



Geothermal Communities

www.geothermalcommunities.eu

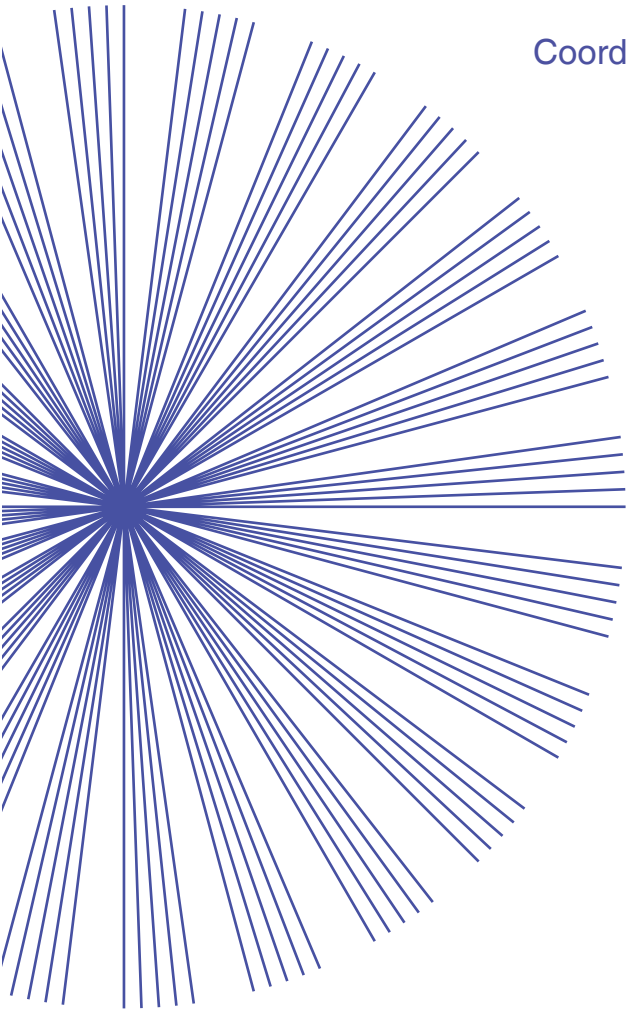
GeoCom – FP7 CONCERTO – 239515

Third Periodic Report

Final version

Date of Preparation: March-April 2013

Coordinator: Geonardo Environment Technologies Ltd.



PROJECT PERIODIC REPORT

Grant Agreement number: 239515

Project acronym: GEOCOM

Project title: Geothermal Communities – Demonstrating the cascading use of geothermal energy for district heating with small scale RES integration and retrofitting measures

Funding Scheme: Collaborative Project – Large Scale Integration Project

Date of latest version of Annex I against which the assessment will be made: 31/01/2012

Periodic report: 1st 2nd 3rd 4th

Period covered: from 1 January 2012 to 31 December 2012.

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¹ Usually the contact person of the coordinator as specified in Art. 8.1. of the Grant Agreement .

² The home page of the website should contain the generic European flag and the FP7 logo which are available in electronic format at the Europa website (logo of the European flag: http://europa.eu/abc/symbols/emblem/index_en.htm logo of the 7th FP: http://ec.europa.eu/research/fp7/index_en.cfm?pg=logos). The area of activity of the project should also be mentioned.

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2. Declaration by the scientific representative of the project coordinator

I, as scientific representative of the coordinator of this project and in line with the obligations as stated in Article II.2.3 of the Grant Agreement declare that:

- The attached periodic report represents an accurate description of the work carried out in this project for this reporting period;
- The project (tick as appropriate)³:
 - has fully achieved its objectives and technical goals for the period;
 - has achieved most of its objectives and technical goals for the period with relatively minor deviations.
 - has failed to achieve critical objectives and/or is not at all on schedule.
- The public website, if applicable
 - is up to date
 - is not up to date
- To my best knowledge, the financial statements which are being submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project (section 3.4) and if applicable with the certificate on financial statement.
- All beneficiaries, in particular non-profit public bodies, secondary and higher education establishments, research organizations and SMEs, have declared to have verified their legal status. Any changes have been reported under section 3.2.3 (Project Management) in accordance with Article II.3.f of the Grant Agreement.

Name of scientific representative of the Coordinator: Mr. Gabor Kitley, Managing Director / Geonardo Ltd.

Date: Budapest, 28/02/2013 (submitted as DRAFT on 12/04/2013 and as FINAL on 13/05/2013 in line with the approval of the newly appointed Project Officer, Mr. Mario Dionisio)

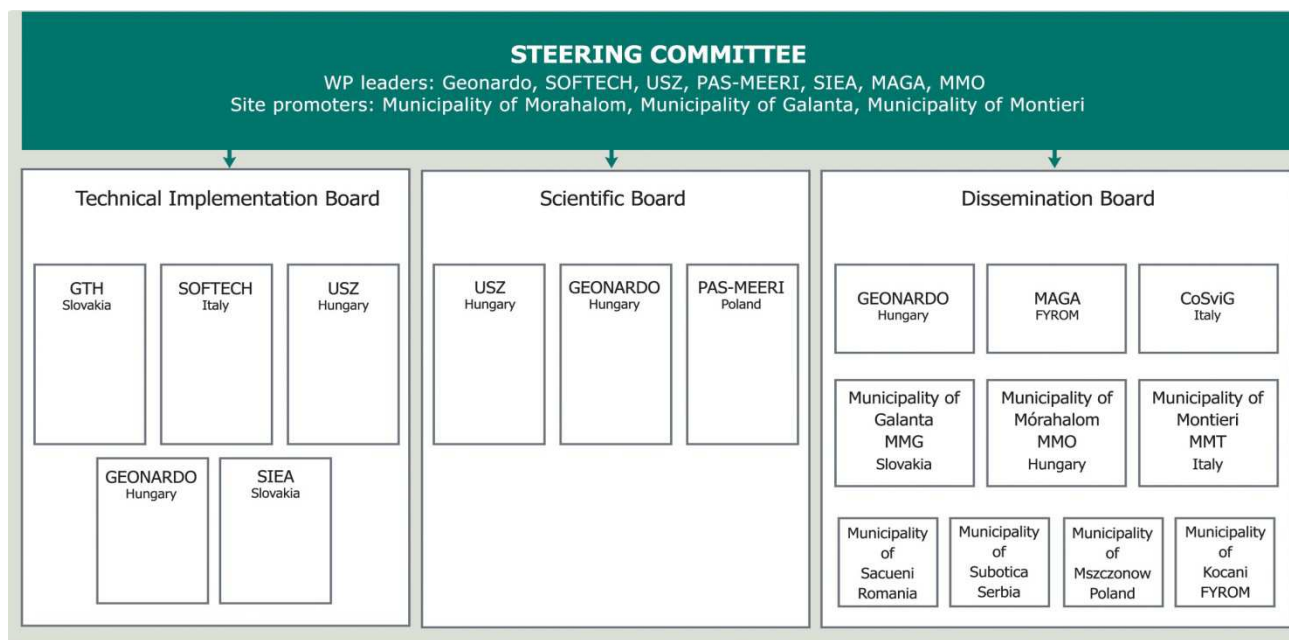
For most of the projects, the signature of this declaration could be done directly via the IT reporting tool through an adapted IT mechanism.

³ If either of these boxes below is ticked, the report should reflect these and any remedial actions taken.

3. Publishable summary

3.1 A summary description of project context and objectives

The **Geothermal Communities** project is a CONCERTO Phase III action that started in January 2010.



The project’s overall objective is to promote the utilization of geothermal energy and resources as a reliable renewable energy resource through demonstration actions in three cities involved in the project as CONCERTO Areas. Geothermal energy is the least known and least expanded RES in Europe, though its relevance and importance should deserve much more attention. **By using the practically unlimited internal heat of earth, geothermal energy has one of the highest potential of all RES.** When compared with other RES – like solar or wind – its main advantage is the practically constant energy and heat output it can provide. Besides the well known geothermal regions like Iceland or the region of Tuscany (Larderello) in Italy, **Central-Eastern European countries have exceptional geothermal resources.** These resources are either unexploited due to the lack of technological know-how or their use is carried out in an unsustainable way; geothermal district heating projects lack the energy efficiency component and the used thermal water is generally not re-injected but instead released to surface waters.

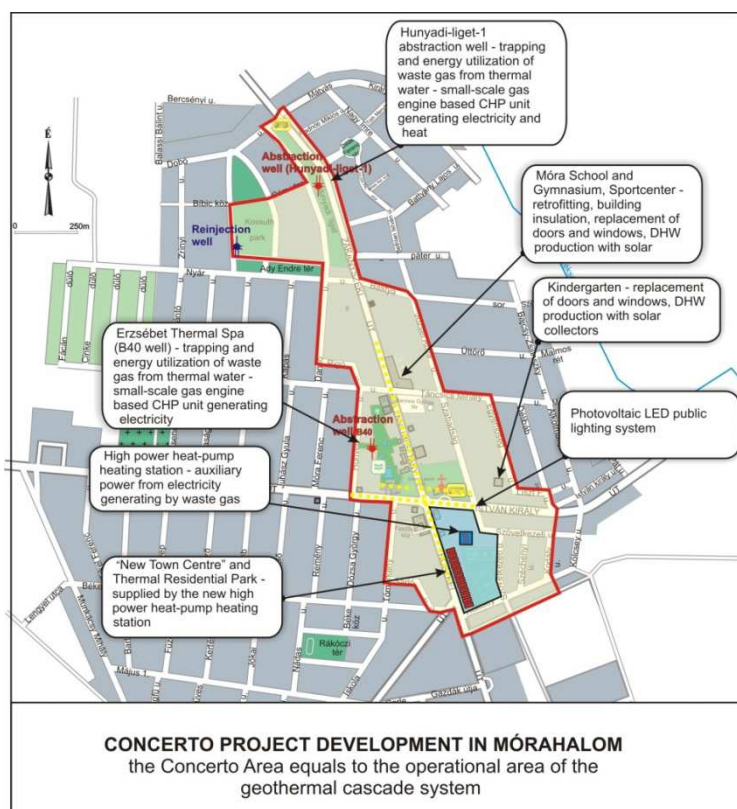
The Geothermal Communities project, joint action of 16 individual partners, demonstrates the best available technologies for the use of geothermal energy combined with innovative energy-efficiency measures and with the integration of other renewable energy sources in three different pilot sites (Hungary, Slovakia and Italy). Furthermore, the project integrates a large number of cities as project partners (from Serbia, Romania, Poland and Macedonia) that either already have ongoing geothermal initiatives and are keen on adopting the latest technologies (e.g. Oras Sacueni, Romania) or they would like to realise brand new systems by taking advantage of the project’s results and its competent consortium (e.g. Subotica, Serbia).

The project implements the following measures at the three demonstration sites:

Mórahalom, Hungary:

The Geothermal Cascade System of Mórahalom (the core works were financed by the Hungarian Structural Fund („KEOP-4.1.0-2007-0006:

Geothermal Cascade System of Morahalom (2008-) – EURO 2,147,000”). According to the plans the proportion of renewable energy within the energy utilization of public institutions will grow from 0% up to more than 80% - resulting in saving 14,441 GJ of fossil energy sources per year. 2620 kW heat capacity is calculated to be provided through the geothermal heat supply system. By replacing the amount of 481,907 m³ of combusted natural gas per year; the annual emission of pollutants from energy utilization is expected to drop by 866 t of CO₂, 318 kg of N_xO_x and 605 kg of CO.



High power heat-pump station: The auxiliary power demand of 60 kW of the heat-pump heating station is going to be met by the trapping of methane production of the new abstraction well of the cascade system, while the electric power produced by trapping of the methane production of the B40 well at the spa will be used at the Thermal Spa. Currently this methane is directly emitted into the air (with a twenty-one times higher greenhouse effect than CO₂). Complex, so called combined energy utilization gas engine based CHP units are planned for the waste gases (CH₄: 65-98%) of the abstracted thermal water, which generates electric power, and supplies auxiliary power to the system. An average water amount of 30m³/h with a temperature of 30 C° arrives to the area of the “New Town Centre” (after cooling down in the cascade system), which is able to produce a thermal power of 450 kW in a heat-pump system with an average efficiency of 5 COP. This helps the full utilization of the complete energy of the thermal water (including its gas content) abstracted for the supply of the cascade system at a temperature of 65-70°C to a temperature down to 5-6 C° before reinjection. Currently there is no thermal water and heat pump combined system with similar efficiency either in Hungary or elsewhere in Central-Eastern Europe.

Retrofitting and RES integration: The area concerned in the development of the Mora Cultural Centre, School and Gymnasium (built in 1935 and 1972 respectively) is 1430 + 560 = 1990 m², and uses an annual amount of 130-140,000 m³ natural gas for heating. By the GEOCOM measures, gas amount of approx. 122,000 m³/year shall be replaced by geothermal energy. A solar collector system of 175 m² of vertical plate collectors and the related engineering are planned to accompany the retrofitting measures of these buildings. The solar system is able to produce a hot water amount of 17,500 l/day. An intelligent control unit will optimize the use of solar-thermal and geothermal in the building taking into consideration the peak demands and the usual school cycle (45 minutes class/15 minutes break) for ventilation

control. It needs to be mentioned that façade insulation and refurbishment measures will take into account the fact that the old building is part of the local cultural heritage and is under local protection. Wooden-framed custom made windows (triple glass with argon fills) will replace the old ones in a style that matches the building built in 1936.

Galanta, Slovakia:

City of Galanta has been operating a geothermal district heating system since the early '80s. The CONCERTO activities focus on the further utilization of the geothermal energy by retrofitting measures, connection of new areas to the district heating system and last, but not least by developing the possible reinjection techniques. The municipality's effort is to use this green energy widespread in the city and assure this energy for the next generations.



Well-head of the Galanta geothermal abstraction well

Retrofitting of three old, concrete-panel based multi-level housing units and of the elementary school and RES integration by photovoltaic system and comprehensive renewal of the lighting system and RES integration also by photovoltaic system:

The refurbished buildings and the elementary school need less geothermal energy, which can be used for longer DHW producing on the other main part of the CONCERTO area.

The retrofitting of the selected dwellings included:

- Facade insulation,
- Roof insulation,
- Change of the doors and windows at the common spaces,
- Reconstruction of the rising pipes
- Using of thermostats.

