President hails GDC

Steam

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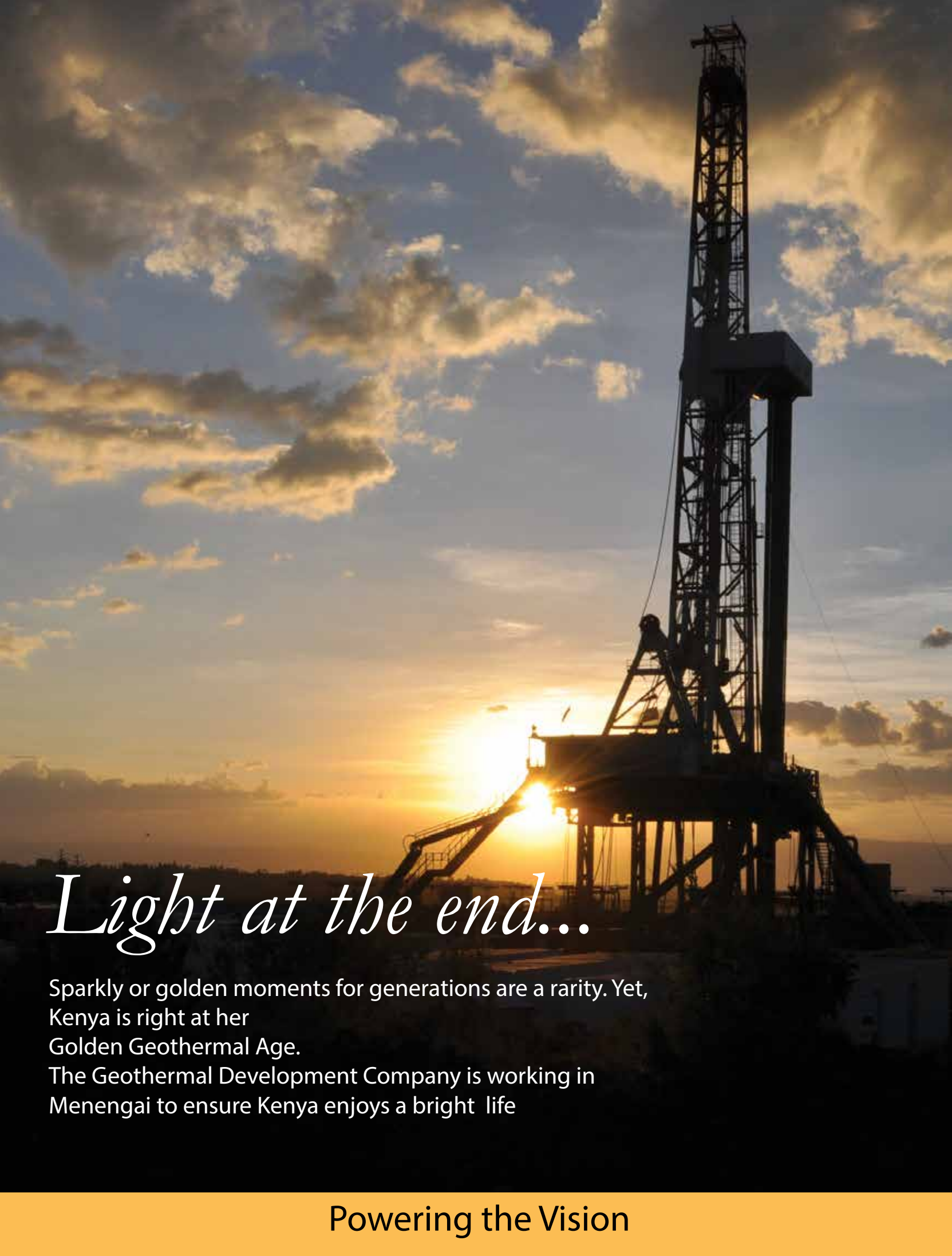
Charm of Menengai

Governor, MPs, senetors enchanted

Tapping wealth of the counties

Tanzania seeks GDC's support



Light at the end...

Sparkly or golden moments for generations are a rarity. Yet,
Kenya is right at her
Golden Geothermal Age.
The Geothermal Development Company is working in
Menengai to ensure Kenya enjoys a bright life

Powering the Vision

Steam is an authoritative platform that reports on geothermal development in Kenya. It gives readers an understanding of the great potential that exists in Kenya and how GDC is providing an enabling environment for investors to participate in the sector.
Steam is published quarterly by the Geothermal Development Company Limited (GDC). Views expressed in this publication do not necessarily reflect the position of GDC.

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Magical geothermal

In this year of Jubilee, Kenya has a lot to be proud of, at least for those who are perceptive. In GDC, we are celebrating the enchanting geothermal. Like Kenyan tea famed for its magical ability to turn even the dullest brand of tea into a first grade beverage, geothermal energy is the mystical ingredient that is going to re-define Kenya's energy mix. Kenya generates only 14% of its electricity from geothermal sources. The rest is hydro-generated (54%) and diesel-generated (30%). This power mix has made the cost of electricity so expensive such that today domestic consumers pay approximately Kshs. 17 (19.78 US cents) per kWh.

To change this situation, something phenomenal must happen. And this is where GDC comes in; we have continued to promote home-grown solutions to Kenya's energy challenges. We know that increasing the amount of geothermal in the energy mix is the magical portion that will address expensive, erratic and inadequate power supply, for good. More geothermal in the energy mix will lower electricity tariffs by almost half. And this is poised to happen within the next three years! Then, the electricity consumer, both domestic and industrial, will forget foreign exchange (forex) and fuel cost adjustment charges, besides enjoying an electricity tariff as low as Kshs. 8 (9 US cents) per kWh.

Established in 2008 to accelerate the development of geothermal resources in Kenya, GDC has lived up to its mandate. Today almost all investors in the energy sector want a piece of the geothermal sector. This was not the case four years ago. Then, investors shunned the geothermal sector branding it a risky investment. Fast forward and GDC has successfully removed these upfront risks giving potential investors one of the best available investment opportunities in Kenya.

Why do I say this? The investment environment GDC has created ensures that an investor gets a constant supply of steam (the raw material used to generate geothermal power) for the life of the power plant. GDC will supply steam to the investor's power plant. On the other hand, the national off-taker guarantees the investor of a ready market by signing a power purchase agreement undertaking to purchase all the electricity generated. Now, with an assured source of raw materials and a ready market, what else would an investor ask for? Geothermal is simply beautiful; the best investment opportunity one can ever think of.

I could write on and on because the geothermal story is one that always captivates. I will however let you read for yourself what others are saying about the great strides made by GDC in record time. What GDC has done in well under 4 years is what many public institutions have been unable to do for decades. Find out the consensus opinion from three energy committees-two from Kenya and one from Tanzania; governors, a delegation from Rwanda; members of county assemblies, and development partners. They all agree in one thing: the Menengai Geothermal Project is simply fascinating, and GDC is truly a Centre of Excellence in geothermal development in Africa.

Recently GDC held its inaugural geothermal symposium where for two days staff presented conference papers on the work they are undertaking in GDC. The papers covered all disciplines – engineering, sciences, social sciences and humanities. Turn to page 4 for more on this. Of course, we continue to bring your regular columns including profiles, a news roundup, book review, opinions and commentaries on various matters of interest. As always the authoritative publication on geothermal news in the region never disappoints. This one is simply a great read. Take a look.

Cheers!
Ruth

POST CARD

Inside

For God and country…Pupils from Lions Primary School in Nakuru reciting a poem during the 2013 World Environment Day celebrations at Menengai. The event attracted other schools and key stakeholders in the Central Rift region

Bravo for bringing life to Menengai

Kudos to the GDC fraternity for bringing life to Menengai and the neighbouring communities.

Menengai is today abuzz with activities and many jobs have been created for the youth and the economy of the communities uplifted. Walking down into the caldera today, you will witness amazing sites and sounds.

Once the steam will be converted into electricity, we will witness massive growth in the locality.

As we approach the year 2030, more of our country's industries and homes will be using geothermal power, and do you know what it means? We will become less dependent on thermal sources and the livelihood of the neighboring places in Menengai like Wanyororo, Maili Kumi, Bahati, Ligogo, Kimochoch, O'lrongai and Nakuru will change for the better.

