Periodic Activity and Management Reports

Reporting Period No 2

June, 2015

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Orkustofnun, June, 2015

Publisher:

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Website: http://www.geothermaleranet.is/

ISBN: 978-9979-68-355-1

The Geothermal ERA NET is supported by the European Union's Seventh programme for research, technological development and demonstration under grant agreement No 291866

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Acknowledgements

The team of Work Package 1 “Coordination, Management & Dissemination” thank all partners from the Geothermal ERA-NET for supporting the work in several interactive workshops, by providing the necessary information for the presented specific actions and the existing cooperation programs.

Executive summary

The aim of following deliverable is to present achievements of Geothermal ERA- NET partners in second periodic activity of cooperation in past three fruitful years. The report combines overview from all seven work packages from November 2013 until April 2015. Period focus and achieve deeper cooperation of national program owners and administrators and thus be an enabler for the integration of national research and development agendas into a coherent European geothermal R&D program.

The leaders of the work packages developed and implemented the communication strategy and associated plans. Work package leaders were primary face of the ERA-NET and enable member states to deliver a coherent European geothermal R&D programme. This involves the communication and dissemination of ERA-NET results; including positioning the ERA-NET in the European context and assisting national programme owners in achieving the required visibility.

Important milestones have been reached, and various activities have taken place, e.g. several working groups and reports evaluating different aspect of the geothermal sector as a step towards policy recommendation and implementation of joint activities. The focus of our work has been among other on following elements:

- Exchange information on the status of geothermal energy.
- Lay groundwork to create a European Geothermal Information Platform.
- Highlight barriers and recommend practical solutions.
- Communicate with principal stakeholders and enhance public awareness on the added value and benefits of geothermal scientific and policy issues.
- Increase transnational collaboration in research training and mobility.

The program strengthen geothermal sector and its developments as one of the three important EU pillars. Linking together the geothermal industry pillar, the research pillar and the policy pillar by increasing cooperation and consultation between those pillars and stakeholders to strengthen geothermal assessment and policy recommendation. ERA-NET vision is to minimize the fragmentation of geothermal research, build on European know-how and know-who to utilize geothermal energy and to framework large opportunities in the utilization of geothermal energy through Joint Activities (JAs).

The program moves into high level coordination activities with national government and EC stakeholders providing the necessary outreach to form coherent geothermal policies and provide input into European strategic energy technology planning and implementation. During the past 36 months of the project, consortium used €1,2MM out of estimated €2,4MM, which translates into 51% of the total budget of the project being used. This is less than expected as we are about 75% of the project duration. However, an important element of upcoming work is the facilitation of joint activities and possible joint calls of the Geothermal ERA-NET members to a Europe-wide body, where costs increase further.

PROJECT PERIODIC REPORT

Grant Agreement number: 291866

Project acronym: GEOTHERMAL ERA NET

Project title: GEOTHERMAL ERA NET

Funding Scheme: FP7-CSA-CA

Date of latest version of Annex I against which the assessment will be made: 09/01/2015

Periodic report: **1st ☐ 2nd X 3rd ☐ 4th ☐**

Period covered: **from 1/11/2013 to 30/4/2015**

Name, title and organisation of the scientific representative of the project's coordinator[1]:

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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.

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 organisations 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: Hjalti Páll Ingólfsson

Date: 29 / 06 / 2015

For most of the projects, the signature of this declaration could be done directly via the IT reporting tool through an adapted IT mechanism and in that case, no signed paper form needs to be sent

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

1. Publishable summary

1.1 Project objectives for the period

Geothermal resources have been used successfully and economically in some locations in Europe where geological conditions are exceptionally favourable (e.g. Italy and Iceland), but they can play a much more important role at the European scale, if they can be made accessible in other places. Numerous projects in several countries (e.g., in France, Germany, Switzerland) have started to make use of this source of energy applying new approaches.

The Geothermal ERA-NET work program will deepen the cooperation of national program owners and administrators of the participating countries and lay the groundwork for the integration of national research and development agendas into a coherent European geothermal R&D program.

The Geothermal ERA-NET will focus on the utilization of geothermal energy, from direct heating applications up to higher enthalpy resources and their corresponding uses (e.g. power generation). To ensure appropriate linkages to related R&D activities (renewable heating and cooling via ground storage heat pumps, power distribution and transmission) the interface with related ERA-NET´s such as ERACOBUILD or Smart-Grids will be maintained to avoid overlap. The ERA-NET will include technical and non-technical issues as long as they can be considered to be exclusively applied to the support of geothermal energy utilization.

A significant instrument will be the EERA Joint Programme on Geothermal Energy whose aim is to contribute via research and development to the renewable energy targets for 2020 and beyond, in member and associated states. Coordination activities will focus on the implementation of commonly agreed objectives, joint activities and funding of joint transnational research actions.

1.2 Objectives

The overall objective is the mutual opening up of national research programmes and research infrastructures, and the development of joint activities. To reach this target, the detailed objectives that will direct this Geothermal ERA-NET are aimed to:

- Complete the preliminary work required to create a European Geothermal Database whose purpose is to share information on legal and regulatory aspects, policies, measures, institutions, research projects and data.
- Exchange information on the status of geothermal energy, including national support schemes and RD&D activities and identification of gaps.
- Recommend measures to strengthen European geothermal development in order to meet short-term targets according to National Renewable Energy Action Plans (and similar endeavours in associated countries) and future contributions to renewable energy supply.
- Foster synergies at regional and pan-European level by mobilizing competitive and non-competitive funds for research in a more coordinated way through joint activities.

- Achieve a critical mass to address cross-thematic research targets, thus enhancing cooperation and avoiding fragmentation.
- Define possible schemes and barriers for the joint activities and recommend practical solutions.
- Prepare and execute transnational funding activities, required agreements on themes of the planned projects and on all implementation and administrative issues concerned.
- Increase transnational collaboration in research training and mobility in geothermal research, improving human capacity building, by sharing of best practices, gap analysis and improve science development and collaboration.
- Gain a clear understanding of the principal stakeholders for a successful, Europe-wide coordination of publicly funded, national research, development, deployment and innovation programmes.
- Communicate with principal stakeholders and enhance public awareness toward the values and benefits of geothermal scientific and policy issues.
- Prepare the ground for the future formulation of a common European roadmap for geothermal energy technology research, development, deployment and innovation programme.

1.3 Work progress and achievements during the period

During the first 36 months since the birth of the Geothermal ERA-NET in 2012, the main focus has been on exchanging information on the status of geothermal energy utilization, including national support schemes and research, development and deployment (RD&D) activities and the creation of an inventory report on these activities. From this information the consortium has generated following results with emphasis on gaining an understanding of the principal stakeholders, including key industry players for successful, Europe- wide coordination for publicly founded national research development, deployment and innovation geothermal energy programmes.

In the second period four meetings and workshops were held in Gstaad (March, 2014), Trieste (September, 2014), Leiden (November, 2014) and Offenburg (March 2015). Additionally, several telephone conferences were executed between partners and leaders on different programme issues.

Efforts have been put on the development and execution of Joint Activities. Due to different structures and topics of national researcher programmes, common objectives and interests have been defined between ERA- NET partners.

The Joint Activity (JA) working groups prepared plan and procedures for seven Joint Activities (NWW, EGIP, OPERA, PRGeo, New Concepts, ReSus, and GEOSTAT) and funding agencies established commitments at national levels. To build sustainable structures for transnational policy coordination and project funding in geothermal research as a part of

WP7, which coordinates strong, commonly agreed on framework and joint funding scheme. This will be consistent with applicable national legal rules and regulations. However, there has been also indicated possible barriers for the joint activities such as: distribution and handling of funding, lack of existing cooperation, private investment, national funding rules or laws, politics, national status for 2020/ 2050 goals, and funding budget.

Even though barriers can appear, main goal for Joint Activities have been set: first actions with effort on human resources and financial support, presents the effectiveness of transnational cooperation and smooth the way for more complex future joint activities, begin cooperation within the Geothermal ERA-NET, capability to produce fast results, take the main barriers into account, consider previous results and have an additional benefit for the development of geothermal energy in Europe.

Propose for joint actions are: building bridge gaps, overcome barriers and promote the use of geothermal energy in Europe. Preliminary discussion and further work focus on clustering workshops (TNT B&O / RD&D), modelling cooperation with joint activities, implementing approach to finalise D2.5, creating supplementary workshop for WP2 and WP4 as a choice of JA's.
As a result of meeting in Leiden, it has been decided to create 8 working groups for the final formulation of JA. Each Joint Activity has two leading countries and creates different numbers of participating countries followed by lots of discussions merging of JA or re-arrangements afterwards.

In April 2015, most of Joint Activities had their kick off meetings during which partners decided on overall budget for them and planned actions such as: five European workshops, three interactive events (e.g. round table, idea factory etc.), national workshops and presentation events, as well as planned publications with four workshop proceedings.

1.4 Deliverable tables

During past four meetings, results from different deliverables have been presented as follows:

- In Gstaad
  - D6.1 Report with an inventory of existing mobility and programmes and
  - D3.2 Feasibility study for a European Geothermal Database
- In Trieste
  - D1.4 Newsletter,
  - D2.3 Report on technical and non-technical barriers,
  - D2.4 Report on future R&D needs,
  - D2.5 Actions to bridge gaps, overcome barriers and promote the use of geothermal energy in Europe.
- In Leiden
  - WP4 Proposed Joint activities
  - D6.2 Recommendation for collaboration in the area of HR, mobility and training.

