

NEWSLETTER

April 2020

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Chief Executive Officer
Darrell Boyd

MESSAGE FROM THE CEO, DARRELL BOYD

Hi Everyone

A very warm welcome to all our stakeholders. I think this is our 20th Edition of our Newsletter and we hope you still find it informative, interesting and of value.

The TMGO Team continue to progress our project and investment here in Ethiopia as best we can with the current restrictions. We are all keeping safe, acting responsibly, and following all the good expert advice that we receive. We had our first Lender & Advisor Conference last week – Online / Virtually of course. These Workshops were due to be held in London the first week of May but of course we had to adapt, improvise, and overcome so that we can continue to make progress. Certainly a first for me, to see 79 participants in a Video Teleconference / Call - Probably not a World Record or even a National Record given the current corona crisis, but all went very well and we hope all our Lenders and their Advisors found it interesting, informative and covering most significant matters. We have 11 more sessions scheduled in over the next 5 weeks.

Keeping everyone connected to our project safe and well remains our utmost priority. We are very proud to have made donations at the Ethiopian National

COVID-19 Fund and Oromia Regional COVID-19 Fund levels. We have also purchased a significant value of PPE for our local health authorities in the Tulu Moya Area. We are also supporting initiatives led by AM-CHAM and the private sector investment community here [led and coordinated by Zoscales]. We hope these have a real impact in helping Ethiopia come through these crises as soon as possible.

Working from home every other week, as all the TMGO Team do to help increase our resilience this the crisis, is challenging. I personally find it quite difficult – Maybe I just miss the TMGO Team too much...well the half that I am unable to meet due to that initiative. We are all on regular VTC's and calls, including a daily 4pm one to update on health. We are also making available training courses and counselling for the Team to help with effective working from home and any mental health concerns that people may worry about.

We continue to work very collaboratively with KenGen to re-mobilize geothermal drilling. After the great start to our Geothermal Drilling Campaign it was a shame that the current corona crisis led to a temporary suspension. We are hopefully that during May we will be able to recommence this. Our customer organizations have been very helpful in provide all necessary Letters of Support to help facilitate this. Appreciated and thank you all.

I would like to thank the TMGO Team for remaining so positive and committed during these troubled times. Keep it up!

We hope you all had a lovely Easter during April and Ramadan Mubarak.





As in March 2020, finalization of road and water infrastructure were the focus of the civil works for the month of April. Road construction has reached final stage with partial handover in progress, expected to be completed in May 2020. Works on well pad GB, west of

SITE UPDATE

CIVIL WORKS AND GROUND WATER DRILLING

well pad GA, has progressed. The well pad will be ready in May 2020.

Installation of the booster pump system and pressure test for the water supply pipeline from the intermediate tanker south of Iteya to Tulu Moye started and will also be completed in May. Connection of well 2 and 3 to the intermediate tanker progressed and the wells will be connected in the same month (May).

Casing of well 3 completed at the end of April. Developing of the well and pumping test will take place in May and finally the well will be connected to the water supply system along with well 2.

Drilling of 4 halted during the month of April due to technical issues. Drilling is expected to resume early in May.

TMGO has hired an independent flood hazard assessment team to conduct flood related study around our project area in coordination with the local water authorities-study will be ready in May, ahead of the rainy season.





GEOTHERMAL DRILLING WORKS

At the end of March geothermal Drilling Operations went into temporary suspension due to the Kenyan Government closure of all passenger air-traffic in and out of Kenya in reaction to the Corona Virus emergency.

TMGO and KenGen, the drilling contractor, are working in collaboration to resume exploration drilling of GA-1

in safe and secure manners. TMGO has engaged with professional advisors, such as Innova, and relevant authorities regarding the situation. The plan is to resume drilling beginning of June 2020.

TMGO'S LENDER DUE DILIGENCE KICKS-OFF



TMGO's Lender Due Diligence meetings kicked-off in April 30th. TMGO team together with its advisors and lenders will hold different series of various sessions within the scope of the TMGO project withing the coming 2 months. Some of the sessions are broken down

into different areas of the project such as Environmental & Social, Technical, Law, Risk Allocation, Financial Models etc.