Insulation works included the change of windows and doors, which are in disrepair and in addition to poor thermal insulation attributes, are dangerous when handling them. The construction of windows is disrupted with cracks in the wooden frame. From the energy savings point of view, taking into account the current technical condition, the windows are the structure, which has the greatest impact on the wasteful heating of the building.

Photovoltaic panels shall provide enough electricity for the lighting of the common areas of multi-storey buildings included in the project. Photovoltaics and a comprehensive renewal of the lighting system is hoped to significantly decrease the electricity consumption of the retrofitted elementary school heated from the geothermal source.

Reinjection borehole research and project works, including full documentation, studies, permits and assessments to secure the geothermal capacity for the next generation recent system needs a reinjection well, which is injecting the non-used or waste geothermal water back to the reservoir. Now this “waste water” is pumped into river Váh in amount more than 500 000 m³ a

year. The implementation of a reinjection borehole needs a feasibility study, research and a comprehensive project documentation to set the technical specification of the well.

Geothermal network improvement at CONCERTO Area I by connecting several newly build businesses and residential buildings to the existing geothermal loop.

Connection of newly developed urban areas to the geothermal district heating system

Montieri, Italy:

Montieri is a small medieval village situated in the heart of the Tuscany Geothermal Region of Larderello, with 3 main CONCERTO activities:

Construction of a highly innovative geothermal district heating system by using high-enthalpy fluids: This may serve as a new, ambitious example for communities with similar geothermal characteristics (e.g. Central-Eastern European countries); In CEE higher temperature fluids (medium/high enthalpy) might also be recovered, though at significantly higher investment costs. Aided by innovative technological solutions the feasibility of tapping into medium enthalpy resources is going to be demonstrated here. This aspect of the project affects 425 dwellings which are to be connected to the district heating system. The total heated volume of these homes adds up to 110,000 m³, while the output of the geothermal system is estimated to be approx 5,500 kW (20,000GJ)



The village of Montieri

Retrofitting of selected dwellings **by using integrated approaches and techniques**: Montieri represents a challenging site for defining and testing a qualitative architectural integration of renewable energy technologies and retrofitting measures. In such an architectural heritage the potential for intervention at the building envelope level is quite limited. Only natural materials and methods are acceptable that are in conformity with the medieval city structure. 20% of the total dwellings in Montieri are subject to be retrofitted during the project.

The Energy Retrofit Strategy which will be introduced over 425 residential dwellings is part of the geothermal district-heating plan. It aims at reducing energy needs in conjunction with building renovation. In addition these buildings will make use of geothermal heating to become 100% fossil fuel free. The retrofitting demonstration will take into consideration the town's high cultural and artistic value.

RES Integration – on one hand a 8,5kW PV panels system will be installed to serve as the main power source of Montieri's renewed public lighting system. On the other hand a total of 42,5 m² solar thermal collectors will be set up to serve as primary heating and DHW source for dwellings too spread out to be linked to the district heating system.

The three CONCERTO cities in the project represent three completely different sites in terms of their climate, technological setting, population (Montieri: 1.200, Morahalom: 6.000, Galanta: 15.000), retrofitting techniques to be applied and the nature of the geothermal systems. This gives the project a unique added value where communities with different background can demonstrate the importance of geothermal energy.

In addition to the demonstration components through the **parallel implementation of three ambitious development works**, there is also a strong complementary research aspect to the project focusing on making geothermal projects more cost efficient and technologically sound. Research work includes:

- **Integration of the geothermal energy with other RES** to outline ways of more efficient and sustainable green-energy production (e.g. solar energy, biomass, wind) in Europe – with special emphasis on trapping CH₄ and other combustible gases and energy production;
- **Trans-boundary issues** of the utilization of geothermal energy (4D modelling of geothermal reservoirs along the Hungarian/Serbian border);
- **Socio-economic modelling** of geothermal investments, with special focus on the public perception and understanding of RES/RUE measures.

Results of the project activities have been widely disseminated via common dissemination channels combined with traditional and electronic training programs and workshops organized for municipal-level decision makers. Besides the dedicated dissemination work-package, the demonstration activities are expected to have a solid impact on the environmentally-focused thinking (i.e. by having done retrofitting and system integration projects over buildings of various educational institutions such activity would provide local students the opportunity to get familiar with the RES/RUE measures and to understand their importance). Finally, the unique **Mayors' Geothermal Club** is planned to be set up to continue operating even after the project is over as a permanent network of city mayors and municipal-level decision makers who are interested in the sustainable utilization of geothermal energy. It is expected that with the help of such **high-visibility pilot actions** combined with the research and dissemination efforts investment into geothermal systems can be boosted in Europe and **these investments** are going to take place **in a sensible, environmentally aware and economically sound way**.

3.2 Description of work performed since the beginning of the project and the main results achieved so far.

Year 1

The planned duration of the project is 60 months (01/2010 - 12/2014). During the first 12 months of the project, mainly administrative, management and preparatory works have been conducted; however, the retrofitting measures in Galanta at the 3 multi-level dwellings were also implemented ahead of schedule.

The project's kick-off meeting was held on 27-29 January 2010 in Budapest with site visits to the Morahalom and Galanta demo sites. An interim project meeting was held in June 2010 in Montieri, Italy, with most of the partners present. These were followed by several bilateral meetings between the coordinator and the demo sites representatives later on.

Galanta decided to bring the retrofitting measures forward by a year since Bysprav Ltd. had finished completing the retrofitting measures of the 3 multi-level dwellings in the primary CONCERTO area. This has put the project ahead of schedule.

The project website was also launched at www.geothermalcommunities.eu. This website is regularly updated and all relevant information and results are made available.

Year 2

Due to the very slow legislative processes, most of the legal issues commenced in the first year of the project were still ongoing during the last reporting period. Public procurement and procedures for compliance with local regulations presented major hurdles (and they still do) for the actual implementation of the proposed and funded actions.



The second interim meeting was held in Kocani (Macedonia) on 27-28 April 2011. After a brief summary of the first-year activities (results achieved, deviations, delays and bottlenecks experienced) the upcoming tasks and deliverables were discussed. This session was followed by a detailed



description of the first-year results of the three demonstration sites. Interim results of the relevant research WPs were also shared with the consortium.

The indoor sessions were complemented by site visits related to the Kocani geothermal infrastructure (geothermal heated elementary school, greenhouses, abstraction well etc.)

At the demo sites, the municipalities have been working hard on overcoming all legal obstacles and obtaining relevant permits and documentation required to commence the investments. As a result of all of these efforts, many aspects of the GEOCOM initiative started to get realized in 2012.

The preparatory works, energy audits, planning and public procurement procedures were also in the pipeline at the two other CONCERTO cities. The actual retrofitting and construction works started in 2011, as planned.

Preliminary steps regarding the launch of WP7-Monitoring have been taken during bilateral talks between relevant partners.

Year 3

Some of the planned activities of the third project year were hindered by a slow and time-consuming legislative issue which resulted in unavailable interim payments needed for project implementation purposes and which is briefly described below.

During the GA negotiation phase back in 2009, the Commission informed the GEOCOM consortium that the unit-scale flat-rate cost reporting option was not available, so the budget, based on the actual costs of the demonstration activities planned to be realised at each of the demo sites, was re-calculated in close cooperation with DG ENER. The costs were reported in this way in the first two periods (2010 and 2011), and DG ENER has accordingly accepted the cost statements and paid the interim instalments.

In February 2012, GEOCOM's Project Officer Mr. Royer-Dupre forwarded Geonardo (the coordinator) a letter from DG Energy's legal department mentioning that using the actual costs for the demo activities was a mistake. As a result, Geonardo had to initiate a GA amendment procedure to include the unit-scale flat-rate costs and ANNEX D into the GA. This procedure took more than 6 months, although all of the requested documentation was submitted promptly. Officially, the Grant Agreement of the GEOCOM project was amended only in September 2012 – till that point the project was in “suspended” status.

In November 2012, DG ENER informed Geonardo that all reported and previously accepted costs on DEMO activities were rejected due to lack of hand-out certificates, meaning that the GA modification had a retroactive effect on GEOCOM's activities, resulting that in spite of all financial reporting took place in accordance with the valid GA during period 1 and period 2, the amendment procedure of the GA (which replaced the old GA) rendered all the reported DEMO actions of the first two project years ineligible.

This unpleasant situation (namely no interim payment received in 2012) hit the small communities (less than 15.000 inhabitants) of the demonstration sites hard due to their limited financial capacities when it comes to pre-financing major cost items of already ongoing or planned project implementation.

The consortium was informed on this topic during the 3rd interim meeting, which was held in Budapest on 30-31st May 2012. The whole consortium was represented and all the progress achieved as well as plans for 2012 were presented, discussed and agreed upon.

Despite these unfortunate set of administrative shortcomings, the project implementation was not fully halted during this period as a result of all the preparatory work which had earlier been commenced. There was a number of implementation components in the pipeline waiting to be realised in 2012 and as it is listed further below the occurred financial hurdles did not necessary coincided with the lack of progress.

4. Core of the report for the period: Project objectives, work progress and achievements, project management

4.1 Project objectives for the period

According to FP7 reporting requirements, a short overview of the project objectives relevant to the 3rd period of the project (year 2012) is given below. As mentioned earlier, the first and the second years of the project have been dedicated mainly to preparatory works especially at the demo sites regarding the investment aspects, however some of the demonstration tasks (e.g. retrofitting in Galanta) have started and partly finished while the RTD and dissemination activities are on schedule and despite the previously mentioned financial hurdles, the third year brought about some tangible results at the Morahalom demonstration site as well.

In line with GEOCOM's Description of Work, during the third year of the project the following nine WPs have been running:

WP1 – Management, Month 1 – 60

WP2 – **WP3** – **WP4** – Demonstration activities at the 3 CONCERTO Cities; Month 1-48

WP5 - Technological Research Month 1-36

WP6 – Socio-economic research Month 25-48

WP7 – Monitoring Month 31-60

WP8 – Dissemination. Month 1-60

WP9 – Training Month 31-60

(Although the relevant WPs last longer than the reporting period itself (12 months), a detailed description (from Annex 1) of each related WP for the entire span of their lifetime are given in this chapter – since some of the mentioned WPs were scheduled to terminate in 2012 while others have just started and will carry on till the end of the project, as a result some of their set objectives have not been completed by the end of the third reporting period.)

WP1: Management

Work-package leader: Geonardo

Objective: As of DoW

WP 1.1 Internal Consortium Affairs

- Effective communication and flow of information between partners, Preparation of Internal Consortium Agreement.
- To organize progress meetings: yearly management meetings and workshops.
- IPR Management, declaration of Background IPR, monitoring and management of Foreground IPR.
- Project reports (annual, mid-term and financial) as outlined in the Grant Agreement.
- To monitor Critical Paths, SWOT assessment, alternatives for crisis management. Identification and strategy for any correction of potential risks and dispute, which may occur.

WP 1.2 Liaison with External Parties

- Representing the Consortium towards the European Commission and the Scientific Officer.

- Liaising with other relevant Directorate Generals (including DG JRC) of the European Commission.
- Liaising with the CONCERTO Premium initiative and contact establishment with other CONCERTO projects.
- Monitoring other RES/RUE-related European initiatives (including EIE).
- Monitoring national and international initiatives liaising with International end-users and Stakeholders,
- Developing uniform guidelines for press and media appearance

WP 1.3 Geothermal Communities Engineering Project Office

- Supervision of design and implementation works at all test sites (WP2, WP3, WP4 and WP7). There are sub-teams responsible for each the relevant test site, lead by SOFTECH (for Montieri), USZ (for Morahalom) and MG (for Galanta)
- Keeping records and supervising of tendering procedures (lead by project engineering office)
- Help desk, consulting and engineering service for the involved municipalities (including associated cities).
- Supervising the compliance with standards and regulations.
- Acceptance and take-over of project works, in-situ supervision and documentation.
- Development of financial and legal conditions and elaboration of a plan for the sustainability of the project results.
- Identification and strategy for any correction of potential risks and dispute, which may occur.
- Maintaining and monitoring links with the industry ensuring that adequate competition is generated among the subcontractors.
- The project office is located in Budapest at Geonardo HQ, with input from 3+2 key partners who provide expert consulting and supervision of local activities: USZ (Morahalom site), SOFTECH ((Montieri Site); MG (Galanta site); and GEONARDO (WP1/4) and SIEA (WP7).

WP 1.4 Elaboration of a plan for the sustainability of the project results (also in WP 10)

- Development of financial and legal conditions description and technical guidelines for the long-term operation of the network
- Maintaining and monitoring links with associated cities and other interesting stakeholders

WP2-WP3-WP4: Demonstration activities at the CONCERTO Cities

Though the demonstration activities are split into three separate work packagers (WP2 - Geothermal System Development, WP3 - Retrofitting and Energy Efficiency Measures, WP4 – System Integration), the objectives (and the achievements in the next chapter) of these WPs are discussed together, using separate description by CONCERTO Cities. These WPs are the main activities of the GEOCOM project, so special attention is paid on their introduction as well.

CONCERTO City: Morahalom, Hungary – Objectives of DEMO WPS

WP 2.1 Within the framework of the CONCERTO element a heat-pump centre is planned. A gas turbine that is planned to utilize the methane content of the thermal water currently produced at the city's wells will power the heat pumps. Another element is the integration of a solar-thermal system providing DHW for the Mora Ferenc Primary School, Kindergarten and Sports Hall complex.

WP3.2 Two public buildings are subjects of retrofitting. The Mora Primary and Secondary school currently spends 82% of its annual budget on heating (natural gas) due to extremely poor qualities of the external walls and windows. For both buildings an intelligent system is to be installed in order to control ventilation and shading (during the summer). Higher-grade high-school students to be involved in the planning and implementation of retrofitting measures is hoped to raise awareness and understanding among young people regarding the principals of energy efficiency in general..

WP4.2 A combined solar-thermal and geothermal system taking into account cost-efficiency and reservoir management are assumed at the pilot site. The insulation techniques to be applied at the school and the sports hall are beyond national and EU standards. The intelligent ventilation systems will consider the usual school cycle. The combusted methane content of the Hunyadi-liget thermal well is going to power the heat pump centre producing heating and water for the new housing area in the city: At the same time energy generated by the same process at the B-40 thermal well is expected to be used at the thermal spa.

