TMGO

TULU MOYE GEOTHERMAL

NEWSLETTER

October 2020

- AUC SIGNING GRMF GRANT CONTRACT AGREEMENT WITH TMGO IN ETHIOPIA
- FRENCH AMBASSADOR VISITS TMGO PROJECT SITE
- TMGO OFFICE EXPANSION & RENOVATION
- LIFE TRANSFORMED THROUGH TMGO
- ARGEO-C8

Environmental & Social Manager
Aynalem Getachew

MESSAGE FROM E&S MANAGER, AYNALEM GETACHEW

WELCOME TO THE OCTOBER ISSUE OF OUR NEWSLETTER

TMGO along with its shareholders is committed to making a positive contribution to the Oromia regional state in which its Project area is located. TMGO acknowledges that the Project requires social license to undertake the on-going Project and thus has adopted a comprehensive policy framework that guides the company on how it will manage the social and physical environment. The development of the Project is expected to impact the economy and livelihoods of local communities and nearby towns and contribute towards sustainable development. As such, we work closely with the community members to establish an open dialogue that can foster an inclusive, honest, and mutually beneficial relationship with our stakeholders. These relationships are viewed as valuable assets that are critical to our project success. This relationship is also serving as a great vehicle for us to ensure that we are truly listening to concerns raised by all the relevant stakeholders. We have created forums at the village, local, regional, and national levels to ensure that all stakeholders can easily provide feedback to the company.

In the year 2019, 200,000 USD was spent on community development work which focused on skill development i.e. a 3-year scholarship program for 40 local youth to be trained in technical and vocational programs that can improve their employability, improvement of an access road, improving health service delivery through improved energy supply to local health centers, and overall social service improvements. Subsequently, in 2020, we developed a three-year community investment plan with a 900,000 USD budget prioritizing three key intervention areas; improving the supply of potable water, access to electricity, and decent and productive work for young women and men through SME creation and growth.

So far, the development of the project has created employment opportunities for more than 300 local community members during the construction and geothermal drilling work phase. This is done by ensuring that our contractors and sub-contractors give local candidates with the required skill set priority during employment. TMGO also helps the overall country's economy through the procurement of local goods and services which amounted to 10,630,213 dollars in the year 2020 alone in addition to 1,312,741.05 dollars paid as a local and national tax.

More recently, Covid-19 has affected all of us and as the number of cases climbs, countries have adopted a variety of restrictions to try to curb the spread and 'flatten the curve' to prevent health care systems from being overwhelmed. Ethiopia is no exception to this.

In the fight against Covid-19, TMGO's experience has demonstrated that the best way to respond to this pandemic is to build trust in personnel, communities, and stakeholders, and to try and understand the perspectives of all of its internal and external stakeholders by sharing information and resources that help in keeping people safe and aware. We have focused our efforts on three main areas: keeping our people safe, supporting our communities, and standing with our partners and stakeholders. Accordingly, we have donated 100,000 USD directly to the national government and we continue our active contribution to the fight against COVID 19 at the regional and local levels by providing critical financial support, medical supplies, training for critical health workers, and an awareness campaign for the public. There is real pride in being able to play our part. TMGO understands that social and environmental responsibility is necessary if we hope to preserve our world for generations to come. Our commitment to

contribute positively to the local community and the country as a whole is of the utmost importance to our company. Thus, we conduct our business operations in a manner that preserves the environment and protects the health and safety of workers and neighboring communities. We will continue to operate responsibly and strive to create a positive impact on society. Community members will remain an important part of our efforts to create social, environmental, and economic value we are striving to achieve in the medium and long term.