Deliverables in following periodic report to be submitted to the EU Commission with this report presented in Table 1, next page.

Following deliverables met delays due to the shift in the work schedule explained in chapter with Work Packages description (Chapter 2):

- D5.2, D5.3, D5.4- delayed; explanation in chapter 2.2.4 (WP5)
- D7.2 Proposal for transnational activities – delayed; explanation in chapter 2.2.7 (WP7)

In addition to planned deliverables the Geothermal ERA- NET consortium issued a report focusing on the comparison of international geothermal energy statistics, where the main aim is to provide an overview of statistic collection by various international organizations.

In the second project period two new partners joined the Geothermal ERA- NET consortium: Slovenia (Slovenian Energy Directorate) and Portugal (Electicidade dos Acores).

All planed milestones have been met, including deliverables due from 18 until 36 months. They are either submitted or in the last phase of review.

The next major steps in Geothermal ERA- NET process is to finalize work and full fill requirements of strengthening the European Geothermal sector together with EGEC and EERA- JPGE as three important EU pillars.

Table 1 Deliverables Periodic report number 2

No	Deliverable Name	WP No.	Lead participant	Nature	Dissemination Level	Delivery Date	Calendar date	Info
D 1.4	Newsletter and other information leaflets	1	OS	O	PU	24	April 2014	Uploaded & Received
D 2.3	*Report on technical & non-technical barriers*	*2*	*RVO*	*R*	*RE*	*26*	*June 2014*	*Uploaded & Ready to submit*
D 2.4	*Report on future RD&D needs*	*2*	*RVO*	*R*	*RE*	*26*	*June 2014*	*Uploaded & Ready to submit*
D 4.1	Report on possible schemes and barriers for the joint activities	4	Jülich	R	RE	28	August 2014	Uploaded & Received
D 2.5	Report on required actions	2	RVO	R	RE	30	September 2014	Uploaded & Received
D 6.2	Recommendations for collaboration and proposals for joint actions	6	RANNIS	R	CO	32	December 2014	Uploaded & Received
D 5.2	*Report including the inventory and classification of stakeholders on European level*	*5*	*SFOE*	*R*	*CO*	*34*	*February 2015*	*Delayed to M39*
D 1.5	Newsletter and other information leaflets	1	OS	O	PU	36	April 2015	Uploaded & Received
D 1.8	*Periodic activity and management reports for the EC*	*1*	*OS*	*R*	*PU*	*36*	*April 2015*	*Uploaded & Ready to submit*
D 5.3	*Communication plan with key messages to principal European and national stakeholders*	*5*	*SFOE*	*R*	*PU*	*36*	*April 2015*	*Delayed to M39*
D 5.4	*Delivery of a comprehensive plan to successfully engage stakeholders for the development of a strategic roadmap for geothermal energy RDD&I in Europe*	*5*	*SFOE*	*R*	*PU*	*36*	*April 2015*	*Delayed to M42*
D 7.1	Report on developed tools for joint activates	7	CNR	R	RE	36	April 2015	Uploaded & Received
D 7.2	*Proposals for transnational activities*	*7*	*CNR*	*R*	*RE*	*36*	*April 2015*	*Delayed to M42*
D 4.2	*Report on common interests & Action plan for joint activities*	*4*	Jülich	*R*	*RE*	*38*	*June 2015*	Uploaded & Received

Picture presented below shows the time line schedule of activities and meetings organized in Period Report #1 and Period Report #2 (Please see **Fig. 1** below).

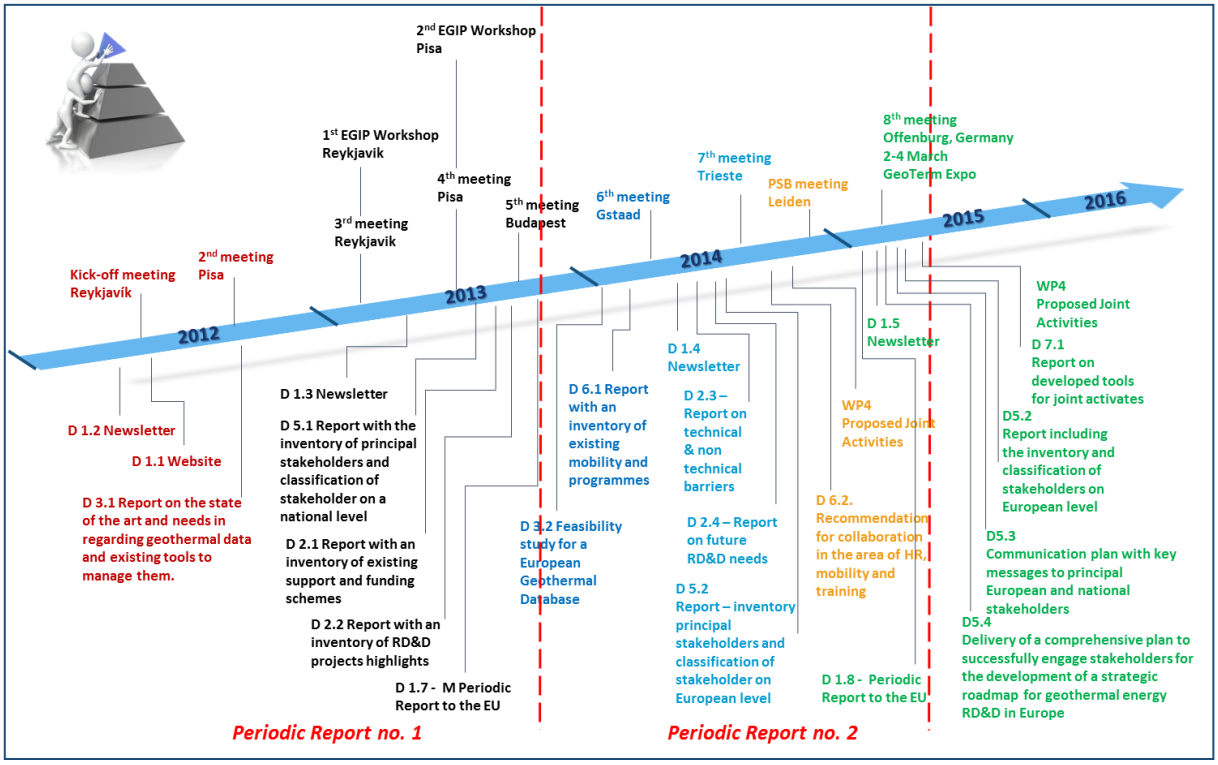

Figure 1 Timeline schedule of activities and meetings organized in Period Report #1 and Period Report #2

1.5 Expected results and impact

National geothermal energy programs have developed mostly in response to specific local geothermal resources and conditions, national skills and competences and importantly, along with national goals that result from local conditions. This has led to the development of national/ local RD&D value chains that are duplicated in other European countries. The fragmented nature of the geothermal industry and hence technology development become a liability considering the vastness of the geothermal resource.

National governments have recognized that structured, internationally rooted, in the first instance, European approach needs to be developed to evolve towards a coherent and effective industry and research infrastructure that can master technological challenges. National authorities and in particular those that administer research, development, deployment and innovation (RDD&I) programs have to play a crucial part in bringing development towards an unified platform for wide- spread uptake and growth of geothermal energy utilization.

While for example pan- European research topics have been suggested for Enhanced Geothermal Systems (ENGINE within the 6th Framework Programme), actual work on the topics has been patchy owing to the lack of concerted action by national and EC funding agencies. Very little, if any prioritised activities have been carried out by member states. More relevant for this Joint Proposal is the fact there has been virtually no implementation of

inter-/transnational research activities in parts due to lack of a platform for funding agencies and national program owners.

The creation of the Geothermal ERA-NET is a necessary prerequisite to exploit synergies and to significantly reduce the fragmentation in the European geothermal energy research area. The work program will identify key challenges and bottlenecks; define the actions to tackle them; establish the investment levels needed; develop a strategy for prioritisation and thus to develop an understanding of the optimal level of intervention from member states that wish to advance geothermal development and deployment.

Primary impact areas of the ERA-NET are expected to be on a strategic level, optimal resource allocation levels and with regards to positioning Europe within an international context.

Strategic coordination of national research programs: the Geothermal ERA-NET is expected to contribute to an indigenous European energy supply that is reliable, affordable and sustainable. The cooperation will also contribute to the development of a European market for research, development and activities that are driven by excellence and value added rather than championing national entities that act exclusively on a local/ national level. National program owner will be given an opportunity to coordinate program implementation beyond national boundaries.

Implied is a drive towards optimal allocation of national resources (funds, personnel and time) according to strengths of national players and resource specifics while freeing up resources that are better deployed in other regions and organizations to deliver expected results.

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

2.1 Project objectives for the period

The following milestones have been achieved during the reporting period as per table below.

