



GEORG

GEOthermal Research Group

Annual Report

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Centres of Excellence and Research Clusters
Strategic Research Programme

Year 6, 2014-2015

May 20th 2015





Geothermal Research Group

Grensásvegur 9,

108 Reykjavík

Iceland

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May 2015





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GEORG is a research-driven Geothermal Cluster-cooperation aiming at joint effort in geothermal research and innovations.

GEORG is supported by the Science and Technology Policy Council in Iceland through their Centers of Excellence and Research Clusters - program.

EXECUTIVE SUMMARY

GEORG has now been operating for six successful years. During this time the cooperation has matured and developed further towards the ideology of cluster cooperation. Following are highlights of activities that took place during the operational year April 1st, 2014 till March 31, 2015:

- The **Sixth General Assembly (GA)** was held on May 20th, 2014.
- The **DRG project** was launched in 2013 with the support of GEORG, HS Orka, Orkuveita Reykjavíkur, Landsvirkjun, Orkustofnun and the IDDP project. The DRG project is a collaborative project on the Deep Roots of Geothermal systems. The supporters will contribute nearly 100MISK directly to the project.
- GEORG, in cooperation with Arion banki, Landsvirkjun, Innovation Centre Iceland, Klak Innovit and Iceland Geothermal launched the second innovation effort **Startup Energy Reykjavik** in January **2015**. This is a mentorship-driven seed stage investment program with focus on energy related business ideas. Seven carefully selected teams got 5 MISK in seed funding, combined with mentorship and training from more than 60+ mentors and workspace at Reykjavik University.
- GEORG continued to **support students** during the year. Two calls were publishes and 16 grants were awarded in year 6.
- GEORG organized an **Open House, January 14th 2015**, where four projects supported by GEORG were presented.
- The **Geothermal ERA NET** is very active. The next steps are to develop and implement cooperation opportunities for joint activities for geothermal energy in Europe.
- GEORG negotiated with the energy companies (LV, OR and HS) and Orkustofnun to continue supporting Jon Örn Bjarnason and Stefán Arnórsson work on the **rewriting of the WATCH program**.
- **Waste to Value (W2V)** was formalized in two defined projects, one led by Gerosion: "Value Creation in Icelandic Geothermal Processes: Extraction of minerals and metals" and other led by Innovation Centre Iceland: "Value from waste- gas from geothermal power plants".
- GEORG participate in **World Geothermal Congress** in Melbourne, **Australia** where many of the projects supported by GEORG presented approved papers.
- **European Dimension** work of GEORG has been developing further within programs of Horizon 2020, Geothermal ERA NET and DEEPEGS projects in cooperation with various collaborators.





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GENERAL ASSEMBLY 2014

GEORG 6th General Assembly (GA) took place at Orkugarður on May 20th, 2014. The GA agenda was traditional with a presentation of the 5th year annual report and discussions, as well as the presentation and approval of the annual accounts for year 5. The management and committees of the cluster cooperation was elected and other issues discussed.

The following Board of Directors (BoD) was elected at the GA:



Sigurður M. Garðarsson
University of Iceland,
Chairman



Bjarni Pálsson
Landsvirkjun



Einar Jón Ásbjörnsson
Reykjavík University



Ernst Huenges
GFZ, Potsdam



Magnús Tumi Guðmundsson
University of Iceland



Oddur B Björnsson
Verkis



Rúnar Unnþórsson
University of Iceland



Steinunn Hauksdóttir
ISOR



Hákon Gunnarsson
Iceland Geothermal
Observer



Viðar Helgason
Iceland Geothermal
Observer

Further information on the management of GEORG can be found at the [GEORG website](#).

STARTUP ENERGY REYKJAVIK



The President of Iceland, Mr Ólafur Ragnar Grímsson and the Minister of Industry and Commerce Mrs. Ragnheiður Elín Árnadóttir attended and addressed the SER Investor Day, where the team pitched their ideas and plans.

GEORG is a proud founder and owner of the business accelerator program Startup Energy Reykjavik (SER), together with Landsvirkjun, Arion-banki and Innovation Centre Iceland. The program is facilitated by Klak Innovat and Iceland Geothermal.

Startup Energy Reykjavik is a mentorship-driven seed stage investment program with focus on energy related business ideas. Selected teams receive USD 40,000 in seed funding, outstanding working facility, ten weeks of intensive top-notch mentorship and the chance to pitch to angel investors and venture capitalists at the end of the program. Fourteen teams have taken part the program, seven team in 2014 and another seven in 2015, with great success. The website for the effort is: www.startupenergy.is

GEORG is a shareholder these startups, through the holding company "SER eignarhaldsfélag ehf". The teams are introduced in Annex I.



Startup Energy
Reykjavik

Landsvarmi



Laki
Generator

Eta-nýtni



Fourteen healthy innovative Start-Ups' have been achieved though SER business accelerator.

WORLD GEOTHERMAL CONGRESS

April 19-24, 2015, the World Geothermal Congress brought together over 1,500 geothermal experts/ industry and government representatives and international development partners in Melbourne, Australia. This was the second largest Congress with over 1.500 participants and 1300 papers presented. Iceland was well presented at the conference with more than 86 paper presented, and over 100 participants from Iceland. Twenty seven of the papers presented results from projects funded by **GEORG**.



Pictures taken at the WGC2015, in Melbourne Australia.

ICELAND THE HOST FOR WGC2020.

In the second half of 2013 potential host countries of the World Geothermal Congress in 2020 were asked to present their proposal to the International Geothermal Association (IGA). In the first quarter of 2014 all bidding documents were evaluated and seven applicants were asked to present a full proposal until March 2014. Six applications then presented their full bid to the IGA Board in Manila, Philippines on 21 March 2014. Applying countries were Chile, Germany/ Netherlands, Iceland, Kenya, Philippines and the USA.

Following an extensive evaluation and three rounds of voting, the proposal submitted by Iceland was accepted by the Board as the winner. The IGA Board will now enter into negotiations to conclude an agreement to host WGC 2020 in Iceland and the Iceland Geothermal Cluster will organize the event with the IGA Board.

GEORG was active supporter of the application both in terms of financial support as well as preparation.

EUROPEAN DIMENSION

HORIZON 2020



In order to support and assist Icelandic companies and organizations in applying to the EU Horizon2020, Rannis, Enterprise Europe Network at Innovation Center Iceland, Iceland Geothermal and GEORG teamed up and decided to try a new technique in introducing the program. Two events were organized on this occasion, the first October 28th and the second one October 30th.

In the first meeting, the program was introduced, followed by a presentation on how it is to apply and participate in an EU project and an introduction on the support available to Icelandic applicants

The second event was a workshop, with a brief introduction of the geothermal cluster-cooperation's and the possibilities it offers and a short presentations from consultants companies in the field of application consultancy, where emphasis was put on the possible assistance the companies can provide.

The aim was to provide participants with:

- Informing about the key issues in the energy plan Horizon2020;
- Information on support companies and organizations stand available;
- Stories about how to download and run a project;
- Promotion of the consulting services in Iceland offer;

EU HORIZON 2020 WORK PROGRAMMES

Hjalti Páll Ingólfsson, GEORG operational manager, participates on behalf of Iceland, in the energy committee of Horizon 2020 where the [Secure, clean and efficient energy](#) WP is prepared. This program is planned for two year at a time and the preparation for WP 2016-2017 is about to finish, and published in the autumn. Hjalti emails regularly information about the meetings, the progress, as well as the geothermal issues discussed, to the GEORG mailing list.

