

GEORG

ANNUAL REPORT

2015-2016



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*This report covers two operational periods
1.4.2015 - 31.3.2016 & 1.4.2016 - 31.12.2016*



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MESSAGE FROM THE CHAIRMAN

GEORG was formed in 2009 with a grant from the Science and Technology Policy Council in Iceland through their Centres of Excellence and Research Clusters program. The formal grant period is over but GEORG will continue operation as an association with the same objectives as before, namely, enhancing research activity and cooperation within the geothermal community that benefits cluster members with special focus on building bridges between the research community and industry.

GEORG has been successful with partners in promoting geothermal research which has been evident, among others things, in the recent increased prominence of geothermal issues at the European level and the success of geothermal applications in the Horizon 2020 program. This is certainly a result of the focused promotion by Icelandic stakeholders on the benefit of geothermal energy as an option in energy usage, both with respect to energy security as well as greenhouse gas reduction.

GEORG organized a successful workshop last November, GGW2016, which summarized the achievements and knowledge gathered the past seven years as well as giving the tone for new developments and possible further

achievements in the near future. The results from the workshop can be found at the website www.geothermalworkshop.com

The main projects that GEORG is currently involved in include the Horizon 2020 project, DEEPEGS, which has already successfully drilled the deepest well in Iceland at Reykjanes. The DRG (Deep Roots of Geothermal Systems) project is in the final year and a large workshop is planned in the fall. GEORG is strongly involved in developing the Krafla Magma Testbed (KMT) project, with large international group of experts and stakeholders, with exciting potential. GEORG is managing the GEOTHERMICA project which is the successor of the GEOTHERMAL ERANET. The first call was published in April with deadline in July 2017. GEORG participated in the third round of Startup Energy Reykjavik which supports startups through a business accelerator. GEORG participates in organizing the World Geothermal Congress (WGC) in 2020. Detailed discussion on these projects is provided in the annual report.

The final GEORG General Assembly (the original project) was held November 8, 2016, and the GEORG Association is now operating GEORG. This annual report covers two financial periods, from

April 1, 2015 to March 31, 2016 and then April 1, 2016 to December 31, 2016. This is done to transfer the operating year of the GEORG Association to the calendar year. A new employee was hired last April, bringing the number of employees to four.

Further information on GEORG's activities can be found at <http://georg.cluster.is>.



Sigurður Magnús Garðarsson
Chairman of GEORG
Professor at University of Iceland

PROJECTS OVERVIEW

During the past year of cooperation, the emphasis has been put on evaluating the GEORG added values brought to the geothermal sector and its partners to finalize the grant from RANNIS Centres of Excellence and Research Clusters program. The second emphasis put on bringing new projects and secure funding for the organization for next years.

GEORG supports 28 research projects that were coordinated by the cluster members. The projects have ranged from the geothermal reservoir upstream, midstream technology, including borehole construction and equipment, downstream waste streams, environmental impacts, and geothermal management and data. Many of these research projects were created as a collaboration of members of the cluster and, in some cases, additional partners were recruited. Collaboration shows the strong connections established through the projects between universities, research institutes and industry, both energy companies and consulting companies. It clearly shows that GEORG has been able to fulfil one of the main objectives of bringing together the main players in the field of geothermal energy.

GEORG has maintained the research project with about 2.3 M€ with matching co-funds from other sources of about 9.1 M€, yielding a total turnover of about 11.4 M€.

By 2016 GEORG projects were divided by 22 **research projects through open calls**. These projects then formed a basis for two large projects that combined the synergy by cooperation between the players which the cluster harness creating following **Deep Roots of Geothermal Systems** (DRG) and **Waste 2 Value** (W2V) with 0.4 M€ support with a total budget of 2.1 M€.

GEORG partnered with Arion Bank, Landsvirkjun and the Icelandic

Innovation Centre to encourage formation of startups in the energy field, yielding 21 startups through the business accelerator **Startup Energy Reykjavik**. GEORG has been successful in assisting and participating in securing European grants, and is currently participating in **DEEPEGS** and **GEOTHERMICA** Horizon 2020 projects and is assigned to run the project office in developing the **Krafla Magma Testbed** which is in the initial investment phase.

GEORG founding principle was to create a critical mass of joint resources and efforts to break through existing scientific and technical barriers to innovation in the field, and increase significantly the number of qualified experts in geothermal research, engineering, design and technical exploitation of the resource. In past seven years, GEORG has been working on implementing all the assessments with cooperation with national and international partners. GEORG has actively focused on supporting students in the research projects. About 35 doctoral students

have been partly or completely funded through GEORG grants, about 38 MSc students, and 4 postdocs. The research projects have already been published in 59 journal articles, in 56 conference papers, and in 143 other miscellaneous publications.