Table 2 Milestones in Periodic Report number 2

Milestone number	Milestone name	Work package	Lead beneficiary	Delivery date from Annex I	Calendar date
MS4	Annual project meeting	WP 1	OS	21	January 2014
MS12	Proposals for joint actions in HR, mobility and training	WP 6	Rannis	29	August 2014
MS7	Propose actions to promote the use of geothermal energy in Europe	WP 2	Agentschap	30	September 2014
MS5	Annual project meeting	WP 1	OS	33	January 2015
MS10	Action plan for joint activities	WP 4	Julich	36	April 2015
MS13	Joint transnational activity	WP 7	CNR	37	May 2015

Objectives for the second reporting period followed up the structure built during the first period and keep the communication strategy on schedule. The focus from last periodic report which was building European Geothermal Database has been achieved and information exchange went fine following up also with delivery of the stakeholder analysis.

Another important foundation of future ERA- NET work is the collection and sharing of information on the status of geothermal energy utilization, including national support schemes and research, development and deployment (RD&D) activities as well as information on training and mobility, and stakeholder analysis. Relevant questionnaire was sent to the participating countries to be filled out and analysed by the WP leaders.

2.2 Work progress and achievements during the period

The Gantt chart below shows the planed timing of the work and red lines indicate beginning and ending of the reporting period.

All objectives for the period summarized in the previous section have been successfully achieved with few delays described further in the chapter. In the following we provide details of the progress per work package (**Pict. 2**, below).

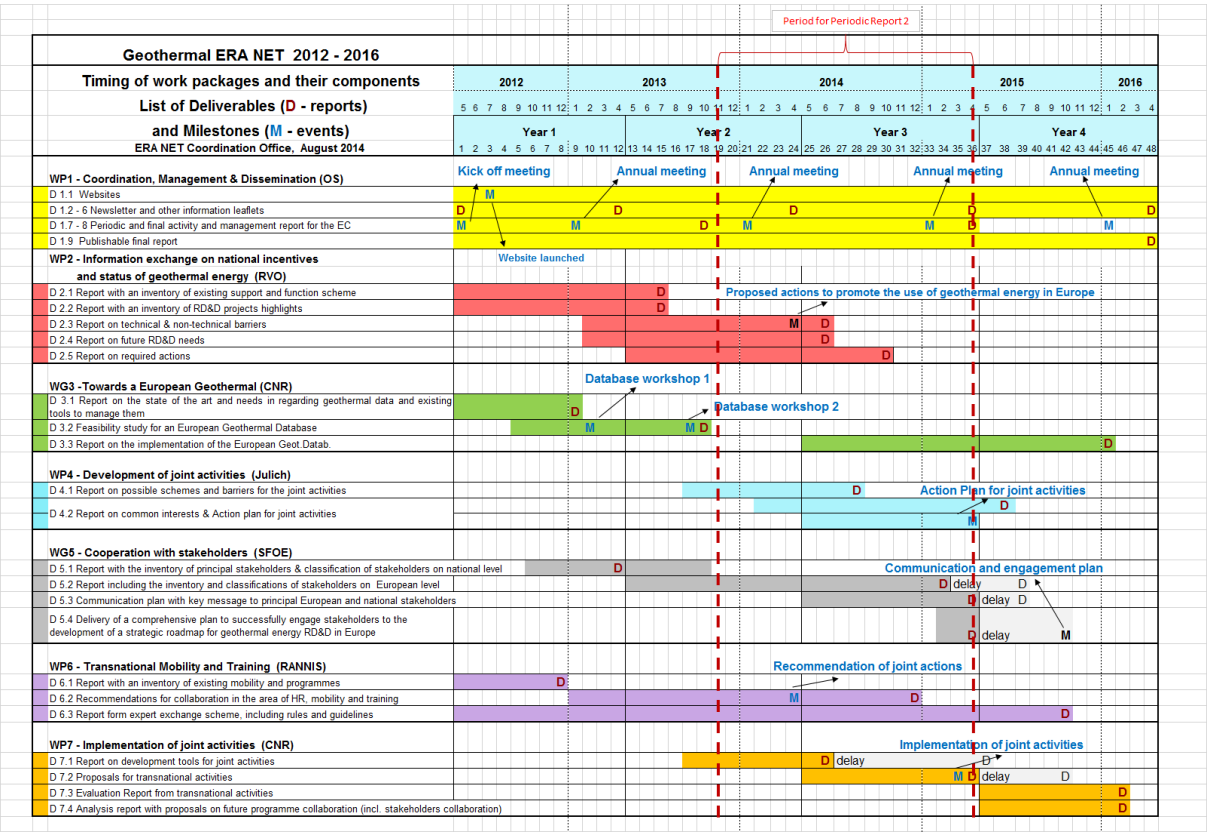

Figure 2 Gantt chart providing details of the progress of each work package

2.2.1 WP 2

Work Package 2: Information exchange on national incentives and status of geothermal energy

The results of the work on information exchange are highly relevant, and they have been used as the groundwork for the definition of Joint Activities. The collaboration between task leader, coordinator, participating countries, and the task leaders of other work packages has been very good.

List of results to date

Task 2.1

- D2.1 "Geothermal energy status and policy review – Geothermal ERANET participating countries - Part A Analysis", finalised December 2013
- D2.1 "Geothermal energy status and policy review – Country questionnaires" (restricted). Last updates added to the SharePoint December 2013
- D2.2 "Inventory of RD&D project highlights", finalised November 2013

Task 2.2

- Clustering workshop, Technical and non-technical barriers and opportunities across ERA-NET Geothermal countries, March 2014, Gstaad, CH
- Clustering workshop, RD&D needs across ERA-NET Geothermal countries, March 2014, Gstaad, CH
- D2.3 "Report on technical and non-technical barriers and opportunities", finalised September 2014
- D2.4 "RD&D needs", finalised September 2014
- D2.5 "Actions to bridge gaps, overcome barriers, and promote the use of geothermal energy in Europe", finalised November 2014

Progress per task: Task 2.1 Initial information exchange

This task was effectively completed during the first reporting period.

The collection of information on support and funding schemes, evaluation, monitoring and dissemination, and RD&D projects has been instrumented with two questionnaires. The information in the questionnaire has been analysed and brought together in two reports. The reports are available through the website.

Progress per task: Task 2.2 Barriers, gaps and required actions

The main work within Task 2.2 is completed, and the results have been taken up by WP4. The focus of the consortium has shifted to completion of WP3- WP7, and there will only be additional activity in WP2 if the consortium sees a need for more intensified information exchange on specific topics.

The focus of the work in Task 2.2 was to get from basic understanding of the situation in various countries to an inventory of subjects interesting for joint actions of the Geothermal ERA-NET. The consortium aims for a set of joint activities at various levels, from information exchange to joint calls. A three-step process resulted in the inventory of subjects. Firstly, all countries identified national barriers and opportunities for the development of geothermal energy (D2.3), and national RD&D needs (D2.4). Secondly, the national views were brought together in two workshops at the Gstaad 5th project meeting. This has been a very important step, which resulted in organising the consortium around a limited number of priorities. The results are available in the deliverables D2.3 and D2.4. Finally, the results of all work in WP2 was integrated in report D2.5 (Actions to bridge gaps, overcome barriers, and promote the use of geothermal energy in Europe). This report brought together the conclusions of the previous work, including the work in Task 2.1, and completes these with ideas on how to collaborate in joint actions, and an overview of ongoing European projects relevant to geothermal. Report D2.5 has served as a starting point for WP4 that works on selection and definition of Joint Activities. Reports are available on the website.

2.2.2 WP 3

Work Package 3: Towards a European Geothermal Information Platform (EGIP)

Task 3.3 Preparation of a feasibility study:

Task 3.3 has been concluded in line with the schedule defined in the DoW Annex 1 (M24). Deliverable D3.2 (Feasibility study for a European Geothermal Information Platform), due by M18, was released in draft version at M19, and after reviewing by partners, the final version was delivered in M22. The reason of this delay, as already indicated in the previous report, has been the broader scope of a European Geothermal Information Platform (EGIP) with respect to the European Geothermal Database mentioned in DoW, and the related wider discussion and complexity. Task 3.3 activities and results have been presented in the projects meeting organized in the reference period of this report.

Following the recommendations of the Supervisory Board (December 2014), an updated version of the D3.2 will be realized, following hints and guidelines of with the support of the project coordination. The updated version will reinforce the description of the target audience, needs and impact of the European Geothermal Information Platform (EGIP).

Task 3.4 Following-up the implementation

The original Task 3.4 was focused on the follow- up of the Joint Call for the implementation of EGIP, which is still in debate. The final decision on the possibility to launch a joint call on EGIP implementation will be taken by the Geothermal ERA-NET consortium in October 2015 (M42) at completion of the second JA on EGIP "Tuning EGIP for target users". While waiting for the final decision, task 3.4 was dedicated to support consortium partners who expressed the interest on joining the EGIP pilot.

Depending on the choice taken in October 2015 regarding JA, the description of the implementation of EGIP will be restricted to the actual pilot implementation or expended to a further stage. In both cases we foresee to prepare the D3.3 (Report of implementation of the European Geothermal Information Platform) in due time (M45).