I look forward to seeing GDC venture into more sites and change the face of Kenya

Benard Ekal Lochara, Nakuru

Updates

Your magazine is handy in educating us about geothermal development in the country. I always receive your copies and it gives me pride to know that my country has the best technological knowhow in the continent. GDC needs the support of everyone including local communities and government in order to deliver on this crucial mandate. Once we have geothermal energy our cost of living will definitely come down. Keep up the good job.

Sylvester Kung'u, Nairobi.

Thanks GDC, keep developing Baringo

Baringo has numerous geothermal resources that need to be harnessed for the benefit of the county. I thank GDC for the effort to ensure that our county is not left behind in development matters. Geothermal is good for us, and for the future generation. It will bring wealth and development to our county. Keep up the good development work .

Belinda Mutai, Nairobi

Dedicated team

I am impressed by the way GDC operates. Every employee seems to be dedicated and doing work diligently. This has made GDC to grow very fast. It is our pride here in Nakuru. All state corporations should come to Nakuru and see how GDC is operating.

Felix Kiplagat Cheptoo, Nakuru

Best institution

I wish to salute GDC for the tremendous work it is doing towards green energy. Today, GDC is among the best run institutions in this region. Kudos for the great performance. Your institution will help not only Kenya but will go a long way in supporting the region in producing green energy.
I wish you all the best GDC and keep up the great team.

Dancun Arithi, Nairobi

Write to us

The Editor welcomes letters on topical issues. Write to the Editor, Steam, Geothermal Development Company, P.O. Box 100746- 00100, Nairobi, Kenya. Email: steam@gdc.co.ke. The Editor reserves the right to edit letters for space and clarity.

IN FOCUS

Just to make sure all is well… *Drilling Engineers Wellington Kivure (L) and Joel Sutter assembling a rig model just before the Annual Career Fair at Kabarak High School*

Homegrown solutions

The last quarter was a busy one for GDC. Delegations of diverse interests visited with us full of curiosity: "Just how have you managed to do it within four years?" They kept asking.

The unique GDC model is a story for another day. How we are going to build tens of GDCs along the Eastern Africa Rift System (EARS) is the case for this reflection.

Let's see. The EARS straddles through 11 countries. It is the only region in Africa with abundance of commercially exploitable geothermal energy for electricity and other uses. The region has a conservative potential of 25, 000MW.

Only Kenya is developing geothermal at a grand scale. So far, we have 284 MW. Well, this is small compared to the 10,000 MW that is within our borders. But all will change as GDC targets 5,000 MW by the year 2030. Menengai's success is emblematic of tour future. Our success, if I may hint, is simple - government commitment and a passionate pool of pedigree expertise.

In Kenya, our Cabinet Secretary in the Ministry of Energy and Petroleum, Mr. Davis Chichir is committed to the geothermal ideal. He has provided useful insights and encouragement. The same is true of the Principle Secretary, Eng. Joseph Njoroge.

These are some of the things that a high-powered delegation from Rwanda and Tanzania came to explore. It was gratifying to see the kind of enthusiasm and fire that Menengai ignited among our visitors.

"Our success if I may hint, is simple - government commitment and a passionate pool of pedigree expertise.

Strategic co-operation

To develop this region optimally, we need strategic cooperation. I know a number of protocols exist towards unification endeavors; we need to cement collaboration and cooperation on the geothermal front as well.

For starters, geothermal is a unique and complex enterprise demanding extremely specialized expertise and equipment. And since the region lacks such a tradition, it means there is scarcity of technical proficiency and even conceptual models that are context-specific to drive our energy needs. Only Kenya has beaten the path to enjoy the perch it is in now.

And that is how Kenya is becoming a fulcrum for the region's geothermal interests. What is our local solution to our local problem? Our approach may be rudimentary but very effective. In 2011, GDC trained about 16 Rwandese experts at Menengai. They have since transformed the thinking on geothermal in their country. Today, Rwanda is drilling for geothermal. With its pool of expertise, GDC has offered to support Tanzania in this quest – both in training and provision of exploration and laboratory equipment. The Comoros Island has also benefited from our expertise.

Now, when this region picks the geothermal card, it opens up an array of opportunities ranging from mass employment opportunities to attracting foreign direct investment, as well as dealing with food insecurity.

Furthermore, equipment manufacturers will also take the region seriously and offer better deals as opposed to the current status where only Kenya is the customer.

Intellectual chord

Besides, green energy strikes an intellectual and emotional cord worldwide. That is why, our commitment will be rewarded abundantly- with a green production mechanism, our products will be competitive worldwide. That is how to build a multi-trillion dollar green economy.

GDC has developed models that work; it has invested in equipment and human resources that the region requires.

What these countries now need is political goodwill. Major resource developments make sense when the political class understands the dynamics and provides the vital legislative and budgetary facilitation.

The political class should also be wary of speculators who seek concessions but lack the capacity to develop fields. In the end, they waste time and opportunities. Geothermal should be developed by the government and then Independent Power Producers (IPPs) are invited at the power plant stage.

While it is commendable that the region also boasts of fossil fuel, still, it makes economic sense to export oil and gas and plough that money back to the economy while we generate electricity from geothermal, which is free, abudant and clean.

In its raw form, geothermal cannot be exported unless it has generated electricity or produced goods. The worldover geo-electricity is the cheapest.

Dr. Silas Simiyu, M.B.S
Managing Director & CEO
Geothermal Development Company.

Congratulations Mr. Chairman... *H.E. President Uhuru Kenyatta presents GDC Board Chairman Paul. E.O.Gondi with an award for the Best Overall Stand at the Nakuru ASK show*

President hails GDC

You have done a good job- he says

H.E. President Uhuru Kenyatta recently visited the GDC stand at the Nakuru ASK show and urged the company to assist in lowering the cost of electricity.

The Head of State was taken through the progress made so far by GDC in helping the country achieve energy independence.

"You have done a good job," observed the President "…the cost of energy has to go down tremendously," he stated while being taken through the GDC exhibition by the MD & CEO Dr. Silas Simiyu.

His stopover at the GDC stand lasted more than 25 minutes. The president was impressed by the rig model and was pleased to learn that GDC uses its own rigs and experts as a strategy to bring down the cost of power.

Clad in a red tie and a dark suit, the president keenly followed the explanations and once in a while interposed to seek clarification or just to make a point.

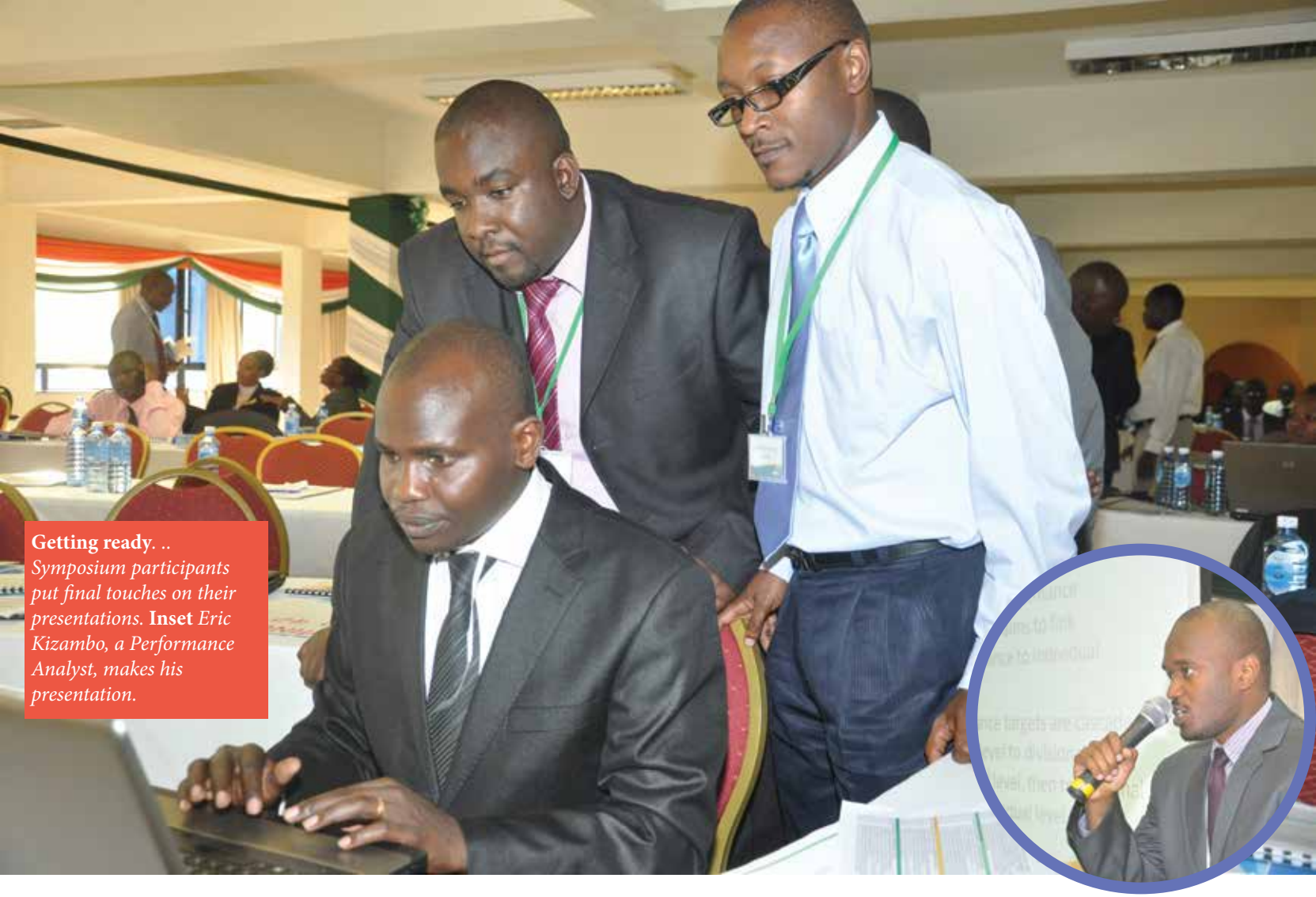
GDC emerged the best stand that best explained the 2013 ASK show theme.

