

Report

CHILE Market visit

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Introduction

Capacity building is understood as actions that foster know-how transfer, good practises exchanges and effective feedbacks in technical and organisational fields, and standardisation procedures. In GEE (Geo-Energy Europe) strategy, capacity building actions have a central role which can be divided into two main approaches: one directly oriented towards the GEE metacluster SMEs to develop proper expertise in liaison with export conditions, which can be considered as a preamble to the second one that consists in bringing those competencies outside the consortium to reach the key target markets.

Why has Chile been chosen as a target country?

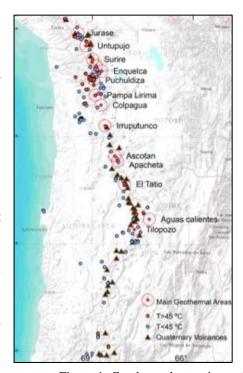
According to the International Energy Agency, Chile's generating capacity has already more than tripled over the past 20 years (from around 6,500 MW in 1997 to around 23,000 MW by the end of 2017), and the government foresees that the demand in electricity will more than double by 2050.

Chile has a vast untapped potential for renewable electricity, which can help limit carbon dioxide (CO₂) emissions and air pollution as well as reduce import dependency. The government has set a target for a 60% share of renewable power by 2035 and 70% by 2050. The share is currently around 40%. Chile's electricity grids are not supplied by any geothermal energy though the market is considered low-risk from an investor's point of view.

In terms of geothermal context, this renewable energy has a special legal status compared with other renewable energy sources.

Chile's Law 19,657¹ on Geothermal Energy Concessions (2000) established regulatory frameworks for geothermal exploration and exploitation, as well as standards for concession allocation and tenders.

In 2013-14, the government obtained USD 53 million from the World Bank's "Clean Technology Fund" (CTF) which was largely directed at risk mitigation in geothermal



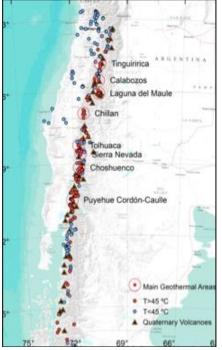


Figure 1. Geothermal areas in northern and southern Chile (Lahsen, 1986)

1

¹ Source link

exploration (MiRiG)²; USD 3 million was provided toward a technical assistance programme. In 2015, the government and CTF agreed to add another USD 25 million to MiRiG. The World Bank contributed an additional USD 500 000 to the technical assistance project, from the Bank's Energy Sector Management Assistance Program (ESMAP).

The MiRiG is being implemented at the Cerro Pabellon³ site (48 MW) as the first beneficiary; the site is South America's first geothermal power plant⁴ and belongs to the Empresa Geotermica del Norte S.A., a company created by Enel Green Power and the National Oil Company, ENAP. The powerplant has recently been expanded with a third 33 MW unit, giving Cerro Pabellon a total power of 81 MW⁵. Two other projects, Mariposas (EDC) and Licancura III (Transmark), were also selected.

Figure 16 outlines the geothermal energy resource present in Chile; it is estimated that Chile has a resource of 3,800 MW. This very important potential represents the main motivation for GEE's SMEs to gain a foothold on that geothermal market.

² Source <u>link</u>

³ Source link

⁴ Source link

⁵ Source link

⁶ Source link

Preparatory Work and Training Session

It is important to note that the first contact with a Chilean representative of the geothermal market was made during the World Geothermal Congress, attended by GEODEEP (Virginie Schmidlé-Bloch) in Reykjavik in October 2021. There, she met Jeanne VIDAL, a French PHD geologist working for the Chilean Geothermal Excellence Center (CEGA) in Santiago. The possibility to travel again after two years of covid-19 restrictions was significantly helpful in the management of a project based on export *in loco* activities. From that moment on, a strong collaboration started between GEODEEP and CEGA regarding the organisation of several video conferences to finalise different aspects of the market visit: drafting an agenda, invitations to be made and a list of official persons to contact, organisation of the venue and of the travel conditions for the representatives of the European SMEs (i.e. sanitary conditions to be respected, logistic aspects such as flights and hotel bookings...). CEGA kindly offered to host the event offering GEE's partners support for a professional event that lasted for 2 days.

In liaison with GEOENERGY EUROPE's partners, GEODEEP settled the date of the Chilean Training session for the 8th of March from 3:00 to 5:00 pm (CET). An official invitation to the training session and the market visit was prepared by EGEC, in charge of the project communication, and disseminated among GEE members by each cluster partner.