GEORG has explicitly supported participation by students in conferences through a separate grant application process. To date, GEORG has provided 66 grants to students to present papers at various geothermal conferences. GEORG support for geothermal research projects has increased the number of young scientists and technical experts and stimulated new insights emerging generation gap, innovative developments and entrepreneur spirit by facilitating “thinking out of the box” idea.

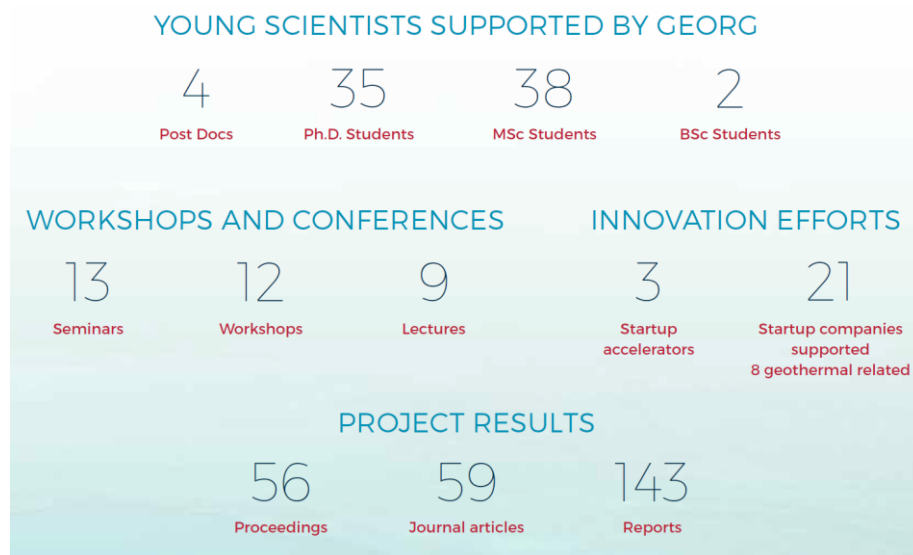


Figure 1 GEORG supported research, innovation and cluster cooperation

FINANCIAL STATEMENTS

Income Statement	1.4.2016- 31.12.2016	1.4.2015- 31.3.2016
Income		
Grants.....	53.265.024	65.494.284
Other revenues.....	4.255.004	0
	<u>57.520.028</u>	<u>65.494.284</u>
Expenses		
Grants awarded.....	25.047.279	51.178.761
Salaries and other operational expenses.....	27.659.662	14.727.991
	<u>52.706.941</u>	<u>65.906.752</u>
Financial income and (expenses)		
Interest revenues.....	1.090.487	1.327.778
Financial income taxes and Interest expenses.....	-310.074	-342.634
Exchange rate differences.....	-5.593.500	-572.676
	<u>-4.813.087</u>	<u>412.468</u>
Net Income.....	<u>0</u>	<u>0</u>
Balance sheet		
	31.12.2016	31.3.2016
Investments		
Shares companies.....	18.619.547	12.255.911
	Fixed assets	12.255.911
	<u>18.619.547</u>	<u>12.255.911</u>
Current assets		
Receivables.....	250.249	0
Cash and cash equivalents.....	57.264.194	80.166.682
	Current assets	80.166.682
	<u>57.514.443</u>	<u>80.166.682</u>
	Total assets	92.422.593
	<u>76.133.990</u>	<u>92.422.593</u>
Liabilities		
Current liabilities		
Deferred income - DEEPEGS.....	24.195.571	39.788.794
Deferred income - Other grants.....	50.777.247	51.449.048
Accounts payable.....	361.001	384.342
Other payables.....	800.171	800.409
	Current liabilities	92.422.593
	<u>76.133.990</u>	<u>92.422.593</u>
	Total liabilities	92.422.593
	<u>76.133.990</u>	<u>92.422.593</u>



DEEPEGS

GEORG participates in the 44M€ DEEPEGS project funded in 2015 by almost 20M€ from the Horizon 2020 Program. It is co-ordinated by the Icelandic energy company HS ORKA, with participants from five countries. It is a four-years project and GEORG is, among other things, responsible for running the project office. DEEPEGS will demonstrate advanced technologies in three geothermal reservoir types, in Iceland and France, which all provide unique conditions for demonstrating the applicability in different geological conditions. It will demonstrate EGS for widespread exploitation of high enthalpy heat (i) beneath the existing hydrothermal field on the Reykjanes Peninsula (volcanic environment) with temperature up to 550°C and (ii) very deep hydrothermal reservoirs at Valence (crystalline and sandstone) and Riom (limestone) with temperatures up to 220°C.