Scheduled for this reporting period at the Mórahalom demonstration site:

- public procurement of CHP engine
- detailed energy audit of the CONCERTO Area

CONCERTO City: Galanta, Slovakia –Objectives of DEMO WPs:

At Galanta, three local partners are involved in the project activities: P11 - Municipality of Galanta (Mesto Galanta), representing the Municipality, P6 - Galantaterm s.r.o, the company (owned by the municipality) representing the Geothermal district heating operator, and P17 Bysprav s.r.o, another municipal-owned company responsible for the retrofitting actions of the multi-storey buildings.

WP 2.2 Geothermal System Development

In order to improve environmental performance of the existing system full documentation and related studies of a reinjection borehole will be compiled. For further development of geothermal heating in Galanta, it is key to determine the viable options and their extent regarding reinjection into sandstone reservoirs. Such complexity must be preceded by a set of geological surveys, which happen to be also part of the project. From the perspective of sustainability and environmental suitability reinjection may prove to be an important step, due to the fact that nowadays over 500 000 m³ a year of waste geothermal water is released to the nearby river Váh. According to preliminary estimates and studies, reinjection could return 60 - 80% of the abstracted water back into the reservoir (exact value to be determined by the proposed study). This activity aims on securing the complete research and project documentation required for the implementation of the reinjection borehole.

Three new housing estates, a biotechnical-accessories producing company and an elderly home are under construction in close proximity to Galantaterm Ltd. creates a sufficiently dense heat market at CONCERTO Area I. The investors announced their interests to use renewable energy sources for heating of their properties. This presents a great opportunity for the GEOCOM project to provide a year-round heating and DHW supply from geothermal sources on the spot, instead of limiting such capacities only to produce DHW during the summer period on the initial CONCERTO II area. Request for changing the original work plan have been approved by the Commission within the frame of the amendment procedure.

WP 3.3 – Retrofitting and Energy Efficiency Measures (Mesto Galanta)

Insulation works include the change of windows and doors, which are in disrepair and in addition to their poor thermal insulation attributes, are dangerous when handling them. The window structures are disrupted by cracks running in the wooden frame. From the energy savings point of view, taking into account the current technical conditions, the windows have the greatest impact on the wasteful heating of the building. Replacing them can achieve a saving up to 30 % on the heating bill.

WP 3.3 - Retrofitting and Energy Efficiency Measures (Bysprav)

Three blocks of flats were selected for retrofitting where the applied external wall insulation technologies demonstrate the standard insulation systems often used in the country and which are in accordance with the dwellers' decision.. Further elements of retrofitting include insulated doors and windows at the common areas; fully renewed rising pipes and the use of thermostats in the apartments.

WP 4.3 – System Integration (Mesto Galanta)

The local elementary school has high electricity consumption due to the need of continuous lighting during the day. The project includes the integration of renewable energy sources through the installation of photovoltaic panels performing up to 5 kW with a total annual energy output of up to 5300 kWh (calculation based on the records of annual solar radiation in the Slovak Republic). Furthermore, to enhance the efficiency of this measure, a comprehensive upgrade of the school's lighting system is scheduled to be carried out, making it possible to achieve an average saving of up to 25% on the power bill.

In addition to saving power, the upgrade of lighting fixtures contributes to the improved conditions of teaching, reduces the number of lamps, increases total light output (in terms of technical standards) and it will cast a less harmful shade of light for the eyes of children.

WP 4.3 – System Integration (Bysprav)

RES integration is committed through the future deployment of photovoltaic panels on the provision of electricity for lighting common areas of the housing units. On the top of each insulated housing unit a photovoltaic system with a total power up to 1.5 kW will be mounted, which is sufficient to cover the energy needs of the common areas at the 48-flat housing units.

Scheduled for this reporting period at the Galanta demonstration site:

- Recent developments and new investments near CONCERTO Area I resulted in a much denser heat market to be served by geothermal heat at a much reduced cost than the initially anticipated budget. The proposed change in plans has been filed to the EC for evaluation.
- First phase of the school retrofitting targeting two pavilions which are in the worst condition to be completed.
- Project documentations for all the photovoltaic systems to be done and to be approved prior installation.

CONCERTO City of Montieri, Italy – Objectives of DEMO WPs:

There are three legal entities involved in GEOCOM that are responsible for the demonstration actions at Montieri: P2 - SOFTECH Ltd, an engineering and architect-planning SME, responsible for the sensitive retrofitting measures of the medieval village of Montieri, P8 - CoSviG, a regional public body responsible for the geothermal district heating implementation and P12 Municipality of Montieri, the local government responsible for the implementation of all works, especially coordinating the retrofitting measures.

WP 2.3 Geothermal District Heating System of Montieri

The main objective is to set a new, ambitious example for Central-Eastern European countries, where higher temperature fluids (medium/high enthalpy) may also be recovered (although at significantly higher investment costs). With the help of innovative technological solutions the feasibility of tapping into medium enthalpy resources is demonstrated. Challenges include HPHT conditions (high pressure (15-20 bar) and high temperature (200-215 °C)). Given the elevation difference between the steam/hot water heat-exchanger at 530 m above sea level and the central exchanger at 700 m a.s.l., in order to keep the circulating superheated water at a pressure of 2 bars it is sufficient to pressurize the circuit at the central exchange, where jars of expansion are subjects to be installed.

Plant Technical Features

- Total energy output: 19,800 GJ
- Total power output: 5330 KW
- A double primary and secondary circuit, with use of heat exchanger plates with two thermal plants (primary heat steam / water boiler and secondary overheated water / hot water) and intermediate pumping stations.
- Utilization system: based on heat exchanger plates
- Primary thermal plant location: geothermal well
- Central location secondary heat: municipality of Montieri
- Length of distribution network: 5600 m (times 2, return) of pipes, excluding the connection to users.
- Inlet primary circuit temperature: 200 °C
- Primary circuit overheated water temperature: 120 °C
- Secondary circuit water temperature: 80-90 °C

To maximize the economic efficiency a specific planning targeting the intervention was elaborated, without precluding any possibility of scattered units to be connected, where the distance and the cost is within the parameters of depreciation schedule. According to calculations, the total volumes to be heated were 110,000 m³, while total power output reaches 4850 kW.

Having noted the almost **uniform architectural features of the selected buildings**, a building types-based calculation method had been implemented. This has allowed a careful assessment of the differences in energy requirements related to the heating demand of similar buildings. The development shows that the analytical energy requirements for the buildings shall be increased by 10%, and therefore it sums up to approximately 5330 kW.

WP3.4 Retrofitting at Montieri:

Montieri represents a challenging site for defining and testing a qualitative architectural integration of renewable energy technologies and retrofitting measures because in such an architectural

heritage, the potential for intervention at the building envelope level is quite limited. Only natural materials and construction methods are acceptable that are in conformity with the medieval city structure. The climatic conditions here are similar to that of the Western Balkan thus results are going to be directly applicable to South-Eastern European countries while taking into account the different socio-economic conditions.

20% of the total dwellings will be retrofitted, having an enormous effect on the energy balance and setting an example for similar future projects.

Energy audit of the 425 dwellings selected for retrofitting and micro-scale RES integration will be carried out. Retrofitting and RES integration comply with the special local conditions.

The innovative retrofitting technologies to be used at Montieri are as follows:

Day lighting:

- Central skylights opening;
- Careful selection of the skylights glass (light transmission/solar gains/light reflectance coefficient);
- Opening of skylights in order to allow the natural light to reach the lower levels of the building;
- Special care concerning the spatial distribution at each floor.

Building envelope:

- Application of thermal insulation at the roof levels and partition walls, and floors;
- Selective covering of the massive walls from inside in order to optimize comfort conditions and thermal inertia of the building;
- High quality double glass, wooden frame vertical windows;
- High quality skylight glass (low solar gains – low reflectance).

Natural ventilation:

- Utilization of of the buildings' high natural ventilation potential;
- Opening of skylights to increase the natural ventilation (free-cooling, night cooling in summer);
- Keeping infiltration rates at low levels, during winter.

WP4.4 System Integration at Montieri

A catalogue of applications, integrally estimated on each technological/typology crossing is suggested to be worked-out, in order to predict the most appropriate technology and configuration for any of the various building types. The result yields a matrix of technologies, components, equipments and materials to be tested in the whole town centre, qualified and quantified in terms of energy benefits, environment impact reduction, and gas emission control.

The main area of RES integration includes the modernization of the complete public lighting of the town centre by changeover to solar-powered LED lighting system. Photovoltaic modules will be adopted reaching a total amount of 8.5 kW to provide the electricity needs for street lighting. The current power demand for the public lighting is 15 kW and it is estimated that with the energy efficient street lighting system to be adopted by the Municipality, the 8.5 kW of PV output could cover the whole energy needs for such a public use. The use of central panels and closed circuit networks is planned. Apart from the occasional cleaning of the panels, the system does not require any maintenance. It is completely automatic with dusk-to-dawn solution. This system reduces the energy demand by 35-50%, and its utilization results in a 100% energy saving compared to the replaced system.

The other area of RES Integration is to use a total of 42,5 m² solar thermal collectors. Such a limited capacity derives from the population's uniform satisfaction over the community's thermal needs covered by the geothermal source. Only a few dwellings decided not to be served by the district heating (due to their distance from the pipeline), including domestic hot water. In such dwellings, at the periphery of the geothermal loop solar thermal panels shall be installed to provide solar hot water all year round.

Scheduled for this reporting period at the Montieri demonstration site:

- Additional legal framework regarding the investment, such as land use, finance, labor force
- Fundaments of the site specific energy efficiency measures to be laid by SOFTECH
- Draft plans for the new buildings to be erected as part of the geothermal heating network with special emphasis of the integration of renewable energies in their building envelope and other utilization of RESs.

WP5: Technological Research

Work-package leader: University of Szeged

Objective: As of DoW

WP5 is one of the two research work-packages of the project. Its main objective is to set-up a technological guideline on future geothermal energy investments and to give a clear and transparent picture on the possible outcomes of similar projects. It has four sub-WPs in order to cover all relevant research and horizontal topics. The leading partner is P9 – University of Szeged, with strong cooperation and involvement with all the project partners (local data input, research and legal issues, etc.)

WP5.1 Integration with other RES

The main scope of this sub-WP is to outline ways of integrating geothermal energy with other RES (e.g. solar energy, biomass) in Europe, and evaluation of integration methods.

In this WP, available experience on integrating different RESs into a cascaded facility is studied, with a special emphasis on environmental improvements and broadened operational time and spectrum of use for such facilities. At present most of the experience available is confined to general cascading utilization such as health spas, space and greenhouse heating in a low temperature geothermal environment. There are very few examples regarding the cascading other RES. The results will provide blueprints of innovative cost-effective solutions for geothermal investments in the enlarged Europe. The following activities are planned: 1) Investigation of the economic factors that influence the integration of GE into energy systems. 2) Investigation of other factors that influence the integration of GE into energy systems. 3) Identification of integrated systems potential layouts. 4) Studies for the improvement of geothermal energy utilization in CEE.

WP5.2 Trans-boundary issues of utilizing geothermal energy

The most significant thermal water resource in the Carpathian Basin resides beneath the Hungarian-Serbian border, in the Szeged-Morahalom-Subotica triangle. The abstraction for extensive and complex utilization is currently being started on both sides of the border. For the safe and sustainable abstraction, and its international monitoring, it is necessary to determine the hydrogeological-hydrodynamic features of the common thermal water base, and to elaborate a two-phase 4D model of the water base for the mapping of the water resource and its gas content. Geology doesn't follow country borders, thus no surprise that the Upper Pannonian reservoirs of the

Great Plain stretch to the mountains of Serbia and Romania. This strengthens the necessity of basic research, since the set up of international abstraction monitoring systems and abstraction agreements will eventually become a necessity targeting a reasonable and sustainable bilateral production.

WP5.3 Reinjection monitoring and modeling

Sandstone reservoirs in the Pannonian-basin and other similar sedimentary basins all over Europe pose a significant challenge for geothermal related reinjection. To comply with the mandatory reinjection procedure of the geothermal waste water back to the reservoir high performance pumps are necessary (with high power demand) – occasionally up to 50% of the total heat power of the source. That may destroy the whole economic viability of the geothermal system. Different methodologies are under investigation, which aim is to define technical solutions, partially or totally eliminating the problem and by doing so increasing the economy of such geothermal systems. The recently commissioned reinjection borehole in Morahalom is used for simulations, model calibrations and for detailed optimum reservoir management studies which enable reinjection with minimum energy consumption.

The aim of the work package is to collect data and information under production conditions that clarify the relation between wellbore construction and well-geophysical relations of abstraction-reinjection wells drilled into Upper Pannonian sandstone reservoirs as well as the actual abstraction-operation methodology. The research activity seeks answers to various questions such as: from which location how much water can be abstracted, what technological circumstances have to apply for successful reinjection to take place thus ensuring a sustainable, long-term water production.

WP5.4 Integrated utilization of waste gases of thermal wells

Waters abstracted from a large number of thermal wells of the Great South Plan Region have high gas (predominantly methane) content. During water abstraction (both in the case of spa uses and energetic utilization) novel technologies are available to separate and utilize the energy-content of these gases (as well as heat content of the CHP units while combusting these gases) reducing greenhouse effect and increasing system effectiveness through integration. In WP2.1 Morahalom serves as the first Hungarian pilot site for such action, as combined heat and power from the CHP units mounted on two abstraction wells shall be utilized in an integrated system. In Wp5.4 researchers of the USZ involving the leaders of the other test sites aim to carry out an in-situ study of the Morahalom site, to assess the results of integrated use, to do benchmarking, to analyze the needs and potential of other possible sites and to outline suggestions for wider applications.

The following activities are planned:

- Investigation of the economic factors that influence the integration of waste gas energy in RES.
- Investigation of other factors that influence the integration of waste gas energy in RES.
- Assessment of waste gas energy integration in RES potential and technologies for the South Great Plan Region.
- Building a database of South-Great Plan sites with potential in waste gas energy integration in RES.
- Providing technology transfer to projects proposing waste gas energy integration in RES.