The aim of the training session was to provide an overview on Chile with specific information on the country's geothermal market to GEE SMEs, at the same time to coach the participants with useful tips on key aspects and specific expertise needed to access and work in the Chilean geothermal market. This coaching was provided by an international business developer. The GEO-CoLab tool developed by GEE consortium, a tool to easily find partners within GEE members for geothermal projects using a simple keyword search, was also presented during this session. The webinar also gave the possibility to participating SMEs to interact with expert panellists, ask clarifications on Chile and its geothermal market, and to exchange contacts with the representative of the Chilean geothermal Cluster.

The main expectations of participants of this session were: to know more about country's strategies on renewables sources and geothermal energy, and the main market actors, including technologies on which to focus. A short introduction to the Chilean market visit was done at the end of the webinar. The participants list is in annex 3.

The following agenda was presented to the circa twenty participants connected to the training session webinar:

15:00	Introduction:
CET	Overview of Geoenergy Europe project (Ana Luisa LAVADO – Geological Survey Ireland)
	 Presentation of capacity building activities (Virginie BLOCH - GEODEEP)
	• Presentation of Chilean geothermal council (Carlos JORQUERA – Chilean geothermal
	Council)
15:15	Presentation of Chilean Country Fiche (Christian BOISSAVY - GEODEEP)
CET	global structure of the energy market
	 geothermal market (regulation and risk mitigation scheme if existing, market barriers,
	structure of the competition, key stakeholders)
	Presentation of GEE Collaborative tool (Gabor GERDEI - CAPES)
15:45	Coaching of our SMEs (Sylvain BROGLE - Halfway / GEODEEP)
	Key aspects when working with Chilean geothermal companies
	 Identification of specified know-how developed by our SMEs to fit to market country specificities
	If needed, identification of proper expertise / competencies to develop outside the
	consortium, to reach key target markets?
16:45	Roundtable with participants - Q&A session
	Share experience
	SME's expectations in coherence with training contents?
	 If not, what are the main areas where GEE SMEs require capacity building
	Presentation of Chile Market visit (4, 5 & 6th of April 2022 April in Santiago) (Virginie BLOCH
	- GEODEEP)

Recording and presentations are available on the following link : https://www.egec.org/events/chile-training-session-geo-energy-europe/

Market Visit in Santiago Chile

The Market Visit took place in Santiago del Chile on the 4th and 5th of April 2022, the Chilean stakeholders thanked GEE's companies for their venue that has allowed the organisation of an interesting meeting, involving Chilean and European partners. The first day of the meeting started with an introduction to the agenda, project aims and a summary of the training session. The agenda of the market visit is in Annex 4.

Roundtable

The second slot was a roundtable between the Chilean Ministry of Energy, the CEGA and the Chilean Geothermal Council, on how the Chilean legislative context could promote geothermal development. provided by GEE partners on the project.

During the round table the following topics have been discussed:

1. Chilean energy context – geothermal market

Existing goals for the Chilean energy sector: (i) 20% of non-conventional renewable energies by 2025; (ii) Decommissioning of coal plants by 2025-2030; and (iii) Carbon neutrality.

Chilean energy strategy is driven by matrix of Decarbonisation through public-private agreement. Country installed capacity is 32,1GW, distributed as follows:

• Renewable energy: 11,9GW

Thermal: 13,4GWHydro: 6,8GWOthers: 0,3GW

The installed geothermal capacity is 81 MW, but the country has the potential to develop around 3,8 GW. There are 9 exploitation permits and 3 requests to explore deep resources in Chile. A modification to the existing geothermal law is under approval by the Senate, establishing a registration system for shallow geothermal energy use and improve standards and administrative aspects. In addition, Chile is setting up measures to promote and accelerate the development of geothermal energy, both for the electricity generation and for thermal uses. These measures also include a guide for the environmental assessment of geothermal power plants, indigenous consultations and participation with communities, and other dissemination and communication actions.

2. Challenges

- To get suitable PPA Power Purchase Agreement (*):
 - Market price for energy does not include the attributes the market requires: flexibility, base load
 criteria, 100% renewable and environmental friendly (eco-energy), locally available in Chile
 - o Improvement of energy auctions

- Increase market activity with entry of new players and studies for new areas
- Exploratory risk management & suitable risk mechanisms tools

(*) The PPA principles are: price depend on maturity of your process not the amount of MW sold; PPA under energy auction for regulated clients; Stabilized Spot market for small RE projects <9MW.