The main objectives of DEEPEGS are based on testing of stimulating technologies for EGS in deep wells in different geologies that 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. The ambition of the project, is to explore the possibilities of producing energy from deep geothermal systems which are enhanced following drilling to depths of 4-5 km.

The industry-driven project consortium can implement the project goal through cross-fertilization and sharing of knowledge. The focus on business cases will demonstrate advances in bringing EGS-derived energy routinely to market exploitation, and on its potential to mobilize project outcomes to full market. The consortium will 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 prioritized and awareness raised for social acceptance. Through risk analysis and hazard mitigation plans, the project will ensure that relevant understanding of the risks will be implemented as a core of the business case development.

Drilling operations began in early August 2016, and a critical milestone was reached on January 25th, 2017, when drilling of IDDP2 at Reykjanes was concluded at 4659 m depth. HS Orka led the project, with the involvement of ÍSOR and several European (www.deepegs.eu) and American institutes (www.iddp.is). Iceland Drilling Company was in charge of the drilling.

The composition of fluids from the geothermal system down to 5 km depth had to be evaluated because of potential environmental impacts. A new three-dimensional resistivity model for the geothermal system, extending from Reykjanes to Eldvörp, was developed to better understand the distribution of geothermal heat with depth. Furthermore, the conceptual model of the area was updated by adding newly acquired data sets. Numerous projects remain to be carried out in the near future, in cooperation with domestic and international bodies, including petrological and geochemical studies and the evaluation of geothermal system response to enhancement and production.

The principle objective of this challenging drilling operation was to drill deep into the extreme temperatures and

pressures, retrieve drill cores that allow the study of the nature of the rocks and to determine the permeability, if present, at such great depths. These objectives were achieved. The temperature at the bottom of the well was 426°C but the alteration mineralogy suggests that it is not less than 500°C and hydraulic pressure was 340 bars. At such temperature and pressure, the rocks become metamorphic, i.e. they recrystallized, as evidenced by drill cores, and fluids are superheated (supercritical state). An unexpected discovery was that permeability was present at the most extreme depths.

For the first time ever, scientists have had the opportunity to investigate the roots of an active geothermal system. A door has been opened allowing us access to deep geothermal systems, which contain superheated liquid or steam. This means that it will be possible to harness significantly more energy, with fewer boreholes whilst at the same time, being environmentally friendly and financially attractive. In addition, it will be possible to inject wastewater associated with geothermal utilization, back down to 4-5 km depth to expand production in geothermal systems at shallower depths and maintain their pressure. The main results of the various technical and financial aspects of the project will be completed by the end of 2019.





WASTE 2 VALUE

From Waste to Value

W2V

Waste 2 Value is a joint effort towards added value and economical solutions and is based on the research projects that focused on downstream waste streams. These include waste streams like warm water for Aquaponics, or utilization of gases, such as CO₂ for energy production. It has explored possibilities and opportunities aiming to reduce environmental impact and to **convert Waste 2 Value**.

GEORG has funded two projects under this umbrella, one focusing on extraction of minerals and metals from geothermal brine and the other on creating value from geothermal power plant exhaust gas.

Value Creation in Iceland Geothermal Processes: Extraction of Minerals and Metals

Coordinator: Sunna Ólafsdóttir Wallevik; Gerosion ehf.

For utilization of geothermal energy, project co-ordinators meet with corrosion and scaling issues in geothermal wells and power plants. Both can lead to mechanical failures and decreased power production. The precipitation of dissolved minerals from the geothermal fluid causes clogs in the wells, wellheads, pipes and heat exchangers. The project investigates available commercial technologies that can be used for the isolation of minerals. Secondly, investigation of non-commercial options will be explored with the focus on relevance to Icelandic reality. The potential extraction products will also be studied, mainly regarding material properties, market value and potential local applications. The different geothermal areas in Iceland will be analysed regarding the potential for mineral extraction, as it is known that the geothermal fluid composition is different in different geothermal regions.