The Head of State was accompanied by the Agriculture Cabinet Secretary Felix Koskei, Nakuru Governor Kinuthia Mbugua, Secretary to the Cabinet Francis Kimemia, Keiyo South MP Jackson Kiptanui, the ASK National chairperson Alice Kalya, ASK CEO Batram Muthoka, Chief of Staff and Private Secretary to the President Jomo Gechaga, among other government officials.

This year's theme focused on enhancing technology and industry for food security and national growth.

One of GDC'S major objectives is to utilize geothermal to promote agricultural and industrial activities. The President emphasized on the important role technology can play in agriculture, industry and more importantly in enhancing food security.

> *...you have done a good job, the cost of energy has to go down tremendously...*
> -President Uhuru



Getting ready. .. *Symposium participants put final touches on their presentations.* **Inset** *Eric Kizambo, a Performance Analyst, makes his presentation.*

Symposium converges GDC's finest

GDC recently held its first in-house symposium where staff presented papers of diverse interests.

And the event, to be held annually, provides a platform to engage the team in intellectual discourses that recharge interest and passion in various areas of expertise.

The audacity of marshaling staff to engage in such kind of enterprise seems to defy the imaginary limit of most organsations, save in the academia. Yet, GDC did it with the ease of a bird taking to the air.

And the delegates did not disappoint. Well written papers were presented to an audience of about 150. Among those who attended were Mr. Paul E.O. Gondi, the Chairman, Board of Directors and the Managing Director, Dr. Silas Simiyu.

"This conference is a great opportunity to develop cutting-edge expertise in one's area of focus," observed Dr. Simiyu.

"You're really excellent. As GDC, we will sponsor you to international conferences because you have great ideas which will help the geothermal industry. We are very proud of you for the good job you've done. The ideas are very original," observed the CEO.

The 1st GDC Annual Symposium attracted a total of 60 papers drawn from all the departments. The MD encouraged staff to keep on researching and presenting papers. And for the two days, the MD took time off from his busy schedule to listen to the staff and to offer guidance where required.

A symposium, so noble a venture for any organisation, is organized in search of excellence. And for GDC what do you expect? Its top brass is made of academics. The MD and his General Manager are men of books complete with PhDs, infact the MD is a post-doctoral fellow. Many other staff are scholars in their own right.

"I'm so happy today. This is why I'm at home in this company," said James Tikonin, an ICT expert who received accolades for his presentation.

So impressive and original were some of the papers that the Organising Committee feted their authors and presenters.

"I'm amazed by the quality of the papers presented today. GDC has a huge resource of intelligent and passionate staff. We should all support them at their different stations of work," said Mr. Gondi who opened and closed the conference.

He encouraged staff to emulate the MD, whom he observed, has a deep passion for the company and encourages innovation.

Staff who participated in the symposium billed it as a great stride in consolidating the GDC's intellectual asset. They promised to keep their spirits alive in a bid to make GDC a better place to work.

The MD reminded staff that continuous improvement is a requisite to becoming an authority in one's filed. He explained that most managers were tried and tested through the many papers they had presented in international conferences. He encouraged staff to be committed and focused on their goals in research.

"We will also adopt some of the innovations presented in our operations," he said. A journal containing all the papers that were presented is now in circulation.

'Impressed' senate to support GDC

Hon. Gideon Moi, the Baringo County Senator and Chairperson of the Senate Committee on Energy, Transport and Roads, listens intently to John Lagat, the Manager, Geothermal Resource Assessment at the Menengai Geothermal Project

The Senate Committee on Energy, Transport and Roads has assured GDC of its support.

The committee members said they are extremely encouraged by the work the company has done so far.

Sen. Gideon Moi, the committee's chairman noted that the senators will call on the government to properly fund GDC's geothermal exploration to ensure Kenyans enjoy low power tariffs.

Sen. Moi who is also the Baringo County Senator added that geothermal power produced in Menengai and Baringo areas when fully operational, will lower electricity tariffs in the country.

While leading a delegation of eight other senators, the chairman affirmed that geothermal is the only way the country will realize cheap, and reliable source of energy.

"The committee is extremely encouraged and pleased by the work GDC is doing in Nakuru and Baringo counties; we will stand with them," he said while addressing the press in Menengai recently.

The mission also took the committee to other prospects in Baringo and Turkana counties.

Senators in the mission included: Chris Obure (Kisii), Dan Mwazo (Taita/Taveta), Otieno Kajwang' (Homa-Bay), Charles Keter (Kericho), Sammy Leshore (Samburu), Martha Wangari (Nominated), James Mungai (Nakuru) and Peter Mositet (Kajiado).

GDC's delegation was led by the MD & CEO Dr. Silas Simiyu and the Chairman, Paul E.O. Gondi. The MD took the senators through a detailed presentation of GDC's milestones and aspirations.

The tour came just a few weeks after Members of Parliamentary of the Energy, Information and Communication Committee visited the GDC prospect areas in the North Rift and Central Rift.

The National Assembly committee also pledged to support GDC in mobilizing funds for geothermal development in the country.

GDC calls investors for 90 MW geothermal plants

A discharging well with a silencer at the Menengai Geothermal Project

GDC has invited bids from eligible firms for the supply and installation of three geothermal modular power plants at the Menengai Geothermal Project. Each plant will be 30 MW and is expected to be completed by the end of 2014.

The successful firms will finance, design, install, construct, and test the plants. They will also be required to commission, operate and maintain the plant on a 25-year Build Own Operate (BOO) basis at the Menengai field.

The 90 MW will be part of the larger 440 MW phase 1 Menengai Project Development, scheduled for commissioning by 2016/2017.

The interim injection of the 90 MW to the grid will offer a reprieve to the consumer who has had to make do with unstable and expensive power supply.

Bye bye Mr. Minister

The growth of the energy sector has been commendable through the efforts of his leadership,"

GDC was among energy sector players who feted former Energy minister Kiraitu Murungi, two of his deputies and the former Permanent Secretary. CEO/MD Dr. Silas Simiyu, led the GDC team in presenting artistic gifts to Hon. Murungi, his former assistants; Magerer Langat, Mohamed Mahamud, and former PS Patrick Nyoike.

Speaking on behalf of all Energy and Petroleum parastatal heads, the MD lauded efforts by the group in developing the country's energy sector. He was flanked by the Chairman of the GDC Board Paul Gondi.

"Hon. Kiraitu was an outstanding and reconciliatory peacemaker. The growth of the energy sector has been commendable through the efforts of his leadership," he said amid applause from the crowd.

The MD added that the energy sector fraternity has the duty to continue with the good job started by the outgoing leaders, saying that the growth of the sector happened because of their passion, commitment and diligence.

Speaking during the function held at a Nairobi hotel, Energy and Petroleum Cabinet Secretary, Mr. Davis Chirchir said that geothermal is one of the critical sources of energy that will help in reducing the cost of power in the country.