GEOHERMAL ERA NET NEWS



GEORG initiated the Geothermal ERA NET, together with Orkustofnun, in May 2012. The project is supported by the EU Seventh Framework and the participants of the project, together with Orkustofnun, and Rannís, are administrative bodies of eight other European countries, the Netherlands, France, Switzerland, Germany, Italy, Hungary, Turkey, Slovakia, Slovenia and the Azores.

The collaboration has been successful and already analyses on the research programs of the participating countries have been done and a considerable work has been put into preparation work for synchronisation of geothermal information in Europe, through geothermal information platform.

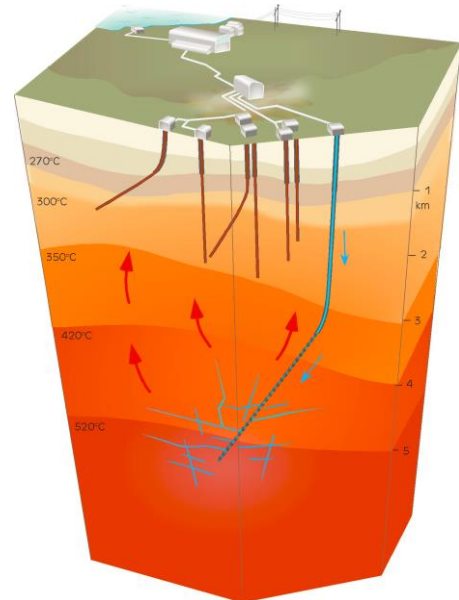
Joint actions have been developed and prioritised and an action plan for implementation have been designed. For more information please visit the project website www.geothermaleranet.is

DEEPEGS

GEORG is part of the DEEPEGS project consortium, which applied for funding in the Horizon 2020 Call: H2020-LCE-2015-2 Topic: LCE-03-2015. The consortium is strong and consists of some of the main players in Europe geothermal utilisation and development, from Iceland, France, Germany, Italy and Norway. The project is coordinated by HS – Orka with administrative support from GEORG.

The goal of the the DEEPEGS project is to demonstrate the feasibility of enhanced geothermal systems (EGS) for delivering energy from renewable resources in Europe. Testing of stimulating technologies for EGS in deep wells in different geologies, will deliver new innovative solutions and models for wider deployments of EGS reservoirs with sufficient permeability for delivering significant amounts of geothermal power across Europe. DEEPEGS will demonstrate advanced technologies in three geothermal reservoir types that provide all unique condition for demonstrating the applicability of this “tool bag” on different geological conditions. We will demonstrate EGS for widespread exploitation of high enthalpy heat

- ✓ Beneath existing hydrothermal field at Reykjanes (volcanic environment) with temperature up to 550°C and
- ✓ Very deep hydrothermal reservoirs at Valence (crystalline and sandstone) and Vistrenque (limestone) with temperatures up to 220°C.



A concept model, showing the EGS system in the Reykjanes demonstrator

The consortium is industry driven with five energy companies that are capable of implementing the project goal through cross-fertilization and sharing of knowledge. The companies are all highly experienced in energy production, and three of them are already delivering power to national grids from geothermal resources. The focus on business cases will demonstrate significant advances in bringing EGS derived energy (TRL6-7) routinely to market exploitation, and has potential to mobilise project outcomes to full market scales following the end of DEEPEGS project. We seek to understand social concerns about EGS deployments, and will address those concerns in a proactive manner, where the environment, health and safety issues are prioritised and awareness raised for social acceptance. The consortium will, through risk analysis and hazard mitigation plans, ensure that relevant understanding of the risks and how they can be minimised and will be implemented as part of the RTD approaches, and as a core part of the business case development.

GEORG is leading WP9 in the proposal, and will mobilise its constituent members (those not already participating in DEEPEGS) for taking part in disseminating and communicating about the DEEPEGS activities. The project office existing as a virtual entity between HS ORKA and GEORG will provide administrative support for the project participants as part of WP1. In the DEEPEGS project GEORG will manage a dedicated virtual DEEPEGS Project Office, under management of the coordinator, the aim is to support the Project Coordinator in the administrative and financial coordination, which includes:

- ✓ Financial administration: costs monitoring; costs statements preparation and collecting the cost information from the partners for the coordinator, etc.
- ✓ Supervising and informing all participants about the project progress (i.e. sending interim reports, meetings minutes, etc.).
- ✓ Day to day assistance to the overall Project Management (including both technical and administrative issues).
- ✓ Support the quality management of deliverables, and their timely submission to EC, ensure that milestones and deliverables project work plans are maintained as planned, and advice coordinator and Executive Board about any potential project delays, and risk issues,

- ✓ Organising project meetings and calling on participants to attend the project meetings, as well as setting up and circulating the meeting agendas

Through secondment of LCA expertise available within the University of Iceland, that is one of the leading members of GEORG, the Task 2.3 will be led by GEORG. For this purpose we expect to recruit a graduate student to work on the life cycle perspective research parts.

GEORG will also support the planning and preparations for the open day's events at all three demonstrator sites, and also administer the internal DEEPEGS workshops and preparations for other key project events.

IMPACT ASSESSMENT FOR GEORG

The GEORG office work is divided into four pillars: Support for Geothermal Research Projects, Service to Cluster Participants, Grant Application Support for Cluster Participants, and Dissemination and Promotion. This includes e.g. financial support of twenty two research projects, service for at least hundred cluster participants, travel funds for students, and creating platform for nine collaborative geothermal research projects, where GEORG's responsibility is to manage evaluation process and bringing high efficient service to cluster participants.