Value from Waste-Gas from Geothermal Power Plants

Coordinator: Guðmundur Gunnarsson, Icelandic Innovation Center

This project brings 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 not been done before. If successful, it will provide a new path for domestic production of a sustainable fuel, methane, and could lead the way to utilization of other geothermal resources in Iceland, and elsewhere, for methane production. The methane produced from geothermal gas could make a significant contribution to meets Iceland's goals in reducing CO₂ emission from transport by 10% in 2020.



DEEP ROOTS OF GEOTHERMAL

The cooperative project, titled "Deep Roots of Geothermal Systems" (DRG), is now at its final year and the final conference will be held at Krafla this fall. The aim of the 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. The latest technology will be 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. 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. The research work is divided in three separates, but interconnected, parts; Exploration, Modelling and Utilization.

The project consortium consists of a team of highly competent individuals from universities, research institutes, energy companies and engineering companies, building a strong bond between the academia and industry. The DRG project has, furthermore, synergy with, and is linked to, other international projects such as the Swiss COTHERM project, IPGT-partnership work, the ICDP Krafla Magma Testbed Project (KMDP), and EU projects; IMAGE, DEEPEGS, FUTUREVOLC and DESRUMBLE to name some.

DRG components

Study of geology and structure of exposed extinct volcanic geothermal systems.

Geophysical study of active systems by comprehensive analysis of micro-seismicity.

Monitoring of crustal deformation and gas emission.

Advancement of modelling physical processes in the roots of volcanic geothermal systems and advancing methods of reservoir modelling for geothermal resource management.

Material selection and design of the components (well-heads, casings, etc.) of deep geothermal wells that can withstand the high temperatures, pressures and flow-rates.

Design of a power process for energy utilization and material recovery of high enthalpy geothermal steam.

The research work is divided in three separates, but interconnected, parts; Exploration, Modelling and Utilization.

Part I Exploration



Part II Modelling



Part III Utilization



TOWARDS THE VOLCANIC ROOTS

Deep Roots of Geothermal & Krafla Magma Testbed
Combined Conference

SAVE THE DATE

Fall 2017

Krafla

KRAFLA MAGMA TESTBED

One of the new projects GEORG is participating in and leading is called „Magma Krafla Testbed“ (KMT). Some of the world’s leading volcanologists and geothermal engineers have signed up to this \$100m magma drilling project in a bid to help protect millions of people, towns and cities across the world from volcano disasters; and to make a strategic step in scaling up the use of geothermal energy. More than 30 magma and geothermal scientists from as far away as Alaska and New Zealand came together at a three-day meeting in Paris in March 2017 to work up plans for the Krafla Magma Testbed project, which would see a 2.1km-deep-hole drilled directly into a magma chamber below Krafla volcano in Iceland.

Discovered serendipitously in 2009 as part of a deep drilling project by Iceland’s energy company Landsvirkjun, the magma chamber beneath the Krafla volcano provides scientists with the first-ever opportunity to study, in-situ and at depth, the source of volcanic eruptions and geothermal energy.

Volcanology Professor John Eichelberger at the University of Alaska Fairbanks explained: “Finding the magma chamber presents us with the first-ever opportunity to investigate magma properties in situ and to deliver a rich and tested dataset that can provide civil defence authorities with greater surety of what is happening below dangerous volcanoes.

“Krafla is the only place in the world where we can pinpoint the exact location of a magma chamber: making it the best and only place on Earth to do this. It is also among the most researched volcanoes in the world, and therefore one we know most about.

“What we know about magma comes from interpreting activity measured at the surface, the geology of fossil magma chambers, and laboratory experiments. The Krafla drilling project will provide direct samples and observations, helping the world to read signs of volcanic unrest better. It will improve civil protection for the 800 million people who live within

100km of an active volcano: be they the millions of Indonesian citizens living under the veil of the archipelago’s active volcanoes or the millions of tourists visiting America’s Yellowstone National Park.”

So far, 38 research institutes and companies from 11 countries have signed up to the Krafla Magma Testbed (KMT) project. These include Britain, Canada, Denmark, France, Germany, Iceland, Italy, New Zealand, Russia, South Korea and the United States. The project is gaining wider international recognition, with Mexico, Switzerland, and Japan taking an interest following the Paris meeting in March 2017.

The collaboration is seeking to raise \$30m for the first drilling phase to make the research facilities available to the scientific community by 2020. The facilities would be open to the international science community for a 30-year-programme of research, including repeated probing and sampling of the magma body.