"We will expedite the process of reducing the cost of power in the country," he said.

The function was also attended by current and outgoing energy heads and the chairman of the organizing committee who is also a board member at GDC, Mr. Paul Ngatia.

Former Energy minister Sen. Kiraitu Murungi

GDC, Baringo County in pact

GDC and Baringo County Assembly have embarked on a mission to accelerate geothermal development in the region.

In a fruitful consultative meeting held in Nakuru, the two parties decided to form a committee that will spearhead the process.

"Baringo County has numerous geothermal resources and we will support GDC in harnessing the energy," said the county's Senator Hon. Gideon Moi who led the delegation.

Sen. Moi added that the County and GDC need to work together to ensure that communities benefit from the huge resource.

The GDC team was led by MD Dr. Silas Simiyu.

What's the joke Mr. Senator? *Baringo County Senator, Hon. Gideon Moi appears tickled during the consultative forum*

GDC staff lauded for excellence

By Christopher Ngolo

A section of GDC staff have been lauded for their exemplary performance in the just concluded training on Structural Geology.

The staff drawn mainly from geosciences departments impressed Potsdam University lecturers upon completion of the short course offered through a Memorandum of Understanding (MoU) between GDC and the German institution.

The training which comprised of field visits to Longonot, Olkaria, Nyahururu, North Rift areas of Marigat, Elgeyo Marakwet , Lake Bogoria and Menengai caldera sought to equip the scientists with the much-needed skills to undertake their exploration duties.

"I'm impressed by the commitment, motivation and enthusiasm that you have displayed during this training," said Prof. Manfred Strecker, the lead trainer. "I want to appreciate your commitment in this field, your good work and determination and the eagerness to learn that you showed during late night classes," he added.

Prof. Strecker , who has a vast knowledge of the Kenya's rift system having studied the volcanic formation of the rift system, led a team of two other experts - Dr. Daniel Melnick from the Potsdam University and Dr. Lydia Olaka of the University of Nairobi – in the training.

"I'm the happiest man today and humbled by the sentiments from the facilitators. However, you need to implement the skills in your work. That is the only way this training can be fruitful," remarked Dr. Peter Omenda, GDC's General Manager.

University of Potsdam has signed an MoU with GDC with the aim of improving geothermal research and development of geothermal resource in the country.

GDC's Drilling Operations Deputy Manager Johnstone Maleche (third from right) takes Rwandan Minister of Infrastructure Prof. Silas Lwakabamba (third from left) through the drilling process at the Menengai Geothermal project

Rwanda Minister invites GDC expertise

GDC scientists have been invited to carry out geothermal exploration surveys in Rwanda.

Speaking during a visit to the Menengai Geothermal field, Rwandan Minister of Infrastructure Prof. Silas Lwakabamba invited the GDC team to survey and help in mapping and developing geothermal resources in his country.

Lwakabamba requested GDC Managing Director Dr. Silas Simiyu to tour Rwanda in a bid to assist the country realize its full potential of geothermal development.

"I would wish to kindly invite you (GDC) to Rwanda for a geothermal field tour to help us develop a plan to map out this resource," the minister said.

He lauded GDC's effort in Menengai terming it "amazing," adding that GDC should be made a geothermal center of excellence in the region in the pursuit of green energy initiatives.

Geothermal will make a great difference in the region in terms of providing green and reliable energy

"Geothermal will make a great difference in the region in terms of providing green and reliable energy. What GDC has done in Kenya is a major step towards eradicating the expensive thermal energy in the country," said Lwakabamba. "That is why we shall mobilize resources for GDC to be a geothermal center of excellence in the region," he added.

The MD, Dr. Silas Simiyu noted that GDC and Rwanda had started the consultations regarding this kind of partnership before and urged Rwanda's Infrastructure ministry to formulate policies that would allow geothermal resource development.

Lwakabamba stressed the need for his country to work closely with GDC in the development of the resources, citing an already existing MoU signed between Rwanda and GDC.

Among the areas that GDC will work with Rwanda include geothermal resource assessment, drilling operations, donors' funds mobilization, surface exploration, community engagement, corporate social responsibility among other areas.

GDC has been offering geothermal resource consultancy services to Rwanda as the country seeks alternative sources of renewable energy.

World Bank boosts Djibouti's geothermal quest

The World Bank early June this year approved a $6 million funding which is part of a larger $31 million package for the assessment of the commercial viability of the Fiale geothermal resource in the Lake Assal region of Djibouti.

The project is the first phase of a two-step process to develop local geothermal generation capacity and could help Djibouti fully meet its peak demand, alleviate energy dependency and reduce electricity production costs by 70 percent. The exploration phase, supported by donors, will assess whether large scale power generation is possible. This will be followed by competitive tendering for the development of an estimated 56 MW geothermal power plant by private power producers.

"The design of this project is built on international best practices as well as on lessons learned from previous attempts to develop the geothermal resource in Djibouti. The project is supported by several of our partners and will bring the latest know-how in this field to Djibouti," said World Bank Representative in Djibouti, Homa-Zahra Fotouhi. "We are very excited to bring this cutting-edge technology to a country where universal access to electricity seemed a remote hope. This could turn hope into reality."

The project is financed by the World Bank's International Development Association (IDA) which was established in 1960 to help the world's poorest countries by providing interest-free loans (called 'credits') and grants that fund projects to boost economic growth, reduce poverty, and improve poor people's lives. IDA is one of the largest sources of assistance for the world's 82 poorest countries.

Djibouti recently prioritized geothermal development with the Head of State Ismaail Omar Guelleh announcing the establishment of an institutional framework that will support research, studies, exploration and development of geothermal energy.

Source: World Bank

Rwanda kicks-off geothermal drilling

Rwanda is fast moving towards geothermal exploration with the first phase of exploration drilling kicking off.

The country has finally started exploration drilling on the slopes of Mt. Karisimbi, a move touted to be Kigali's game changer.

"Exploration drilling has been ongoing for the last one month with one hired rig. If all goes well, we are likely to start production drilling in the next six months," said Dr. Stephen Onacha (pictured), a Kenyan geothermal consultant working in Rwanda.

In a telephone interview with *Steam,* Onacha added that if all goes according to plan, Kigali will invite Independent Power Producers (IPPs) to put up small power plants for generation.

According to Onacha, Rwanda will be targeting other sites such as Gisenyi, Kinigi and Bugarama.

"Karisimbi is estimated to have a potential of 150MW. This will however depend on the exploration results while the country is estimated to have at least 700MW," adds Onacha.

He adds that Rwanda will also replicate Kenya in the Direct Use of geothermal.

Earlier, the country's Infrastructure ministry hand indicated that there is hope in Kigali's geothermal development.

"There is hope that this project will be successful. Research shows that in ten drilling sites, at least seven have potential for geothermal energy extraction," said the State Minister in the Ministry of Infrastructure, Emma Francoise Isumbingabo during the official launch late last month.

Dr. Stephen Onacha

She further explained that the government has taken risks with the project.

The drilling project is being undertaken by China's Great Wall Drilling Company (GWDC) with the supervision done by Reykjavik Geothermal Company (RG), a private company from Iceland.

Rwanda is closely following on the footsteps of its East African counterpart Kenya, which is touted to be Africa's geothermal power house.

The Karisimbi geothermal project will cost at least $21 million.

If the project succeeds, the government says it will provide the country with reliable, sustainable, and cheap energy source.

Minister of Infrastructure Prof. Silas Lwakabamba made the announcement a day prior to the initial exploration.

The Karisimbi geothermal project is one of four geothermal prospects in Rwanda; the other three locations are Kinigi in Musanze, Gisenyi in Rubavu and Bugarama in Rusizi. Each location will have multiple drilling sites. Research findings have shown that these locations may potentially have enough geothermal energy to satisfy the entire country's energy needs.

The start of drilling at Karisimbi is a big achievement after a long process of infrastructure renovation, research, prospecting, and drilling installation to ensure that it will be safe and reliable.

700

No. of Rwanda's estimated geothermal potential in MW

Geothermal food: *Tomatoes grown using geothermal resources*

Tunisia- an oasis of geothermal splendor

By Pauline Sheghu, Pascal Manan, Caroline Achieng and Charles Bengo

The image that comes to mind at the mention of Tunisia is a wind-swept vast desert. Whilst that is true, that is not the whole picture. As soon as you touch down at the airport, you are greeted by the magnificence of Arab architecture and friendly locals dressed in flowing robes.