The Chilean government has specified 6 blocs with different PPA for each blocs.

Open discussions regarding legislative context

(simultaneous translation Spanish/English)

Jeanne VIDAL - CEGA (Moderator)

Ruben MUNOZ - Ministry of Energy

Carlos JORQUERA - Chilean geothermal Council

Diego MORATA - CEGA

Munoz: Concession systems give space to geothermal projects.

<u>Jorquera:</u> The tender basis need to be modified for high enthalpy and geothermal should be used for base load power generation. Social acceptability / indigenous consultation remain a main problem for the geothermal projects. The Chilean geothermal sector is lacking of investors, that can contribute to give more importance to the sector. Geothermal power can be used also in energy intensive industries as the mining to extract, for example, copper.

Morata: Geothermal law has been set because Chile was facing a situation of gas shut down from Argentina. In the past, Chile and Argentina used to have an agreement. But then gas became so cheap and Argentina was selling so much to Chile that they couldn't provide their own needs. So Argentina reduced its exportats to Chile which suffered from shut down.

<u>Power generation:</u>

Geothermal energy which has to compete with other renewables that are indeed cheaper but also intermittent, which is disturbing the grid. The range of prices is wide but not all sources have the same quality.

Direct uses:

The government was about to propose a modification amendment to the law in November 2019 but due to the pandemic status and restrictions it was no longer a priority. In April 2022 the amendment is not yet ready..

<u>Lithium extraction from geothermal brines</u> is a subject of interest, but different aspects should be addressed:

- Extraction is complicated because environmental aspects are strict. Indeed, the Chilean geothermal law prevents operators to change temperature of fluids and their chemical composition. Even the uses of scaling & inhibitor products are forbidden.
- Lithium in Chile, Argentina and Bolivia is from salars not mining, However, the extraction of lithium from bines requires a specific mining permit, which is an alternative to a geothermal exploitation permit
- Strong social conflict with the exploitation of lagoon/water in the salars industry.

The Chilean Geothermal Council has initiated a discussion to promote the extraction of lithium from geothermal brines and the new government has pushed for the creation of a "National lithium company".

In addition, there are high hopes for a boost in geothermal industry with the publication and implementation of new guidelines with the entry into function of the new ministry.

Discussion wrap-up - message for companies:

- There is the availability to collaborate with European companies, to develop geothermal energy
- Chile is a stable country from an economic point of view
- Regulations concerning the electricity sector are quite clear
- High geothermal potential in the country
- The geothermal supply chain to develop deep geothermal is poorly developed in Chile and there are spaces for the entry of new operators. This should foster the development of the Chilean geothermal sector
- High possibilities to develop geothermal heat pumps
- The supply chain for geothermal heat pumps is not complete in Chile and there are spaces to develop collaborations
- Concerning heat pumps, most of the technology is provided by Spain and Germany, but the technical support is slow and spare parts take a long time to get to Chile.

The **second day** of the meeting was reserved for the companies and networking,.All present companies did a small presentation of their expertise. For organisation purposes, the SMEs were divided into two groups: GeoEnergy Europe Metacluster SMEs and Chilean companies/SMEs.

GeoEnergy Europe Metacluster SMEs

The following companies from the GEE consortium are interested in the Chilean geothermal market and took part in the market visit (see table below). All these companies prepared a brief presentation, the slides

are available on the GEODEEP extranet, the link to these presentations was sent to all participating companies and the GEE consortium after the market visit.

Table 1 – GEE companies that participated in the Market Visit

Company	Country
GTN online	Germany
GEOLITH	France
Halfway	France
Geother	Spain
Steam	Italy
Geochem	Hungary
Cluster GEODEEP	France
Cluster COSVIG-DTE ² V	Italy

Chilean Companies/SMEs

TRANSMARK (presentation from the company's country manager)

Transmark Chile is a daughter company of Transmark renewable based in the Netherlands. There are new aspects in the project management that need to be taken into account, for example stakeholder study and mitigation risk exploration, not only during exploitation phase, The main problems are:

- being far from the grid;
- altitude;
- administrative delays are too long, which oblige developers to go back to communities and local cities to explain the project more than once;
- PPA system that gives priority to cheap renewables without taking into account disadvantages of that sources (solar and wind energy sources are intermittent)

Among paths of development, the geothermal industry could find synergies with other industries, such as PV solar, H₂ and lithium (even if lithium is not a priority because of regulatory barriers).