Paolo Papale, Director of Research from Italy’s Istituto Nazionale di Geofisica e Vulcanologia, said: “The Krafla Magma Testbed will be the place to develop our fundamental science of the Earth system; new ways of understanding and monitoring volcanoes; our ability to extract and exploit geothermal energy sources; and new technology and materials that function in the most extreme conditions we can access on Earth.”

Sigurdur H. Markusson, from Iceland’s national energy company Landsvirkjun, said: “Utilizing geothermal energy from the near magma environment is a very exciting next step for the geothermal industry. Understanding where the magma is, how to locate it and the properties of the fluid, is very, very relevant to developing the concept of near-magma geothermal energy in volcanic areas all over the world.”

John Ludden, Executive Director of the British Geological Survey said: “KMT will deliver an incredible knowledge of real conditions of magma rocks by getting

into the system. It will enable geoscientists to explore the big questions. Can we harness the energy of magma? Can we find better ways of monitoring magma? How do we use new technology involving gravity to track magmas in volcanoes?

Jean Vandemeulebrouck volcanologist from France’s Institut des Sciences de la Terre said: “After 150 years, technological and scientific advancements are enabling our community to embark on Jules Verne’s Journey to the Centre of the Earth. The potential benefits for humanity and for the well-being of our planet are immeasurable.”

The KMT project team, from its Icelandic office, is working up its science, technical drilling and business plans to approach research funding agencies and foundations to raise the initial \$30m required to deliver the research infrastructure. The remaining \$70m would fund a 30-year programme of strategic scientific research at the magma chamber. In June this year, the International Continental Scientific Drilling Programme will determine a \$5.5m proposal to kickstart the project.



GEOHERMICA

GEORG is playing a very important role in the GEOHERMICA project which is the successor of the ERA-NET project. GEORG will manage the GEOHERMICA Office and support the coordinator and the consortium management team in implementing the co-funded action to ensure an optimal, flexible and smooth operation of all activities. The main roles of the GEOHERMICA Office are; to be an assistant to the coordinator, support external and internal communication, operate the call secretariat and to support the implementation of additional activities when they occur.

OBJECTIVES

GEOHERMICA's objective is to combine the financial resources and know-how of 16 geothermal energy research and innovation programmes owners and managers from 13 countries and their regions. Together with financial support from the European Commission GEOHERMICA will launch joint projects that demonstrate and validate novel concepts of geothermal energy deployment within the energy system, and that identify paths to commercial large-scale implementation.

RENEWABLE ENERGY

Europe aims to increase the share of renewable energy for direct heating and cooling, industrial processes, power generation and energy storage. Geothermal energy today is only utilized

in choice market sectors and in few regions. It is an under-utilized widely distributed, clean, low carbon footprint and continuously available energy resource. Thus, it is uniquely positioned to substantially contribute to a safe and secure energy supply of Europe's Energy Union.

INDUSTRY INVOLVEMENT

GEOHERMICA will call for innovative demonstration projects and technology development projects that accelerate geothermal energy deployment. Projects will deliver outcomes by 2021. Joint projects will have a strong industry participation. Project proposals will meet both, GEOHERMICA and national/regional funding rules. This joint effort by EU Member States and Associated Countries will complement Europe's research and innovation community and industry sector efforts. It will reinforce the sector's contribution to the goals of the European Energy Union and the implementation of the SET Plan.

THE FIRST CALL

In April 2017, GEOHERMICA published a joint call for projects. The budget for the first call is about €32 million and the call is asking for large projects with strong industry participation that accelerate the deployment of geothermal energy in Europe. Also, a part of the budget will be available for technology development projects which can be of smaller size. The call text is reflecting these options. Projects may

INDICATIVE TIMELINE

February 15, 2017:
Preannouncement of the call

April 10, 2017:
Call text to be published

July 10, 2017:
Due date for pre-proposals, stage 1

September 11, 2017:
Invitation to second stage for those pre-proposals that pass stage 1