The temptation to immerse yourself fully in a conversation with the affable airport authorities is checked by the language barrier. You have to either be fluent in Arabic or French, a rare thing for most Kenyans. But thank God we were in the good hands of Mr. Bennaissa Ayadi, an AfBD consultant.

Food? Not too different. Wheat products, chicken, fish and perhaps the novelty here could be olives. Another relief.

It is April, 2013. We are in Tunisia to share ideas, views and experiences in all aspects of geothermal resource management with our Tunisian counterparts. First stop is the AfDB office in Tunis where we are warmly welcomed by Mr. Youssef Arfaoui, the Chief Renewable Energy Specialist-AfDB. Here we are given an overview of the country, energy development and a brief regarding our visit.

Our next port of call is the Ministry of Energy in Tunis, to get a feel of the energy situation in the country. Here we learn that despite having enormous resources, the country too experiences energy deficits. 95% of its electricity is generated from natural gas but the country is moving to wind and solar, abundant resources due to its desert conditions.

Pleasant surprises

There are few notable differences with Kenya though. Tunisia's electricity production is at 4, 200MW, and the government provides a 30% subsidy to those who wish to purchase solar panels in order to encourage more energy efficiency in the country. And then surprise- a 13kg LPG cylinder retails at about KShs 350, only! What can't you cook with that?

Tunisia is blessed with geothermal resources though not of temperatures hot enough to generate electricity. They didn't hang their heads in despair though- they utilized it for direct uses in agriculture and spas. Their direct use is so advanced we were rather envious; the envy however nudged us to learn as much as we could.

So, let the learning begin in earnest. Next trip- El Mouradi-Hammam Bourguiba hotel. This hotel is renowned for providing high technology geothermal-based treatments with most of the clients streaming in from all over the world among other trappings. The hotel has pools and Jacuzzis all run with geothermal waters. That business is booming was confirmed by busloads of people flowing in and out of the hotel.

Done with the Jacuzzis, our other fish to fry was 400km to the South in a desert town called Tozeur. Here, our team had an opportunity to meet the Regional Director. Our discussion and tour was on the thousands of greenhouses dotting the desert, all utilizing geothermal since 1980. Tomatoes, cucumber, sweet melon, and capsicum are the most common crops raised at the green houses.

Cooling the desert

You never know how green vegetation can look breathtaking until you find it in the middle of a desert. At Tozeur, a cooling plant is used to cool geothermal water extracted from a well cooled using a condenser and stored in tanks then later allowed to flow to the community members' palm trees which produce tones of dates for sale abroad. Community members are employed to operate the plant; however farmers are expected to meet minor costs. Through the production of dates, there is a modern city in the middle of the desert and camels are a major investment. The palm trees are managed by a society.

We visited next a place called Kebili, here geothermal waters are cooled before being piped to the green houses. The produce is shipped to Europe. Next to Sanfucar International is a Spanish company based in Doo city in the desert. They have two geothermal wells belonging to the government of Tunisia. The company deals solely in tomatoes mainly for export to Spain, Libya and Dubai. The company employs a 1000 people from the local community.

Lastly, we visited The Royal Prince Hotel in Korbous city which is under construction and is billed to be the biggest hotel in Tunisia utilizing thermal water for its countless Jacuzzis, baths and pools. But before saying bye to Tunisia, a little fun at Hammamet; a beach town with the best beaches for swimming and water sports. Off to our beloved country; but with vital lessons on geothermally irrigated greenhouses and geothermally driven tourism.

Tunisia is blessed with geothermal resources though not of temperatures hot enough to generate electricity.

Nursing the wells

10 *Questions for Cornel Ofwona, Manager, Geothermal Resource Management and North Rift Area*

GDC's Geothermal Resource Management (GRM) staff at work. Inset: Cornel Ofwona, Manager GRM

1 What does your department do?

We're mandated to carry out reservoir engineering and management, steamfield operations and management and power plants operations and management. This means carrying out all the scientific measurements and monitoring of wells and the reservoir for sustainable resource utilization. It also entails designing steam-gathering systems and managing steam sales to power producers. Finally, we design, operate and maintain power plants and ensure that the electricity is evacuated.

2 Why is reservoir management important in geothermal development?

Our geothermal reservoirs need to be exploited in a sustainable manner. We need to know the resource capacity so that we don't over exploit or under exploit.

3 How unique is reservoir management?

It is both a science and an art. It is about imagination to figure out what is happening under the earth and then using this imagination to design a real system that will transform the energy underneath for the benefit of mankind.

And imagine a technician looking at a discharging well and without any data accurately telling you the well output in megawatts! That is how unique we are. Actually, our work started in the Biblical days with Moses when he struck water out of a rock!

4 What are the milestones you have covered at GDC?

•Establishing GRM department from inception in 2009/10.
• Recruitment of core staff and acquisition of key equipment
• Testing the first well in Menengai Geothermal Field in 2011 and testing subsequent wells.
•Staff development and capacity building through internal and external trainings
Mentoring young engineers.
•Ongoing feasibility study of Menengai.
•Power generation concept and specifications

5 What major projects are you tackling now and in the near future?

• Feasibility study of 400 MW power generation in Menengai
• Developing design and specifications for power plants and gearing towards implementation of 90MW power plant by December 2014
•Developing and implementing strategies of improving steam production for power generation in Menengai.
•Developing Menengai geothermal field reservoir model
• Discharge testing of drilled wells
•Well measurements and reservoir assessment.
• Design and specification of Steam Gathering Systems.

6 What are the challenges facing reservoir management in the world?

• Few training opportunities
• Geothermal fluids have unique chemistry
• Dealing with production decline
• Long learning curve

7 How are you overcoming these challenges?

• International experts are invited to train our staff on the job and we have also sponsored several engineers and technicians for training overseas.
•Appropriate measures are taken to deal with the unique reservoir chemistry such as chemical treatment and choosing optimum operating conditions depending on fluids being produced.
•Appropriate reservoir management strategies will be developed to deal with production decline when production starts. Some of these will include proper design of hot and cold re-injection, optimal production well spacing, reservoir and wellbore simulation and good steamfield operation and management.
•Motivate, train and retain staff. They will have a better understanding of our geothermal systems.

8 What kind of team do you need to execute your work?

GRM needs a staff with basic training in mechanical, electrical, chemical, power systems, and instrumentation and control engineering, chemistry and geology/hydrogeology. Someone must be dedicated, visionary, motivated, multi-skilled, innovative, and flexible. One must be ready to work at odd hours, and in strenuous environment and extreme weather.
Training yong engineers to carry out the works

9 What is resource management's role in achieving 5000 MW?

•Testing drilled wells and availing data
•Modeling the resources to determine capacity
•Resource assessment and feasibility studies
•Design and specifications of the steam gathering and power plants
•Supervision and management of steam supply contracts
Training young engineers to out the work.

10 What would you like to see GDC achieving in the long run?

Developing all the Geothermal Resources in Kenya and realizing its dream of reducing the cost of electricity to Kenyans.

Berries to bricks

By Erick Wamanji

Kariuki Muchemi pours hot water into a mug. The aroma of coffee fills the room. He stirs his brew slowly but avidly amid a hum. Of the things he relishes most, coffee enjoys a perch at the top. "But I've got little regard for coffee farming," he muffles after two sips of his steaming beverage.

"Coffee farming is very punitive," he continues, pushing aside *The Fastest Billionaire,* one of the inspirational books he is reading. "The peasant farmer is an exploited lot; he is paid peanuts yet coffee is a full time and dirty job. It's why I uprooted my coffee bushes from the garden I inherited back home."

That's Eng. Kariuki Muchemi for you – candid. And true to his aversion for coffee farming, he did not pursue a career in agronomy, neither did he fancied cherry-picking nor becoming a top barista. Rather, the director at the Geothermal Development Company (GDC) chose civil engineering.

"My dad was a local contractor in Nyeri. I used to accompany him to his projects and assist the fundis here and there. I think that's how I nurtured interest in engineering," says the father of three.

Tar and marrum

It is these escapades of building local houses, schools, or *dukas* that seem to have laid the firm foundation for Kariuki's future business. Today, through his Interconsult Engineering firm, he has constructed numerous edifices including the Agro House in down town Nairobi and Timau Plaza on Agwings Khodhek Road. He understands tar and marrum as well. Currently, his bulldozers are roaring on Oljororok-Dondori, and Turbo-Chepterit roads.