Deviation from Annex 1:

The task 3.3 will be concluded later than foreseen, in order to update D3.2

2.2.3 WP 4

Work Package 4: Summary of progress towards objectives and details for each task

In the reporting period from November 2013 to March 2014 all specified goals in WP4 (Development of Joint activities) were reached. According to the updated description of work these tasks were:

- Task 4.1 Identification of joint activities
- Task 4.2 Definition of possible schemes and barriers for the joint activities
- Task 4.3 Preparing an action plan the for implementation of joint activities

Task 4.1 was processed starting with a detailed analysis of the results from WP2. In this WP the main barriers and opportunities, RD&D needs in the participating countries were collected. With answers from a survey which was carried out in WP2, an interactive workshop of WP2/ WP4 was organized and took place during the Geothermal ERA-NET Meeting in Gstaad on 11- 12 March, 2014. During workshop the results were recapitulated, ranked and screened for adequate topics for Joint Activities. In addition to the interactive workshop, existing cooperation schemes were collected and the main barriers for the realization of possible Joint Activities were identified. Based on this information the adequate instruments for transnational cooperation were identified and a bottom- up approach for the development of Joint Activities was proposed in D4.1 (Report on possible schemes and barriers for the Joint Activities) together with different topics, relevant for national funding authorities, research communities and national geothermal industries. The approach was presented to the consortium at the Geothermal ERA-NET Meeting in Trieste in September 2014. A decision on the specific Joint Activities which were pursued was made at the Project Supervisory Board Meeting in Leiden in December 2014. Based on these decisions, seven specific Joint Activities were developed by the designated steering committees (two countries for each action) and the WP4 leaders. These Joint Activities were presented at the Geothermal ERA-NET meeting in Offenburg in March 2015. All proposed actions started in April and May 2015 and will deliver first results in September 2015. The final structures and an action plan for each activity were summarized in D4.2 (Report on common interests & Action plan for joint activities) and delivered to the coordinator. Therefore, all tasks from the DoW were completed successfully during the reporting period respectively shortly afterwards.

Significant results:

- Interactive joint WP2/ WP4 workshop "**Clustering R&D priorities, barriers and opportunities",** 11.03.2014
- Interactive joint WP2/WP4 workshop "**Identification of potential joint activities",** 12.03.2014
- Proposal of a bottom- up approach for joint activities, 10.09.2014
- D4.1 "Report on possible schemes and barriers for the joint activities"
- Proposal of specific joint activities, 4.12.2014
- Interactive workshop WP4 **"Prioritization and final decision on the implementation of Joint Activities",** 4.12.2014

- Organization and hosting of the Geothermal ERA-NET Meeting in Offenburg in March 2015
- Further development of the specific activities and final presentation of activities incl. an action plan at meeting in Offenburg, 04.03.2015
- D4.2 “Report on common interests & Action plan for joint activities”

Time schedule:

At the beginning of WP4 the delay of the Geothermal ERA-NET was estimated 6 month. At the end of W4, we could reduce this delay to estimated one month.

Use of resources:

Travel costs for meetings in Gstaad, Trieste, Leiden and Offenburg.

Meeting costs for facilities in Offenburg.

Personnel costs for Dr. Stephan Schreiber and Manuela Richter for conclusive works on WP2 and the processing of WP4.

During the reporting period one additional meeting took place in Leiden (NL), which was not part of the original planned travel costs. For the work on WP2 1,95 PM were spent (planned 2 PM until end of ERA-NET). For WP 4 3,82 PM were spent (planned 6.8 PM until end of ERA-NET), additional PM are necessary for the monitoring and assistance for the specific JA. The table below summarizes the spent manpower for all WP and the estimated amount until the end of the ERA-NET:

Table 3 Summary the spent manpower for all WP 4 and the estimated amount until the end of the ERA-NET

Work package	**Planned PM**	**Used PM**
WP1	1	0,4
WP2	2	1,95
WP3	1,1	0,81
WP4	6,8	3,82
WP5	0,5	0,13
WP6	0,5	0,07
WP7	3,5	0
Total:	**15,4**	**7,18**

2.2.4 WP 5

Work Package 5: Cooperation with stakeholders. Summary of progress towards objectives and details for each task.

In the reporting period from November 2013 to April 2015 all specified goals in WP5 (Development of Joint Activities) were reached. According to the updated description of work these tasks were:

Deliverables WP5

- D 5.1 Report with the inventory of principal stakeholders and classification of stakeholder on a national level
- D 5.2 Report including the inventory and classification of stakeholders on European level
- D 5.3 Communication plan with key messages to principal European and national stakeholders
- D 5.4 Delivery of a comprehensive plan to successfully engage stakeholders for the development of a strategic roadmap for geothermal energy RDD&I in Europe

Task 5.1: Collection of data and classification of stakeholders

The first step of WP5 encompassed the acquisition of data on national stakeholders. In view of national idiosyncrasies the data have been collected from the partners in a standardized manner with the aid of a spreadsheet template. The guiding principles in the identification of stakeholder groups include those groups who are central to the allocation of funds for publically sponsored research, development and deployment programs, groups that are directly affected by the availability of funds and research programs, other funding agencies and those stakeholders that are affected directly and indirectly from results obtained in publically sponsored research. Each stakeholder group has various characteristics and features that require a broad range of possible modes of interaction. The templates have been completed by all participating partners and returned to the WP leader. A first review of the obtained data revealed significant inhomogeneity with respect to the role of funding agencies and program owners, assessments of stakeholders and country-specific modes of discourse among national stakeholders (e.g. the implementation of an agreed national research agenda versus highly competitive project-specific funding schemes). Sensitivities around stakeholder interactions and impartiality were managed by agreeing on broad stakeholder groups and describing their characteristics and features in a generalized manner. The results are summarised and published in the report “Stakeholder Analysis on a National Level” (WP5-D5.1-2013-11-08).

The report and methodologies served as a building block for the stakeholder analysis on a European Level. The adopted questionnaire was sent to the ERA-NET member countries but only two responses with very little information about European Stakeholders were received. A first general assessment of the European Stakeholders came to the conclusion that the European Stakeholder structure is complex and that hardly any information is available

among the participating partners. A detailed and time-consuming information gathering was therefore essential and conducted by the WP leader. An additional meeting with Burkhard Sanner, President of EGEC and expert of the European Geothermal Sector, was hold to discuss the outcomes of the analysis, classification and ranking of the European Stakeholders. The associated report "Stakeholder analysis on a European Level" (D5.2) is near completion.

The report will suffer a three month delay due to the unforeseen complex stakeholder structure on European level and the resulting missing information input from the ERA-NET partners. An external consultant had to be hired to conduct the time intensive data gathering and analysis. It was necessary to await the GEOTHERM in Offenburg (Germany) as this was the first opportunity to discuss the results of the European Stakeholder Analysis with Burkard Sanner.

Task 5.2: Furnish national program owners

National program owners will be furnished with messages on and proofs of strengths and benefits of a coordinated European geothermal energy research agenda. The relevant representatives from the different ERA-NET partners are engaged in the task and therefore familiar with the key messages. Details will be provided with the report "Communication plan with key messages to principal European and national stakeholders" (D5.3). This deliverable is based on the national and international stakeholder analyses as well as on the output of WP2 and WP4. It will most likely be finished in June. This results in a delay of one month.

Task 5.3: Engaging with principal stakeholders

The engagement with principal national and European stakeholders will follow the recommendations of the communication plan and correlated key messages (D5.3; see Task 5.2). Nonetheless, it is essential to involve the most important stakeholders in an early stage to enhance the probability of success. Therefore, the WP leader decided to contact and exchange first information with the Joint Research Centre (JRC) and especially EGEC. This extra effort will later on simplify the development of a commonly accepted strategic roadmap for geothermal energy technology.

Task 5.4: Coordination of geothermal energy technology RDD&I

This task will prepare and utilize output of WP7 to engage with principal stakeholders in the run- up to the development of a strategic roadmap for geothermal energy technology RDD&I. The Task activities will ensure efficient and structured collaboration with principal stakeholders in order to further reduce the fragmentation of transnational research activities and policies. Existing technology platforms will be mobilized. This task is based on the outcomes of Task 5.1-5.3 as well as on the results of the other work packages of the ERA-NET work programme. The deliverable of this Task (D5.4) will be a comprehensive plan to successfully engage stakeholders to prepare the ground for the future formulation of a common European roadmap for a geothermal energy technology RDD&I program. The key

element will be an Action Plan "Coordinated Geothermal RDD&I" which will be widely distributed among the principal stakeholders. There have been no actions yet.

In support of WP5, the Swiss Federal Office of Energy (SFOE), the WP5 leader, hired an independent consultant as subcontractor to work on the stakeholder analysis. The costs of the subcontracting are to date €39'677.70 (excl. VAT), of which €19'263.08 (excl. VAT) have been charged to the EC contribution to the SFOE. We have adjusted the chargeable hourly rate to €54.92. The resources were employed in broad accordance to plan.

2.2.5 WP 6

Work Package 6: Transnational Mobility and Training- Objectives

To increase opportunities for transnational collaboration in research training and mobility in geothermal sector by sharing of best practices, gap analysis and increased programme collaboration. The work package will result in proposals for Joint Activities to be implemented in Work Package 7 (WP7).

Description of work (task/subtask leaders in brackets)

Work Package 6 (WP6) addresses transnational researchers' mobility and a common approach in training of research talent. In order to achieve the targets of geothermal research, adequate human resources and capacity have to be in place. A coordinated approach to research has to be supplemented by idea exchange and the development of a transnational approach to research training. This new approach will likely take a bottom- up approach, i.e. from the national programmes already in place, and be account of European programmes and initiatives in human resources and development, in particular the FP7 and future energy programmes and the various actions of the People programme.