WP6: Socio-economic research

Work-package leader: PAS-MEERI

Objective: As of DoW

WP6.1 Public perception of geothermal energy: This sub-WP aims to compile a cross-national, comparative analysis of public understanding and attitudes towards geothermal energy in general. The work targets the evaluation and assessment of the society's perception regarding the function and role of geothermal energy in energy systems and everyday use. Research includes both quantitative and qualitative methods (e.g. internet-based surveys, questionnaires, and analysis of statistical data that has been gathered for other purposes. Relevant project partners will gather domestic data that characterizes their home country).

WP6.2 Public perception and understanding of RUE measures (*pilot-site case studies*).

To determine user satisfaction (with the implemented measures, information, energy advice, feedback-systems on consumption) and user involvement related to the project activities analysis of different stakeholders / inhabitants perceptions about changes in the affected communities and acceptance of the CONCERTO measures will also be performed.

WP6.3 Overview of market drivers, fiscal measures and subsidies: Issues such as financial constraints (on capital investment, flow of capital, and other); environmental constraints; land concessions; water rights; taxation; etc. is planned to be thoroughly investigated in the aspect of their handling through the relevant existing legislative and administrative framework, as well as financial incentives, fiscal measures, market incentives, analysis of economic viability and cost-effectiveness in relation to reduction of CO₂ emissions, environmental and sustainability issues, reinjection, etc.

For the reported period, no activities within the frame of WP6 were originally planned (as included in Annex I to the Grant Agreement). The project partners decided to initiate additional works in WP6 much earlier than in M24. The following chapter lists the work completed so far.

WP7: Monitoring

Work package leader: SIEA

Objective: Technical and non-technical monitoring of the pilot actions based on a synchronised methodology. Besides the data and measurements performed on each demo-sites, the results of technical aspects (WP5) and socio-economic aspects (WP6) are also key-elements to the Monitoring WP.

WP7.1 Ambient monitoring:

- daily value of ambient air temperature and hour global solar radiation are important data for energy balance calculation, for examine an operation of the solar renewable sources.
- Daily rainfalls, wind speeds, evaporation and humidity could be optional data or information could be obtained from the weather services.

WP7.2 Technical monitoring of RES systems:

- projected data and technical specifications to be used for boreholes (yield, temperature, chemistry, depression curves), for chemical composition determination and for environmental impacts.

- daily pumped geothermal water, average temperature of water,
- thermal energy delivered in the summer period from the geothermal sources to the area of the heating plant (i.e. K12, K16 (Concerto area II of Galanta.) in GJ)
- monthly non-RES auxiliary energy input and heating, cooling and electrical or fuel energy.

WP7.3 Technical monitoring of CONCERTO building performance

- Domestic water usage.
- Space heating usage (separately metered in the units).
- Electricity usage (meters).
- Information will be collected on auxiliary electricity usage for heating and cooling and also waste heat estimation
- For the photovoltaic system, the amount of the energy (electricity) delivered directly by the panels to the primary circuit.
- For building blocks (in Galanta) the units will be separately metered and the common areas (staircase, corridors, laundries, storage rooms) will also be metered separately.

WP7.4 Non-Technical Monitoring – in cooperation with WP6

- Annual socio-economic data will be collected monitored and compared to the baseline (three surveys altogether). Salaries (average income level of households) will be collected and GDP/inhabitant will be estimated within the CONCERTO community.
- Share of household income spent on energy will be calculated on a sqm/per capital/per household basis.
- Qualitative indicators will be defined to evaluate the real/perceived impact of the CONCERTO measures.
- Quantitative indicators will use per capital income related to the per capital expenditure on energy services normalised with a coefficient used to evaluate the level (quality) of energy services (continuity of district heating provision, feeling of comfort after the retrofitting measures, etc).
- The public awareness concerning the CONCERTO measures (and the impact of those measures) will be monitored on a community level.

WP7.5 Real-time on-line monitoring of system performance:

Real-time on-line monitoring of system performance is one of the main dissemination interface of the project towards the public and the stakeholders. Also it allows having an immediate alert when an anomaly occurs and to rapidly intervene if necessary. Telemonitoring system will be implemented at all the CONCERTO areas and will be available through the GEOCOM website. The data received will make it possible to assess the global performances of the installations. The entire CONCERTO areas have to be demonstrative, so the telemonitoring equipment used will be as simple as possible in order to increase the replication potential.

WP8: Dissemination

Work-package leader: Geonardo

Objective: Dissemination of information about the project in general, its objectives, the approaches and results through electronic and traditional methods. All beneficiaries have important role in dissemination, like translations, publications, content developments, conference and workshop participation, etc.

WP8.1 The first task under dissemination was to develop the project's website available starting from the first month (January 2010.) and serving as the main platform of the project.

The website contains:

- Consortium structure, list of partners and contact points
- Private communication forum with a restricted access to the partners, for communication / discussion
- Links to stakeholders and other websites (e.g. other CONCERTO projects) with relevant information of interest
- Appropriate links to the Mayor's Club and Monitoring, as and when it becomes available

The website is regularly updated with:

- New versions of the brochures and newsletters
- Occurrences of dissemination of the project by its partners to conferences and meetings
- Announcements of relevant future meetings that a partner intends to attend
- Reports/Minutes of the kick-off, interim and final meetings (accessible only to partners)
- Results from each work package as they are released by the partners (accessible only to partners)
- Public presentation of final deliverables

WP8.2 Common Dissemination Activities

- Dissemination activities were planned in order to improve the market for development of geothermal energy and integrated geothermal/RUE/cascading RES projects in EU countries
- General dissemination of information about the project, its objectives, the approaches and results through publications and leaflets and the project Newsletter
- A project logo to be created and used in all publications and leaflets
- Brochures to contain the overall aim of the project and the planned actions (WPs) that would be undertaken to achieve this aim. Additionally, International and National Press and Media Releases from each partner within its home country are forecasted.
- Project **electronic newsletters** to be issued on a yearly basis containing above all the information found in the most recent brochure the following:
 - Summary of progress of all WPs, including all the deliverables produced since the last edition of the newsletter
 - Reports of activities of each partner since the last edition of the newsletter
 - Information on relevant forthcoming conferences / meetings, where GEOCOM is presented
 - Announcement of forthcoming project meetings

WP8.3 Presentation and participation at high-profile events

Provisional activities planned in general and for the period:

- European Technology Platform on Renewable Heating & Cooling conference

- Presentations and publications in international conferences (such as the European Geothermal Congress 2013) that are related to the objectives of the project
- Participation at CONCERTO Plus/Premium meetings and activities
- International Press and media releases.
- National Press and Media releases from each partner within its country

WP9: Training

WP leader: MAGA

Objective: To convert project results into a digital training material and implement a series of trainings for municipal decision makers and the research community

WP9.1 Practical training for decision makers

One day interactive workshops for municipality and national administrative staff who are to take initiatives and organization of projects development and completion. Practical training shall particularly consist of a summary of the local source on disposal, possibilities for sustainable and economically justified incorporation in the local economy development and, improving the life conditions and environment. Necessary administrative procedure for development of concrete geothermal (or combined) projects shall be summarised in a practical table, with necessary information for related administrative units where to get necessary permissions and support. Finally, a locally based proposal shall be given in order to illustrate how to organize an initiative, of what is composed and how should be organized a concrete project development.

WP9.2 Research based international workshops

Target group includes professionals on identification of positive possibilities of energy efficiency measures in the municipalities with application of geothermal energy and locally on disposal RES for composition of integration projects. Three special international workshops is planned, i.e.:

- In Hungary, with a special focus on WBC countries: to present possibilities of direct and indirect application and power/heat production of geothermal energy, composition of technologies applied and possibilities for further improvement based on the reached experience. Organization of scientific investigations by collaboration of the national scientific and business sector.
- In Italy; the same as above but for different technologies and under different natural, organizational and economy conditions. Italy was the country where modern development of geothermal energy use was initiated and where interesting technologies have been invented, applied and modernized.
- In Poland, with particular attention to the introduction of energy efficiency improvement technologies and increasing human environment conditions. The project in Zakopane, Poland consists very interesting technical solutions, unique incorporation in a specific natural and economic environment and particular improvement of the environmental conditions.

WP9.3 Development of an e-learning and information base and collaborator network:

The project will take advantage of Moodle (Modular Object-Oriented Dynamic Learning Environment), which is a course management system (CMS) - a free software package using sound pedagogical principles, to help educators create effective online learning communities (www.moodle.org). Work will integrate photo and video archives with input from virtually all WPs (including research WPs 5&6) into a multimedia-based digital learning material. Content of the different services and their IT support system shall be developed. Services: Information service and

helpdesk - E-learning course with different modules for city planners experts (focus on energy efficiency and geothermal integration) but also available for students and researchers.

4.2 Work progress and achievements during the period

WP1: Management

According to the FP7 reporting guidelines, the achievement and progress of the Management WP is discussed in the next chapter (*3.2.3 Project Management during the period*).

WP2 – WP3 – WP4 activities for the 3 demonstration sites

Just like in the previous chapters, the periodic report of GEOCOM describes the achievements of the DEMO WPs as a whole, by splitting the actual results into three subchapters, according to the CONCERTO Cities.

CONCERTO City of Morahalom

In the third year of the project the implementation of many project elements has come to an end. Fortunately the “suspended” status of the project in terms of financials did not affect those components which started back in 2011, thus were already in the pipeline or under construction.

WP 2.1 Within the framework of the CONCERTO element a heat-pump centre is planned to provide heating for the New Town Center and Thermal Residential Park. The public procurement has been completed and the contractor was selected. The realisation of this project element will commence upon the payment of the latest interim instalment.

Also a set of CHP gas turbines were planned to utilize the methane content of the thermal water, which is currently produced at the city’s wells. Excess energy derived from the combustion of this methane is expected to power the heat pumps. One of these CHP engines at the Hunyadi-liget grove had been installed and function tested during the course of 2012. The other one at the Szent Erzsébet Thermal Spa is slightly lagging behind schedule due to a required modification of the initial technical plans. The updated plans are ready now and the installation of the engine is on its way. Once ready a series of function tests need to precede the actual operational stage. All testing and commissioning is expected to be finished during 2013.



One of the two waste-gas (methane) fuelled CHP engines at Mórhalom

WP3.2 Two public buildings were subjects of retrofitting. The Mora Cultural Centre, Elementary School and Dormitory used to spend 82% of its annual budget on heating (natural gas) due to extremely poor qualities of the external walls and windows. Similar figures applied to the Kindergarten and Day-care Centre Complex, too. For both buildings an intelligent system was to be installed in order to control ventilation and shading (during the summer). Higher-grade high-school students are involved in the planning and implementation of retrofitting measures in order to raise awareness and understanding among young people regarding the principals of energy efficiency in general.

During 2012 all the planned construction works on the target buildings have been concluded and commissioned. Thermal insulation was applied on the buildings' facades and all the doors and windows had been replaced. In addition solar thermal collectors were installed on the rooftops of both buildings for domestic hot water generation purposes. After the installation thorough function tests have been conducted for quality control. Now the local, building-scale DHW demand is covered by these solar thermal panels.



Step-by-step facade insulation and the installed solar-thermal collectors at both target buildings

WP4.2 The system integration aspect of the initiative will be realised through the combined efforts of the previously mentioned sub-work packages. A combined solar-thermal and geothermal system taking into account cost-efficiency and reservoir management are assumed at the pilot site. The insulation techniques applied at the school and the sports hall are beyond national and EU standards. The intelligent ventilation systems consider the usual school cycle. The combusted methane content of the Hunyadi-liget thermal well is going to power the heat pump centre producing heating and water for the new housing area in the city: At the same time energy generated by the same process at the B-40 thermal well is expected to be used at the thermal spa.

Scheduled for this reporting period at the Mórahalom demonstration site:

public procurement and implementation of the new LED public lighting system

installation of the monitoring system as per CONCERTO requirements

CONCERTO City of Galanta, Slovakia

At Galanta, three local partners are involved in the project activities: P11 - Municipality of Galanta (Mesto Galanta), representing the Municipality, P6 - Galantatherm s.r.o, the company (owned by the municipality) representing the geothermal district heating operator, and P17 Bysprav s.r.o, another municipal-owned housing association company responsible for the retrofitting actions of the multi-storey buildings.

WP 2.2 Geothermal System Development (Galantatherm)

In 2012 two new multi-storey houses were connected to the city’s existing geothermal heating network. In order to carry out the realization of this new junction a new pipeline and measurement system was developed. The newly installed capacity of this latest extension of the district heating system is 300 kW and 275 kW for heating and DHW purposes respectively.



Newly erected residential building connected to the extended geothermal district heating loop at Galanta

A newly built elderly home was also connected to the geothermal system of which DHW distribution capacity had to be improved and extended for this reason. Two new circulation pumps were installed for DHW purposes and also a new heat exchanger. In addition a new exchanger station had to be developed along with the pipelines supporting the elderly home and covering their demand. The installed capacity of this junction for heating and DHW production is 264 kW.

In 2012 Galantatherm successfully finished sub-WP 2.2, resulting in its full compliance with the DoW and ahead of schedule.

Overall overview of newly connected building to geothermal system – GEOCOM project measure:

Connected building through GEOCOM	Installed capacity in kW	
	For DHW	For heating
Multi-storey house – 1.	124	176
Multi-storey house – 2.	124	176
Multi-storey house – 3.	118	157
Microbiological accessories producing company	35	65
Elderly house	64	200
OVERALL	465	774
OVERALL INSTALLED CAPACITY	1 239	

WP 3.3 – Retrofitting and Energy Efficiency Measures (Mesto Galanta)

In 2012 retrofitting works continued on the elementary school and the first phase was successfully finished. After that the public procurement on second phase was done.



First phase of the replacement of windows at the local elementary school is completed

Planned for 2013

During the course of 2013 the second phase of retrofitting at the elementary school will be finished, thus successfully concluding all the retrofitting works at Galanta which were proposed in the DoW.

WP 4.3 – System Integration (Mesto Galanta)

In 2012 the city of Galanta successfully finished the deployment of photovoltaic panels at the previously selected demonstration sites. A 2,16 kWp photovoltaic system was installed on the top of each retrofitted multi-storey house and a single 4,86 kWp photovoltaic unit was commissioned on the rooftop of the retrofitted elementary school. The overall installed capacity of the photovoltaic panels are 11,08 kWp.