With about 20 employees, Interconsult is no mean player in the civil engineering job market. Yet, the owner cuts an unassuming demeanor. On this chilly Friday morning, he is glad to play host, profusely apologizing for a cancelled earlier appointment. He talks to Beatrice – the office assistant-with courtesy, he listens before he speaks. Generally a man of few words, he doesn't shout; his laughter is measured.

Early-Riser

Even with this kind of team, Muchemi is normally up by 5am. "We're just two at home: my wife and I. Upon waking up, we say a short prayer then prepare for the day."

His wife, his "best friend," also runs some business for the family. By 6 am Eng. Muchemi is in the office. Then his day rolls off as if it is a roller-coaster: he gets briefings, he meets lawyers to discuss contracts, visits existing and potential clients or visits construction sites; it is dusk that gets him home. Occasionally he has board meetings to attend at GDC or in the many associations he chairs.

"My wife and I like being together. When you reach and the age where all children have left home, it really helps when your spouse is a friend; we're," says the man who loves the Bible and Church. In his office, among the collection of engineering and inspirational books, is a brown Bible.

"Life in Christ allows you to be peaceful. I'm never scared in my life because I don't step on people's toes," he says. And his advice to those desirous of matrimony: "Look for a friend. That's what I always tell young couples. Otherwise, when children are grown up, you may start to drift apart and live a very painful, lonely old age."

And to him, 1980 was his highest moment- when he tied the knot. However, he suffered a blow in 1982 when his dad died and was forced to travel from UK for the burial.

One brick at a time

For 21 years he has captained his firm, Interconsult, to the financial stability it is enjoying today. And now, he is desirous of calling it a day. "It's time I paved way for young engineers to take over the management of my company's day-to-day operations. My work will be to provide guidance."

Twenty-one years ago, indeed, he mustered courage and took a leap into self-employment. That was in 1992 when the economy was bearish. Still, he quit a well-paying job to found Interconsult. It wasn't easy, he says, but he stuck in there - building an empire one brick at a time. "When you go into business you need courage and determination. It also works well if you have the necessary support from your family," he counsels.

There were discouragement and hitches as wont to any startup. But today, he is having the last laugh. Yet, Eng. Muchemi is not drenched in the glamour that big money brings. Well, he plays golf at Muthaiga; what else would you expect the moneyed to do?

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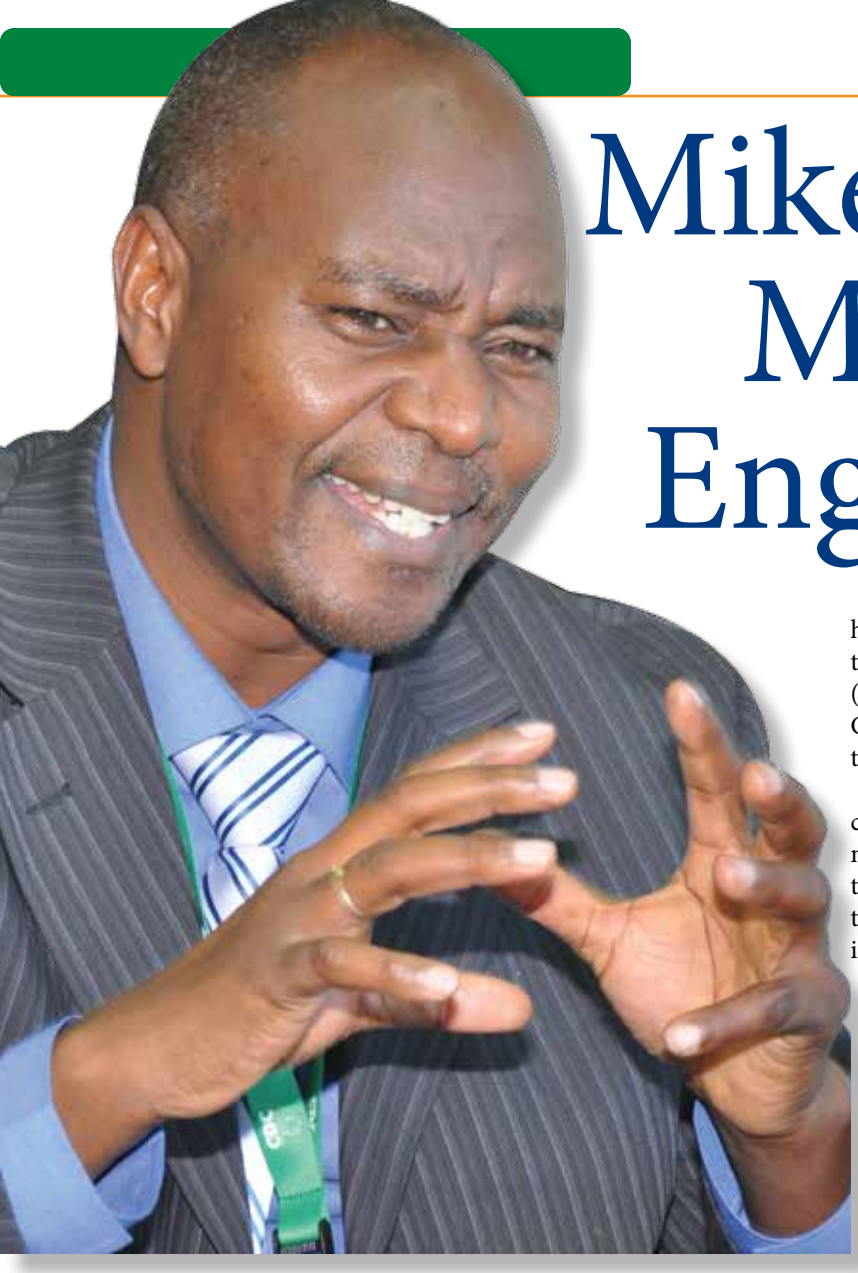
Boardroom matters Today:
- Chairman, Association of Consulting Engineers of Kenya (ACEK)
- Council member of the Management University of Africa.
- Fellow of the Kenya Institute of Management (KIM)
- Council member of the Association of Professional Societies of East Africa (APSEA).

Past:
- Council member of both Kenyatta University and the Institution of Engineers of Kenya.
- Board member Water Services Trust Fund.



Mike: The Mellow Engineer

By Godffrey Olali

Michael Mbevi stumbled and fell on his way to school at a tender age of seven. Then, he was only a Standard One pupil at the Ngumbau Primary School, Machakos.

Writhing in pain after the fall, the little boy was later taken to the nearby dispensary - and fired passion in him for a career in medicine.

"I admired the way the nurses conducted a short procedure on me after applying anesthesia. I didn't feel any pain. I immediately wanted to be a doctor; a profession I cherished most of my primary school days," quips Mbevi fondly.

His was a typical country boy's lifestyle: he trekked to school, ploughed shambas and did not have a mentor. He just worked hard and passed his examinations.

His parents, Joseph Mbevi and Anastasia Nthambi, were peasants.

"I came from humble beginnings and as the first born, I had to work hard. We lacked food and basic requirements but my parents struggled to give us an education," says the University of Nairobi alumnus who today occupies a well-furnished office based on the ninth floor of Taj Tower in Nairobi.

Through his love for work, passion, dedication and drive, he is today the Drilling Operations Manager at GDC. He has held this post since 2009 when he moved from the Kenya Electricity Generating Company (KenGen) where he served as a Chief Engineer, Drilling by the time he left.

"Drilling experience is fascinating; it keeps you busy. It makes you to be an efficient time manager, running on tough schedules while executing critical assignments all the time," says the father of one who is also a firm believer in Christian faith, a preacher and a philanthropist.

He equates his busy work to parenting, a parent has to monitor daily the progress and the on goings in the family.

"It really calls for utmost discipline and dedication. I receive phone calls even if I'm officially out of the office. And I have to attend to all the enquiries," he states.

Mbevi found himself in the engineering profession by default. During his days in Kitui High School, he developed the passion after a group of young engineering students from the University of Nairobi visited the school and demonstrated how computers would take over the world in future.

"I really didn't choose this career, but somehow, I found myself in it due to the subject combination I later took at the university."

After graduating, he would later hustle for at least one year taking a teaching career at the local Ikalaasa Secondary School in Machakos County. Here, he taught Mathematics, Physics and Chemistry with a monthly stipend of Sh1, 500. With this, Mbevi would later rent a small house departing for a monthly rent of Sh150.