Task 6.1 Mapping of existing mobility and training programmes (RANNIS, OS)

In order to identify areas of collaboration, this work package will initially map existing mobility and training programmes at national and European levels. Each partner country will fill in a standard questionnaire about training programmes dedicated to geothermal research and mobility programmes open to researchers in the field. An analysis of hosting organisations will also be performed under this task. The questionnaire will be prepared by the task leader and collected electronically. The collected information will be made accessible at the project website and, furthermore distributed to a wider group of stakeholders. Provisions will be made to publish research grants and positions on the EURAXESS jobs portal. Special attention will be given to the transnational aspects of the programmes, i.e. if they are open to researchers of all nationalities. The main results of the mapping exercise will be presented in a report with an inventory of existing programmes. The report has been delivered

Task 6.2 Human Resources; Identification of training needs and knowledge gaps (RANNIS, CNR)

Based on the results from the mapping exercise (task 6.1.) the inventory of available mobility and training programmes will be compared with the long term ambitions for the use of

geothermal resources in Europe. A working group will identify possible training needs and knowledge gaps that need to be addressed in order to achieve adequate human resources for meeting those goals. The task-force will, for example, look into the need for transnational programme collaboration, mutual opening of national programmes, establishment of common programmes and need for dedicated programmes at Community level. The result will be a study analysing the various options and recommendations for collaboration in the area of human resources, mobility and training. Recommendations for joint actions in the area of human resources issues will be presented to the project supervisory board. The report has been delivered

Task 6.3. Expert exchange scheme (RANNIS, ROV NL)

Geothermal research is largely based on geographical conditions and limitations. To increase understanding about how research activities and polices have developed in those different circumstances a number of expert visits will be organised for scientific experts and policy makers. The aim of the visits is to facilitate collaboration in research activities as well as policy and programme collaboration. The task leader will prepare rules and guidelines for the allocation of grants that will be submitted to the plenary meeting for approval. Each expert will have to apply for the funding to the task leader by nomination of respective national agency. All approved visits shall provide an input into one or more project activities primarily WP2, WP4 and WP7. Participating experts shall submit a report to the task leader within 8 weeks after the visits. The results will be compiled and analysed by the task leader and used as an input to various policy collaboration tasks throughout the project. Importantly, this task is seen as key to share and disseminate good practices and learning on non-technical, social, commercial and political issues within ministries and government agencies. To be delivered Oct/Nov 2015

Overview of deliveries

- D 6.1. Report with an inventory of existing mobility and programmes (M8)- delivered
- D 6.2. Recommendations for collaboration and proposals for joint actions in the area of human resources, mobility and training (M29) - delivered
- D 6.3. Report from expert exchange scheme, including rules and guidelines (M42) – pending

2.2.6 WP 7

Work Package 7: Implementation in joint activity

Task 7.1 Preparation of tools for joint activities

The activities defined in task 7.1 are strictly related to the WP4 analysis and results. The task force in charge has worked to define, on the base of research topics identified in WP4, the national budget allocation for the Joint Calls, and to design a system for transnational Calls. This activity is running, and the final plan and decision will be made in October 2015 in Brussels.

Since it was not defined what kind of joint activity to be delivered for other topics, most of the activity in Task 7.1 focused on the only joint activity already defined, i.e. the EGIP Pilot implementation. The work covered the preparation of documents describing: i) the joint activity, ii) the rules for participation and iii) the organization of (virtual) meetings. All the produced tools have been made available to the Geothermal ERA- NET consortium.

In order to prepare D7.1 (Report on developed tools for joint activities) examples from other ERA-NET projects and documents of ERA-LEARN have been collected and analyzed, in order to optimize them to the specific requirements of the foreseen Geo ERA-NET Joint Activities.

Task 7.2 Implementation of joint activities

The EGIP feasibility study produced in the frame of WP3 indicated the set up a pilot EGIP aimed to demonstrate the usefulness and effectiveness of such platform. The implementation of the EGIP pilot project has been coordinated in the frame of task 7.2 as Joint Activity (JA) and carried out by volunteering consortium partners as in kind contribution, and run between M25 and M29. The technical coordination of this JA was led by the WP3 leader. Task 3.3 results and the related WP7 activity were presented at the Geothermal ERA-NET meeting in Trieste (M29).

Since data organization by an information system is a specific task of European Energy Research Alliance – Joint Program on Geothermal Energy (EERA-JPGE) (a subprogram led by Philippe Calcagno (BRGM) who is also participating to Geo ERA-NET), the EGIP pilot has been the occasion to make a bridge between Geothermal ERA-NET consortium, representing public authorities and funding agencies, and EERA-JPGE consortium, as expression of the research community. A dedicated bilateral meeting was therefore arranged, not only to show EGIP pilot but also to share preliminary outcomes from Geothermal ERA-NET project and main challenges and opportunities identified by EERA-JPGE, exploring then the possibilities for future joint activities.

The EGIP pilot was the first JA implemented by the Geothermal ERA- NET consortium. Furthermore, in agreement with the WP4 results, seven JA are in progress. We foresee that most of them will be concluded by M42. The JA details are summarized in the table (Table 3, below):

Table 4 Joint Activities in Periodic Report number 2

JA name	Topic	Link to description slides
NWW	Operation and Steering of research funding / Financial instruments	http://www.geothermaleranet.is/media/publications/Funding-of-R&D-and-Geo-Projects-Offenburg-4-March-2015-3.pdf
WG- OPERA	Operational Issues	http://www.geothermaleranet.is/media/publications/Offenburg_2015_OPERA_Schreiber.pdf
WG- PRGeo	Public Relation on geothermal	http://www.geothermaleranet.is/media/publications/Offenburg_2015_PRGeo.pdf
WG- New Concepts	New concepts in utilization and technology	http://www.geothermaleranet.is/media/publications/JA-New-Consepts-2015-04-03--Geothermal-ERANET-offenburg.pdf
WG- ReSus	Reservoir Sustainability	http://www.geothermaleranet.is/media/publications/JA_ReSus.pdf
WG – GEOSTAT	Geostatistical geothermal data, Towards consistency	http://www.geothermaleranet.is/media/publications/ERA-net-meetin_geostat.pdf
WG- EGIP	Tuning EGIP for target users	http://www.geothermaleranet.is/media/publications/JA_tuning_EGIP.pdf

A task group has been set up for each JA, defined during the meeting in Leiden (M30). The organizing groups of each JA are working to define the implementation of the activities.

Deviation from Annex 1:

The task 7.1 is still running, in order to complete D7.1, which was originally foreseen at M24 and then delayed to M37.

Task 7.2 is almost six months late, since originally it should have been completed by the end of M36. This is due to the delay of WP4 products. Consequently the D7.2 has not been released yet. However, since the organization of Joint Activities in close collaboration with WP4 has been delayed and the real development and entity of the Joint Activities is under development right now, a comprehensive report has not been finalized. It is foreseen to be released by M42.

The activities required much more time than foreseen, especially for WP2, WP3, WP5, WP6 because we had to do an extensive search for information. Moreover, the senior experts were very busy in other activities and the project has been a very good opportunity to train junior experts, under the coordination of the management. Activities required much more time, but the personnel have gained a large experience not only in geothermal sector, but also in the management of international projects.

In particular staff resources spent up to now (RP1+RP2) in WP 3, WP5, WP6 were different from the estimated ones. WP3 has 1.26, WP5 0.89 and WP6 0.65 man/ months more. Such difference is mainly referred to the effort included in RP1. However due to the different cost of the junior experts respect senior experts this greater effort is in line with the budget foreseen and available for concluding the project.

2.3 Project management during the period

Period for 2nd periodic report begun in November 2013. Periodic report focused on exchanging information on the status of geothermal energy "*Infex",* groundwork to create a European Geothermal Information Platform, highlighting barriers and recommend practical solutions. Secondly, it was important to communicate with principal stakeholders and enhance public awareness on the added value and benefits of geothermal scientific and policy issues, increase transnational collaboration in research training and mobility. These actions would lead to prepare policy and implementation for a common European Geothermal Action Plan for geothermal energy technology research, development, deployment and innovation supported by member states. Also it would help to prepare and implement Joint Geothermal Activities (e.g.: transnational funding activities), recommend measures to strengthen European Geothermal development, economic opportunities, energy security and mitigate climate change.

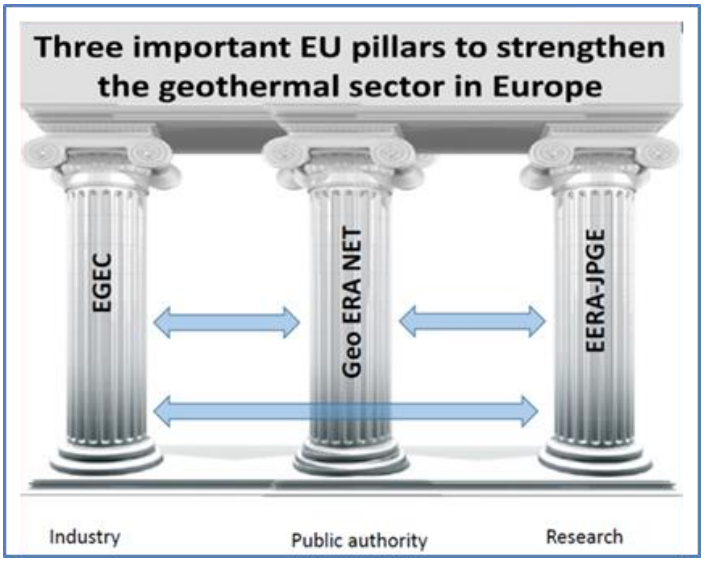

Figure 3 Three important EU pillars to strengthen the geothermal sector in Europe

Period two consist of four meetings and workshops were held in Gstaad (March, 2014), Trieste (September, 2014), Leiden (November, 2014) and Offenburg (March 2015).