Photovoltaic panels on the top of the retrofitted multi-storey house at Mierová 1436

There is only one remaining duty of the sub WP 4.3, namely the lighting upgrade at the elementary school. In 2012 a comprehensive project documentation including detailed budget elements was developed indicating that all the required preliminary steps are ready to launch the public procurement procedure

Planned for 2013:

The public procurement of lights renewal and its implementation is expected to take place in 2013, meaning that WP4.3 will be concluded by the next reporting period.

WP5.3 – Reinjection monitoring and modeling

In late 2012 a public tender was launched to find an appropriate contractor capable of carrying out the tasks ahead, but the evaluation of the bids and other related administrative issues will be

realized in the course of 2013. The whole project work of the reinjection well have been divided into the following studies:

- Geothermal project tasks including technical project of reinjection borehole,
- Feasibility study of a reinjection borehole in Galanta,
- Comprehensive project documentation of surface technology of waste-water pumping (pipelines, technology, construction, electricity connection, driveway) in order to obtain building permission,
- Detailed total budget including both surface and subsurface works

Planned for 2013:

The public procurement will be finished and the above mentioned project work will be carried out. WP5.3 will be finished by 30th of September 2013 (legal constrain)

CONCERTO City of Montieri, Italy

There are three legal entities involved in GEOCOM that are responsible for the demonstration actions at Montieri: P2 - SOFTECH Ltd, an engineering and architect-planning SME, responsible for the sensitive retrofitting measures of the medieval village of Montieri, P8 - CoSviG, a regional public body responsible for the geothermal district heating implementation and P12 Municipality of Montieri, the local government responsible for the implementation of all works, especially coordinating the retrofitting measures.

WP 2.3 Geothermal District Heating System of Montieri

2012 concluded the tendering procedure for the award of the contract work of the district heating network, which began in November 2011. The tendering took longer than usual because the offer received from the company ranked first initially in the bidding process (ATI LAMI of Palagano (MO), COGE of San Cesareo sul Panaro (MO) and CER of Bologna) included only 53% of the whole investment's nominal value, thus there has to be a separate, very complex thread of actions initiated to investigate if the company really have the potential and capacity to carry out the tasks at the proposed price which was concluded with a favorable outcome for the initial bidder by June 2012.

On 25.06.2012 the final award of the contract took place in favor of the company of the winning bid and, on 22.08.2012, the contract was signed. The works were handed over to the contractor on a provisional basis on 22.08.2012 and, finally, on 02/10/2012.

During the course of October, November and December 2012 the CER cleared the track on which the pipeline will be laid between stations A and B and carried out the civil works for the two exchange stations (excavations and rough structural parts, roof included).

At the same time, LAMI and COGE began the construction of the internal distribution network of the historic center in Vicolo del Romito and Vicolo di Castello.

This phase - as it have been envisaged during the planning and design - is very complex because of the small size of the alleys of the old town within which the pipes should be laid together along with the new underground utilities. In addition, as the works proceeded it became evident that it is necessary to replace the existing underground utilities which are very old and no longer functional (for example some streets in the old town run sewers that date back to the eighteenth century). In order to preserve and document any potential archeological findings in the historical city center, in accordance with the provisions of the Regional Directorate of Cultural Heritage Office - Department of Archaeology of Florence and Siena, the progress of the work is under the continuous supervision of a specially appointed archaeologist.

Work in progress:

Digging of streets of the village and laying down of the pipeline of district heating. For each dwelling in every street affected there was previously a technical survey done in order to identify existent structural damages on the subject houses that could cause further problems during excavation.

From the beginning of 2013 the construction was extended to Via di Castello, the last part of Via Verdi and on the SP5 "Delle Galleraie" aiming to connect the heat exchange station B to the town centre.

In the meantime the two heat exchange stations "A" and "B" are under continuous improvement and construction. The following page is to demonstrate the progress by pictures taken at the sites.



Heat exchange station "A" and "B"



Pipeline in SP 5 and Via Verdi



Pipeline in Vicolo del Romito e Vicolo di Castello

Planned activity for 2013:

- To define the technical specifications of the heat exchangers to be purchased
- To set-up an informal bulk purchase scheme for the citizens to buy individual heat exchanger units (technical specifications provided by the municipality) at a discount price.

WP3.1 – Technology showcase for optimization and common baseline + final version of D3.1

The document was submitted at the interim meeting in Budapest. The Technical guidelines for retrofitting are now integral part of the “*Public Announcement on the availability of funding for energy retrofit actions on private buildings in Montieri municipality*” as attachment n. 2, (Allegato 2). They provide rules and information to design energy retrofit actions on the historic village respectful of the high value of local constructions.

WP3.4 – Retrofitting and Energy Efficiency Measures

A specialized team of 2, called “sportello Geotermia” was set up and has been operating since June 2012 providing support for the locals in the many aspects of the city’s transition to the district heating such as preparation of required documentation and finding the best and easiest way of connecting the dwellings to the main district heating system. Since January 2013 the same service has been supporting those citizens who are facing technical difficulties choosing the design of retrofit actions on their private dwellings. CosVig (P8) and SOFTECH (P2) delegated one of their experts to form Sportello Geotermia.

Work in progress

The “Public Announcement on the availability of funding for energy retrofit actions on private buildings in Montieri municipality” was published on the 3rd January 2013

A public meeting to introduce to citizens the content of the public announcement was taken in Montieri on the 24th of January 2013. The documentation is available on the municipality’s website at the following web address:

<http://www.comune.montieri.gr.it/bacheca/bandi-e-gare/bando-per-la-promozione-degli-interventi-di-risparmio-energetico-sugli-edifici-esistenti-approvato-con-del.-di-g.c.-n.-133-del-27-12-12-indetto-con-d.d.-455-del-27-12-12-1>

The meeting raised interest among citizens and professionals thus a wide range of interest is expected.

Planned activity

The Public Announcement is open for 3 months to gather a number of requests in the immediate future. Then, starting as of April 2013, the Public Announcement is going to be launched again and it will be open also for the other hamlets of Montieri municipality, that aren’t served by the geothermal district heating yet.

During the first months of the year 2013 the municipality is designing the retrofit actions and RES integration on public buildings.

Retrofit actions are foreseen for the city hall and for a primary school.

Integration of PV panels is being designed on the roof of the lower heat exchange station (Centrale A) of the geothermal pipeline. It is going to be a fully integrated system respecting the landscape value of the hill.

WP5: Technological Research

WP-Leader: University of Szeged

WP5 is one of the two research work-packages of the project. Its main objective is to set-up a technological guideline on future geothermal energy investments and to give a clear and transparent picture on the possible outcomes of similar projects. It has four sub-WPs in order to cover all relevant research and horizontal topics. The leading partner is P9 – University of Szeged, with strong cooperation and involvement with all the project partners (local data input, research and legal issues, etc.)

WP5.1 Integration with other RES

Deliverable 5.1 “RES integration in CEE Concept Paper / Project plans and case studies” is attached to this periodic report. Sub-work package is finished.

WP5.2 Trans-boundary issues of utilizing geothermal energy

Deliverable 5.2 “The water base model of the Szeged-Morahalom-Szubotica triangle” is attached to this periodic report. Sub-work package is finished.

WP5.3 Reinjection monitoring and modeling

Sandstone reservoirs in the Pannonian-basin and other similar sedimentary basins all over Europe pose a significant challenge for geothermal related reinjection. To comply with the mandatory reinjection procedure of the geothermal waste water back to the reservoir high performance pumps are necessary (with high power demand) – occasionally up to 50% of the total heat power of the source. That may destroy the whole economic viability of the geothermal system. Different methodologies are under investigation, which aim is to define technical solutions, partially or totally eliminating the problem and by doing so increasing the economy of such geothermal systems. The recently commissioned reinjection borehole in Morahalom is used for simulations, model calibrations and for detailed optimum reservoir management studies which enable reinjection with minimum energy consumption.

The aim of the work package is to collect data and information under production conditions that clarify the relation between wellbore construction and well-geophysical relations of abstraction-reinjection wells drilled into Upper Pannonian sandstone reservoirs as well as the actual abstraction-operation methodology. The research activity seeks answers to various questions such as: from which location how much water can be abstracted, what technological circumstances have to apply for successful reinjection to take place thus ensuring a sustainable, long-term water production.

Draft version of D5.3 is attached to this periodic report, final version is expected over the course of 2013.

WP5.4 Integrated utilization of waste gases of thermal wells

Waters abstracted from a large number of thermal wells of the Great South Plan Region have high gas (predominantly methane) content. During water abstraction (both in the case of spa uses and energetic utilization) novel technologies are available to separate and utilize the energy-content of these gases (as well as heat content of the CHP units while combusting these gases) reducing greenhouse effect and increasing system effectiveness through integration. In WP2.1 Morahalom serves as the first Hungarian pilot site for such action, as combined heat and power from the CHP units mounted on two abstraction wells shall be utilized in an integrated system. In Wp5.4 researchers of the USZ involving the leaders of the other test sites aim to carry out an in-situ study of the

Morahalom site, to assess the results of integrated use, to do benchmarking, to analyze the needs and potential of other possible sites and to outline suggestions for wider applications.

The following activities are foreseen:

- Investigation of the economic factors that influence the integration of waste gas energy in RES.
- Investigation of other factors that influence the integration of waste gas energy in RES.
- Assessment of waste gas energy integration in RES potential and technologies for the South Great Plan Region.
- Building a database of South-Great Plan sites with potential in waste gas energy integration in RES.
- Providing technology transfer to projects proposing waste gas energy integration in RES.

WP6: Socio-economic research

WP-Leader: PAS MEERI

The following sub-workpackages were implemented in 2012:

- WP6.1. “Public perception of geothermal energy” (main focus in 2012, completed),
- WP6.2. “Public perception and understanding of RUE measures (pilot-site case studies)” (partly done, to continue in next period of Project duration),
- Task WP6.3. “Overview of market drivers, fiscal measures and subsidies” is envisaged to be done in M37 – M48 (2013).

In 2012 the main WP6 outcome was the Deliverable 6.1 “Study of public perception of geothermal energy”. Other two Deliverables will be elaborated in the next period of Project realization.

Applied methods of works

All WP6 sub-work packages involved some identical methods of works, i.e.:

- Quantitative methods (questionnaire surveys),
- Qualitative methods (open opinions and feedbacks by experts, screening and analyses of relevant publications and information, etc.).

The above works were based on contributions of experts appointed by each of the project partners.

Quantitative methods: the questionnaire surveys – way to prepare:

1. Issues to particular questionnaire surveys (for WP6.1, WP6.2) were proposed by PAS (WP6 leader) than consulted and accepted by all Partners (at Interim Meeting, Budapest, May 2012). Issues covered by questionnaires involved basic aspects of the Project (both general as well as technical, energy, economic ones).
2. Questionnaire surveys were done by the experts in respective GEOCOM countries. Preliminary summaries and general comments of the surveys were done by contact person from each expert group.
3. Collection of questionnaire results, common processing of results, analyses, interpretation were done by PAS.

Qualitative methods: open opinions, etc. expressed by appointed experts:

These methods served to emphasize personal experiences of appointed experts and their interpretation of quantitative responses and picture of public attitude towards geothermal energy

and other issues (done by the questionnaire surveys). The work employed a comparative research, investigating similarities and differences between respondents residing in several GEOCOM countries.

Appointment of experts

The essential part of input contributions of WP6.1 (as well as WP6.2 and WP6.3) was done by the groups of experts appointed by the Project partners (several persons from each GEOCOM country) and the contact person for each group.

The following rules were applied to appoint the experts:

1. The expert has sufficient objective knowledge, expertise in geothermal, RES, energy issues, economics, energy management, etc. what should ensure that his responses and opinions are representative and reflect the public attitudes towards investigated matters (respective expert profile information is kept for internal needs of the WP6 leader),
2. Each expert group has among its members the person/s from GEOCOM partner teams,
3. Each expert group designates a contact person for working contacts with PAS and other partners. This person should also coordinate the work of the group, translate the questionnaires into national languages, collect questionnaires, make their resumes, general analyses, remarks etc. (considering country-specific conditions).

In general, 37 experts from 7 GEOCOM states were appointed to cooperate on WP6.1 realization and 10 experts for WP6.2 (some more are expected in 2013).

The experts' roles in particular WP6 tasks were as follows:

- **WP6.1:** to objectively assess the state of geothermal energy perception by the public in particular GEOCOM states
- **WP6.2:** to cooperate on questionnaire survey addressing three GEOCOM pilot-sites (Galanta, Montieri, Morahalom). Thanks to this survey one should gain an insight into the level of perception and understanding of applying rational energy use (RUE) measures in these localities, i.e.:
 - Users' satisfaction (with the implemented measures, information, energy advice, feedback- systems on consumption, etc.),
 - Users' involvement (investing in energy efficiency measures, organized in local agencies, tenants' organizations),
 - Analysis of different stakeholders/inhabitants perception about changes in the affected districts / communities and acceptance of the GEOCOM measures.
- **WP6.3:** to cooperate on the questionnaire survey, as well as to prepare open opinions (qualitative method of work) focusing on several detailed legal, economical, environmental and social aspects. (The WP6.3 task will be realized in course of 2013).

Detailed description of work done in particular WP6 tasks in 2012

WP6.1. "Public perception of geothermal energy"

The works embraced seven GEOCOM Partner countries (Hungary, FYROM, Italy, Poland, Romania, Serbia, Slovakia) and included:

- Preparation (by PAS) the scope of works and themes for qualitative and quantitative research, including preparation of the contents of questionnaires. They were consulted by other partners and finally approved at Interim Meeting in Budapest, 30 – 31 May 2012 (att. 1a-c),
- Translation the English version of questionnaires into seven national languages by the Partners

- Appointing the experts,
- Conducting questionnaire surveys and collecting open opinions (qualitative methods) in particular countries,
- Preliminary summaries of questionnaires by expert group leaders and collecting open opinions,
- Collecting the above by PAS (WP6 leader), common data processing, analyses, interpretation of results,
- Screening and analysis of existing relevant information and publications related to particular countries to learn and create the background for results' elaboration and interpretation,
- Elaboration of Deliverable D6.1 "Study on public perception of geothermal energy". Draft version was prepared by PAS, consulted by the Partners and than finalized (att. 2).