Four pillars of GEORG office

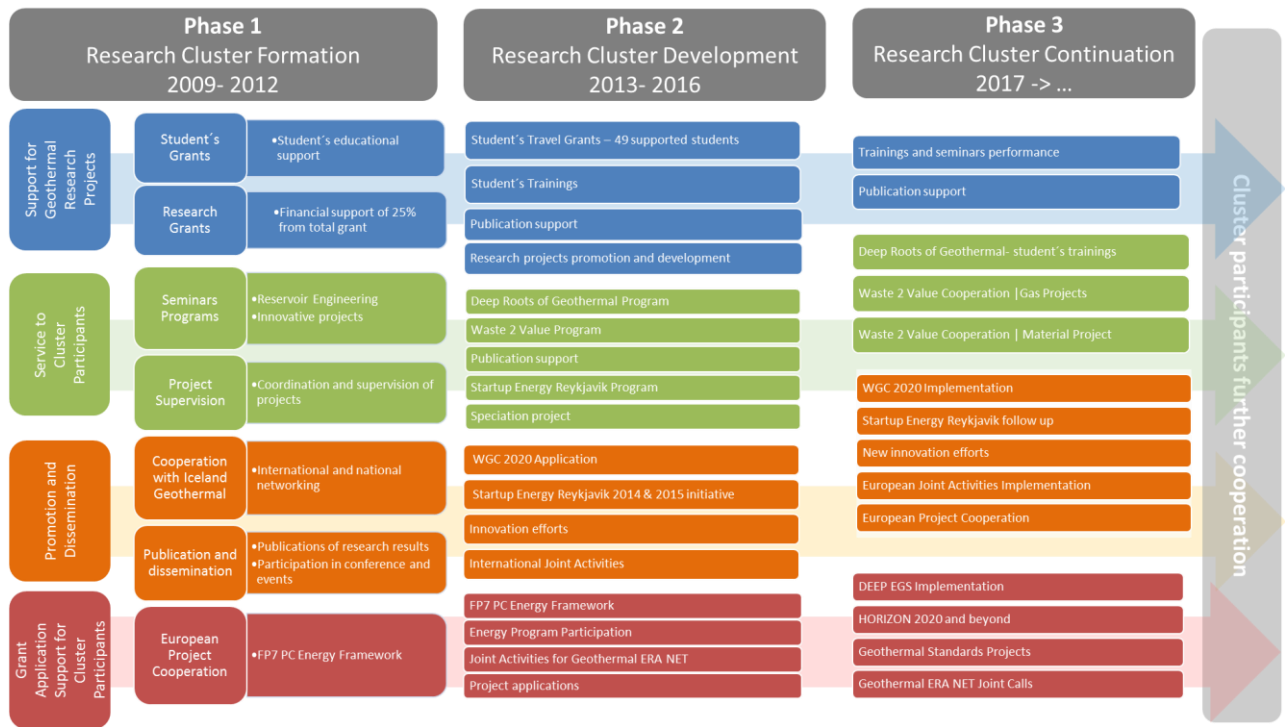
As the seventh year of cooperation has begun, there is now a time to evaluate the value addition GEORG has brought to the geothermal sector. It has been decided by the Board of Directors to hire Ms. Alicja Wiktorja Stoklosa to assist in this respect. Ms. Stoklosa's work focuses on collecting information and material on the achievement of GEORG. It shall assess and bring to light the impact and the added value GEORG has brought to the geothermal sector in Iceland and abroad. The synergy between GEORG and Iceland Geothermal should be assessed and the project shall give recommendation on how to continue the cluster cooperation when the current public funding expires.

Within the promotion and dissemination tasks for GEORG, main effort now focuses on defining strengthen in cluster cooperation, understanding needs and values of formed projects and their future cooperation. GEORG's strategy can be understood in three stages and currently development phase is an ongoing process.

In Phase 1 (Research cluster formation) four value addition streams were created as a main core for GEORG overall project management, the four pillars.

Phase 1 implements:

- ✓ **Support for Geothermal Research Projects** – financial support for student's travel and research grants
- ✓ **Service to Cluster Participants**- organising seminars, preparing project cooperation and supervising projects
- ✓ **Promotion and Dissemination**- direct cooperation with Iceland Geothermal, national and international collaborators and disseminate project results and news.
- ✓ **Grant Application Support for Cluster Participants**- European projects cooperation



Description of GEORG's strategy – DRAFT

Phase 2 collects and develops achievements of cluster members, matching possible cooperation between projects from Phase 1 and increases their visibility. In current Phase 2, the cluster is focused on developing the values, managing and developing them.

Phase 2 implements:

- ✓ Continues **support for student's travel** and training
 - In total 49 travel grants (Appendix II)
- ✓ Continuation in **research projects**
 - Until now approx. 85 publications issued within 22 admitted projects
- ✓ **Deep Roots of Geothermal** and **Waste 2 Value** innovation projects are in a full development
- ✓ **Cooperation with Iceland Geothermal**
 - Created two rounds of innovative business accelerator program Startup Energy Reykjavik, achieving 14 new start-up companies
- ✓ **European Framework energy Projects**
 - Developed idea for Geothermal ERA NET platform where joint activities have been proceeded
 - Taking active part in the development of EU FP7 and Horizon 2020 work programs

Phase 3 implements continuation of GEORG operation when the current government funding expires. In this stage, GEORG association creates the value of being a platform for ongoing projects, entrepreneurship and export for geothermal energy resources and education, both for partners in the group and in the ensuing creative environment established through its national and international operations and managing their assets. Currently office work focuses on this task.

SUPPORTED RESEARCH PROJECTS

GEORG has supported 22 research projects through open calls. The projects deal with various aspects of geothermal research but the strongest focus has been on reservoir science. The projects have encouraged broad collaboration, both within GEORG as well as collaboration with outside partners. Figure 4 shows the

collaboration patterns of supported projects within GEORG. The dotted line determines the Geothermal Research Group; those inside the line are members of GEORG.



Collaboration patterns of supported projects within GEORG. The GEORG members are inside the dotted line

The progress of supported projects has in general been good. Most of the projects have been on time with few exceptions, where delays have mainly been due to personal reasons of key participants or other external influenced, such as volcanic eruptions.

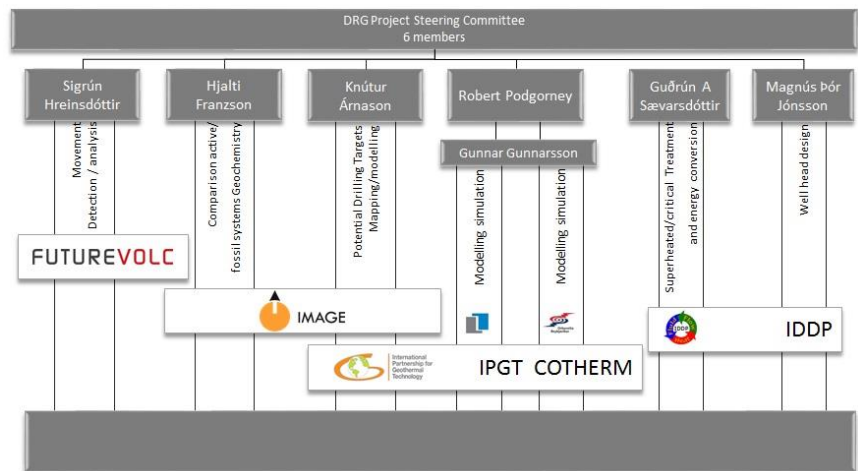
Out of the 22 projects 13 are already finished and additional 4 projects are scheduled to finish during the first half of 2015. Annex II presents an overview of the supported projects and support amount still pending to be paid out. Total allocation of GEORG to these projects is 276 MISK of which 62 MISK is still to be paid.

Further information on the projects can be found on the GEORG website: www.georg.hi.is/node/134

DEEP ROOTS OF GEOTHERMAL (DRG)

The cooperative project, titled "DEEP ROOTS OF GEOTHERMAL SYSTEMS" (DRG), is managed within the cluster cooperation of GEORG and is financially supported by GEORG, Orkustofnun, Reykjavik Energy, HS Orka, Landsvirkjun and the Iceland Deep Drilling Project (IDDP), in total nearly 100 MISK in direct funding.

The aim of the DRG project is to understand the relationship of water and magma in the roots of volcanoes and how heat is transferred into geothermal systems to maintain their energy. Furthermore, the design of wells and well heads for high temperatures will be a focus of the project, as will methods for utilizing superheated steam from greater depths.