Meeting in Gstaad tackled problems on RD&D needs, barriers and opportunities. This was focused on work status of WP3, WP4, WP5 and WP6, interactive session for WP2 and WP4 on clustering priorities for RD&D, barriers and opportunities and identifying potential of Joint Activities. By the end fund raising and strategic aspect for launching Joint Activities and Calls has been raised.

During annual meeting in Trieste, Italy, discussed issues from project reviewed by European Commission experts. Exchange information on national incentive work based on main challenges and opportunities for WP2, WP3, WP4, WP5 and WP6 with implementation of Joint Activities. Following this session there was also held discussion on the ERA- NET Instrument in H2020.

This meeting was organized back to back to a bilateral meeting of Geothermal ERA- NET and EERA-Joint Programme on Geothermal Energy. The meeting presented main challenges and opportunities with recent EERA Activities and Reports. Further, technical and non- technical barriers and future R&D needs were presented (WP2) with focus on actions to bridge gaps, overcome barriers and promote use of geothermal energy in Europe. European Geothermal Information Platform (EGIP) within WP3/ WP7 was presented as EGIP pilot version of Joint Activity by ERA-NET.
Important part for this meeting was cooperation with Stakeholders: EERA- JPGE, EGEC and several other stakeholders. They have been consulted several times concerning working groups and consulting them with stakeholders including EERA- JPGE and EGEC. Meeting in Italy 2014 held a special cooperation with EERA- JPGE discussion on common barriers, challenges and possible future options and possibilities. Geothermal ERA-NET representatives have been invited for consultation at EERA- JPGE meetings.

Different deliverables have been issued, describing cooperation with various stakeholders bringing out objectives of good benefits and results implemented, e.g.:

1. **International Collection of Geothermal Energy Statistics - Towards reducing fragmentation and improving consistency, 01.02.2015**

The aim of the report is to give an overview of the international collection of geothermal energy statistics by various international organizations, offices and associations to enable interoperability of energy statistics, increase reliability and decrease fragmentation in line with the aim of these organizations, motions and regulations. One of the goals of the Geothermal ERA-NET is to validate the feasibility of a European Geothermal Information Platform (EGIP). The aim is hence to get an overview of what is being collected today and how the Geothermal ERA- NET can contribute without duplicating further work that is already multiplied across various international bodies. Based on this repot – and cooperation with several stakeholders, like, - IEA, OECD, UNECE, Eurostat, IEA-GIA, IGA and EGEC – recommendation for improvement and implementation are now discussed.

2. **D 5.2 Actions to bridge gaps, overcome barriers and promote the use of geothermal energy in Europe**

To facilitate the development of joint activities, the report offers a brief overview of recent or ongoing European and international activities. This overview forms a basis to identify the Joint Activities that would best complement existing work – based on information from several stakeholders. The report presents suggestions for joint actions, which need to be further elaborated within Work Package 4 of the Geothermal ERA- NET, and ways to organize them.

3. **D 3.2 Feasibility study for a European Geothermal Information Platform, 30.10.2013**

Document describes our proposal for the joint implementation of a European Geothermal Information Platform (EGIP). EGIP's target is to increase the share of potential geothermal energy users - primarily international operators, and surveyors - primarily European bodies.

4. **D 5.1 Report with the inventory of principal stakeholders & classification of stakeholders on national level**

The report collect data on principal stakeholders of the Research, Development, Deployment and Innovation (RDD&I) chain in national, regional and European areas with a particular focus on stakeholders with a European and international dimension. Classification of stakeholders and rank stakeholders according to their roles and responsibilities in strategy setting, implementation planning, execution, performance evaluation and review of networked, transnational geothermal energy RDD&I programs.

5. Development of joint activities

One important element of the Geothermal ERA- NET is to link together the geothermal industry pillar, the research pillar and the policy pillar by increasing cooperation and consultation between those pillars and stakeholders to strengthen geothermal assessment and policy recommendation. ERA- NET vision is to minimize the fragmentation of geothermal research, build on European know-how and know-who to utilize geothermal energy and to framework large opportunities in the utilization of geothermal energy through Joint Activities (JAs).

To create a scheme for the implementation of trans-European cooperation on geothermal energy, work package (WP) 4 "Development of joint activities" proposed a bottom up-approach for the realization of joint activities. This approach is based on the previous results of the Geothermal ERA-NET and wants to present the main benefits of a European cooperation scheme. The approach combines the following requirements (see also D 4.1.):

- Minor effort of financial and human resources.
- Based on the input from the geothermal community to ensure the necessity of the results.
- Integration of stakeholders from the different fields of geothermal energy.
- Capable to produce high-quality results and solutions for non-technical and technical issues
- Capable to identify several topics for joint calls

In a second phase scheme (Figure 4) was further developed and combined with the thematic needs on RD&D knowledge and information exchange and solutions to overcome non-technical and regulatory barriers.

In addition to already mentioned deliverables – there are several activities regarding cooperation with stakeholders' e.g.:

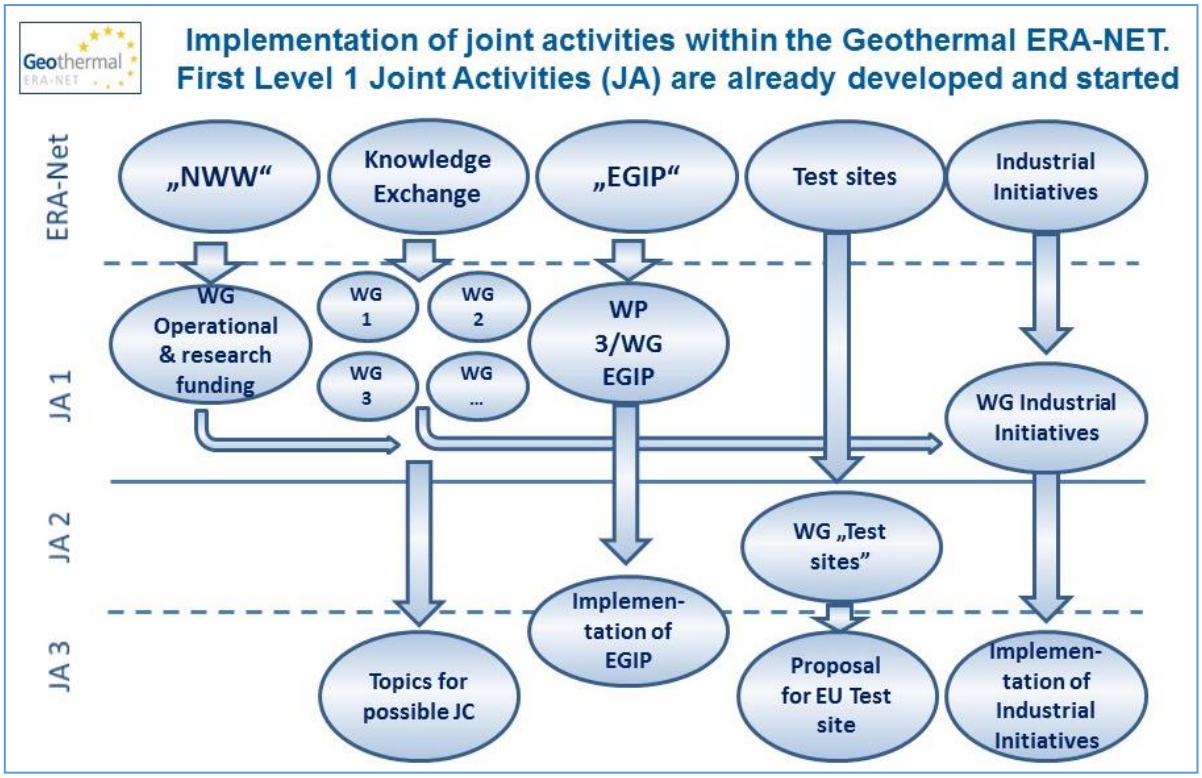

Figure 4 Implementation of Joint Activities within Geothermal ERA-NET

As a result of actions, 7 Joint Activities (JA) on different topics were proposed:

1. **NWW** – New ways of working: Financial Instruments and Funding of RD&D and Geothermal Projects
2. **OpERA** – RD&D Knowledge Exchange on operational issues of geothermal installations inEurope
3. **PRGeo** - RD&D Knowledge Exchange on public relations for geothermal energy
4. **New Concepts-** for geothermal energy production and usage
5. **ReSus** - RD&D Knowledge Exchange on reservoir sustainability
6. Tuning **EGIP** (European Geothermal Information Platform) for target users
7. **Geostat** - Towards Consistency of geothermal data.

In all mentioned activities there will be a constructive cooperation with stakeholders – including EERA- JPGE and EGIP – as these stakeholders have been or will be invited as speakers to several meetings within this Joint Activities.

The next meeting in Leiden 2014 was a Project Supervisory Board additional meeting proposed in light of the need to speed things up due to the constructive and blunt critic on the project process. During this time Board discussed and prioritised nine clusters of possible joint activities, assigned work group leaders and participating countries.