In total, 37 experts took part in WP6.1 realization what resulted in 37 filled questionnaires from 7 GEOCOM states.

WP6.2. "Public perception and understanding of RUE measures (pilot-site case studies)"

This WP6.2 research addresses three GEOCOM pilot-sites (Galanta, Montieri, Morahalom). As result one should gain an insight into the level of public perception and understanding of applying rational energy use (RUE) measures in these particular localities, i.e.:

- User's satisfaction (with the implemented measures, with information, energy advice, with feedback-systems on consumption, etc.),
- Users' involvement (investing in energy efficiency measures, organized in local agencies, tenants' organizations),
- Analysis of different stakeholders/inhabitants perception about changes in the affected districts / communities and acceptance of the GEOCOM measures.

Initially, this task was planned to conduct and completed within 25th – 36th Project months (2012). However, the implementation at the pilot-sites has not reached far enough to accommodate full scope of planned research surveys in course of 2012. Once all the investment components will be done (or at least most of them) the basic survey (questionnaires) can start.

Therefore, only a part of planned activities was done in 2012. Some shall be continued in the forthcoming period of the Project.

The activities of 2012 included:

- Preparation of the scope of works and themes for qualitative and quantitative research, including preparation of the contents of questionnaire surveys (by PAS), consulted by relevant partners and finally approved at Interim Meeting in Budapest, 29 - 30 May 2012 (att. 3a-d),
- Translation the English version of questionnaires into three national languages (Hungarian, Italian, Slovak) by the Partners,
- Appointing the experts.
- During the technical visit to Galanta (1 June 2012) PAS team members collected information, observations, comments and facts resulting from the-so-far realization of GEOCOM investment works useful for WP6.2 realization.

The works (including questionnaire surveys) will be continued in next period when investment works in pilot-sites are more advanced therefore some first experiences and opinions by their beneficiaries (users, local municipalities representatives) will appear.

It has to be noted that the WP6.2 research (questionnaire surveys, etc.) were preceded by the Preliminary Questionnaire survey done in 2010 - 2011 (as reported in previous GEOCOM

Technical Progress Report 2011). Their results made it possible to gain some reference background as to the state of public perception and understanding of RUE measures before their implementation in the GEOCOM pilot-sites. The results of both surveys (i.e. preliminary and WP6.2) should help to compare the state of this perception and understanding before, as well as during and after their implementation specially if some benefits will be experienced by the users. Comparison of results of both surveys shall help to obtain more representative and sound results of this WP6.2 task.

WP6.3. “Overview of market drivers, fiscal measures and subsidies”

This task is planned for delivery between the 37th – 48th Project months (2013).

WP7: Monitoring

WP-Leader: SIEA

In May 2012 (during the 3rd Interim meeting in Budapest/ Hungary) SIEA informed all partners that the current state of monitoring of energy consumption in multi-storey houses in Galanta has been assessed in accordance with the draft “Methodology for monitoring and evaluation of energy consumption in block of flats”. First proposal of monitoring system for data collection, transmission, visualization and archiving is done. This includes software and measurement devices which should be added or to replace existing one. Further discussion is also needed between SIEA and Galanta in order to find a compromise between the price and effectiveness of the proposed monitoring equipment and complete monitoring system. For details about the data that should be collected for the different demo-sites SIEA contacted representatives of CONCERTO Premium Team in July 2012. Since August 2012 SIEA planned visit of 2 other demo-sites: in Mórahalom (August 2012) and Montieri (October – November 2012/ during the 4th interim meeting) for purpose of detailed discussion and planning of the monitoring system and taking into account the specific needs of each demo-site. These meetings did not take place in 2012.

Next steps in 2013:

- Mapping the situation in demo-sites (Mórahalom, Montieri) and geothermal system in Galanta in order to identify minimum monitoring requirements
- Detailed experts discussion
- Analysis of data on energy flows in demo-sites (requirement for submission of historical data from each demo-sites)

WP8: Dissemination

WP leader –GEONARDO

WP8.1 - Website:

www.geothermalcommunities.eu

The portal keeps functioning as initially intended, keeping the partners informed through their dedicated partner area and also having been regularly updated by the latest news regarding the project activities to keep the public up-to-date.

WP8.2 Common Dissemination Activities

General dissemination of information about the project, its objectives, the approaches and expected results have been carried out by all partners at numerous occasions via presentations, publications, news articles and company newsletters, etc. in order to improve the market for development of geothermal energy and integrated geothermal RES&RUE projects in EU countries.

A list of all related dissemination activities are given below.

SIEA (P4)

Participation in trade fairs and exhibitions is the main activity for dissemination and communication of the SIEA. The international trade fairs take place regularly every year for general public, researchers, students, engineers, investors, etc. These trade fairs are focused on heating, measurement, control, energy savings, environmental technology and protection, sustainability and utilization of renewable energy sources. We usually distribute leaflets, brochures, magazines and provide advisory services.

GEOCOM project is indicated on a poster concerning international projects. This poster is displayed within SIEA's stand during Trade Fairs. In 2012 SIEA's representatives participated in:

- AQUATHERM Nitra, 7.2. – 10.2. 2012
- CONECO Bratislava, 27.3. – 31.3. 2012
- ELO SYS Trenčín, 9.10 – 12.10.2012

GEOCOM leaflets were distributed during above-mentioned trade fairs.

PAS-MEERI (P5)

- Meeting of the Parliamentary Committee for Energy (Polish Sejm) on geothermal development prospects in Poland (Warszawa, 12/07/2012),
- Polish – Icelandic bilateral conference on cooperation in geothermal sector (Warszawa, 19/09/2012)
- Information on GEOCOM and its objectives, works, main aspects and role for geothermal development was presented during university lectures on geothermal energy and energy future delivered by some member of PAS as well as during some meetings with potential investors interested in geothermal energy and RES,
- Information on GEOCOM placed on the MEERI PAS website /with the link to the GEOCOM Project website/,
- GEOCOM Brochure No. 2 translated into Polish available at GEOCOM website, distributed during several meetings and some conferences participated by PAS team.

Publications by PAS MEERI team members:

- Kasztelewicz A., 2012: Postrzeżenie energii geotermalnej przez społeczności lokalne - wstępne wyniki ankiet przeprowadzonych w ramach projektu "Społeczności geotermalne – GEOCOM" (Perception of geothermal energy by local communities – preliminary results of questionnaire survey in frame of the Project „Geothermal communities, GEOCOM”). Technika Poszukiwań Geologicznych. Geotermia, Zrównoważony Rozwój (Exploration Geology. Geothermics, Sustainable Development). Vol. 50, no. 250, pp. 31 – 44 (in Polish, English abstract).
- Bujakowski W., Kasztelewicz A., 2012: Upowszechnienie energii geotermalnej w projektach unijnych realizowanych z udziałem Pracowni OZE IGSMiE PAN (Dissemination of geothermal energy through EU-projects participated by the MEERI PAS Division of Renewable Energy Sources. Polska Energetyka Słoneczna (in Polish), paper in press.

MAGA (P7)

- Prepared and printed book on Renewable-Sustainable Energy Sources, author prof. Slave Armenski, 390 pg., ¼ devoted to Geothermal Energy, ¼ devoted to Solar Energy.
- 2nd cycle study program on Product Lifecycle Management, at the Faculty of Mechanical Engineering (Un.St.Cyril and Methodius), subject Eco Technologies (elective course), lecturer Ass.prof.Sanja Popovska-Vasilevska, four students. The emphasis given to the possible application of renewable energy sources in industry in order to achieve environmental, energy and economical sustainability. Four seminar works produced on: Geothermal energy, Solar Thermal Energy, Solar PV and Biomass in Industry.
- International Conference ZEMAK2012 (Energy Association of Macedonia), Ohrid, 4-6.10.2012, Sanja Popovska-Vasilevska – leader of the session Renewable Energy Sources, article on Solar Thermal Energy in Industry
- Energy Efficiency in Buildings, 5-days training for local consultants, Sanja Popovska-Vasilevska training module M2-Modules EE in buildings (Architecture and Mechanical Engineering Systems): M2-1Macedonian Rule-book on EE in buildings, M2-2 Solar Energy in buildings and houses, M2-3 Principles to implement EE in buildings, M2-4 Building envelope and EE façades, M2-5 GSHP (Ground Source Heat Pumps), M2-6 Use of Biomass in EE buildings; Skopje 23-29 January 2013.
- Participation (SanjaPV) in preparatory session for Rulebook on Methods and Conditions for Price Regulation of Thermal Energy for Heating, organized by Regulatory Energy Commission of Republic of Macedonia, Skopje, 25.12.2012
- EGC2012, two papers accepted: Country Update for Macedonia; Annual utilization factor - prerequisite for feasibility of direct geothermal energy use. Authors: Sanja Popovska-Vasilevska, Slave Armenski

CoSviG (P8)

detailed excel sheet on P8 extensive dissemination activity is attached to the report

MORAHALOM (P10)

The local coordinator has attended the Energy Investment Day organised within the framework of the IEE funded “Collaborative Actions for Triggering Investments in Sustainable Energy Actions using Regional and Structural Funds” project in Budapest on November 20th, 2012. Among the many speakers Mr Pasztor briefed the attendants in a comprehensive and detailed presentation on the objectives of the project and the actual status of the project implementation at the Morahalom demo site. (<http://www.nkek.hu/nemzetkozi-kapcsolatok/sf-energy-invest>)

Also the Morahalom project activities were selected to be displayed at the <http://www.wellspent.eu/> website which is mapping environmentally friendly Cohesion Policy investments and displays some of the best-practices of them in infrastructure projects to be realised recently. While they vary in purpose, all have been tailored towards social and environmental ends in order to ensure direct benefits for the beneficiary region or community.

GALANTA (P11)

Dissemination on the local level (online and printed articles, publications, events etc) In 2012 a printed article was published in regional press “MY – Nitrianske noviny”, which was about geothermal energy development and photovoltaics, both realized from GEOCOM project.

An online article was also published on the website www.galantaonline.sk about the geothermal system in Galanta and the GEOCOM project.

Here you can find the link:

<http://www.galantaonline.sk/geotermalna-voda-vykuruje-uz-aj-najvacsi-slovensky-sklenik-na-pestovanie-paradajok-13-2-2012.html>

Bysprav Ltd. had a meeting with dwellers, where they discussed also about energy efficiency and presented the results of GEOCOM project in terms of heat consumption decrease due to retrofitting. Our aim was to present the benefits of retrofitting on particular examples and enhance the synergic effect of GEOCOM retrofitting works. We also plan to have a same meeting in 2013.

MONTIERI (P12)

Dissemination on the local level (online and printed articles, publications, events etc)

On the 20th October 2012 the Geothermal Communities project in Monteri was presented at the initiative “L’ECO del BORGO. RIQUALIFICAZIONE-RIFUNZIONALIZZAZIONE SOSTENIBILE DEI CENTRI STORICI MINORI IN ITALIA. Procedure-buone pratiche-realizzazioni” of the MADEexpo. The exhibition of Architecture Design and Building activity was held at Milan Fairgrounds in Rho (MI) between 17-20 October 2012. Power point presentation is available at the following web address:

<http://www.iborghisrl.it/new/?cat=15>

D8.3 Brochure #3

The third brochure (ready in M38 – February 2013) contains the overall aim of the project, introduces the consortium (list of participants) and the demonstration activities planned in three demonstration sites. It was updated with the achievements of the project performed mainly in the reporting period at the demo-sites. Its translation is still in progress and the translated versions will be available for download at the project’s web site as soon as they will be finalised. The third (latest) brochure has also been printed in English and in 200 copies similarly to the previous edition. In line with the common practice for the previous brochures it is to be distributed at the various high profile events over the course of the next reporting period.

The project implements 3 small-scale investments on the pilot sites, including geothermal power and heat plants, reinjection borehole development, state-of-the-art retrofitting of dwellings and RES integration. In addition to these demonstration components, there is a strong complementary part of research focusing on making geothermal projects more cost-efficient and technologically sound.

Furthermore, the project integrates a large number of cities as project partners (from Serbia, Romania, Poland and Macedonia) that either already have ongoing geothermal initiatives and are keen on adopting the latest technologies (e.g. Oras Sacueni, Romania) or they would like to realise brand new systems by taking advantage of the project's results and its competent consortium (e.g. Subotica, Serbia).

Demonstration Sites and Partners:
Municipality of Mórahalom
Municipality of Galanta
Galantterm Ltd.
Bystrava Ltd.
Municipality of Montieri
Softech Ltd.
CoVisio Ltd.

Research Partners:
Slovak Energy Agency
Polish Academy of Sciences
Macedonian Geothermal Association
University of Szeged

Assistant Committee:
Municipality of Oras Sacueni
Municipality of Subotica
Municipality of Kocani
Municipality of Mszczonow



Geothermal Communities

An FP7 CONCERTO Project

Research work covers:

- > Socio-economic modelling of geothermal investments, with special focus on the public perception and understanding of RES/RUE measures
- > Integration of the geothermal energy with other RES to outline ways of more efficient and more sustainable green-energy production
- > Trans-boundary issues related to the utilization of geothermal energy, Online monitoring system

Work plan:

- WP 1 Coordination
- WP 2 Geothermal System Development
- WP 3 Retrofitting & Energy Efficiency Measures
- WP 4 System Integration
- WP 5 Technological Research
- WP 6 Socio-Economic Research
- WP 7 Monitoring
- WP 8 Dissemination
- WP 9 Training
- WP 10 Mayors' Geothermal Club

Project Coordinator:
Geonardo Ltd.
Contact: Mr. Istvan Fari
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Fax: 00 36 1 426 9039
Web: www.geothermalcommunities.eu
Contact: coordinator@geothermalcommunities.eu

Geothermal resources are one of the least known renewable energy resources, despite the fact that both their potential and engineering qualities are among the best of RES. In the meantime, Central-Eastern European countries (new EU members as well as Western Balkan Countries) have exceptional geothermal reserves, although the traditional investment-heavy procedures are difficult to apply in these countries. The innovative scientific and demonstration actions implemented in the Geothermal Communities project provides a new opportunity for these markets and Europe as a whole. The Geothermal Communities project, joint action of 18 individual partners, demonstrates the best available technologies for the use of geothermal energy combined with innovative energy-efficiency measures and with the integration of other renewable energy sources in three different pilot sites (Hungary, Slovakia and Italy). The project is one of the only Concerto – 18 projects funded by FP7.