Part I Exploration
Sigrún, Knútur and Hjalti



Part II Modelling
Robert and Gunnar



Part III Utilization
Guðrún A and Magnús Þ



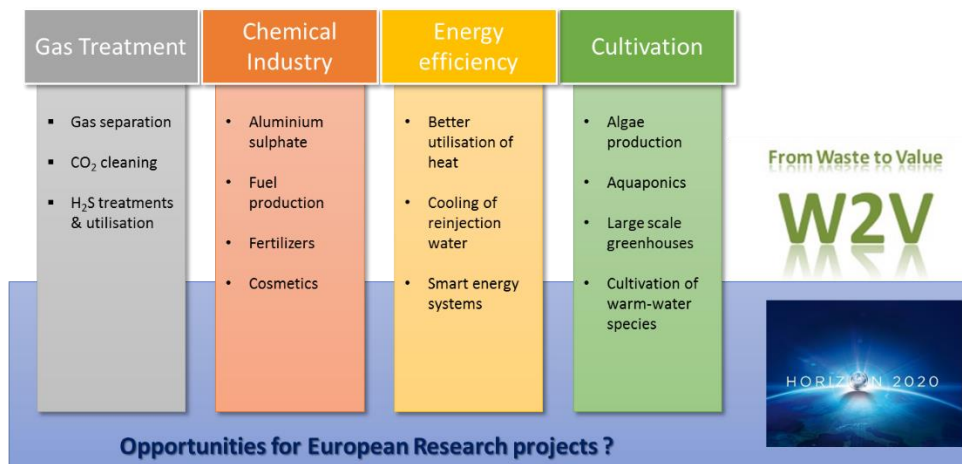
The research is performed by three groups made up of representatives from universities, research institutes, engineering companies and energy companies. The latest technology is applied in surveying, resistance measurements and seismic measurements, petrology and geochemistry. In addition, new simulation models will be developed. These models will be used to simulate heat transfer and operation of geothermal boreholes for high temperature steam. Training young scientists to work in this field will be an area of heavy focus for the project. One of the key aspects of the DRG project is to foster and encourage cooperation with other international project in the same field such as the Swiss/IPGT-COTHERM project and EU-IMAGE project.

FROM WASTE TO VALUE



GEORG office has been working on setting up W2V project based on the results from the project development workshop held in spring 2014. At this workshop the status of treatment and utilization of discharge from geothermal Power Plants were discussed at depth and possible opportunities of cooperation on research projects within GEORG explored. GEORG Board of Directors have devoted up to 20 MISK to lubricate cooperation in this field, given that sufficient co-funding is provided and the projects are scientifically

and/or technically viable. Slides from the workshops can be found at [GEORG W2V website](#).



Thirteen ideas were listed at this brainstorming session and after the prioritization of the preparation committee and further exploration and communication, the following three projects are now materializing:.

Value from waste-gas from geothermal power plants

Value Creation in Icelandic Geothermal Processes: Extraction of minerals and metals

Utilization of geothermal heat in aquaponics

Two of these projects have now started. Gerosion signed a contract with GEORG for the project: Value Creation in Icelandic Geothermal Processes: Extraction of minerals and metals. The time frame of this extensive project is two years and the focus is on the question: Can the Icelandic Geothermal Industry create additional value beyond that which comes from the utilization of thermal energy? In this project, value creation by the extraction of minerals and metals from geothermal fluids in Iceland will be explored and the economic feasibility will be analysed. The project will be carried out in close collaboration with partners from academia and the industry. Gerosion is the project leader and the collaborators are the School of Engineering and Natural Sciences of University of Iceland and the Icelandic energy companies; Landsvirkjun, HS Orka, and Orka Náttúrunnar. The project has additionally received funds by the Energy Research Fund of Landsvirkjun.

Innovation Centre Iceland signed a contract with GEORG for the project: Value from waste-gas from geothermal power plants. This is a one year innovative project that focuses on bringing together technology from different sectors needed to harness an unused resource (geothermal gas) for methane production. The coupling of this technology with the geothermal gas stream has to the best of our knowledge never been done before. If successful it will provide a new path for a domestic production of sustainable fuel (methane) and could lead the way to utilization of other geothermal resources in Iceland, and elsewhere, for methane production. Innovation Center Iceland is the coordinator of the project and the project is executed in collaboration with, Orka Náttúrunnar, Landsvirkjun, HS Orka and GEORG.

Negotiation on the third project, Utilization of geothermal heat in aquaponics, is ongoing.

STUDENT TRAVEL GRANTS



supported students can be found in Annex III.

GEORG supported graduate students, working on the topics of geothermal energy, to participate in International Conferences on Geothermal. Two calls were made and 16 students were offered 100.000 ISK each as a contribution to travel cost. The application deadline was September 21, 2014 and on the 1st of February 2015. Nine applications were received in each call. All application were eligible in the first call and seven in the second call. Sixteen students were therefore supported this year. In total 49 travel grants have been awarded, of which 10 were for attending WGC2015 in Melbourne Australia. A table illustrating all

GEOCHEMICAL SPECIATION AND REACTION PROGRESS SOFTWARE FOR GEOTHERMAL APPLICATIONS

The work on this project continues and the first milestone was reached this summer. The second milestone is due at the end of the year and progress is well under way so there should be no reason for it to be delayed.

GEORG is responsible for the supervision of the project. This includes arranging all contracts and agreements related to the project as well as receiving funds from the Sponsors and transferring these to ISOR – Iceland GeoSurvey in accordance with grant agreements and project progress.

GEORG also keeps the Steering Committee informed about the status of the project and follows up on the Steering Committee's decisions. GEORG assists in organizing meetings as needed in cooperation with Jón Örn Bjarnason, Stefán Arnórsson, the Advisory Working Group and the Steering Committee.



PROJECT SHARING WEBSITE

GEORG and Iceland Geothermal have signed a contract with the Iceland Ocean Cluster cooperating on a project sharing website, called Verkefnamiðlun.



Verkefnamiðlun is a platform for project sharing which was initiated by the Iceland Ocean Cluster and members of the Ocean Cluster education group. The aim of Verkefnamiðlun is to enhance the connection between students and companies. Initially, the focus was on connections between students and companies in ocean related fields but due to high demand there are now projects from all sectors of the economy. Over 60 projects have been registered on the site, dozens of which are already active with students working together with companies.

If you as a company have any projects that you need working on, do not hesitate to contact us. We encourage students as well, to be in touch and register for possible projects. Visit www.verkefnamidlun.is for more information.

GEORG OPEN HOUSE,

The annual GEORG Open House was held Wednesday, January 14th, in lecture hall of the National Museum of Iceland. At this event selected GEORG projects were introduced with presentations and posters. It was a successful event with around 50 participants and interesting talks.

Attending this event gave the attendance a good opportunity to gain insight into what GEORG partners have accomplished and seek opportunities for further cooperation. During the poster session people embraced the opportunity to promote their project ideas and sought for potential partners. The presentations were in English and were all recorded, the video clips from the event can be streamed from GEORG website: http://georg.hi.is/efni/georg_open_house

6TH EUROPEAN GEOTHERMAL PHD DAY

The EGPD has now become a tradition for geothermal scientists. After Potsdam, Reykjavik, Pisa, Szeged and Darmstadt, the 2015 EGPD was held in Delft, The Netherlands, by the Technical University Delft, Department of Geoscience and Engineering and the group of Applied Geology. It took place on February 25th to February 27th after the DAP symposium in Delft.



