program of the WP5.2 Workshop,
- List of participants (optionally).

Training materials included as key elements successful case studies, such as currently used technologies, associated costs and regulatory aspects of geoDH systems (subjects of GeoDH works WP2, WP3 and WP4).
Training materials presented during the Workshops in particular countries are available at the GeoDH Project website (www.geodh.eu).

# 3 National Training Workshops – an overview

## 3.1 Generals

According to the initial Project's assumptions, the Training workshops would be arranged as follows:
- 14 training courses (1 in each GeoDH country),
- 1-day course,
- circa. 30 participants expected in each course,
- free attendance,
- between months 20 and 30 of Project duration.

It was also planned that these events would be organised together with the WP6.5 Promotional workshops and site tours in each country the day before or after the workshop.

In general these assumptions have been successfully realized (except for that some trainings were organized in extended time of the Project duration, i.e. in months 31-32 (October – November 2014).

It was planned that each national Workshop would be reported by the Project Partner responsible in this task. These national reports formed a basis for the presented summary Report (D5.2).

## 3.2 Organisation details

The Training Workshops were organised and conducted by the Partners (sometimes in cooperation with local partner/company) in each of the GeoDH country as follows:

Bulgaria – by UBSLA,
Czech Republic – by GEOMEDIA,
Denmark – Groen Energi,
France – by AFPG,
Germany – by EGEC,
Hungary – by MFGI,
Ireland – by EGEC,
Italy – by COSVIG,
The Netherlands – by Herleen Municipality,
Poland – by PAS MEERI,
Romania – by EGEC,
Slovakia – by AGEO,
Slovenia – by SDDE,
United Kingdom – by EGEC.

Altogether 14 Workshops were held between June and November 2014.

In many cases, WP5.2 Training Workshops were organized together with WP6.5 Promotional Workshops and site visits.

The basic organization details and outcomes of the Workshops are summarized in Table 1.

### 3.3 Number of participants

The number of participants attending particular national Training Workshops varied from 6 to 81 persons (38 as an average). In total 531 persons in 14 European countries were trained on the basics of geoDH systems.

They represented main target groups, i.e. regional and local authorities in charge of regulations and local development, district heating developers, building sector, and also some city mayors, county offices, departments responsible for energy, environment, ESCOs, DH, geoDH companies, R&D institutions, universities, geothermal NGO, students.

However, in several cases one noticed limited interest in Workshop's participation by some target entities (incl. local authorities, DH operators from the areas prospective for geoDH, organizations representing heating sector, agencies for energy, planning, financing institutions).

Trying to find the reasons (which might be universal or might vary from country to country), the Polish Partner indicated, among other, minor role attributed to geothermal energy in national NREAP and government RES strategies (despite prospective resources' base), which might result in hampering the interest in WP5.2 of the listed target groups.

## 4 Outcomes and actions undertaken or planned as results of the Workshops

On the basis of information given in national reports, one may compose the following list of actions undertaken or planned by the participants as a result of the Training Workshops (see also Table 1):

- Some representatives of local authorities attending the Workshops, as well even some organizers (e.g. AFPG) expressed the interest to organize similar events for local administration and some companies (e.g. France, Poland);
- Some GeoDH Partner (AFPG – France) considers further activities to improve geoDH users' perception of geothermal energy (as one of key elements of building wider social acceptance for geothermal energy and geoDH systems in particular);
- Several representatives of local administration and communities interested in geothermal development for space heating gained confirmation on prospective geothermal potential in the areas of their activities and received a basic information on many essential aspects how to arrange and conduct successful geothermal project;

- Some attendees showed the interest to include the maps of geoDH potential presented by the webmap viewer to their local energy and development planning materials. In case of representatives of some district heating companies operating in several municipalities, they benefited from the information where a real geothermal potential exists to consider it as a potential heat source for some of the systems managed by them (e.g. Poland);

- The representatives of some municipalities interested in the use of geothermal energy for district heating received information on possibilities of co-funding from EU schemes as well as national sources. This was a case e.g. of Slovakia, where AGEO – GeoDH Partner and Workshop's organiser is still in charge of helping them with relevant advises;