The project is one of the only by Concerto – 18 projects funded by FP7. Budget: over EUR 11 Million. Duration: 36 Months.

Coordinator: Geonardo Ltd, Hungary. Web: www.geothermalcommunities.eu. Contact: coordinator@geothermalcommunities.eu

Mórahalom HUNGARY

As part of the CONCERTO Project Elements, the future cascade system (under development), will be complemented with a new component (demonstrating total utilization of geothermal energy – like CHP plants on methane gas) and supplemented with energy efficiency/retrofitting measures that geothermal projects in Central Eastern Europe lack at the moment.

A high-performance heat-pump heating station, on which the buildings of the "New Town Centre" can be connected through secondary heating circuits, will be realised through the project. In addition, the auxiliary power demand of 60 kW of the heat-pump heating station will be met by the trapping of methane production in the new abstraction well of the cascade system. The electric power produced also by CH4-trapping will be used at the Thermal Spa.

Retrofitting of the local elementary school and the day-care/kindergarten complex will be carried out by using innovative solutions in order to maximise efficiency and to harmonise the energy need with the geothermal heat supply. In addition, the public lighting system will be replaced by PV-driven LED lights to demonstrate the advantages of RES integration.

For more information about the Mórahalom site please contact: Mr. József Ficsor – ficsorj@morahalom.hu

Montieri ITALY

Montieri is located in the heart of the Larderello Area where the very first geothermal energy utilisation was implemented. The core part of the Concerto activities at the Montieri pilot-site is to build a highly innovative geothermal district heating and power generation system by using high-enthalpy fluid. This may serve as a new, ambitious example for communities with similar geothermal characteristics. This aspect of the project will be funded by the Tuscany Regional Development Fund.

In addition, 20% of the total house stock will be retrofitted applying integrated approaches and techniques. Montieri represents a challenging site for defining and testing a qualitative architectural integration of renewable energy technologies and retrofitting measures due to architectural regulations, which allow only natural materials, and methods to be employed which are in conformity with the medieval city's historical structure. A total of 42,9 m2 solar thermal collectors will be set up to serve as primary heating and DHW source for dwellings too spread out to be linked to the district heating system.

Finally, RES integration will feature a 8,6kW of photovoltaic panels system which is to be installed as the main power source for Montieri's renewed public lighting system. The latter two stages of the project are funded by the FP7 Concerto budget.

For more information about the Montieri site please contact: Mr. Armando Borsari – a.borsari@concord.it

Galanta SLOVAKIA

The geothermal based district heating has been used in parts of Galanta since the 1980s, acting as one of the first examples of RES in the former Eastern-Bloc Countries. Presently, the dual use of geothermal energy includes heating and production of domestic hot water in the concerned areas of the town. The aim of the project on this site is to optimise and enhance the capacity of the geothermal power plant by developing a re-injection borehole and by connecting new residential areas to the district heating system. A total of three residential buildings (6-8 floor blocks of flats), a hospital, an elderly home, a nursery, a primary school, and two greenhouses are heated by geothermal energy.

The CONCERTO activities will also include the following initiatives:

- RES integration of three residential buildings by photovoltaic system
- Rehabilitation of the elementary school, its RES integration by PV system and comprehensive renewal of the lighting system
- Reinjection borehole research and project works, including full documentation, studies, permits and assessments
- To expand the existing geothermal district heating loop in order to connect more, mainly newly built public and private buildings in the neighbourhood.

For more information about the Galanta site please contact: Mr. Tomas Bergend – bergend@galanta.sk

Project activities so far include:

- One of the CHP engines running on water-soluble methane at the Huszari light groove had been installed, function tested and commissioned. The installation of the second well with the same permeage is slightly behind schedule due to the need of modified technical plans.
- All the planned retrofitting works on the target buildings have been concluded and commissioned. Thermal insulation was applied on the buildings' facades and all the doors and windows had been replaced. In addition solar thermal collectors were installed on the rooftops of both buildings for domestic hot water generation purposes.
- Public procurement has been completed and the contractor was selected to realise the heat pump heating station.

Project activities so far include:

- Classification of dwellings to compare their different energy performances,
- Payback time of each possible retrofitting technology is determined
- Digging of streets of the village and laying down of the pipeline of district heating.
- Technical survey done in order to identify excellent structural damages on the subject houses that could cause further problems during excavation in the affected area.
- The two heat exchange stations of the district heating system "A" and "B" are under continuous improvement and construction

Project activities so far include:

- Two new multi-story houses and a newly built elderly home connected to the city's existing geothermal heating network of which (DHW) distribution capacity had to be improved and extended for this reason. The total newly installed capacity of Galanta within the frame of the project is 1230 kW.
- Retrofitting of the residential buildings and the first stage of retrofitting of the elementary school is done (second stage to come in 2013).
- Deployment of photovoltaic panels at the previously selected demonstration sites, the overall installed PV capacity is 11,08 kW.
- Parties involved agreed on the parameters and the methodology of the monitoring (WP7) process.
- A public tender was launched to find an appropriate contractor capable of carrying out the reinjection monitoring and modelling tasks (to be done in 2013)

Third issue of the GEOCOM project brochure

D8.3 Newsletter #2

The second, joint edition of the project newsletter has been compiled by the end of the reporting period and it presents the latest features of the project. It is available for download at the project website and had been circulated to the partners to support their dissemination efforts.

WP8.3 Presentation and participation at high-profile events

- The Coordinator (P1 Geonardo) presented GEOCOM at the Week of Innovative Regions Conference 2012 held in Krakow, Poland on 4-5th June 2012. WIRE2012 focused on smart regional development based on knowledge and innovation; it addressed main current issues related to the effective implementation of the Innovation Union at regional level for the next period 2014-2020. The poster session which was available for visiting throughout the whole conference accommodated over 40 projects on display, including Geothermal Communities too.

Other events earlier in 2012 had already been reported in the second periodic report, since the amendment was filed in May 2012 making it available to include the Geotherm 2012 event in Offenburg, Germany in the previous report.

4.3 Project management during the period

GEOCOM have been implemented an efficient and reliable internal management system ever since the start of the project. The activities in the 3rd period followed this best practice, and were strictly in line with the Grant Agreement and with the Consortium Agreement. In principle the project has been completed the following way:

The Coordinator's responsibilities:

- Monitoring progress: encompassing general coordination activities, devoted to keeping the project on track and on schedule, and the exploitation related activities.
- Collection and review financial and technical reports from all partners. Each team has been directing their own work, but discussed all administrative and technical aspects with the Coordinator. Individual financial reports have been the responsibility of the administrator of each partner, but for the overall management the Coordinator has been in charge.
- Organization of the theoretical aspects related to the objectives of the particular Work Packages and of the project as a whole.
- Supervising the information provided to the partners through the website. The website serves as the main platform of the project, but it is also an instrument to keep partners in permanent contact.

In 2012, the GEOCOM project faced unforeseen legal difficulties, which had a severe effect on the implementation during the 3rd period. In February 2012, Project Officer Mr. de Royer-Dupre informed the Coordinator that an amendment to the Grant Agreement is requested by the DG ENER, due to the lack of Annex D - Unit-scale flat-rates. Since the project was built on actual cost reporting, it needed major re-engineering of costs.

The amended DoW and the new tables were submitted in 30 days after the notice (in March 2013), but was only approved and came into force in late Summer 2012.

Later, in November 2012 the Coordinator was informed that all reported actual costs on the demonstration activities were rejected, due to ineligibility. We were told that the GA amendment had a retroactive effect, the unit scale flat rate costs reporting would have been a must since the beginning of the project.

In the meanwhile, the PO Mr. de Royer-Dupre retired from the DG ENER, therefore Mr. Kitley of Geonardo initiated a meeting with Mr. Bemtgen. On this meeting we discussed the possible next step to avoid further delays in the project. GEOCOM and DG ENER agreed that the newly appointed project officer will assist us on re-reporting the costs of Period 1 and Period 2, by using the hand-out certificates.

Later, in March 2013 GEOCOM had a meeting with the new officer Mr. Dionisio, on which we agreed to report on the new hand-out certificate as soon as possible, but not later than early April of 2013.

By launching WP6, WP7 and WP9 in 2012, all Work-Packages except WP10 became active during the reporting period. Managers of the newly initiated WPs have been selected based on their past experiences with the management/coordination of EC initiatives at a similar scale. They have been responsible for the technical/administrative co-ordination of the work within the assigned work package and also responsible for all the specific WP results being available on time.

The Steering Committee has continuously monitored the project's progress, defined project standards and agreed on project policies. This period of the project did not see any event that would have required the intervention of the Steering Committee.

In conjunction with the compilation of the third periodic report the Coordinator surveyed the partners regarding their performance and gathered information on the status of the soon-due deliverables. The results revealed that some deliverables were too ambitious in terms of their proposed delivery date at the proposal preparation stage of the project and also the previously described confusion swerving around the unit-scale flat-rate calculation methodology and the eligibility of the previous two financial reports resulting in receiving very limited funds for 2012 affected the project's overall performance, thus a number of deliverables especially from the research realm of the project had been rescheduled and their delivery date shifted slightly forward and their finalisation is anticipated only in 2014.

On the other hand, and to make up for this unfortunate situation the consortium is happy to announce that most of the demonstration site activities, especially at Galanta and Morahalom are ahead of schedule and apart from miniscule details they could be considered almost fully done. This is due to the dedicated local managers and the momentum which was build up previously which did not allow the implementation to stop when the due payments were not transferred in time and carried the project components over this crucial stage for the whole consortium's biggest satisfaction. Also some research aspects, mainly WP6-related were also carried out before their due deadlines. Please refer to the deliverable summary table further below.

Meetings and Communication

The communication between the consortium members has been excellent with regular updates and communications via e-mail, Skype, telephone, and personal meetings during the various (joint) events. One project meeting took place during the reporting period where all consortium members were represented (except for the Municipality of Oras Sacueni):

- **30-31 May 2012, Budapest, (Hungary).** *The second progress meeting* and site visit to Galanta. Representatives of the CONCERTO Premium initiative as well as most of the project partners' key personnel were present. The meeting was organized by the Coordinator, Geonardo Ltd, P1) and all eligible costs (excluding the partners' related travel and accommodation costs) were paid by the lead partner.
- 22-23rd October 2012 - Brussels - CONCERTO Coordinators meeting. Introduction of GEOCOM, discussion of experiences so far, meeting with all CONCERTO projects' coordinators.
- November 2012 – Brussels: Bilateral meetings with Mr. Jean-Marie Bemtgen and Mr. Michel Vitucci were held at the DG ENER (topic - unit-scale flat-rates)
- *Several bi- and tri-lateral meetings* were held between the Demo-site representatives and the project's EO staff during the third year of the project.
- ***There is one interim meeting scheduled for 2013. The fourth interim meeting hasn't been scheduled as of the date of the report submission. It very likely to take place in Montieri to make up for the meeting which was eventually cancelled in the Fall of 2012. Its main goal would be to have firsthand experience on the project's flagship investments and its progress there.***

Overall status of project management: the project has been on track with minor delays of initially set targets and deliverables related to these targets. The partner performance and commitment have exceeded all expectations. The consortium did not experience any problems concerning project management and implementation and no changes occurred in partnership or partner status during the reporting period.

5. Deliverables and milestones tables

Del. no.	Deliverable name	Version	WP no.	Leader	Nature	Dissemination level	Delivery date from Annex I	Actual / Forecast delivery date	Status	Comments
D1.1.	Consortium Agreement	Final	1	1	O	PP	M1	M3	Submitted	
D1.2.	Minutes of the Project Meetings #1	Final	1	1	R	PP	M2	M3	Submitted	
D8.1	Website	Final	8	1	O	PU	M3	M3	Available	www.geothermalcommunities.eu
D8.2	Brochure #1	Final	8	1	O	PU	M3	M4	Submitted	
D8.10	Science publications	N/A	8	ALL	O	PU	Cont.		Ongoing	
D8.11	Presentation at high-profile events	N/A	8	ALL	O	PU	Cont.		Ongoing	
D2.3	Pipe line & junction Galanta	Final	2	6	D	PP	M12	M36	Submitted	Amendment of the project in 2012; delivered on M36
D3.1	Technology showcase for retrofitting	Final	3	2	R	PU	M12	M28	Submitted	
D8.6	Newsletter #1	Final	8	7	O	PU	M13	M17	Submitted	
D1.3	Minutes of the Project Meeting #2	Final	1	1	R	PP	M14	M17	Submitted	
D1.7.	Progress reports, financial reports #1	Final	1	1	R	PP	M14	M14	Submitted	
D8.3	Brochure #2	Final	8	1	O	PU	M18	M22	Submitted	
D3.3	Detailed energy audit for Galanta's Concerto Area	Draft	3	11	R	PP	M18	M30	Submitted	