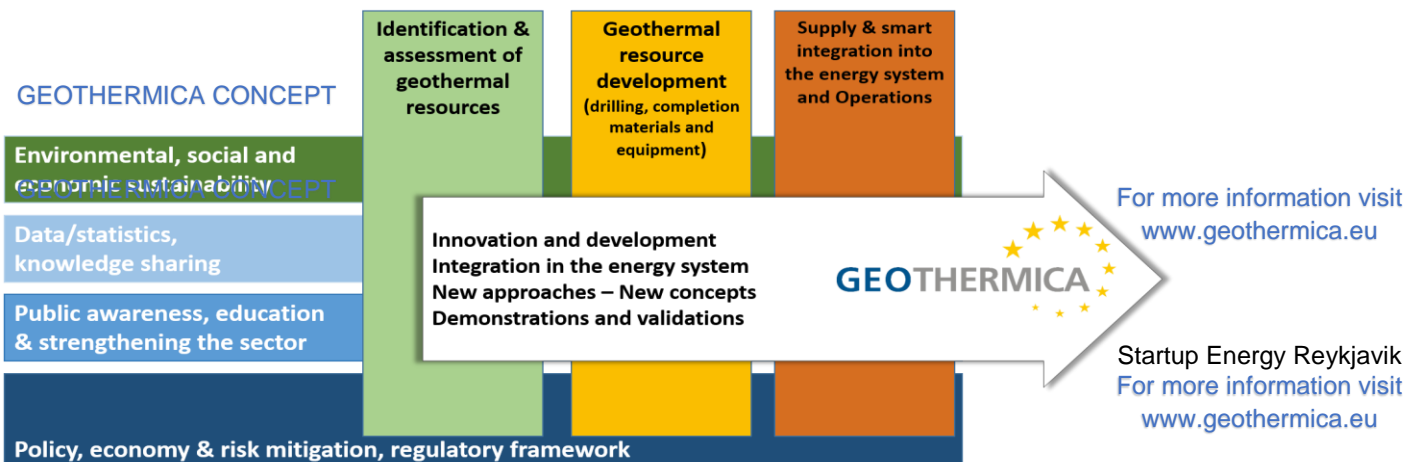
November 24, 2017:
Due date for full proposals, stage 2

March 1, 2018:
Notification

May 1, 2018:
Signing contracts with new projects

May 1, 2021:
Projects close

also link up with, add on or build on ongoing pilots or demonstration projects. Project proposals should be from European consortia with several partners from several of the participating countries. Participants should meet the specifications of the GEOHERMICA call in addition to the funding rules and regulations of their home countries or regions. The deadline for the first call is July 10th, 2017.



STARTUP ENERGY REYKJAVIK

One of GEORG's goals is to create a platform for entrepreneurship. GEORG has supported innovation in the geothermal field and has encouraged a creation of startup companies to bring to market the fruits of research in the geothermal field. This has mainly been accomplished by partnering with Arion Bank, Landsvirkjun and the Innovation Centre of Iceland through the Startup Energy Reykjavik business accelerator.

Startup Energy Reykjavik is a mentorship-driven seed stage investment program with a focus on energy-related business ideas.

The program selects seven energy startups, following a rigorous application process, to participate in a 10-week business accelerator. The startups get a cash infusion from the four partners in exchange for an equity position and access to expert mentors during the program as well as a follow-up advice. Selected teams receive up to USD 40,000 in seed funding.

Twenty-one teams have taken part the program, seven team each year 2014, 2015 and 2016.

GEORG is a shareholder these startups, through the holding company "SER eignarhaldsfélag ehf"



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SER Teams of 2016



Startup Energy Reykjavik



Innovation Center
Iceland

GGW 2016

In a celebration of its successful seven years of operation, GEORG organized a two-day workshop on geothermal science, technology, and innovation.

Workshop aimed to display the achievements and knowledge gathered the past seven years by the GEORG members as well as giving the tone for new developments and possible further achievements.

The workshop provided a unique chance to share and experience the latest development, findings and opportunity in geothermal research and technical developments not only in Iceland. It gathered speakers from different disciplinary and backgrounds, combining industry and academia, for informative and ambitious knowledge exchange.

Authors made contributions on research findings as oral and poster presentations on the four workshop themes: **Upstream** – Nature of the resource (heat sources & volcanos, exploration and modelling); **Midstream** – Harnessing & production (production technology, power cycles, well design); **Downstream** – Diversified utilization (cascaded use, industrial applications, waste to value); **Cross-cutting**- sustainability, social benefits and innovation.