He then landed a job with the then Kenya Power and Lighting Company (KPLC) as a graduate trainee in engineering.

"As a graduate trainee, the government could post you anywhere in the country. I cleared my internship in 1996 and chose to go to work at KPLC's Olkaria. He saw a drilling rig for the first time while on internship. Later he would be employed and posted to Olkaria power plant after being employed by KPLC. He would later work here till the firm was split and the Company created KenGen.

Mbevi's highest moment was the 4th of August 2009, when he became one of the pioneers at GDC.

"Actually, I was the only engineer in the Drilling Operations Department. I loved the dedication and the passion from the few employees at that time. Operating from our tiny offices at Nyayo House in Nairobi was amazing. With no files, computers, desks and other essential equipment, the team work was just out of this world," recalls Mbevi.

He remembers participating in development of technical specifications for the purchase of the first two rigs funded by the government.

Today, he is happy to see Menengai developing into a steam complex with a total of four rigs, with three more on order and over 100 staff to supervise.

"Growth of the department since that time has been amazing. It gives me joy. To train so many people in this highly specialized field, empower them

To pg. 15

It really calls for utmost discipline and dedication...it's like being a parent

The mellow engineer

Cont' d from page 15

and leave them to work and produce results gives me a reason to move on."

With the local and experienced manpower, his job nowadays is to supervise, offer guidance and formulate strategies and policies for the drilling staff.

He joined the University of Nairobi in 1991.

With over 10 years' experience in geothermal drilling operations and development, Mbevi holds a BSc. In Mechanical Engineering and a post-graduate diploma in Geothermal Energy Technology from the University of Auckland, New Zealand.

A dedicated family man, Mbevi's typical day starts at 5:00 am. He takes exactly 30 minutes to prepare and further five minutes for daily morning devotion, a habit he has nurtured and cherished for long. After devotion, he drives to the office.

A church elder and a preacher at Chrischo church, his favourite Bible verse is Psalms 2:8 while his favourite author is Rick Warren, whose book "Purpose Driven Life" is still etched in his mind.

"It's a captivating book. Sometimes, we limit ourselves and see only what the natural eye sees. You should not be limited to what you see or hear; everyone has a potential," advises the man whose favourite food is githeri (a traditional delicacy made from a mixture of maize and beans).

In between our interview, Mbevi also occasionally quotes Deuteronomy 6:10-14, which speaks about the fear of the Lord and retribution associated with serving other gods.

"There is no satisfaction in this life. Why do we have a lot of bloodshed, nations tumbling down each day, lots of lifestyle diseases and stress? It is because man is trying to compete with God," counsels the 44-year old Engineer who draws his strength and rejuvenation from the word of God.

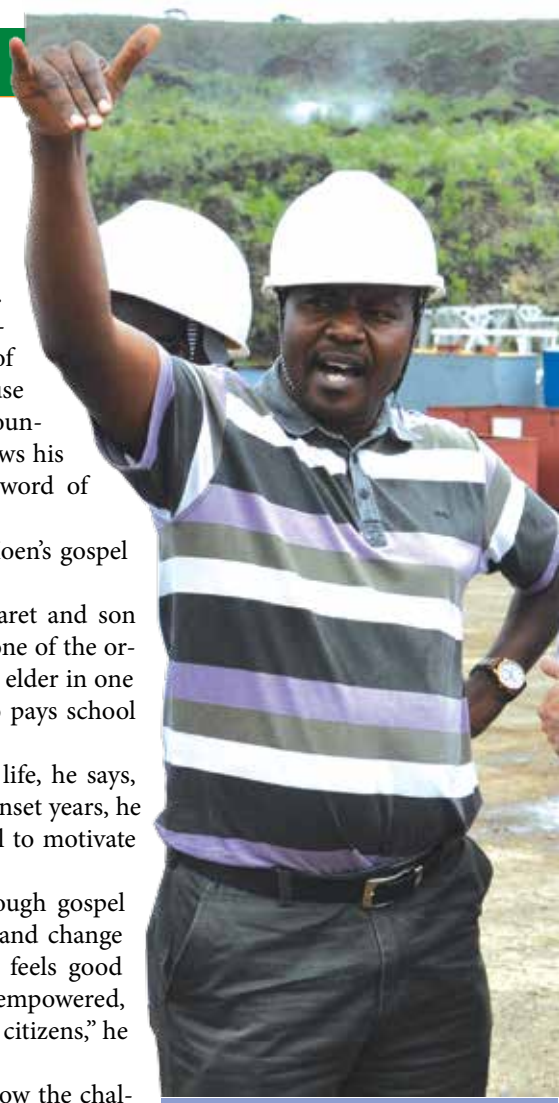
He is an ardent listener of Don Moen's gospel music.

In Naivasha where his wife Margaret and son Mwendwa live, he is also a patron in one of the orphanages for destitute children and an elder in one of the churches in his village. He also pays school fees for four children.

Empowering the less fortunate in life, he says, is his calling. This is why during his sunset years, he would wish to use the gospel as a tool to motivate and empower people.

"Church will be my priority. Through gospel mission, you can reach many people and change their lives in one way or another. It feels good when you see people whom you have empowered, develop, grow and become responsible citizens," he states.

"I grew up in the village and I know the challenges people face. The biggest gift you can give a person is to empower them."



Mike at a function in Menengai

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From berries to bricks

Eng. Muchemi at the Menengai Geothermal Project

But he goes to church as well. St. Andrews Parish in Nairobi has been his sanctuary since his student days at the University of Nairobi where he studied engineering. He is an active member of the Presbyterian Christian Men's Fellowship (PCMF).

"Business requires persistence," he says. "It's not like instant coffee. You have to be patient as well. But as they say, if your business does not collapse in the first seven years, then you are good to go," explains the Alliance High School alumni.

He also went to the University of Buckingham, UK where he attained an MSc in Engineering. He would later work for the then Nairobi Council and then Norconsult, a private firm before quitting in 1992.

Currently he is back to class. Not for engineering but for law. "I am an associate of the Institute of Chartered Arbitrators (Kenya Chapter) and my goal is to enhance my arbitration skills," he explains. " I am of the view that as you grow old it is important to ensure that you are usefully engaged, remember the old adage 'An idle mind is the devils workshop."

To him acquiring knowledge is a lifelong engagement. His wide Isabel is undertaking a PhD.

Organised team

In 2009, he was appointed a director in the GDC Board where he chairs the Finance committee and serves in the Strategy and Planning committee.

"As a director I'm extremely proud of GDC. I've never seen such a dedicated and organised team. Someone may think GDC is a private company. I'm sure if half of Kenya's public institutions executed their mandate the way GDC has, this country would be so much better off," he says.

His most memorable moment at GDC was of course on May 12, 2011.

"It was fascinating; within a short time GDC had proven to the world that Menengai was a viable geothermal resource," he says cheerily.

The engineer is an ardent reader of inspirational books. Reading is healthy, he insists. It explains why of all the things that have impacted him positively, books top the list. There is this particular book by Antony Robins, which he would recommend to anyone. Well, he can't remember the title. He tries the iPad; he can't get it. He calls his wife, and voila, the answer is here: *Awaken the Giant Within.*

The widely-traveled Kariuki has a soft spot for Iceland. It enchanted him: "I was impressed at how Iceland has made maximum use of geothermal energy. They use it for virtually everything from power generation to agriculture, heating buildings to leisure and recreation. We need to replicate that winning model here in Kenya," he enthuses... and perhaps we need a formula for coffee as well.

Parliamentarians at the Menengai Geothermal Project

The charm of Menengai

Eric Wamanji *joins the Parliamentary Committee on Energy to a tour of Menengai and finds out why it wants to leave a legacy in geothermal*

When they came to GDC mid this year, members of parliament left with one message "Kenya needs geothermal energy; we'll support GDC in this mission."

During its sojourn at GDC's projects, the Parliamentary Committee on Energy, Communication and Information also indicated that Kenya needs to rapidly develop geothermal resources if its vision for industrialisation are to be realised.

"We're very impressed by what GDC is doing; it deserves all the support," declared Hon. Jamleck Kamau, the committee's chairman.

And it is in Menengai that the MPs were pleasantly surprised.

"This is gorgeous!" exclaimed a jovial Hon. Mpuri Aburi, upon the site of Simba II, a rig that was drilling on the southern tip of the prospect.

The honorable member for Tigania was not the only one lost for words. His colleagues too confessed as much.