Social acceptance needs a lot of improvement and outreach activities due to the constant miscommunication and little trust that the local communities have in the Chilean authorities. The local communities claim independence towards the Government – "this is our land". In parallel, the level of education and the curiosity towards new technologies is low which make it difficult to deliver the implementation of new geothermal projects.

Due to these reasons, as well as security ones (locations where violence has been increasing), Transmark has decided to leave some places and drop projects, but nevertheless has put in place some mitigation measures:

- be present through a third partner (because Transmark is not consider as a trusted third-party reliable for local communities) in the area when possible (2days/week), to let communities know what is being done;
- heating a school with geothermal energy;
- respect the «Stakeholder engagement plan».

Finally, Transmark does not invest on Lithium extraction from brines because of the current law and because they are an energy company and not a mining one.

Geotérmica Del Norte (presentation from the Coordinator for GEO EXPLORATION Chile and Andean Countries of Enel Green Power)

Geotérmica Del Norte (GDN) is a joint venture between Enel Green Power (84,6%) and the ENAP (15,4%), the Chilean state-owned oil company *Empresa Nacional del Petroleo*. And was represented by Mr Gianni VOLPI.

Before deciding to fix the power plant in Cerro Pabellon, many wells were drilled to find the appropriate temperatures. Finally, it was decided that the power plant should be created in Cerro Pabellón with the following characteristics:

- 48MW since 2017
- +33 MW with a third unit (ORMAT) to be launched 2Q 2022
- Total investments = more than 500M\$
- 250°C max in the reservoir
- with an average of 10Mwe / well
- 5 years to get the environmental authorisation that's why there is a gap in the project duration:
- 2010 exploration phase with 4 wells
- 2015 construction of Unit 1&2 with 9 more wells drilled and they were all a success!
- Salvadorian companies drilled with a camp base at 3500m!
- Anti-scaling treatment are not allowed as it is impossible to reinject fluids with a different chemical composition in the reservoir. This results in Sb, As and Si scaling problems and increasing of operating costs.

What GDN did was considered as remarkable but, unfortunately, there were no significant developments after that. GDN found it very hard to structure a supply chain and thought building a powerplant would attract other companies, but it was not the case. There is a lack of geothermal companies in Chile that can support the maintenance of plants and drill geothermal wells.

Environmental monitoring has rather strict rules and only a few laboratories are able to carry out analyses in Chile. One of these is CEGA.

The Chilean economic and social context can represent a problem and social acceptance towards new geothermal plants is low, which doesn't facilitate new geothermal projects. In parallel, the high competition with solar PV and wind power that produce electricity at a lower cost is an obstacle.

According to GDN representative, future needs include:

- Creation of a GEO culture and structure the entire geothermal value chain, to develop such huge projects;
- Need to have geothermal drilling companies in Chile. Wells drilled so far were super expensive but feasible because they were 9, a number for which total costs can be amortized. On the other hand, no drillers from other countries will go to the drilling site for only 2, 3 wells, so there is the need to find the balance between cost/efficiency of a power plant with 3-4 wells;
- GDN core business is not district heating;
- Lithium activities are managed in Italy as a core business. Contacts will be shared with GEOLITH;
- Bolivia: 7MWe under construction. There is the possibility to do partnership with other Andean Countries and share costs to build power lines to connect to national grids.

Lesson Learnt and Follow-up Actions

The Market Visit ended with a roundtable, the discussion among participants concluded with a common goal, to creatr a roadmap focusing on the main key topics listed below:

<u>DOMAINS</u> / <u>SYNERGIES</u> where a collaboration can be implemented:

- Power plant + lithium
- GeoDH
- GSHP
- Social acceptability
- RMS

<u>DIPLOMATICAL</u> context also gives opportunities to consolidate networks of activities:

- to draft an OFFICIAL letter (copy in annexes) to be sent by each partner to their national Ministry of Energy/Foreign affairs and to countries Embassies in Santiago.
- To use EGEC Repower Europe: renewable energies are addressed
- to organize the visit of a Chilean Delegation following the election of new President in Germany, France, Spain, Italy
- Organize a workshop within international events to follow-up discussions. Possible options are reported below:
 - o GEOLAC Geothermal Congress for Latin America and the Caribbean
 - o <u>GRC Geothermal Rising Conference</u>
 - o <u>EGC European Geothermal Congress</u>
 - o Events organized by Invest Chile to attract foreign investments in Chile
 - o Celle Drilling 2022, in 13th and 14th September, in Celle, Germany