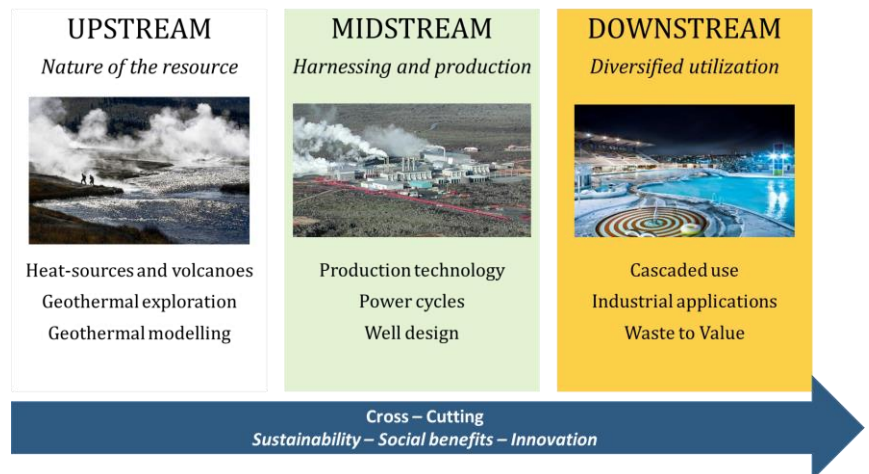
On the opening session three keynote speakers presented distinctions on the current state of the geothermal energy worldwide, in Europe and Iceland. Keynote spokesmen were: *Alexander Richter* the President of the International Geothermal Association (IGA), *Susanna Galloni*, Policy Officer, DG Research & Innovation, European Commission and *Ólafur G. Flóvenz*, the CEO of Iceland GeoSurvey. The closing session on the second day had a pleasure to host *Hildigunnur H.H. Thorsteinsson*, the Managing Director of Research and Development at Reykjavik Energy, *Hallgrímur Jónasson*, the General

Director of Rannís- The Icelandic Centre for Research and *Sigurður Magnús Garðarsson*, Professor and GEORG Chairman of the Board of Directors, who focused on the summary of aims and success of the work of GEORG Geothermal Research Group during the grant period.

Approximately 60 projects were presented covering all aspects of

and Engineering, Reykjavik University, *Bjarni Richter* Geothermal Expert, Iceland GeoSurvey, and *Hólmfríður Sigurðardóttir* Head of Environmental Affairs, Reykjavik Energy.

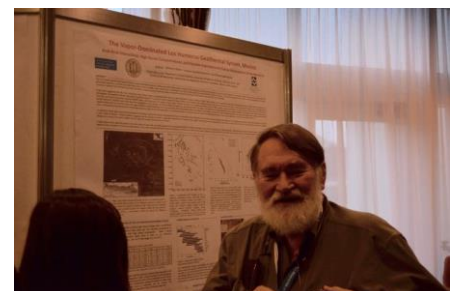
In meantime, there was an afternoon poster session presenting divers work of over 20 researchers mapping differences on geothermal utilization, and present an outlook on upcoming



geothermal utilization and presented overview of researcher' contributions on the past and current research projects. The first workshop day focused on research issues from the upstream and midstream problems and the second day begun with spectrum of work on upstream and cross-cutting, and downstream issues closed up with interesting panel discussion on the Smart Geothermal Future chaired by Bjarni Pálsson, Manager Geothermal Department Landsvirkjun, The panel welcomed six experts from different fields circulating in between the four sessions: *Guðni A. Jóhannesson* General Director Orkustofnun, *Susanna Galloni* Policy Officer, European Commission, *Philippe Jousset* Researcher, GFZ, *Guðrún A. Sævarsdóttir* Dean School of Science

projects and new innovations in the geothermal sector. Providing a great platform for further cooperation and discussion.

The workshop would not be a succes if not a great work of science committee who took a careful eye on the research abstracts chaired by *Sigurður Magnús Garðarsson*, *HÍ*, *Brynhildur Davíðsdóttir*, *HÍ*, *David Bruhn*, GFZ, *Guðni Axelsson*, ÍSOR, *Ingólfur Öm Þorbjörnsson*, ÍSOR, *Kristín Vala Matthiasdóttir*, HS Orka, *Magnús Þór Jónsson*, *HÍ*, *Mariane Peter-Borie*, BRGM, *Ragnheiður Inga Þórarinsdóttir*, SVINNA, *Sunna Wallevik*, Gerosion/ NMI, *Sveinbjörn Sveinbjörnsson*, Independent expert, and *Sæunn Halldórsdóttir*, ÍSOR.





Brook-Ward.com
Photography

WGC 2020

The World Geothermal Congress takes place every 5 years and is often referred to as the “Olympics” for the geothermal industry. It was the Iceland Geothermal Cluster that led the proposal with strong support from the geothermal industry in Iceland, public and private sector as well as academia.

The IGA board announced that they chose Iceland as the destination for the WGC in 2020 after reviewing proposals from six member countries. Applying countries were Chile, Germany/Netherlands, Iceland, Kenya, Philippines and the USA.