AUC SIGNING GRMF GRANT CONTRACT AGREEMENT WITH TMGO IN ETHIOPIA

TMGO are pleased to announce the signing of Grant Contract Agreement with The African Union Commission through the Geothermal Risk Mitigation Fund (GRMF) on 23 October 2020, for support of drilling exploration of initial three wells. The agreement was e-signed by TMGO CEO Mr. Darrell Boyd, and H.E. Dr Amani Abou-Zeid, AU Commissioner for Infrastructure and Energy. The total grant amount is USD 9,990,279 and represents 40% of the total cost estimated for drilling exploration wells and 20% of the total cost estimated for infrastructure.

TMGO applied to the Geothermal Risk Mitigation Fund (GRMF) in June 2018 for funding to support plans for three full size exploration wells and associated support infrastructure, such as well pads, roads, and water supply. We received the good news late in 2018 that our application had been successful with GRMF offering up to US$10M in grant support funding for the project. It is acknowledged that GRMF grant funding is the single largest grant award to a geothermal development project and is a great vote of confidence and support to TMGO, project sponsors, investors, and geothermal resource in Ethiopia.

The GRMF grants covers costs ranging from 20% for infrastructure, 40% for drilling projects and 80% for surface studies. The project developers are normally required to mobilize the remaining costs of the projects by themselves.

The Geothermal Risk Mitigation Facility (GRMF) was established in 2012 by The African Union Commission (AUC), the German Federal Ministry for Economic Cooperation and Development (BMZ) and the EU-Africa Infrastructure Trust Fund (the EU Africa ITF) via KfW Entwicklungsbank (KfW), as a financial tool for supporting the geothermal energy development in Eastern Africa. The GRMF is hosted and managed by the AUC, capitalized with an initial fund totaling 50 million Euros, which has been made available for such grants. Further contributions and technical assistances were provided by other partners including DFID, UNEP, New Zealand, BGR and others. The Commission is also contributing around half a million US dollars annually for staff salary and the monitoring of the GRMF operations. The objective of the Facility is to encourage public and private investors, as well as public private partnerships, to develop geothermal prospects for power generation in Eastern Africa, by providing grants for two types of activities: (1) surface studies to determine the optimal location of exploration wells; and (2) drilling exploration wells and testing of reservoir, as well as the physical infrastructures (access road, electricity and water supply) related to the two activities. This encourages further geothermal investments and improves access to equity or other funding sources and, thus, play a catalytic role in establishing geothermal energy as a strategic option in power expansion planning in Eastern Africa.

The GRMF has achieved significant successes in supporting geothermal energy development in East Africa by awarding around USD 90 million as grants for 26 projects in Comoros, Djibouti, Ethiopia, Kenya, Rwanda, and Tanzania in four application rounds since 2012. Starting from 2013, the application rounds were expanded to include more countries, namely Burundi, The Comoros, Djibouti, the DRC, Eritrea, and Zambia.

The twenty-six (26) projects awarded grants are located in six (6) different countries, with a planned power

Continued...

...Continued

plant capacity of approximately 2,900 MW and grant volume of USD108 million. The planned investment volume by geothermal developers is estimated to USD 9.3 billion.

The Commission will continue to work with development partners to improve the capacity and expertise of interested Member States and mobilize more financial resources to meet the increased interest in geothermal energy development as witnessed by the growing number of projects that are submitted for grant awards. It is critical that Member States put in place the appropriate institutional, legal and regulatory frameworks, in order to attract more private investors and allocate adequate resources to the Commission for the expansion of this Program to other AU countries.

SITE UPDATE

GEOTECHNICAL SURVEY WORKS FOR THE POWER PLANT

After many attempts to seal off the steam zone between 639-650 m (RT) it became evident that the zone is too wide/large to seal with cement plugs. The solution was to run the production casing earlier than planned to close out the zone.

For this purpose, the well was drilled deeper, from 659 m (RT) to 701 m (RT) to provide a firm bond for the shoe. After that, the well was reamed properly to provide a smooth running of the casing, which was run down to 695,8 m (RT). Primary job performed through the casing, with plug cementing.