Also, TMGO's Lenders due diligence will aim to allow its lenders to make an informed decision as to whether to support the TMGO project by lending finances and in return the meeting will aid to allow the Lenders to prevent or address adverse impacts related to human and labour rights, the environment, and corruption associated with TMGO as well as avoid financial and reputational risks.





TMGO'S CONTRIBUTES TO ETHIOPIA'S EFFORTS TO FIGHT COVID-19

TMGO is extremely happy to be able make financial and in-kind contribution to the efforts of Ethiopian people and the Government to prevent the COVID-19. The TMGO made in kind contribution of PPE worth USD 30,000 at local community level where the project is located; USD 30,000 in cash contribution to the Oromia Regional government and USD100,000 at the Federal level which add up to total of USD 160 thousand which is equivalent to 5.4 million ETB.

As an Ethiopian company, TMGO is extremely pleased to be able to contribute to very important cause and will continue to support the government and the local community it works with until this disease is over.

TAKEAWAYS FROM CONTROL RISK WEBINAR ON "AFRICA IN THE FACE OF COVID-19"

Recently some of our staff members took part in a webinar titled as "Africa in the face of COVID-19" with our security adviser company "Control Risk" which is based in Nairobi, Kenya. The followings are some the major lessons we take as a takeaway from the webinar.

- The sub Saharan countries have already compromised diseases such as TB, therefore the impact of the COVID will be a higher risk especially if it spreads to the lower income population since people are living in close quarters, with limited clean water supply and other resources as well
- All sub Saharan countries have taken strict measures against COVID 19 which are the necessary measures that are needed to manage the risk of infection and spread of the disease
- The political outcomes of this strict measures may rise social unrest since most income of the population in the Sub Saharan Africa comes from informal sectors; there has been increase in frequency of looting vandalism & robbery in countries such as SA, Ghana, Kenya & Nigeria already; this might occur in other parts as well but may not be as risky as deteriorating the country.
- Tapping into local network & evaluating where things are going with someone on the ground is a key factor to manage due diligence and logistics issue
- Ethiopia has opened an Aid Hub with the UNESCO to distribute PPE items throughout the continent, which is an important measure to get support regarding COVID 19
- Severe economic impact on the Sub Saharan Africa is estimated to about 1.8 % of economic impact
- Difficulty in importation of raw material from China will impact the construction & mining sectors.
- Sub Saharan countries such as Senegal, Ethiopia, Rwanda, and Uganda will not likely be hit hard with economic recession, due to their diversified economy and healthy local sectors. As such they will have a better economic situation in comparison with countries like Zimbabwe, Kenya, or Nigeria **Continued...**



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whose economy are mainly relies on tourism and oil respectively.

- Regarding market opportunity, sectors like renewable energy, health care & logistics will be key for investment and the focus with the governmental sectors and other investors as well.



TMGO AND INNOVA CONSULTANCY

TMGO has signed a contract agreement with INNOVA consultancy that operates with a vision of becoming the leading healthcare consulting firm in Ethiopia through the use of a human-centred design thinking approach to provide customized clever solutions in order for our clients to achieve their goals.

They are a multidisciplinary and international team with extensive experience in the global health sector provision and the local health context. Our team is composed of doctors, lawyers, economists, business consultants and financial consultants, which will enable us to have a 360-view over a health concern including the current COVID-19 issue.

This agreement was signed with INNOVA because it is the upmost interest of TMGO to get reliable and timely information in relations to health information, Protocol updates, government-level decisions and policy updates made in a national and international

level related to the COVID-19.

In Addition, to develop a health education platform which will enable the employees to get an updated scientific based health information related to the disease and be able to take safety precautions for themselves and to their community and other TMGO stakeholders as well.

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ANOTHER WONDERFUL NEWS FROM TMGO: MEET BABY MIRAN

WE WANT TO DEDICATE THIS MONTH'S NEWSLETTER TO CONGRATULATE OUR STAFF MEMBERS YAMROT GRUMNEH AND YETIMGETA FANTU [OUR PROJECT CONTROLS LEAD & DEPUTY CHIEF TECHNICAL OFFICER RESPECTIVELY] ON THE ARRIVAL OF LITTLE MIRAN (ALSO KNOWN AS BABY GEO IN OUR TEAM).