- The information how the Workshops commenced and materials presented and links to them were e-mailed by the organizers to all participants and to invitees who did not attend it - to target significantly larger group that present at these events (e.g. Poland, Slovakia). In case of PAS MEERI (Poland) comprehensive set of information was also individually posted to several top politicians and decision makers (minister of economy, minister of environment, head of Parliamentary Commission for Energy, head of the National Fund of Environmental Protection and Water Management, National Energy Conservation Agency). Thus, the GeoDH Partners and WP5.2 Workshops' organisers sought to get the information to the most important target groups and persons for the Project objectives;

- Participants of some Workshops (e.g. Hungary) indicated that geothermal energy itself does not have enough lobbying strength. This creates one of the most important reasons hampering wider geoDH development. Therefore, in order to increase the lobbying strength and efficiency of promotion, it was suggested that institutions and organisations representing geothermal sector should address policy makers together with other renewable energy stakeholders (including biomass and solar). Such an approach is important specially that it was also highlighted that in the current funding schemes (Energy and Environment Operational Program) a significant part of the finances available is for the surface technologies, therefore does not support geothermal efficiently;

- Many of Workshops' participants declared to promote further geoDH systems and related issues among their co-workers, institutions, cooperators, etc.

# 5 Concluding remarks

The reported Training Workshops on geoDH in 14 countries fulfilled their role and met assumed objectives. In total, 14 meetings were held attended by 531 representatives of target groups.

In common opinion of participants, the Workshops were evaluated as important events, being the most recent source of information on the possibilities, technologies, purposefulness and the need to develop on much wider scale geothermal district heating systems in many European countries, including fourteen ones to which the GeoDH Project was oriented. The attendees indicated high substantial and organization level of all Workshops.

Among the topics that raised special interests one may indicate the webmap viewer on geothermal potential for geoDH systems in combination with operating DH networks and heat demand; modern geothermal drilling technologies; production, exploitation and management of geothermal resources; issues related to district heating; regulatory, financial aspects and risk insurance in geoDH

oriented-projects; non technical issues (public acceptance, awareness on geoDH systems). The lectures during the Workshop were accompanied by active participation of the audience, i.e. discussion and questions.

It was appreciated that all topics were elaborated by outstanding international experts with large experience and expertise (GeoDH Project was fortunate to have such leading specialists within its team) what resulted in bringing to the participants the high-quality most recent knowledge, information, know-how, and best practice examples from leading geothermal DH projects and countries in Europe. The Workshop increased their awareness on geoDH systems. The attendees declared to promote geoDH among other entities and experts.

However, one shall add that the participation by some target groups, including the DH companies, local/regional administration responsible for energy planning, etc. in some national Workshops was rather limited. In case of Poland the reasons for this fact may lie, among others, in the fact that there is no public support for geothermal drilling and related infrastructure for the time being, no RES Law has been introduced so far, and that still traditional energy carriers, mostly coal, are strongly promoted and lobbied, thus many DH companies show very little interest in RES/geothermal as a potential heat source what resulted also in limited participation in Training Workshop on geoDH.

**Table 1.** Summary of Training Workshops on geothermal district heating systems in the GeoDH Partners' countries

| Country, Venue, Date | Organisers from GeoDH side | Attendees' number | Comments, Summary | Actions that were /or are planned by the attendees as results of the Workshop |
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| Bulgaria, Varna<br><br>25, 26 and 27 June 2014 | UBBSLA | 21 participants attending each day, so 63 in total | gathering representatives of the regional energy stakeholders, local authorities and citizens; provided technical support to 6 municipalities in the process while developing their SEAPs and helped them in presenting the local GeoDH potential. | Technical assistance needed |
| Czech Republic, Litomerice,<br>23 October 2014 | GEOMEDIA | 33 | Good and relevant discussions, general support of the idea to promote geothermal district heating systems | Further promotion of geodh |
| Denmark,<br><br>Copenhagen<br><br>26-27/08/2014 | GE | 28 | Discussion on geological risk, interesting site visit | Establish the risk insurance scheme |
| FRANCE<br>Chevilly-Larue<br>15 October 2014 | AFPG and SEMHACH, French geothermal district heating operator | 21 | Our workshop was organized in three main parts of conferences and a visit of the SEMHACH geothermal heating station:<br>1) Geothermal energy<br>2) District heating<br>3) Project management<br>Speakers are DH operators, design offices, geological state agency.<br><br>Participants: geothermal professionals or representatives of local authorities. | AFPG and its partners have decided to carry on GeoDH actions in organizing similar training course next year.<br>The possibility of visiting a GeoDH operation is really valuable.<br><br>The problematic of social acceptance has appeared to be a key point during the discussions.<br><br>AFPG is thinking about having actions in 2015 to improve users perceptions on geothermal energy. |