In the second half of 2013 potential host countries of the World Geothermal Congress in 2020 were asked to present their proposal to the 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.

The statement from IGA about the choice announced

“Following an extensive evaluation, some additional correspondence with bidders, 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. The IGA wishes to thank all the bidders for the work they put into the bids. We congratulate the Icelandic group, and look forward to working with them to create a successful WGC in 2020”.



Figure 2 Icelandic representatives involved in succesful bids for having WGC2020 in Iceland together with former and current IGA President. From left: Rósbjörg Jónsdóttir independent consultant, Juliet Newson former IGA President, Ragnheiður E. Árnadóttir, former Minister of Industry and Commerce, Bjarni Pálsson Manager Geothermal Landsvirkjun, Lúdvík S. Georgsson Director UNU-GTP, Alex Richter President IGA

Figure 3 Icelandic representatives involved in succesful bids for having WGC2020 in Iceland together with former and current IGA President. From left: Rósbjörg Jónsdóttir independent consultant, Juliet Newson former IGA President, Ragnheiður E. Árnadóttir, former Minister of Industry and Commerce, Bjarni Pálsson Manager Geothermal Landsvirkjun, Lúdvík S. Georgsson Director UNU-GTP, Alex Richter President IGA

THE TEAM OF GEORG OFFICE

GEORG is developing the way people look at the geothermal research in more attractive way and at the same time being a big player on the energy market. Helping not only academia but also industry becoming smarter with utilization of the geothermal energy in different areas. The 2016 year was a challenging time and marking the moment of ending the formal grant period from the Science and Technology Policy Council in Iceland through their Centres of Excellence and Research Clusters program, GEORG continues operation as an association with the same objectives as before, namely, enhancing research activity and cooperation within the geothermal community that benefits cluster members.

Promotion and implementation plan of GEORG strategic research program achieved successful results and the program outreach the visible impact on the geothermal utilization in Iceland and internationally. Due to this effort, the association for the next four years has been secured shaping the way of having new team members who jointly secure the force to execute the operational objectives. The office employs four people and external accounting office. In addition to the Hjalti Páll Ingólfsson who is operational manager since 2009, in the beginning of 2016 GEORG hired two new members to its office team. Alicja Wiktorja Stokłosa and Sigurður Bogason. However, due to the new proposals and upcoming tasks, management decided to hire one more person in April 2017 Sigurður Tómas Björgvinsson, joined the project management team. The experience and educational background of the team enhance the further growth of the GEORG in international market by solving challenging problems and making a real impact to build the pure geothermal platform.

GEORG TEAM

Implements the four pillars by ensuring clear communication among all partners involved in successful delivery of projects.

HJALTI PÁLL INGÓLFSSON



Operational Manager, Responsible for the overall project administrative management and support to Research and Technological Development (R&TD) project teams. Liaison with the relevant funding bodies on behalf of the consortium.

SIGURÐUR BOGASON

Specialist with over 30 years professional experience within the international industry as a R&D and Group Development manager and project management for the research groups, marketing and exporting companies.



ALICJA WIKTORJA STOKŁOSA



Project Manager; Responsible for managing execution of geothermal energy projects and programmes within the EC framework and research cluster communication. Field of interest Geothermal Engineering and Innovation.

SIGURÐUR TÓMAS BJÖRGVINSSON

Project Manager with an extensive experience of international project building, project co-ordination and evaluation of projects and programme. Previously Sigurður worked as a consultant, e.g. for PwC, IBM and the EC Brussels.



BOARD OF DIRECTORS 2015- 2017

The BoD is responsible for the proper administration of the Grouping in accordance with Statutes, the fulfilment of the public duties, and the communication among the Members. The following individuals were elected as a BoD member at the General Assembly on May 20th, 2015.



Sigurður Magnús Garðarsson (HI)
Chairman



Oddur B Björnsson (Verkis)



Bjarni Pálsson (Landsvirkjun)



Ernst Huenges (GFZ)



Einar Jón Ásbjörnsson (HR)



Rúnar Unnþórsson (HÍ)



Magnús Tumi Guðmundsson (HÍ)



Steinunn Hauksdóttir (ISOR)



Viðar Helgason (Iceland Geothermal)
Observer

UNIVERSITIES AND TRAINING CENTRES



RESEARCH COMPANIES & INSTITUTIONS



CONSULTANCIES AND PRIVATE COMPANIES



ENERGY COMPANIES