STRUCTEVALUE CHAIN and worldwide collaboration:

- Improve the partnership with Chilean Geothermal Council
- To set up a network of Geo Center of Excellence
 - o CEGA (15 full time jobs + 30 part time/student/PHD..)
 - o CECG (to be created for Caribbean)
 - CEGLab (managed by COSVIG)
 - Iceland
 - o Kenya

ANNEX 1 - Training Session Participants List

81747625793 - Registration Report

Registration Report					
Report Generated:	Mar 07, 2022 4:12 PM				
Торіс	Webinar ID	Scheduled Time	Duration (minutes)	# Registered	# Cancelled
Geo Energy Europe (GEE2) / CHILE TRAINING SESSION	817 4762 5793	Mar 08, 2022 3:00 PM	120	33	C
Attendee Details					
First Name	Last Name	Email	Country/Region	Organization	Job Title
			NL	H.P. Well Screen B.V.	Business Development Manager
			DE	Geothermie Neubrandenburg GmbH	Managing director
			PT	Ligia Marc Pinto A A Unipessoal Lda	CEO
			PL	Polish Geothermal Society, AGH University of Science and Technology	Researcher
			ES	ACLUXEGA	DIRECTORA
			GB	Eavor Technologies Inc.	
			CA		
			CL	Latcommodities SPA	CEO
			п	GEOTHERMAL ENERGY CONSULTING S.R.L.	PRESIDENT
			HU	University of Miskolc	professor
			СН	CloZEd Loop Energy AG	CEO
			ES	Enertra	Técnico superior
			П	Steam s.r.l.	Director of Sales and BD
			FR	Halfway SAS	President
			TR	Medithermal Enerji A.S.	Business Development & EU Projects Specialist
			HU	CAPES	Clustermanager
			HU	MS Energy Solutions Ltd.	MD
			DE	GeoDienste GmbH	Senior Geologist
			HU	Applied Earth Sciences Cluster	International Relations
			US	Geoscience Ireland	Panel Expert
			ES	Ecoforest	Sales Engineer
			ES	IGME	Grupo de Geo-Energía. Dpto. Recursos geológicos para la transición ecológic
			CL	Veolia	Desarrollo Comercial Energía
			ES	EnegyLab	Responsable Técnico
			us	Caltech/Asociación Geotérmica Ecuatoriana	Researcher
			KE	Job Seeker	Job seeker
			TR	SOYAK HOLDING	Geophysical Engineer
			п	STEAM SRL	Director of Operations
			п	Steam Srl	Steam Srl
			п	COSVIG-DTE2V (GEE2 partner)	Geothermal Project Officer
			CL	University of Chile/CEGA	Postdoctoral researcher
			TR		
			PT	AZORES UNIVERSITY	Professor

ANNEX 2 - Extract of the official invitation launched by EGEC to the training session on Chile and the market visit



Geo Energy Europe

GEO-ENERGY EUROPE project came into play to increase SMEs performance and competitiveness, in all industries concerned by the use of subsurface for energy, in Europe and in target countries. Partners of the project want to offer their SME the opportunity to attend **«training sessions»** dedicated to those market countries that are Chile, Kenya, Canada and Costa Rica. Each "training session" will be followed by a **«market visit»** organised in the country.

Please find below the invitation for both, CHILEAN

training session and market visit

CHILE TRAINING SESSION

Tuesday, 8th March 2022 15:00 PM - 17:00 PM CET

Registration



The invitation is also available online here.

ANNEX 3 - Participants of the market visit

Due to GDPR rules, only the name of the company and the number of representatives of such companies is provided in this annex.