The goal of the conference is to bring together people working on geothermal energy. By presenting their work participants are able to receive constructive feedback and revisit their work from a different perspective. Both aspects should prove helpful in preparing a full article for a peer-reviewed submission. Furthermore, attendees are also able to explore possible collaboration for their future academic or non-academic career in geothermal energy.

All PhD students working in the field of geothermal energy are invited to join!

There is an increasing interest on geothermal energy on a global scale. The EGPD is becoming a tradition in the field with a track record of 5 successful events. The topics cover a broad range of disciplines not only limited to geosciences, engineering or chemistry, but also reaching to business, law and social studies. The scale of the projects ranges from whole continents, nations and regions to specific geothermal fields, reservoirs or even micro-structures.

ANNUAL ACCOUNTS

In April 2012 the association of GEORG was established and this is its second year of operation. On the bases of a service agreement between UNI, on behalf of the GEORG Project, and GEORG the new association handled all the operational cost of the GEORG office except for the cost of staff. Therefore there are two accounts presented in the annual report, the accounts of the GEORG Project and accounts for the GEORG Association. In both cases the operating year is April 1st, 2014 –March 31th, 2015. All amounts are in thousand ISK. The accounts have been reviewed by Sveinn Rúnar Reynisson at Íslenskir Endurskoðendur slf and the payment of grants is acknowledged and confirmed. Co-financing from partners are best possible estimations and excluded from the review.

ANNUAL ACCOUNTS-GEORG PROJECT

GEORG - Cost and financing account

Cost	Note	Year 6		
		GEORG	Partners	Total
Grants	1	75.860	221.973	297.834
Contracted services.....	2	230		230
Travel expenses.....	3	0		0
Conferences, dissem. & outreach.....	4	0	0	0
Overhead total.....	5	10.481	2.000	12.481
Total operation cost		86.572	223.973	310.545
Financing				
Admission fee.....		0		0
Partner Co-financing.....		0	223.973	223.973
Funding from Rannis.....	6	70.000		70.000
Total financing		70.000	223.973	293.973
Results of operational activities		-16.572	0	-16.572
Transferred between years				
Unpaid funding fom Rannis.....		14.000		
Aquired funding from last year.....		-14.000		
Other receivables.....		0		
Allocated but unpaid grants to R&D projects..		-60.735		
Allocated grants to R&D projects last year.....		114.110		
Other short term liabilities.....		0		
Other short term liabilities from last year.....		0		
Final results of the year		36.803	0	36.803

GEORG - Balance sheet

		Year 6
Assets	Note	31. March 2015
Funds at UNI account 1566-156305	7	68.087
Unpaid funding fom Rannís.....	6	14.000
Other receivables.....	1	0
Total assets		<u>82.087</u>
Debts and liabilities		
Unpaid grants for projects.....	8	60.735
Other short term liabilities.....	1	0
Total debts and liabilities		<u>60.735</u>
Unallocated funds at the beginning of period		-15.451
Final results of the year		36.803
Total unallocated funds		<u>21.352</u>

ANNUAL ACCOUNTS GEORG PROJECT- NOTES

1 - Grants

GEORG has supported over 20 research projects as well as supporting students and other activities. The partners co-financing is estimated according to the projects status.

1 Grants	Year 5 April 2013- April 2014			Year 6 April 2014- April 2015		
	GEORG	Partners	Total	GEORG	Partners	Total
<i>RTD Projects first call</i>						
09-01-003.....	4.080	2.895	6.975	0	0	0
09-01-005.....	0	0	0	8.000	27.882	35.882
09-01-007.....	6.900	36.900	43.800	0	0	0
09-01-011.....	3.600	24.826	28.426	0	0	0
09-01-012.....	0	0	0	5.800	7.923	13.723
09-01-013.....	0	0	0	0	0	0
09-01-016.....	2.475	3.038	5.513	6.000	7.364	13.364
09-01-017.....	0	0	0	0	0	0
09-01-028.....	0	0	0	1.500	3.200	4.700
09-01-029.....	0	0	0	0	0	0
	0	0		0	0	
<i>RTD Projects second call</i>						
09-02-001.....	0	0	0	3.500	9.529	
09-02-003.....	12.500	193.020	205.520	10.000	154.416	164.416
09-01-005.....	0	0	0	0	0	0
09-02-010.....	520	1.969	2.489	0	0	0
09-02-017.....	1.005	1.439	2.444	0	0	0
	0	0		0	0	
<i>RTD Projects third call</i>						
10-03-004.....	7.300	31.299	38.599	0	0	0
10-03-005.....	3.350	3.482	6.832	3.000	3.118	6.118
10-03-012.....	2.600	2.604	5.204	0	0	0
10-03-013.....	0	0	0	0	0	0
	0	0		0	0	
<i>RTD Projects fourth call</i>						
11-04-002.....	0	0	0	1.500	0	1.500
11-04-003.....	0	6.827	6.827	0	6.716	6.716
11-04-005.....	6.125	0	6.125	6.025	0	6.025
Student travel grants.....	960	0	960	1.702	0	1.702
SER	4.167		4.167	15.833		15.833
WGC2020	2.000		2.000	2.000		2.000
DRG	11.056		11.056	11.000		11.000
Grants Total	68.638	308.299	363.881	75.860	221.973	269.979



2- Contracted services

Contracted services	Year 5 April 2013- April 2014			Year 6 April 2014- April 2015		
	GEORG	Partners	Total	GEORG	Partners	Total
<i>Legal & audits</i>			0			0
<i>Account audit</i>	171		171	230		230
Contracted services Total	171	0	171	230	0	230

4 - Overhead

The largest part of GEORG overhead goes into operating the office and paying the salaries of the Operational Manager. A large part is also involved in the participation of partners in committees as BoD, SA and other. The cost of these participations is paid by the partners themselves and is accounted as partner co-financing.

Overhead for GEORG	Year 5 April 2013- April 2014			Year 6 April 2014- April 2015		
	GEORG	Partners	Total	GEORG	Partners	Total
<i>Operational Manager & secretariat</i>	9.024		9.024	8.378		8.378
<i>Office operation</i>	73		73	101		101
<i>Other general operational costs</i>	0	2.000	2.000	0	2.000	2.000
<i>GEORG association</i>	2.000		2.000	2.000		2.000
<i>Travel Expenses</i>	130		130	0		0
	11.226	2.000	13.226	10.479	2.000	12.479

5 - Funding from Rannís

The grant for the sixth year is divided in three payments, one by signing of the contract (28MISK), the second one (28MISK) by the submission of progress report in December and the last one (14MISK) at the delivery and acceptance of this annual report, see table below.

<i>Payments upon:</i>	<i>Date</i>	<i>Amounts in ISK thousand</i>
Signature of the contract		28.000
By submission of progress report	Des 2014	28.000
An Annual report	June 2015	14.000
Total amount for the 6 th year		70.000

6 – Funds at UNI account 1566-156305

On the 31st of March 2015 the status of GEORG accounts was **68.087 thousand ISK**.