Krafla, a geothermal power station in Iceland

GEOTHERMAL ENERGY

WRITTEN BY: JOHN W. LUND (ADAPTED BY TADESSE MAMO OF TMGO FOR THE NEWSLETTER)

Geothermal energy, form of energy conversion in which heat energy from within Earth is captured and harnessed for cooking, bathing, space heating, electrical power generation, and other uses.

Heat from Earth's interior generates surface phenomena such as lava flows, geysers, fumaroles, hot springs, and mud pots. The heat is produced mainly by the radioactive decay of potassium, thorium, and uranium in Earth's crust and man-

tle and also by friction generated along the margins of continental plates. Geothermal heat energy can be recovered and exploited for human use, and it is available anywhere on Earth's surface. The estimated energy that can be recovered and utilized on the surface is 4.5×10^6 exajoules, or about 1.4×10^6 terawatt-years, which equates to roughly three times the world's annual consumption of all types of energy.

The amount of usable energy from geothermal sources varies with depth and by extraction method. The increase in temperature of rocks and other materials underground averages 20–30 °C (36–54 °F) per kilometre (0.6 mile) depth worldwide in the upper part of the lithosphere, and this rate of increase is much higher in most of Earth's known geothermal areas. Normally, heat extraction requires a fluid (or steam) to bring the energy to the surface. Locating and developing geothermal resources can be challenging. This is especially true for the high-temperature resources needed for generating electricity. Such resources are typically limited to parts of the world characterized by recent volcanic activity or located along plate boundaries or within crustal hot spots. Even though there is a continuous source of heat within Earth, the extraction rate of the heated fluids and steam can exceed the replenishment rate, and, thus, use of the resource must be managed sustainably.

Uses

Geothermal energy can be used for direct-use applications and electric power generation.

Direct uses

Probably the most widely used set of applications involves the direct use of heated water from the ground without the need for any specialized equipment. All direct-use applications make use of low-temperature

geothermal resources, which range between about 50 and 150 °C (122 and 302 °F). Such low-temperature geothermal water and steam have been used to warm single buildings, as well as whole districts where numerous buildings are heated from a central supply source. In addition, many swimming pools, balneological (therapeutic) facilities at spas, greenhouses, and aquaculture ponds around the world have been heated with geothermal resources. Other direct uses of geothermal energy include cooking, industrial applications (such as drying fruit, vegetables, and timber), milk pasteurization, and large-scale snow melting. For many of those activities, hot water is often used directly in the heating system, or it may be used in conjunction with a heat exchanger, which transfers heat when there are problematic minerals and gases such as hydrogen sulfide mixed in with the fluid.

Electric power generation

Depending upon the temperature and the fluid (steam) flow, geothermal energy can be used to generate electricity. Geothermal power plants can produce electricity in three ways. Despite their differences in design, all three control the behaviour of steam and use it to drive electrical generators. Given that the excess water vapour at the end of each process is condensed and returned to the ground, where it is reheated for later use, geothermal power is considered a form **Continued...**

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of renewable energy.

Some geothermal power plants simply collect rising steam from the ground. In such “dry steam” operations, the heated water vapour is funneled directly into a turbine that drives an electrical generator. Other power plants, built around the flash steam and binary cycle designs, use a mixture of steam and heated water (“wet steam”) extracted from the ground to start the electrical generation process.

Electrical power usually requires water heated above 175 °C (347 °F) to be economical. In geothermal plants using the Organic Rankine Cycle (ORC), a special type of binary-cycle technology that utilizes lower-temperature heat sources (such as biomass combustion and industrial waste heat), water temperatures as low as 85–90 °C (185–194 °F) may be used.



GEO THERMAL IMAGE; Credit: © Shutterstock



Steam rising from the Nesjavellir Geothermal Power Station in Iceland



Photo by JULIEN FUMARD 05/07/2012 ICELAND, ROAD TRIP, TRAVEL DIARIES



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