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| | | | Participation was very active and participants didn't hesitate to intervene during the Q/A sessions. The thematic of social acceptance lead to many comments and questions. This subject appeared to be central in the good implementation of a GeoDH project. | |
| Germany, Troisdorf 26 November 2014 | Ubeg, EGEC | 15 | Issue of financing and very poor interest about geothermal in that particular region | Make more promotion, attract financing, use structural funds |
| Hungary Budapest, Kistokaj 5-6 November 2014 | MFGI, Hungarian Chamber of Engineers – Section Geothermal, Geotermia Express Ltd. | 81 (training workshop)<br><br>41 (site visit) | A successful workshop with high number of participants, including site visit to Hungary's largest geoDH system | Cross-fertilization with the DH sector is essential. Lobbying for geoDH systems towards policy makers with other RES is required. |
| Ireland,<br><br>Webinar 27 October 2014 | Geoserv, EGEC | 6 | Poor interest about district heating, interactive webinar | Increase awareness of both geothermal and DH |
| Italy Pisa 25 June 2014 | COSVIG<br><br>EnerGea<br><br>Ordine dei Geologi della Toscana | 23 | The course was held before the issuing of final version of training manual and slides.<br>Low attendance and absence of ESCOs and financial institutions.<br>Participants found the course very interesting.<br>A certificate of participation was sent to participants. | The course was organised in cooperation with the Tuscan professional association of geologists, which wold use Project results also to organise other training activities for its members.<br>The course was organized with the support of EnerGea and the University of Pisa, which are interested in using Project results.<br>COSVIG has also a training agency and will use GEODH training materials in its courses. |

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| The Netherlands<br>Municipality of Westland<br>15 September 2014 | Municipality of Heerlen,<br>Centre of Expertise NEBER<br>Zuyd University of Applied Science | 25 | Positive feedback.<br>Discussion on innovations.<br>Possible investment arrangements discussed. | Attendees to final conference in Brussels.<br>Linking more European projects with the initiatives in Westland.<br>Scanning of possible new H2020 projects. |
| The Netherlands<br>Municipality of Heerlen<br>7 October 2014" | Zuyd University of applied science<br>Province of Limburg | 54 | Surprised by the elaborated issues in GEODH<br>Useful knowledge with regard to DH and business cases | Set up master classes with the information of geodh, to keep the information alive<br>Scanning of possible new H2020 projects. |
| Poland<br>Uniejów<br>13 October 2014 | PAS MEERI | 49 | - An important event, source of recent information on wide prospects, and the need for wider deployment of geoDHs in Europe /Poland.<br>- Contributed to: convincing that geoDHs have proper resources' potential in Europe; are credible heat supply systems: an immediate response to alleviate the expected imported gas supply crisis; assure the base load demand all year round; are technologically viable; offer competitive prices.<br>- Rather limited participation from DH companies, decision makers, banks, etc. | - Some municipalities declared to organize similar events for local administration (to present selected issues from WP5.2 Workshop).<br>- Some group of local administration and communities interested in geothermal development gained confirmation on prospective geothermal potential in the area of their activities and information how to arrange successful geothermal project.<br>- Some attendees showed the interest to include the maps of geoDH potential presented by the webmap viewer to the local energy and development planning materials.<br>- Representatives of one district heating company obtained the information where a geothermal potential exists to consider it as |

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| | | | | a potential heat source for some systems managed by this company. |
| Romania,<br>Bucharest,<br>20 Nov 2014 | RGS, EGEC | 46 | High attendance<br>Technical lessons | Need financing, look for structural funds |
| Slovakia<br>Bratislava<br>12 November 2014 | AGEO | 37 | Structure of attendees:<br>• 7 academia<br>• 5 municipalities<br>• 4 ministries and governmental<br>• 2 banks<br>• 19 private companies and others | - To promote project and findings after its conclusion<br>- To help with possibilities of co-funding of the projects<br>- To share knowledge about the projects under development |
| Slovenia,<br>Ljubljana<br>27-28 Oct 014 | SDDE | 34 | Good attendance, issue of regulatory barriers and financing | Better understanding of the potential |
| UK,<br>25 Oct 2014<br>(webinar) | Geoserv, EGEC | 17 | Interactive webinar<br>Technical course | Issue of financing: RHI |
| **TOTAL** | | **531** | | |