1st backfill immediately performed through the annulus. Cement baskets installed on the casing above the steam zone to retain the cement from the annulus to fall into the steam zone. After the 4th backfill, cement was observed on the surface as expected. The expansion spool and the master valve were then successfully installed on the wellhead, with BOP placed on top and pressure tested again.

Immediately after that, we drilled through the production casing section. After drilling out the shoe and drilling ahead a couple of meters we started to drill the 8-1/2" production section. We are currently at a depth of 1060 m and continuing drilling till Total Depth of the well.

CIVIL WORKS UPDATE

Road works to the power station and to the water wells has progressed very well. SAP Engineering has been a very diligent partner by delivering their set out scope ahead of schedule.

WATER SUPPLY WORKS

After several challenges, the Tulu Moye drilling activities will very soon be getting water from one of its drilled ground water wells as installation of submersible pump and necessary connections have been successfully completed at well 3.

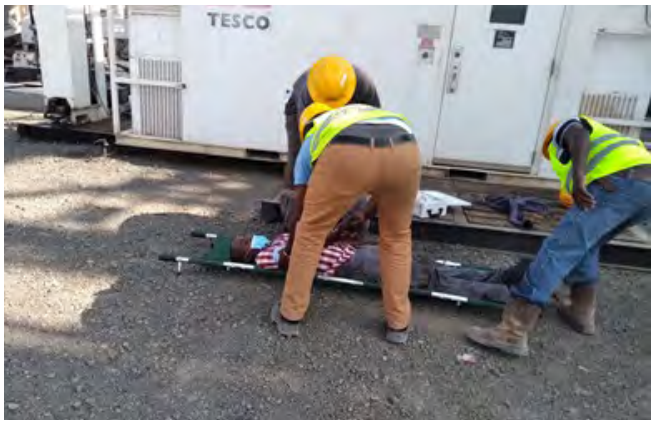
SEISMIC MONITOR INSTALLATION

Seismic monitors installation is in progress in various locations in the TM Geothermal concession area.

GEOTECHNICAL SURVEY WORKS FOR THE POWER PLANT

Radice Engineering PLC is currently mobilizing two of their geotechnical rigs to proceed with detailed geotechnical investigation that will provide valuable information for the prospected EPC contractors. Radice will conduct soil boring, field testing and carry out sufficient in-situ testing and sampling; laboratory testing of obtained samples to determine the properties of the subsoil; Determination of geotechnical parameters required for foundation analysis for the power plant components and carrying out engineering analyses for foundation design and proposing foundation alternatives for the power plant components as additional inputs for EPC bidders.

Emergency Drill at Rig Site. Scenario of one person hurt simulated



KenGenlocal staffs working at the rig site started this month

Clean up day at the rig site and water reservoir pond as part of Environmental Awareness

After a challenging long shift, KenGen made a smooth shift rotation with a new crew of 35 people arriving from Olkariaat at the beginning of the month.

TMGO CARES!