7 - Other receivables

GEORG Project had no outstanding claim at the end of Y6.

8 - Unpaid grants to R&D projects

ID #	Allocated grants	Committed grants	Unpaid grants
	31.3.2015	31.3.2015	31.3.2015
09-01-016-2	8.475.000	18.825.000	10.350.000
09-02-017	5.535.000	8.540.000	3.005.000
10-03-005	10.400.000	15.300.000	4.900.000
10-03-012	15.150.000	18.500.000	3.350.000
10-03-013	8.309.000	10.309.000	2.000.000
11-04-002	3.000.000	18.450.000	15.450.000
11-04-003	2.000.000	9.680.000	7.680.000
11-04-005	14.875.000	17.875.000	3.000.000
13-05-001 to 13-05-007	22.056.000	33.056.000	11.000.000

60.735.000



**GEORG-
Rannsóknarklasi í
jarðhita**

Financial Statements 2015

March 31st, 2014 / April 1st, 2015

Audited

GEORG-Rannsóknarklasi í jarðhita

kt: 430412-0350

Grensásvegi 9

108 Reykjavík

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Report of the Board of Directors and Operational Manager

GEORG-Rannsóknarklasi í jarðhita was founded in the year 2012 as an International Geothermal Cluster Cooperation. GEORG is a non-for-profit organisation with the purpose of bringing together players in the geothermal field and creating a strong force for rapid progress and added value in geothermal research, engineering and design. GEORG achieves its purpose by: 1) Supporting and promoting projects among the Cluster members, in the field of geothermal research and development. 2) Service its members by organizing workshops and seminars addressing the most urgent issues and challenges of each time. The members will also maintain a strong contact network among the members. 3.) Systematically promote geothermal energy and geothermal research, both domestically and abroad. The fiscal year is from 1st April to 31st March.

These financial statements are compiled in accordance with Icelandic laws and regulations regarding preparing and presenting financial statements and in accordance with other applicable laws and regulations.

Total Revenues for the fiscal year 1 April 2014 - 31 March 2015 amounted to ISK 15.825.025 and deferred revenues amounted to ISK 48.286.058. Total revenues over expenditures for the financial year were none. Assets total were ISK 71.014.341 at financial year end.

We, the board of directors and operational manager, of GEORG-Rannsóknarklasi í jarðhita hereby confirm that we are responsible for the preparation and presentation of these financial statements and we hereby ratify these financial statements for the financial year of 1 April 2014 - 31 March 2015 with our signatures.

Reykjavík, 18 May 2015

The image shows ten handwritten signatures in blue ink, arranged in two columns. The signatures are: Sigurður M. Guðmundsson, Steinn Guðmundsson, Zaccari Zaccari, Guðrún, Ólafur Ólafsson, Ólafur Ólafsson, Ólafur Ólafsson, Ólafur Ólafsson, Ólafur Ólafsson, and Ólafur Ólafsson.

Auditor's Report

To the board of directors of GEORG-Rannsóknarklasi í jarðhita.

We have audited the accompanying financial statements GEORG-Rannsóknarklasi í jarðhita, which comprise the Statement of financial position as at 31 March 2015, the Statement of activities, the Statement of cash flows for the fiscal year then ended, and notes to the financial statements which include a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

The management is responsible for the preparation and fair presentation of these financial statements in accordance with applicable Icelandic reporting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing (ISA). Accordingly, we are required to comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing audit procedures to obtain audit evidence about the amounts and disclosures in the the financial statements. The selection of audit procedures depends on the auditor's professional judgment. This includes the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In assessing those risks, the auditor considers the internal control system relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the Financial Statements present fairly, in all material respects, the financial position of GEORG-Rannsóknarklasi í jarðhita as at 31 March 2015 and its financial performance and its cash flows for the fiscal year then ended in accordance with applicable Icelandic reporting standards.

Reykjavík, 18 May 2015



Sveinn Reynisson
löggiltur endurskoðandi



Íslenskir endurskoðendur Bildshöfða slf
Bildshöfða 14, 110 Reykjavík

Statement of Activities 1 April 2014 - 31 March 2015

	Note	1.4.2014- 31.3.2015	1.4.2013 31.3.2014
Revenues			
Operational grants		15.825.025	21.325.865
		15.825.025	21.325.865
Expenses			
Grants awarded		13.675.334	19.957.375
Other expenses		3.030.799	1.646.849
		16.706.133	21.604.224
Financial income and (expenses)			
Interest revenues and exchange differences		1.130.639	373.264
Financial income taxes		(249.531)	(74.652)
Bank related service fees		0	(20.253)
		881.108	278.359
Excess of revenues over expenditures		0	0

Statement of Financial Position

Assets			
	Note	31.3.2015	31.3.2014
Fixed assets			
Investments:			
Shares in other company	3	12.255.911	0
Fixed assets		<u>12.255.911</u>	<u>0</u>
Current assets			
Receivables:			
Accounts receivable		0	6.411.965
Cash and cash equivalents		58.758.430	17.363.478
Current assets		<u>58.758.430</u>	<u>23.775.443</u>
Total assets		<u><u>71.014.341</u></u>	<u><u>23.775.443</u></u>

31 March 2015

Equity and Liabilities

	Note	31.3.2015	31.3.2014
Net assets			
Permanently restricted		0	0
Temporarily restricted		0	0
Unrestricted		0	0
Total net assets	4	<u>0</u>	<u>0</u>
Current liabilities			
Deferred income		69.583.792	21.147.734
Accounts payable		1.430.549	2.627.709
Current liabilities		<u>71.014.341</u>	<u>23.775.443</u>
Total liabilities		<u>71.014.341</u>	<u>23.775.443</u>
Total net assets and liabilities		<u><u>71.014.341</u></u>	<u><u>23.775.443</u></u>

Statement of cash flows

	Note	1.4.2014- 31.3.2015	1.4.2013 31.3.2014
Operating activities			
Net income (loss)		0	0
Changes in operating assets and liabilities:			
Short term receivables, change		6.411.965	(6.411.965)
Short term payables, change		(1.197.160)	2.280.259
Changes in operating assets and liabilities		5.214.805	(4.131.706)
Net cash from operating activities		5.214.805	(4.131.706)
Investing activities			
Acquisition of shares in other company	3	(12.255.911)	0
Net cash flow used in investing activities		(12.255.911)	0
Financing activities			
Other payables, change		48.436.058	19.608.767
Net cash flow from financing activities		48.436.058	19.608.767
Increase in cash		41.394.952	15.477.061
Cash at beginning of year		17.363.478	1.886.417
Cash at year end		58.758.430	17.363.478

Notes

Accounting principles

1. These Financial Statements of GEORG-Rannsóknarklasi í jarðhita for the fiscal year 1 April 2014 - 31 March 2015 have been prepared in accordance with applicable Icelandic laws and regulations and in accordance with generally accepted accounting principles pertaining to non-for-profit organizations.
2. Revenues are recorded at the time of grant decisions made.

Investments in shares in other company

3. GEORG - Rannsóknarklasi í jarðhita aquired shares in other company during the operational year ended 31 March 2015. The share is stated at cost.