	Buildings									
D4.1	Systems Integration Strategies	Final	4	1	R	PP	M24	M25	Submitted	
D8.7	Newsletter #2	Final	8	7	O	PU	M25	M36	Submitted	the second, joint edition of the newsletter summarises the project activities in the second half of 2011 and 2012
D1.8	Progress reports, financial report #2	Final	1	1	R	PP	M26	M29	Submitted	the amendment procedure of the GA took longer than it was initially estimated
D1.4	Minutes of the Project Meeting #3	Final	1	1	R	PP	M26	M30	Submitted	the third interim meeting took place in Budapest on 30-31 st May, 2012 (M29)
D3.2	Detailed energy audit for Morahalom's Concerto Area Buildings	Final	3	10	R	PP	M28	M25	Submitted	
D2.7	Montieri geothermal district heating works		2	2	D	PP	M30	M50		Construction suffered a delayed start due to legislative issues
D5.1	RES integration concept paper	Final	5	9	R	PU	M30	M30	Submitted	
D5.2	Trans-boundary utilisation model	Final	5	9	R	PU	M30	M30	Submitted	
D5.3	Reinjection to sand stone reservoirs technology showcase	Draft	5	9	R	PU	M30	M48	Submitted	Final version to be submitted at the end of 2013
D5.4	Study on integrated utilization of waste gases of thermal wells		5	9	R	PU	M30	M60		
D2.4	Methane utilisation system Morahalom	Final	2	10	D	PP	M32	M39	Submitted	
D4.2	RES/RUE strategy update		4	11	R	PU	M32	M46		

	for Galanta									
D4.3	RES/RUE strategy update for Montieri		4	8	R	PU	M32	M46		
D4.4	RES/RUE strategy update for Mórahalom		4	10	R	PU	M32	M46		
D3.9	Retrofitted city centre Montieri		3	12	D	PP	M33	M60		
D7.2	Analysis of data on energy flows in demonstration sites		7	4	R	PP	M36 - cont	M46		certain project elements haven't been delivered yet to provide input for this analysis
D3.4	Detailed energy audit for Montieri's Concerto Area Building	Draft	3	8	R	PP	M36	M48	Submitted	
D2.5	Heat-pump heating station Mórahalom		2	10	D	PP	M36	M46		Public procurement phase
D2.6	Thermal-solar system for the cultural centre Mórahalom	Final	2	10	D	PP	M36	M33	Submitted	
D3.10	Report on the completed retrofitting measures		3	2	R	PU	M36	M60		
D5.5	Regional database of geothermal sites with waste-gas utilization potential		5	9	O	RE	M36	M54		
D5.6	Guidelines on waste gas energy integration in RES technologies		5	9	R	RE	M36	M60		
D7.1	Methodology specifications of energy flows monitoring	Draft	7	4	R	PP	M36	M36	Submitted	Final version expected by M46 due to the lack of input from the Mórahalom and the

										Montieri demo sites
D8.4	Brochure #3	Final	8	1	O	PU	M36	M38	Submitted	
D7.3	Real-time on-line monitoring system – system planning and implementation		7	4	D	PP	M37	M48		
D9.1	Training for decision makers		9	7	O	PU	M37 - cont			
D9.2	International workshops		9	7	O	PU	M37 - cont			
D9.3	e-learning system development		9	1	O	PU	M37	M45		
D8.8	Newsletter #3		8	7	O	PU	M37	M49		
D1.5	Minutes of the Project Meeting #4		1	1	R	PP	M38	M42		Meeting to take place in Montieri in June 2013
D1.9	Progress reports, financial report #3	Final	1	1	R	PP	M38	M40	Submitted	
D6.1	Study on public perception of geothermal energy	Final	6	5	R	PU	M40	M38	Submitted	
D3.7	Retrofitted Elementary School & micro-scale RES integration (Galanta)		3	11	D	PP	M42			
D4.5	RES Integration in Mórahalom		4	10	D	PU	M42	M50		
D4.6	RES integration in Galanta		4	11	D	PU	M42	M50		
D4.7	RES integration in Montieri		4	12	D	PU	M42	M50		
D4.8	Study on suitability criteria for integrated systems in		4	1	R	PU	M42	M46		

	Eastern Europe									
D2.1	Reinjection borehole Galanta - planning and feasibility studies		2	6	D	PP	M45			
D2.2	Reinjection utilities Galanta - planning and feasibility studies		2	6	D	PP	M45			
D3.5	Retrofitted Mórahalom cultural centre and high School	Final	3	10	D	PP	M48	M35	Submitted	
D3.6	Retrofitted the Huncutka kindergarten (Mórahalom)	Final	3	10	D	PP	M48	M35	Submitted	
D3.8	Retrofitted 3 multi-storey buildings in Galanta and micro-scale RES integration	Final	3	11	D	PP	M48	M32	Submitted	
D6.2	Overview of market drivers and best practices		6	5	R	PU	M48			
D6.3	Handbook on best practices of Geothermal resources management		6	5	R	PU	M48			
D9.4	e-training curriculum		9	7	O	PU	M48			
D8.9	Newsletter #4		8	7	O	PU	M49			
D1.6	Minutes of the Project Meeting #5		1	1	R	PP	M50			
D1.10	Progress reports, financial report #4		1	1	R	PP	M50			
D1.12	Engineering Project Office Final Report		1	1	R	PP	M50			

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D10.1	Mayors' Geothermal Club		10	10	O	PU	M50			
D8.5	Brochure #4		8	1	O	PU	M52			
D10.2	Mayors' Geothermal Club events		10	10	O	PU	M54-cont			
D10.3	Mayors' Geothermal Club Internet Platform		10	1	O	PU	M54			
D9.5	Trainings and e-trainings – feedback analysis		9	7	R	PU	M56			
D1.11	Progress reports, financial report #5		1	1	R	PP	M60			

Milestones

TABLE 2. MILESTONES FOR THE REPORTING PERIOD #3							
Milestone no.	Milestone name	Work package no	Lead beneficiary	Delivery date from Annex I	Achieved Yes/No	Actual / Forecast achievement date	Comments
MS4	Second Progress Meeting	1,2,3,4,5,6,7,8,9	P1	M30 (June 2012.)	Yes	30-31 May 2012. (M29)	Second progress meeting was held in M29 in Budapest, Hungary.
MS5	Geothermal works completed	1,2,3,4,5,8	P1	M30 (June 2012.)	No	M45	The geothermal system development in Montieri started in M34 due to various legislative issues. Once finished the geothermal work component of the project will be finished.

6. Explanation of the use of the resources

All costs reported by the partners to the project were needed for the implementation of the activities of the 3rd period. The Coordinator established an efficient and transparent financial reporting system at the kick-off meeting of the project, where all partners were trained to the special accounting criteria of the FP7. Frequent updates on the financial rules were communicated internally. Though the Consortium consist of many partners from all over Europe, some of them from new member states, many never participated in any Community Programs, all of them understood the reporting requirement and the requested proofs of costs.

As mentioned earlier, the actual costs reported (and reimbursed) on the demonstration activities during RP1 and RP2 by P10 - Morahalom, P11 - Galanta, P12 - Montieri, P6 Galantatherm and P17 - Bysprav were rejected. The project was told to re-report all these costs by using the unit-scale flat-rates.

The Coordinator hereby declares, that all direct subcontracting costs reported in the Form Cs of GEOCOM Year 3 are based on unit-scale flat-rates!

During the third year of the project the main cost items at each partners were the following:

- Personnel costs (based on time-sheets and actual salaries) related to WP1 (MGT), WP2/3/4/7 (DEMO), WP5/6 (RTD) and WP8/9 (OTH)
- Travel costs to project meetings (3rd interim meeting in Budapest and several bi- and tri-lateral meetings, and to relevant conferences, meetings)
- Other costs – dissemination, printing of general and local publications, webpage development, etc.
- Other costs – participation fee at certain conferences and events
- Subcontracting – costs related to the project implementation actions at Galanta, Morahalom and Montieri - energy audits, as foreseen in the amended GA/DoW

Some of the partners (mainly the associated cities bodies) decided to cover their personnel costs fully from their own budget and not charging it to the project due to administrative issues. The Coordinator discussed these issues with all relevant partners in details and finally accepted their standpoint at this.

Partner 13 - Municipality of Ores Sacueni charged no costs at all to Period 3, due to lack of activities and internal financial managerial issues. The Coordinator was informed on this, and P13 understood the consequences of not charging costs to the project

The exchange rates published by the ECB (www.ecb.eu) of the first day following the end of the reporting period for each Beneficiary outside the Euro-zone were used. The spending rate of the project is in line with the workplan and with the budget foreseen in description of work (DoW). All costs reported by the beneficiaries were needed and justified in reports to achieve the project's objectives. At this point there were no ***budget reallocations*** at partners' level or at project level between partners, but the SC continuously monitors the spending and the performed activities and will act if necessary.

All partners submitted the Form C to the Coordinator and the hard copies were sent to the Project Officer.

TABLE 6.1 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 1 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
1	Personnel costs	26553,90	Personnel costs for Mr. Kitley and for Mr. Ceylan managerial activities
5,6	Personnel costs	16873,86	Personnel costs for Mr. Pari on RTD activities
8,9,10	Personnel costs	2370,77	Personnel costs for Mr. Lisztes on OTHER activities - dissemination and trainings
all	Travel costs	4640,16	Travel costs to several meeting, conferences and bi-lateral meetings in Brussels with DG ENER, and in the DEMO cities
all	Remaining direct costs	9060,40	Costs of the interim meeting (Budapest, May 2012), stakeholder meetings (Budapest, autumn 2012), dissemination costs (printing) and DHL costs related to the GEOCOM
	Indirect costs	35699,46	60% flat-rate overheads
TOTAL COSTS		95198,56 €	

TABLE 6.2 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 2 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
	Personnel costs	0	
	Travel costs	0	
	Remaining direct costs	0	
	Indirect costs	0	
TOTAL COSTS		€	

TABLE 6.4 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 4 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
1,6,7,8	Personnel costs	2955,95	Salaries of 3 project personnel (Pavel Starinský (€422,30), Ján Magyar (€65,25) and Ivana Ďuricová (€2468,40))
1	Travel costs	203,7	Budapest/ Hungary for the 3 rd interim meeting
	Remaining direct costs	0	
	Indirect costs	631,93	
TOTAL COSTS		€ 3159,65	

TABLE 6.5 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 5 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
1,5,6,8	Personnel costs	18169,9	Salaries of 5 project personel: Hołojuch Grażyna (€3247,5), Kasztelewicz Aleksandra (€3914,4), Kępińska Beata (€4908,20), Pająk Leszek (€3008,6), Tomaszewska Barbara (€3091,2)
1	Travel costs	1416,7	2 project personnel (B.K and L.P) to attend the third interim meeting in Budapest
	Remaining direct costs	0	
	Indirect costs	11751,96	
TOTAL COSTS		€ 19586,6	

TABLE 6.6 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 6 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
	Personnel costs		
2	Subcontracting/Unit-Scale Flat-Rate costs	1468800	1239 kW(th) installed capacity at 1200€/kW flat rate - see hand-out certificate
1	Travel costs		
	Remaining direct costs		
	Indirect costs		
TOTAL COSTS		€ 1468800	

TABLE 6.7 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 7 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
9	Personnel costs	4129,77	€975 salaries (for 0,44PM at €2200 monthly rate) of 4 project personel (Sanja Popovska-Vasilievska, Slave Armenski, Valentina Gecevska and Elena Popovska) + accounting (€227,62) costs
1	Travel costs	1983	S.P-V and S.A to attend the third interim meeting in Budapest
9	Remaining direct costs	1083,92	printing costs
	Indirect costs	1439,32	
TOTAL COSTS		€ 7196,66	

TABLE 6.8 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 8 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
2,8	Personnel costs	15733,20	Personnel costs for Mr. Burgassi
1	Travel costs	932,97	Armando Burgassi to attend the third IM in Budapest
8	Remaining direct costs	550	Media (press, tv, online) assistance for dissemination reasons
	Indirect costs	3443,23	
TOTAL COSTS		€ 17216,17	

TABLE 6.9 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 9 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
5	Personnel costs	6,478,32	Salary of 1 project person (Dr. Elemér Pál-Molnár) for 12 months, 10 hours / week Salary of 2 project person (Attila Bencsik, Dr. Félix Schubert) for 6 months, 10 hours / week each
	Travel costs		
	Remaining direct costs		
	Indirect costs	3886,99	
TOTAL COSTS		€ 10365,31	

TABLE 6.10 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 10 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
2,3,4	Personnel costs	8296,32	Salary of 1 project person (József Pásztor) for 4,19PM at 1980€ monthly rate
2,3,4	Subcontracting/Unit-Scale Flat-Rate costs	724655	See Hand-out certificate
	Travel costs	247,28	J.P to attend the third IM in Budapest
8	Remaining direct costs	58,45	dissemination and liaison with relevant initiatives
	Indirect costs	1720,41	
TOTAL COSTS		€ 733257,05	

TABLE 6.11 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 11 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
	Personnel costs		
3,4	Subcontracting/Unit-Scale Flat-Rate costs	25300	See Hand-out certificate
	Travel costs	189,49	Tomas Bergendi to attend the third interim meeting in Budapest
	Remaining direct costs		
	Indirect costs	37,90	
TOTAL COSTS		€ 25489,49	

TABLE 6.12 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 12 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
2,3,4,8	Personnel costs	23787,12	
1	Travel costs	907,8	
	Remaining direct costs		
	Indirect costs	4938,98	
TOTAL COSTS		€ 24694,92	

TABLE 6.13 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 13 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
	Personnel costs	0	
	Travel costs	0	
	Remaining direct costs	0	
	Indirect costs	0	
TOTAL COSTS		€ 0	

TABLE 6.14 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 14 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
1,2,5,6,8	Personnel costs	594	Salaries (€198) of 3 project personnel (Marija Milodanovic, Zoran Stipic and Eva Sujic) for 6 person hours at €33/hour rate
1	Travel costs	833,66	MM, Z.S. and E.S to attend the third interim meeting in Budapest
8	Remaining direct costs	35,17	translation and dissemination
	Indirect costs	292,56	
TOTAL COSTS		€ 1462,83	

TABLE 6.15 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 15 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
	Personnel costs		
1	Travel costs	1059	Ratko Dimitrovski, Ljupcho Papazov and Todor Kushevski to attend the third interim meeting in Budapest
	Remaining direct costs		
	Indirect costs	211,80	
TOTAL COSTS		€ 1059	

TABLE 6.16 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 16 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
8	Personnel costs	1190,92	Salary contributions towards Jadwiga Barbulant (€831,78), Marlena Oskiera (€103,97), Zuzanna Maguszevska (€101,83), Jadwiga Kurzepa (€72,74) and Rafal Wasilewski (€80,60)
1	Travel costs	1488,28	Józef Grzegorz Kurek (mayor) and J.B to attend the third IM in Budapest
	Remaining direct costs		
	Indirect costs		
TOTAL COSTS		€ 2679,20	

TABLE 6.17 PERSONNEL, SUBCONTRACTING AND OTHER MAJOR DIRECT COST ITEMS FOR BENEFICIARY 17 FOR THE PERIOD 1.1.2012 – 31.12. 2012			
Work Package	Item description	Amount (€)	Explanations
	Personnel costs		
3,4	Subcontracting/Unit-Scale Flat-Rate costs	908038	retrofitting of the 3 multi-storey blocks-of-flats and PV installation
	Travel costs		
	Remaining direct costs		
	Indirect costs		
TOTAL COSTS		€ 908038	