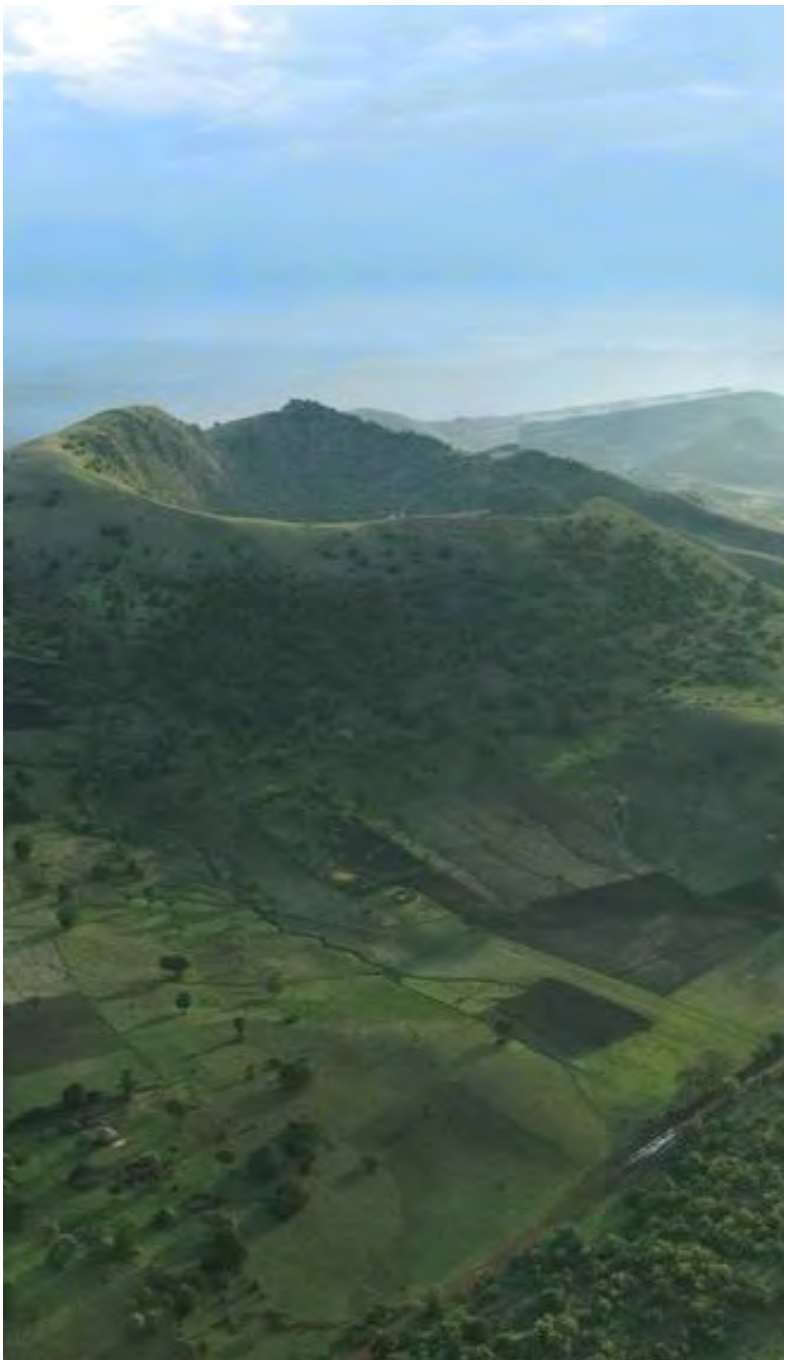
TMGO in partnership with BEY PISON, our catering contractor, supported school materials to over 400 children at Hetossa District of Arsi Zone, Tulu Moye project area. The children were selected from five villages of the district based on family income. The parents of the children who have been supported told us that they are so grateful for the support made by TMGO & BEY PISON.
TMGO also made similar support last year as well and promised to continue its support to the local community in various ways in the future. TMGO also received appreciation certificate from the local government at the occasion.

FRENCH AMBASSADOR VISITS TMGO PROJECT SITE

TMGO was honored to host H.E. Ambassador Rémi Marcéchaux; French Ambassador to Ethiopia, with his team at Addis Ababa, at Tulu Moye project site On October 14th, 2020. The Ambassador with his delegation were also accompanied by TMGO Board Chairman Mr. Mathieu Peller, TMGO team and others at the event. Meridiam, the lead shareholder of TMGO (65% shareholder) is a French Investment firm and thus has had good bilateral relationship over the past years with the Embassy.
Ambassador Marcéchaux Tweeted on October 15th,

"I visited the Tulu Moye drilling operations as part of my 1st field visit. French investments will contribute to realize ETH's first privately funded geothermal electricity plant by 2023. Kenyan team operating drilling. Good cooperation with local actors despite COVID."

Continued...