	Nominal value	Value at cost
SER eignarhaldsfélag ehf.	12.281.486	12.255.911

Net assets

4. Changes in Net Assets:

	Permanently restricted net assets	Temporarily restricted net assets	Unrestricted net assets	Total
Increase in Net Assets	0	0	0	0
Net Assets 31.3.2015	0	0	0	0

Itemizations

	1.4.2014- 31.3.2015	1.4.2013- 31.3.2014
Operating revenues		
Háskóli Íslands	30.833.333	19.222.667
Orkustofnun	12.200.000	7.336.965
HS-Orka	8.125.000	6.125.000
Landsvirkjun	6.225.000	6.125.000
Orkuveita Reykjavíkur	6.125.000	1.125.000
IGA	602.750	0
IDDP	0	1.000.000
Deferred income	(48.286.058)	(19.608.767)
	15.825.025	21.325.865
Grants awarded		
Ísor, Íslenskar orkurannsóknir	10.100.000	9.425.000
Iceland Geothermal	715.185	3.250.000
Háskóli Íslands	1.253.667	3.000.000
Klak Innovit	1.012.357	2.500.000
Raunvísindastofnun HÍ	500.000	1.500.000
Íslenski Sjávarklasinn ehf	94.125	282.375
	13.675.334	19.957.375
Other expenses		
Rent	1.125.794	794.197
Tools and equipment, charged	0	314.932
Accounting services	333.806	161.406
Computerized IT systems	17.708	9.140
Paper, printing and other office supplies	54.547	13.365
Meetings and conferences	1.479.944	353.809
Other costs	19.000	0
	3.030.799	1.646.849

ANNEX I - THE SER TEAMS OF 2015

STARTUP ENERGY 2014

Company	Concept	Fund raised	Management	Contact information
Big Eddy	Big Eddy provides accurate site assessments for wind farms by combining weather observations with state of the art models that reveal the true potential of prospective sites. Furthermore BigEddy specializes in high accuracy wind energy forecasts to enable operators to accurately predict the production of wind farms worldwide.	\$ 40,000	Ólafur Rögnvaldsson, Co-Founder & CEO María Edwardsdóttir, Co-Founder	www.belgingur.eu or@belgingur.is
BMJ Energy	BMJ energy makes the worlds smartest micro hydros available on the market. By being so smart it makes our hydros environmentally friendlier while still more efficient than others.	\$ 40,000	Bjarni Malmquist Jónsson, Founder & CEO	www.bmj.is bmj@bmj.is
DTE Equipment	DTE specialises in developing and manufacturing quality equipment for the production industry through DTE core values. We deliver innovative equipment solutions in close cooperation with our customers. We are proud to present our latest innovation, PEA Aluminum, an analysing equipment for production optimisation	\$ 40,000	Sveinn Hinrik Guðmundsson, Founder & CEO	sveinn@dtequipment.com
ETA-NÝTNI	Eta-nýtni is developing a plant that produces Sodium Chlorate and hydrogen in one process. Hydrogen will be sold to the local market but Sodium Chlorate to the pulp and paper industry in Europe. The project will be built in two phases i.e. 20,000 tpa and 60,000 tpa.	\$ 40,000	Gunnar Tryggvason, Founder	guntry@gmail.com
GeoDrone	Geodrone provides customized measurements for geothermal fields. We combine modern know how in unmanned aerial vehicles (UAVs) with advanced remote sensing technologies. Our service results in cost and risk reduction for our customers	\$ 40,000	Alicja Wiktoria Stoklosa Co-Founder & CEO	www.geodrone.is alicia.stoklosa@geodrone.is
Gerosion	Gerosion ehf. is a knowledge based company that specializes in solutions for the geothermal, oil and gas industries, in the field of material research and selection. Gerosion ehf. will focus on testing of high performance materials, including metals and well cement grouts for casing and equipment of deep high temperature and pressure boreholes	\$ 49,000	Sunna Ólafsdóttir Wallevik, Kolbrún Ragna Ragnarsdóttir	www.gerosion.com sunna@gerosion.com
Landsvarmi	The objective of Landsvarmi is to use heat pumps for district heating in Icelandic municipalities. By using a thermal heat source, like the ocean, space heating can be achieved by using only one third of the electricity currently used for that purpose. The potential market for similar solutions is the entire arctic region with over four million inhabitants.	\$ 40,000	Kristján M Ólafsson, Co-Founder	lafsson@kpmg.is



Company	Concept	Fund raised	Management	Contact information
Málblendir ehf	The idea is to recycle both Spent Pot Liner (SPL) and aluminium fine dross from the aluminium industry and produce alloy (Nickel Pig Iron) at the same time. The outcome of the process is 20% Nickel Pig Iron and 80% non-hazardous slag materials that can be used in many different ways	\$ 40,000	Arthur Guðmundsson	arthurgudm@gmail.com
Keynatura	Innovation, research and development aiming for production of food, nutraceutical and pharmaceutical products from algae using Icelandic energy. To start with, the company will produce astaxanthin (from Hp) infused oils.	\$ 40,000	Halla Jónsdóttir	halla@keynatura.com
Loki Geothermal	Loki Geothermal is a young Icelandic innovation company, established in 2014, in the field of geothermal power production. The company is currently developing well head valves for high- temperature geothermal wells.	\$ 40,000	Þórarinn Már Kristjánsson	thor@lokigeothermal.is
Laki / Eldberg	Laki is an innovative research and development company focusing on eco-friendly power solutions. The product, Power On-Line Generator (POLG) uses the magnetic field surrounding high-voltage power lines to generate energy	\$ 40,000	Magnús Hauksson	mhauksson@gmail.com
XRG - Exergy	The company aims to produce electricity from non-boiling geothermal water (~80°C-85°C). The company is working on a prototype/generator that transforms low-temperature geothermal water (70°C-100°C) into electricity	\$ 40,000	Mjöll Waldorff	mjoll@nmi.is
e1	e1 aims to develop an open access network connecting drivers of electric vehicles (EV) and EV chargers, providing visibility of available and compatible stations as well real-time charging status data for EV owners	\$ 40,000	Axel Rúnar Eypórsson	e1@e1.is
Rofar	We implement behavioural analyses to make smart homes and gadgets truly intelligent, by that having empathy for the user, their needs and desires. Using intelligent light switches and cloud based processing of sensor data and actuator operation we will provide a better lighting environment and provide a basis for energy savings	\$ 40,000	Páll Elvar Pálsson	pallelvar@gmail.com

ANNEX II SUMMARY OF SUPPORTED RESEARCH PROJECTS THROUGH OPEN CALLS.