Company	# Representatives
AFPG – GEODEEP	1
Halfway	1
Geoter	1
Geolith	3
GTN	1
GDN	1
Cega – University of Chile	3
Geochem, CAPES	1
Cosvig-DTe ² V	1
Energy Ministry	1
Consejo Geotermico	1
Transmark	1

ANNEX 4 - Agenda of the Market Visit





Geo Energy Europe (GEE2) CHILE MARKET VISIT

 $4^{th}\text{, }5^{th}$ and 6^{th} APRIL 2022

Andean Geothermal Center of Excellence
University of Chile, Facultad de Ciencias Fisicas y Matematicas,

Department of Geology, Plaza Ercilla 803, Santiago, Chile - room Domeyko (1st floor)
To enter as visitor: COVID checkpoint at Avenida Beauchef 850, and then, cross the campus
Contact number +56940045610 (Jeanne's whatsapp)

Day 1 - Monday 4th of April 2022

Room: Domeyko (1st floor)

9:00	Welcome coffee
9:30	Introduction Virginie SCHMIDLE-BLOCH & Dario BONCIANI (GEE2) • Agenda of the market visit (GI) • Geoenergy Europe project presentation (GI)
10:00	How the Chilean legislative context could promote the geothermal development? Panelists: Rubén MUNOS – Ministry of Energy, Carlos JORQUERA – Chilean geothermal council, Diego MORATA – CEGA Moderated by Jeanne VIDAL (CEGA) Followed by an open discussion with participants
12:00	Lunch (university catering)
14:00	Chilean geothermal context and potential & perspectives of lithium recovery <i>Diego Morata (CEGA)</i> Followed by an open discussion with participants
16:00	End of DAY 1





Day 2 - Tuesday 5th of April 2022

Room: Domeyko (1st floor)

9:00 Welcome coffee

9:30 Introduction: presentation of the agenda

10:00 GEEII Companies / Cluster presentation (15 minutes each):

- GEOCHEM Ferenc FEDOR
- STEAM Matteo QUAIA
- GTN Online Peter SEIBT
- GEOLITH Jean-Philippe GIBAUD
- GEOTER- Juan de ISABEL GARCIA
- HALFWAY Sylvain BROGLE

Chilean's actors presentation

- Transmark Renewables Carolina WECHSLER
- ENEL Green Power- Gianni VOLPI

Roundtable discussions - Follow-up : roadmap for further cooperation between GEE II and Chile

- 13:30 Lunch (university catering)
- 14:30 Geoenergy Europe collaborative tool presentation (CAPES)
- French geothermal association / GEODEEP / French geothermal market Virginie SCHMIDLE-BLOCH
 - COSVIG / DTE 2V Dario BONCIANI
 - CEGA Diego MORATA
- 16:00 Visit of Andean Geothermal Center of Excellence CEGA laboratory
- 17:00 End of DAY 2

ANNEX 5 – Follow-up letter

DESTINATAIRE

Adress

To Mr or Ms....

Paris, 12th of April 2022

Object: Chilean geothermal market – GEOENERGY Europe

Dear XXXX

In the framework of the European GEOENERGY project aiming a stronger and more integrated sustainable geothermal energy sector in Europe and in targeted countries, a delegation of seven European companies/organizations (GEOCHEM, GEOLITH, GEOTER, HALFWAY, GTN, STEAM, CAPES, the French geothermal Association and COSVIG/DTE2V) have met Rubén Muñoz Bustos representative of the Chilean Ministry of Energy, Carlos Jorquera for the Chilean geothermal Council and two companies (TRANSMARK Chile and GDN) during a two-days Seminar hosted by the Andean Geothermal Center of Excellence (CEGA) on 4th and 5th of April in Santiago de Chile.

Those fruitful discussions about the Chilean geothermal context have led to the following recommendations:

- Diversification of geothermal markets besides the power generation: development of geothermal districts heating and heating & cooling applications assisted by geothermal heat pumps
- Development of lithium co-extraction from geothermal process
- Simplifications of the regulatory framework, related to geothermal and lithium process

- Structuration of the Chilean geothermal value chain to address the national goal of 20% of non-

conventional renewable energies by 2025

Taking the opportunity of the newly elected President Mr Gabriel BORIC entry into function, we would

like to propose our support and organize the venue of a Chilean delegation for an high-level meeting

with national representatives about the potential of geothermal energy in the energy transition and

access to a better energetical sovereignty as it was expressed in the Repower Europe strategy. This

could also followed by the visits of outstanding geothermal operations, whether in France, Germany,

Italy, Spain.

We would be pleased your Excellency if you could inform if any bilateral meetings and visits are

scheduled and if our geothermal subject could be part of the agenda.

If you should have any further questions, please contact Ms Virginie Schmidlé-Bloch,

(virginie.schmidle@geodeep.fr), GEODEEP Secretary general.

Yours faithfully,

Jean-Jacques GRAFF

Président de l'AFPG

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