PERSONAL DEVELOPMENT PLAN

The TMGO team has undergone its final quarter PDP to measure an employee's work and results-based evaluation on their job responsibilities and to structure and provide feedback to and from Employers and/or Supervisors as well.

This has been done with the aim of improving the way the team or the organization functions, build career paths, Improve Communication & resource planning to achieve TMGO goals and MVVs.

...Continued

TMGO OFFICE EXPANSION & RENOVATION

We are delighted to announce the completion of the expansion works of our HQ office in Addis Ababa. The 2 weeks transformation has given our endeared workplace more light, space and most of all it has become a place where the separated teams have reunited without violating COVID-19 prevention protocols.

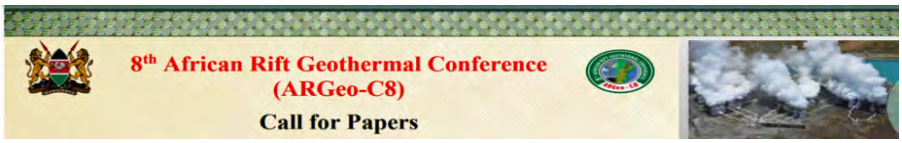
LIFE TRANSFORMED THROUGH TMGO

DUREETTII, (A RICH GIRL BORN TO TERRO MOYE)

My name is Sulti Haji Hirko and I live in Terro Moye village of the Hetossa district in Arsi Zone, in Oromia region. Terro Moye is where TM Geothermal Operation Project is located. I am married and a father of nine children (five sons and four daughters). I and my wife, Yabo Nura, have been married for long and our life depended on subsistence farming. We nearly had little for sale and earn cash.
Mr. Sulti says "One lucky day, we heard that a geothermal Energy firm called Tulu Moye Geothermal operations PLC came to our district to produce electric energy from underground heat. And that small portion of my land is needed for the project workers residential camp" He also added "My family were happy that an international investment company was coming to our small rural village. One day our local government called us for meeting to discuss about the company and also to tell us that some portion of our land is needed for the project. Then we all agreed to accept compensation as per Ethiopia's law for compensation".

Mr. Sulti witnesses that his life has been transformed as a result of TMGO and he told us " they offered me and other farmers who were paid compensation on how to manage our money before they transferred the money in to our accounts" He added " the training offered by TMGO in collaboration with the Oromia Cooperative Bank helped me a lot in planning and managing my money"
Mr. Sulti told us that he bought a house in Adama town, a Zonal town of East Shewa Zone, and a vibrant town only 100 KMs far from the Capital. He says that he has rented two rooms of his house and earning money. In addition to the rent, he also told us that his son, who is studying accounting in Adama town lives there.

Not only that, says Mr. Sulti "I am also permanently hired by the project with a good salary that can sufficiently sustain my family. I also started a shopping business in the project area by using the compensation money I was paid."
Mr. Sulti's continues "TMGO offered a scholarship for 40 students selected from the local community around the project, to study vocational training for three years at SOS Children village Vocational training college; my daughter, Medina Sulti is one of the sponsored children;& studying Electrical Installation"
Mr. Sulti told us that his 9th child came with the coming of the project and he named her "Dureettii" which means "Rich girl" believing that her luck has brought him a life transforming project and wealth to him and his family. Mr. Sulti is now a happier and wealthier person than ever and he hopes to grow his business more.



ARGEO-C8

The Government of the Republic of Kenya is hosting the 8th African Rift Geothermal Conference (ARGeo-C8) under the title: "Seizing the Moment: Investing in Geothermal Resources for Sustainable Development". The conference is organized by the Geothermal Association of Kenya (GAK), the African Union Commission (AUC) and the IGA Africa Regional Branch. TMGO is a Bronze level sponsor of the conference; Darrell Boyd, CEO, will be one of the key speakers at the event.

The conference will take place October 26-November 1, 2020 at the UNEP Headquarters in Nairobi, Kenya.

TMGO staff are also virtually taking part in the conference from Addis Ababa office.