ID nr.	Project name	Coord. Org.	Coordinator	Remaining Balance
09-01-003	Development of coupled reactive fluid flow models	UNI	Hannes Jónsson	Concluded
09-01-005	GEISER	ÍSOR	Kristján Ágústsson	Concluded
09-01-007	HYDRORIFT	ÍSOR	Ólafur G. Flóvenz	Concluded
09-01-011	Properties of two phase flow of water and steam in geothermal reservoirs	RU	Guðrún Sævarsdóttir	Concluded
09-01-012	RENEWABILITY OF GEOTHERMAL RESOURCES	ÍSOR	Guðni Axelsson	Concluded
09-01-013	High pressure and high temperature geothermal grouts	Mannvit	Gísli Guðmundsson	Concluded
09-01-016	Resistivity survey of Grímsvötn	ÍSOR	Knútur Árnason	10.350.000 ISK
09-01-017	Biological Utilization of Geothermal Gas	UNI	Guðmundur Óli Hreggviðsson	Concluded
09-01-028	Evaluation and Improvements of Geothermal Models using Inverse Analysis	UNI	Magnus Thor Jonsson	Concluded
09-01-029	Mathematical modelling of energy flow in a geothermal reservoir	UNI	Halldór Pálsson	Concluded
09-02-001	CarbFix project	UNI	Sigurður Gíslason	Concluded
09-02-003	Advanced 3D Geophysical Imaging Technologies for Geothermal Resource Characterization	ÍSOR	Knútur Árnason	Concluded
09-02-005	The Hengill geothermal reservoir. Evaluation of subsurface geological data	ÍSOR	Hjalti Fransson	Concluded
09-02-010	Utilization of Supercritical Geothermal Fluid	RU	Guðrún Sævarsdóttir	Concluded
09-02-017	Economic IO accounts	UNI	Sveinn Agnarsson	3.005.000 ISK
10-03-004	GREEN GEOTHERMAL GROWTH	UNI	Sjöfn Sigurgísladóttir	Concluded
10-03-005	GeoChem	UNI	Bernhard Örn Pálsson	4.900.000 ISK
10-03-012	Sustainability Assessment Protocol for Geothermal Utilization	UNI	Brynhildur Davíðsdóttir	3.350.000 ISK
10-03-013	Mapping interaction between magmatic and hydrothermal system with fluid inclusion analysis	ÍSOR	Anette K. Mortensen	2.000.000 ISK
11-04-002	Evaluating the cost of environmental impact due to geothermal utilization	UNI	Brynhildur Davíðsdóttir	15.450.000 ISK
11-04-003	H ₂ S sequestration into geothermal systems	UNI	Andri Stefánsson	7.680.000 ISK
11-04-005	Efficient Maintenance Management of Geothermal Power Plants	UNI	Rúnar Unnþórsson	3.000.000 ISK
13-05-xxx	DRG project, implemented at GEORG association			11.000.000 ISK

ANNEX III: SUMMARY OF STUDENT TRAVEL FUNDS GIVEN BY GEORG

#	Full Name	Student Degree	Conference	Year
1	Arnar Vilhjáimsson	Ph.D	1st European PhD Day Potsdam	2010
2	Héðinn Björnsson	Ph.D	1st European PhD Day Potsdam	2010
3	Helgi Arnar Alfreðsson	Ph.D	1st European PhD Day Potsdam	2010
4	Júlía Katrín Björke	M.Sc	1st European PhD Day Potsdam	2010
5	Snorri Guðbrandsson	Ph.D	1st European PhD Day Potsdam	2010
6	Sveinborg Hlíf Gunnarsdóttir	M.Sc	1st European PhD Day Potsdam	2010
7	Silja Rán Sigurðardóttir	Ph.D	1st European PhD Day Potsdam	2010
8	Margrét Th. Jónsdóttir	M.Sc	3rd European PhD Day Pisa	2012
9	María Sigríður Guðjónsdóttir	Ph.D	3rd European PhD Day Pisa	2012
10	Ruth Mary Shortall	Ph.D	3rd European PhD Day Pisa	2012
11	Sandra Ó. Snæbjörnsdóttir	M.Sc	3rd European PhD Day Pisa	2012
12	Silja Rán Sigurðardóttir	Ph.D	3rd European PhD Day Pisa	2012
13	Snorri Guðbrandsson	Ph.D	3rd European PhD Day Pisa	2012
14	Jan Prikryl	Ph.D	Goldschmidt Conference	2013
15	Manuel Gutierrez	Ph.D	Geotermie Kongress, Darmstadt	2013
16	Maria Guðjónsdóttir	Ph.D	World Geothermal Congress 2015	2013
17	Santosh Prathap Moola	Ph.D	Goldschmidt Conference	2013
18	Thecla Munanie Mutia	Ph.D	Geothermal Resources Council	2013
19	Reynir Atlason	Ph.D	ASME Power 2013	2013
20	Sigríður Kristjánsdóttir	Ph.D	GRC Stanford Geothermal Workshop	2013
21	Manuel Plasencia	Ph.D	4th European PhD Day Szeged	2013 Call 1
22	Thecla Munanie Mutia	Ph.D	4th European PhD Day Szeged	2013 Call 1
23	Andrew Fowler	Ph.D	World Geothermal Congress 2015	2014 Call 1
24	Esteban Rodriguez Pineda	M.Sc	GRC Stanford Geothermal Workshop	2014 Call 1
25	Gaetan Sakindi	M.Sc	World Geothermal Congress 2015	2014 Call 1
26	Manuel Plascencia Gutiérrez	Ph.D	5th European PhD Day Darmstadt	2014 Call 1
27	Massimiliano Ciacci	Ph.D	5th European PhD Day Darmstadt	2014 Call 1
28	Róbert Farkas	Ph.D	5th European PhD Day Darmstadt	2014 Call 1
29	Ruth Mary Shortall	Ph.D	EGU 2014	2014 Call 1
30	Sandra Ósk Snæbjörnsdóttir	Ph.D	GHGT-12	2014 Call 1
31	Stephen Odhiambo Onyango	M.Sc	World Geothermal Congress 2015	2014 Call 1
32	Thecla Munanie Mutia	Ph.D	5th European PhD Day Darmstadt	2014 Call 1
33	Almar Barja	M.Sc	Stanford Geothermal workshop 2015	2014 Call 2
34	Jón Sigurður Pétursson	M.Sc	Stanford Geothermal workshop 2015	2014 Call 2
35	Oscar Fernando Cideos Nunez	M.Sc	Stanford Geothermal workshop 2015	2014 Call 2
36	Ragnar Ingi Danner	M.Sc	Aquaculture Europe	2014 Call 2
37	Reynir Atlason	Ph.D	ASME Power 2014	2014 Call 2
38	Ruth Shortall	Ph.D	IAEE International Association of Energy Economics	2014 Call 2
39	Soffía Karen Magnúsdóttir	M.Sc	Aquaculture Europe 2014	2014 Call 2
40	Sven Scholtysik	M.Sc	Stanford Geothermal Workshop	2014 Call 2
41	Thecla Munanie Mutia	Ph.D	World Geothermal Congress 2015	2014 Call 2
42	Cari Covell	M.Sc	World Geothermal Congress 2015	2015
43	Hannah Reynolds	Ph.D	EGU 2015	2015
44	Lárus Þorvaldsson	Ph.D	World Geothermal Congress 2015	2015
45	Ngereja Myabi Mgejwa	M.Sc	World Geothermal Congress 2015	2015
46	Rebecca Anna Lynch	M.Sc	EGU 2015	2015

47	Thecla Munanie Mutia	Ph.D	Geothermal Resources Council Reno	2015
48	Tufwane Mwangomba	M.Sc	World Geothermal Congress 2015	2015
49	Vijay Chauchan	Ph.D	World Geothermal Congress 2015	2015



G E O T H E R M A L R E S E A R C H G R O U P