The meeting in Offenburg 2015 focused on discussion and decision on action plan for the Joint Activities to implement them in 2015. Decision was to set up a date for the kick-off meetings

which were held in first quarter of 2015. Secondly, estimated budget was based on additional money from other ERA-NET budgets (WP1), external money or covered by the existing budgets of the participating countries. During the meeting an opportunity was introduced for the Geothermal ERA- NET consortium to answer to the EU call EE 09-2015 which is under Energy Efficiency - Market Uptake. The title of the call is "Empowering stakeholders to assist public authorities in the definition and implementation of sustainable energy policies and measures". In addition to these physical meetings several telephone conferences have been executed between partners and leaders on different programs issues.

The Geothermal ERA-NET was presented during the World Geothermal Congress 2015 under the title "*International cooperation on Geothermal Research through the geothermal ERA-NET*". This paper focused on the Geothermal ERA-NET having the prominent enabling role to assemble a fragmented picture and optimize geothermal research delivery, with the ultimate goal of developing transnational Joint Activities and ensuring that results from the analysis of national RD&D programs are used.

During this period, Grant Agreement had implemented changes which were submitted by the Commission. Main deviations from Annex I, were new beneficiaries within the Geothermal ERA- NET program. To increase the impact of the Geothermal ERA- NET work and broaden the consortium by two new beneficiaries. Slovenian Geology Survey and Azores Electricity, (EDA – Electricidade dos Açores. Both Slovenia and Azores have a rich geothermal potential as well and political ambitions to increase its utilisation of geothermal energy. Their participation will therefore strengthen and increases the impact area of the ERA-NET.

Following the amendments, it was confirmed that partner Agentchap NL change the name to De Rijksdienst voor Ondernemend Nederland (RVO). RVO was established in 2014, as a merger of "Dienst Regelingen" and "NL Agency" (Agentchap NL). RVO now implements all government policies that were formerly implemented by the constituent organisations.

As the next point to mention, changing the emphasis from Geothermal Database to Geothermal Platform in WP3. The reason for this is that the term database appeared to be restrictive and mainly related to the data container while the designation 'Information Platform' entails not only to store geothermal information but also to display, examine, compare and integrate them. Moreover, the platform is meant to comprehend a broader set of geothermal information with respect to what is usually defined as a geothermal database, and is designed as a distributed system.

In the deadlines for deliverables and milestones few changes have been noticed. The reason for this is mainly twofold: postponement of WP6 work and delay in WP2 work. Due to the close similarity of WP2 and WP6 information collection the consortium decided to postpone the work of WP6 so it would be more in line with the work of WP2. This resulted in delay of D6.1 and D6.2. In case of WP2 however, we experienced a delay of 4- 6 months in preparing the results. It took more time to get all data together and subsequently analyse it. The

individual participants in the network are national experts on geothermal energy, who need to match the need to work for the ERA- NET with their other obligations:

- WP2 and WP6 are laying the foundation for the other WP with useful and good-quality results, and the delay experienced in WP2 can actually be regained again later in the project, due so high quality preparation in information collection and analysis.
- Delay effected the work of WP4 (Development of joint activities) and WP7 (Implementation in joint activity) so the following postponements are needed:
    - WP 2 Postponement of deadlines of D2.3, D2.4 & 2.5
    - WP 4 merging of D4.2 & D4.3 with deadline in M38
    - WP 5 Postponement of deadline of D5.2, D5.3, D5.4 to M42
    - WP 6 modification of tasks and merging of D6.2 & D6.3 with deadline in M32
    - WP 7 postponement of deadline of D7.2 to M42

There has been accepted budget re-allocations. In light of increased emphasis on coordination of the ERA- NET and to answer the critics given by the external reviewers the budget has been redistributed among some of the partners. Orkustofnun has increased their share by roughly €218,000 at the expanse of the Netherland, Switzerland and German partners, which have all decreased their budget share. French partners have also increased their share by some €38,000. New partners share in the budget is about €26- 27,000. This new budget share reflects better the expected commitment workload possibilities by the partners till the end of the project in a better way.

3. Deliverables and milestones tables

3.1 Deliverables

Table 5 Deliverables

Del. no.	Deliverable name	Version	WP no.	Lead beneficiary	*Nature*	Dissemination level[4]	Delivery date from Annex I (proj month)	Actual / Forecast delivery dateDd/mm/yyyy	Status No submitted/ Submitted
D 1.2	Newsletter and other information leaflets	1,0	1	OS	O	PU	1	May 2012	Submitted
D 1.1	Website for the project continuously updated	1,0	1	OS	O	PU	3	July 2012	Submitted
D 6.1	Report with an inventory of existing mobility and programmes	2,0	6	RANNIS	R	PU	8	December 2012	Submitted

[4] **PU** = Public

PP = Restricted to other programme participants (including the Commission Services).

RE = Restricted to a group specified by the consortium (including the Commission Services).

CO = Confidential, only for members of the consortium (including the Commission Services).

Make sure that you are using the correct following label when your project has classified deliverables.

EU restricted = Classified with the mention of the classification level restricted "EU Restricted"

EU confidential = Classified with the mention of the classification level confidential " EU Confidential "

EU secret = Classified with the mention of the classification level secret "EU Secret "

D 3.1	Report on the state of the art and needs in regarding geothermal data and existing tools to manage them.	1,0	3	CNR	R	RE	9	January 2013	Submitted
D 1.3	Newsletter and other information leaflets	1,0	1	OS	O	PU	12	April 2013	Submitted
D 5.1	Report with the inventory of principal stakeholders and classification of stakeholder on a national level	1,0	5	SFOE	R	CO	12	April 2013	Submitted
D 2.1	Report with an inventory of existing support and funding schemes	1,0	2	RVO	R	RE	15	July 2013	Submitted
D 2.2	Report with an inventory of RD&D projects highlights	1,0	2	RVO	R	RE	15	July 2013	Submitted
D 1.7	Periodic activity and management reports for the EC	1,0	1	OS	R	PU	18	October 2013	Submitted
D 3.2	Feasibility study for a European Geothermal Database	2,0	3	CNR	R	RE	18	October 2013	Submitted
D 1.4	Newsletter and other information leaflets	1,0	1	OS	O	PU	24	April 2014	Submitted

D 2.3	Report on technical & non-technical barriers	1,0	2	RVO	R	RE	26	June 2014	Submitted
D 2.4	Report on future RD&D needs	1,0	2	RVO	R	RE	26	June 2014	Submitted
D 4.1	Report on possible schemes and barriers for the joint activities	1,0	4	Jülich	R	RE	28	August 2014	Submitted
D 2.5	Report on required actions	1,0	2	RVO	R	RE	30	September 2014	Submitted
D 6.2	Recommendations for collaboration and proposals for joint actions	1,0	6	RANNIS	R	CO	32	December 2014	Submitted
D 5.2	Report including the inventory and classification of stakeholders on European level	0	5	SFOE	R	CO	34	February 2015	No submitted
D 1.5	Newsletter and other information leaflets	1,0	1	OS	O	PU	36	April 2015	Submitted
D 1.8	Periodic activity and management reports for the EC	1,0	1	OS	R	PU	36	April 2015	Submitted

D 5.3	Communication plan with key messages to principal European and national stakeholders	0	5	SFOE	R	PU	36	April 2015	No Submitted
D 5.4	Delivery of a comprehensive plan to successfully engage stakeholders for the development of a strategic roadmap for geothermal energy RDD&I in Europe	0	5	SFOE	R	PU	36	April 2015	No Submitted
D 7.1	Report on developed tools for joint activates	1,0	7	CNR	R	RE	37	May2015	Submitted
D 7.2	Proposals for transnational activities	0	7	CNR	R	RE	42	October 2015	No Submitted
D 4.2	*Report on common interests & Action plan for joint activities*		4	Jülich	R	RE	38	June 2015	Uploaded & Received

3.2 Milestones

Table 6 Milestones

Milestone no.	Milestone name	Work package no	Lead beneficiary	Delivery date from Annex I dd/mm/yyyy	Achieved Yes/No	Actual / Forecast achievement date dd/mm/yyyy
MS1	Kick Off meeting	WP 1	OS	1	May 2012	May 2012
MS2	Website	WP 1	OS	3	June 2012	September 2012
MS3	Annual project meeting	WP 1	OS	9	January 2013	September 2012
MS8	Database workshop 1: European Geothermal Database: State of the art and needs	WP 3	CNR	10	February 2013	February 2013
MS9	Database workshop 2: European Geothermal Database: Feasibility study	WP 3	CNR	15	July 2013	May 2013
MS4	Annual project meeting	WP 1	OS	21	January 2014	September 2013
MS12	Proposals for joint actions in HR, mobility and training	WP 6	Rannis	29	August 2014	September 2014
MS7	Propose actions to promote the use of geothermal energy in Europe	WP 2	Agentschap	30	September 2014	September 2014
MS5	Annual project meeting	WP 1	OS	33	January 2015	March 2014
MS10	Action plan for joint activities	WP 4	Julich	36	April 2015	March 2014
MS13	Joint transnational activity	WP 7	CNR	37	May 2015	October 2014

4. Explanation of the use of the resources and financial statements

During the first 36 months of the project the consortium has used 1,2 m. EUR out of estimated 2,4 m. EUR, which translates into 51% of the total budget of the project being used. This is less than expected as we are about 75% of the project duration. However, as the project progresses further the effort of the consortium is expected to increase further.