HISTORY OF GEOTHERMAL ENERGY

NATIVE STORY

By Business Daily Reporter

1830: In 1830, in Hot Springs, Arkansas, a man by the name of Asa Thompson charged one dollar for the use of three spring-fed baths in a wooden tub. This was the first known commercial use of geothermal energy as a heating system.

1847: The Geysers, a "steaming valley" just north of San Francisco, are discovered by a man named William Bell Elliot.

1892: The world's first geothermal district heating system was established in Boise, Idaho. Within a few years, over 200 homes and 40 businesses were heated through this system.

1904: The first geothermal power plant was invented by Prince Piero Ginori Conti in Larderello, Italy.

MEET OUR TEAM

Lidiya Yadeta (intern)

Lydia Yadesa is 24 years old intern at TMGO. She has graduated from Addis Ababa Science and Technology University with a BSC degree in Geology in 2019. She has been an intern at TMGO since August 2020. The main aim of internship at TMGO is to enable young graduates to acquire some practical knowledges and skills through office work and project field visits. So far, Lidiya has acquired skills in office communications and procurement works, Microsoft skills, finance and more. Her internship is divided in two categories, office activities and field (Geology) activities. In the second round of her internship program she is going to work on the practical project site (geology) and that lasts for a period of three months. This includes site visits at the Tulu Moye project site. Lidiya envisions becoming a great geologist in the future.

First geothermal power plant in Larderello, Italy
1922: The United States' first geothermal power plant is installed.
The first successful geothermal well at The Geysers
1927: The first exploratory wells are drilled by a company named Pioneer Development Company in Imperial Valley, California.
1960: The country's first large-scale geothermal electricity-generating plant is installed at the Geysers. Pacific Gas and Electric operates the plant, which produced 11 megawatts (MW) of net power.
1972: The Geothermal Energy Association, or GEA is established. The GEA includes U.S. companies that develop geothermal resources around the world for electricity generation and direct heat uses.

1973
The oil crisis started in October, when the members of the Organization of Arab Petroleum Exporting Countries proclaimed an oil embargo. Many countries began looking for renewable energy sources.
1977: The U.S. Department of Energy, or the DOE is formed.
1980: UNOCAL, the Union Oil Company of California, builds the country's first geothermal flash plant, generating 10 MW at Brawley, California.
1981: The first electricity is generated from geothermal resources in Hawaii. The Department of Energy demonstrates the production of electricity from moderate temperature geothermal resources using binary technology at Raft River, Idaho.
1989: The world's first hybrid (organic Rankine/gas engine) geopressured-geothermal power plant begins operation at Pleasant Bayou, Texas, using both the heat and the methane of a geopressured resource.
1994: DOE initiates two industry and government collaborative efforts to promote the use of geothermal energy. Their main goal is to reduce greenhouse gas emissions. One effort is aimed toward the development of geothermal resources for electricity generation. The other effort is directed toward the accelerated use of geothermal heat pumps for heating buildings.
2005: The Energy Policy Act of 2005 was passed. This policy changed U.S. energy policy by providing tax incentives for different types of energy production. It included several changes directed towards making geothermal energy more competitive with fossil fuels when it came to generating electricity.
According to the U.S. Department of Interior's Bureau of Land Management, geothermal energy generated 14,800 GWh of electricity in 2005, enough power to supply the needs of about 1.3 million homes.
2012: The Enhanced Geothermal Systems (EGS) field demonstration project produces a steam equivalent of five megawatts at an abandoned part of The Geysers.

Continued...

...Continued

This encouraged expectations that this large energy source can be further developed and scaled up in the long-term for nationwide electricity generation.

2013: The DOE invests in a project that takes advantage of close-looped geothermal electricity generator to generate essentially zero-emission electricity for less than 6 cents/kWh.

Primary Author: Jessica Ross

Edited by Allison Scoular, Andrew Leuschner