The tables below summarizes the claimed cost of the beneficiaries for the first two reporting periods. The first table (Table 7) serves a general overview of the total cost incurred and claimed costs compared to the total estimated budget. Table 8 lists all the beneficiaries and the budget used for the first two periods. The next, table 9 breaks the costs down further into the categories of personnel costs, subcontracting, other direct cost and indirect cost. The largest category is personnel costs representing roughly 64% of the total costs. Table 10 lists the beneficiaries and the cost associated with each work packages, with the first three work packages being the largest ones. Finally, tables 11, 12 and 13 list the costs for each beneficiary broken down to coordination/support, management and other categories and compares the total costs. Further detailed costs can be found in the submitted Form Cs for each beneficiary.

It's obvious that the efforts is quite different between partners as can somewhat be explained by different obligations in the WP. In any case it's obvious that the consortium has the chance and should increase their efforts further to be able to achieve their ambitious goals in the Geothermal ERA NET a tabular overview of budgeted costs and actual costs, by beneficiary and by major cost item including personnel. The budgeted costs are taken from the Annex I.

Table 7 General overview of the total cost incurred and claimed costs compared to the total estimated budget

	Coordination / Support (A)	Management (B)	Other (C)	Total A+B+C	Requested EU contribution
Total budget (overall project)	2.215.302	141.472	-	2.356.774	1.999.958
Total used (period 1 and 2)	1.076.288	103.725	33.324	1.213.338	1.013.804
% of budget used for period 1 and 2	49%	73%		51%	51%

Table 8 Beneficiaries and the budget used for the first two periods

Nr.	Beneficiary	Total used	Budget	Budget used
1	**OS**	303.993	706.998	43%
2	**RVO**	130.314	275.918	47%
3	**SFOE**	38.172	89.960	42%
4	**CNR**	313.327	353.016	89%
5	**Jülich**	69.119	171.801	40%
6	**ADEME**	78.995	160.490	49%
7	**Rannis**	64.089	187.650	34%
9	**TUBITAK**	60.120	107.100	56%
10	**MESRS**	89.365	141.600	63%
11	**MFGI**	48.708	102.240	48%
12	**GeoZS**	2.422	31.200	8%
13	**EDA**	14.713	28.800	51%

Table 9 Break down of costs into four categories: personnel costs, subcontracting, other direct and indirect cost

Beneficiary	Personnel costs	Subcontracting	Other direct	Indirect	Grand Total
ADEME	9.470		8.258	7.938	25.666
BRGM	36.775		7.666	8.888	53.329
CNR	182.247	1.437	10.820	118.824	313.328
EDA	8.646		3.614	2.452	14.713
GeoZS	1.542		476	404	2.422
Julich	41.758	1.592	9.204	16.564	69.119
MESRS	87.084		2.281		89.365
MFGI	37.153	283	3.201	8.071	48.708
Orkustofnun	191.150	9.602	54.176	49.065	303.993
Rannis	36.868		16.540	10.682	64.090
RVO	92.970	732	15.014	21.597	130.314
SFOE	13.476	19.263	2.338	3.094	38.172
Tubitak	38.468		11.632	10.020	60.120
Grand Total	777.609	32.909	145.221	257.600	1.213.338

Table 10 Beneficiaries and the cost associated with each work packages, with the first three work packages being the largest ones

	Work Package (WP)							
Beneficiary	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Grand Total**
ADEME	25.666							25.666
BRGM	16.465	7.960	12.502		7.960	8.441		53.329
CNR	14.199	40.804	130.683	14.283	20.692	12.893	79.774	313.328
EDA			11.366	3.347				14.713
GeoZS		1.312	185	925				2.422
Julich	3.314	15.723	7.314	41.523	788	456		69.119
MESRS	10.888	17.128	17.375		23.756	20.218		89.365
MFGI	12.056	8.365	11.888	12.257		3.224	919	48.708
Orkustofnun	137.738	37.986	70.425	44.319	4.952	7.126	1.448	303.993
Rannis	10.076	3.521	4.892	5.957	622	39.022		64.090
RVO	5.496	116.564	3.567	3.468	1.219			130.314
SFOE	4.019				34.153			38.172
Tubitak	16.995	6.077	6.077	4.704	4.486	3.034	18.747	60.120
Grand Total	256.912	255.439	276.272	130.784	98.629	94.414	100.888	1.213.338

Table 11 Part 1 Detailed overview of budgeted costs and actual costs of each beneficiary accordingly to general info

		Participant number	Participant short name	Coordination / Support (A)	Management (B)	Other (C)	Total A+B+C	Requested EU contribution
Budget	0	1	OS	645,498	61,500	-	706,998	630,731
Period 1	1	1	OS	72,802	12,429	17,989	103,220	92,817
Period 2	2	1	OS	165,489	19,949	15,335	200,773	179,283
Total used				**238,290**	**32,378**	**33,324**	**303,993**	**272,101**
			% of budget used	37%	53%	N/A	43%	43%
Budget	0	2	RVO	266,918	9,000	-	275,918	248,735
Period 1	1	2	RVO	54,904	2,833		57,738	51,483
Period 2	2	2	RVO	69,908	2,669		72,577	64,793
Total used				**124,812**	**5,502**	**-**	**130,314**	**116,276**
			% of budget used	47%	61%		47%	47%
Budget	0	3	SFOE	80,734	9,227	-	89,960	82,747
Period 1	1	3	SFOE	9,370	3,372		12,742	11,204
Period 2	2	3	SFOE	25,430			25,430	24,744
Total used				**34,800**	**3,372**	**-**	**38,172**	**35,949**
			% of budget used	43%	37%		42%	43%
Budget	0	4	CNR	341,042	11,974	-	353,016	237,778
Period 1	1	4	CNR	111,360	10,810		122,170	82,534
Period 2	2	4	CNR	187,259	3,899		191,158	125,483
Total used				**298,618**	**14,709**	**-**	**313,327**	**208,018**
			% of budget used	88%	123%		89%	87%

Table 12 Part 2 Detailed overview of budgeted costs and actual costs of each beneficiary accordingly to general info

		Participant number	Participant short name	Coordination / Support (A)	Management (B)	Other (C)	Total A+B+C	Requested EU contribution
Budget	0	5	Jülich	163,042	8,760	-	171,801	133,257
Period 1	1	5	Jülich	20,023	2,264		22,286	18,411
Period 2	2	5	Jülich	43,266	1,273		44,539	35,793
Period 2	2	5.1	Jülich - Adjustment	2,293			2,293	1,918
Total used				**65,582**	**3,536**	-	**69,119**	**56,122**
			% of budget used	40%	40%		40%	42%
Budget	0	6	ADEME	140,328	20,162	-	160,490	132,968
Period 1	1	6	ADEME/BRGM	22,844	11,412		34,256	29,850
Period 2	2	6	ADEME/BRGM	29,906	14,254		44,160	36,052
Period 2	2	6.1	ADEME - Adjustment	578			578	578
Total used				**53,329**	**25,666**	-	**78,995**	**66,480**
			% of budget used	38%	127%		49%	50%
Budget	0	7	Rannis	181,800	5,850	-	187,650	167,321
Period 1	1	7	Rannis	16,638	2,180		18,818	16,780
Period 2	2	7	Rannis	45,271			45,271	40,367
Total used				**61,910**	**2,180**	-	**64,089**	**57,146**
			% of budget used	34%	37%		34%	34%
Budget	0	9	TUBITAK	102,900	4,200	-	107,100	95,498
Period 1	1	9	TUBITAK	19,135	1,444		20,579	18,350
Period 2	2	9	TUBITAK	37,174	1,475		38,649	34,462
Period 2	2	9.1	TUBITAK - Adjustment form	774	118		892	795
Total used				**57,083**	**3,037**	-	**60,120**	**53,607**
			% of budget used	55%	72%		56%	56%

Table 13 Part 3 Detailed overview of budgeted costs and actual costs of each beneficiary accordingly to general info

		Participant number	Participant short name	Coordination / Support (A)	Management (B)	Other (C)	Total A+B+C	Requested EU contribution
Budget	0	10	MESRS	136,080	5,520	-	141,600	126,260
Period 1	1	10	MESRS	43,615	1,289		44,904	44,904
Period 2	2	10	MESRS	44,462			44,462	44,462
Total used				**88,076**	**1,289**	-	**89,365**	**89,365**
			% of budget used	65%	23%		63%	71%
Budget	0	11	MFGI	96,961	5,279	-	102,240	91,164
Period 1	1	11	MFGI	919			919	850
Period 2	2	11	MFGI	35,734	12,056		47,789	42,612
Total used				**36,652**	**12,056**	-	**48,708**	**43,462**
			% of budget used	38%	228%		48%	48%
Budget	0	12	GeoZS	31,200	-	-	31,200	27,820
Period 1	1	12	GeoZS				-	
Period 2	2	12	GeoZS	2,422			2,422	2,159
Total used				**2,422**	-	-	**2,422**	**2,159**
			% of budget used	8%			8%	8%
Budget	0	13	EDA	28,800	-	-	28,800	25,680
Period 1	1	13	EDA				-	
Period 2	2	13	EDA	14,713			14,713	13,119
Total used				**14,713**	-	-	**14,713**	**13,119**
			% of budget used	51%			51%	51%

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