"I didn't know that GDC has done so much," Hon. Aburi continued, hands akimbo. "This is a national pride. Every Kenyan should come and see what GDC is doing here in Menengai... Kenya will progress very fast... we need this energy."

The Menengai caldera has this eerie sensation that seeps into the visitors' sensees, and before they know it, they are won over.

Menengai is breathtaking. It has all the hallmarks

of a hiker's paradise, though it is exclusive for geothermal operations. It all begins at the entrance of the project area where GDC has a tree yard complete with a mowed lawn amidst whispering succulents. Then there are meandering roads flanked by shrubs and volcanic rocks. Deep into the caldera, giant pieces of mega-structures called rigs tower the skyline with splendor. And here too, geothermal wells discharge steam with charm and magnificence.

And no sooner had the MPs disembarked from their vehicles than they fished out a phone, an iPad, a tablet or a tiny camera seeking to capture the moments – the sights and sounds that Menengai had to offer.

Here, the MPs had many questions as wont most visitors, "so what's this" what's that? When was this begun? So how is it done…" the questions were flowing fast. And the GDC team was at hand. "This is a rig… that's a well pad…drilling is specialised…those are mud tanks…" the answers flowed out as well as if from a tape recorder.

Sterling performance

It all began in the morning of that bright Thursday. In his characteristic suave, rigorous and invigorated style, GDC's Managing Director Dr. Silas Simiyu worked overtime. From a boisterous presentation in the morning session at a workshop with the MPs, to explaining every iota of the project, it was easier for the visitors to understand why GDC has posted such a sterling performance in just about four years of its existence.

And beyond the zeal there is also a crisp vision which when it was unpacked to MPs, most of them were on the edges of their seats. "It's geothermal that will create close to three million jobs through direct utilisation," intoned the MD. Then he went ahead to demonstrate the numbers.

"And this is how Lapsset will become a reality…" he revealed again, and showed how the rail system and the oil will require sufficient energy, which incidentally is in plenty in most of the rift where the project will traverse.

When his presentation ended, the MPs gave the MD a standing ovation.

"This country needs a lot of energy to achieve its development goals. Yet, only geothermal so far proves to be the energy we can rely on," he said. "We want this committee to be remembered as the one that actualized geothermal development in this country," Kamau noted.

Menengai has all the traits of a legendary legacy-building project. In its first phase, the project is targeting 400 MW. Already GDC has invited investors to bid for 90 MW modular power plants. And the GDC team is full of steam towards this goal. With four rigs drilling, steam wells discharging and a dedicated team of drillers on site, you understand why the lawmakers are so impressed.

This explains why Hon. Kamau was ebullient as he traversed Menengai. Being his first time, he quickly saw that GDC is in fact a ready to plug and play project for the committee and country.

In one accord, the committee pledged to support GDC in mobilizing funds for geothermal development in the country. The team reckoned that geothermal is at the heart of the country's development aspirations.

"If we go by the plans that GDC has set in place and move forward using geothermal as one of the main sources of energy, the cost of power in the next two to three years will come down dramatically," observed Hon. Kamau.

The legislators added that geothermal will play a focal role in the realisation of Vision 2030 since it is affordable, clean and will attract a lot of carbon credits. Emergency power contributes to high cost of energy and of doing business; it is "a politician's headache," as Hon. Kamau would put it.

Of course Kenya needs affordable and reliable energy for economic development. So, when MPs realize there is hope in a resource like geothermal, it is understandable when they put their odds on GDC.

In Bogoria where the committee toured to see other prospects, Steam caught up with Hon. Asman Kamama. The jovial MP from Baringo County bubbled with excitement that GDC is seriously seeking to develop the rich Baringo-Silali Block. This block boasts vast resource of about 3000 MW. He was saddened though that the National Treasury did not allocate enough funds to enable GDC to open up the region.

"But we will support GDC in word and deed," Hon. Kamama affirmed. "GDC must be accorded the necessary environment to deliver on its mandate."

The MPs were also awed by the vast pool of expertise at GDC's disposal and declared that it is the team that will drive the energy dream of the nation.

"Mr. MD, we're fascinated, even humbled by your team. There is no doubt that this is a competent and well-trained team," said Prof. Hellen Sambili, who attended the tour as "a friend of GDC."

And for Moses Lessonet, the MP for Eldama Ravine, he will come back again. "I think I need to come back again to Menengai. I like it here. There's so much to be proud of," he reiterated.

> *"The Menengai caldera has this eerie sensation of seeping into your senses, and before you know it, you are won over*

Nyaribari Chache MP Hon. Dr Chris Bichage (L) gets a point clarified by GDC's General Manager Dr. Peter Omenda (R) and GDC Drilling Engineer Ludasia Ochieno

Nakuru County Governor H.E. Kinuthia Mbugua makes a point during the tour of Menengai Geothermal Project.

Why Nakuru county sees hope in GDC

The governor for Nakuru Country, H.E. Kinuthia Mbugua, cast his eyes around the Menengai geothermal project in admiration.

"This is wonderful," the governor told *Steam* amid the rumble of a discharging well.

"I'm mesmerised at the kind of effort that GDC has put into this project. This is a star project in the county. We need to support it."

The governor had taken time to understand what the "geothermal people are doing at the Menengai Crater." And what he saw exceeded expectations.

"I'm amazed by the vastness of the project. It's monumental," he exclaimed, bending to pick a black rock which he would later give a long scrutiny just as would geologists.

"What does this rock tell us about geothermal?" he quips. "It's young lava rock. It shows a recent eruption indicating that underneath is very hot. Good enough for a geothermal system," I respond, picking from where my friend, John Lagat, a seasoned geologist and the Manager Geothermal Resources Assessment, taught me.

To make it at GDC, you have no option but to immerse yourself into the complex world of geo-science, engineering and policy. Every visitor asks anyone any question. It would be embarrassing if your response would be "I don't know."

Back to the enthusiastic governor. He told this writer that he had never been to Menengai and that Friday mid-day changed his perspective about state corporations.

Passionate MD

"You know what," he intoned as we caught up again at Mlima Punda -a hill that offers a 360 degrees panorama of the vast project. "I heard your MD talking in the morning; I have seen your staff at work; you people are full of passion. It is unlike a state corporation. You have outdone yourselves," he said, almost whispering.

This is a bit flattering; one can blush when such accolades come from a person no less than a governor. Still, the governor was sincere and he did not have a reason to flatter.

The governor now knows too well that it is geothermal that will make the Vision 2030 happen. Geothermal will attract heavy investment in his Nakuru County and thereby create employment and boost the quality of life among the people. And this way, the vaults for revenue to the county's treasury will be overflowing.

"There is no doubt that GDC is playing a critical role in social and economic development and needs all the support to succeed," the governor said.

When he was at the rig, he keenly followed the explanations by the drilling crew. Donning a white dust coat, the governor was patient as the drillers in their blue aprons explained every stage of drilling. He nodded, smiled and his pupil lit up occasionally. He had many questions. He received as much answers from our crew.

"I will call upon the private sector investors to take part in power generation projects in Menengai. I also urge the local leadership to help in resource mobilisation for purposes of creating employment through direct uses of geothermal energy," the governor would later comment in a speech over lunch.

Talking of direct utilisation of geothermal resources, the governor lit up when the MD, Dr. Silas Simiyu demonstrated how eclectic geothermal is and what it can do beyond the traditional generation of electricity.

What we know of and utilise geothermal for, is just but a tip of an iceberg. There is a whole world of tens of uses for this wonder resource.

"There are many opportunities for the county to tap into. We will extend our discussion with GDC to see how we can venture into those other uses of geothermal energy like recreation, fish farming or grain drying. The possibilities are immense," he enthused.

The governor knows too well that his county can invest in geothermal energy. He noted that it will be easy for his government to seek financiers toward renewable energy especially that his county abounds with the resource.

The governor will take advantage of his progressive county to connect. For instance, unlike other areas with geothermal energy, Nakuru County has a developed economy, social and physical infrastructure and is close to the biggest markets in East and Central Africa – Nairobi. All these factors combined give his county a competitive advantage in investing in the promising geothermal sector.

When his motorcade snaked out of the caldera, a Kenyan flag flapping on the right side of the official vehicle, the governor was upbeat, waving us goodbye.

- Eric Wamanji

Capacity boom

A grand plan premised on a Ksh. 1.6 billion grant to train about 500 experts in three years, is mooted

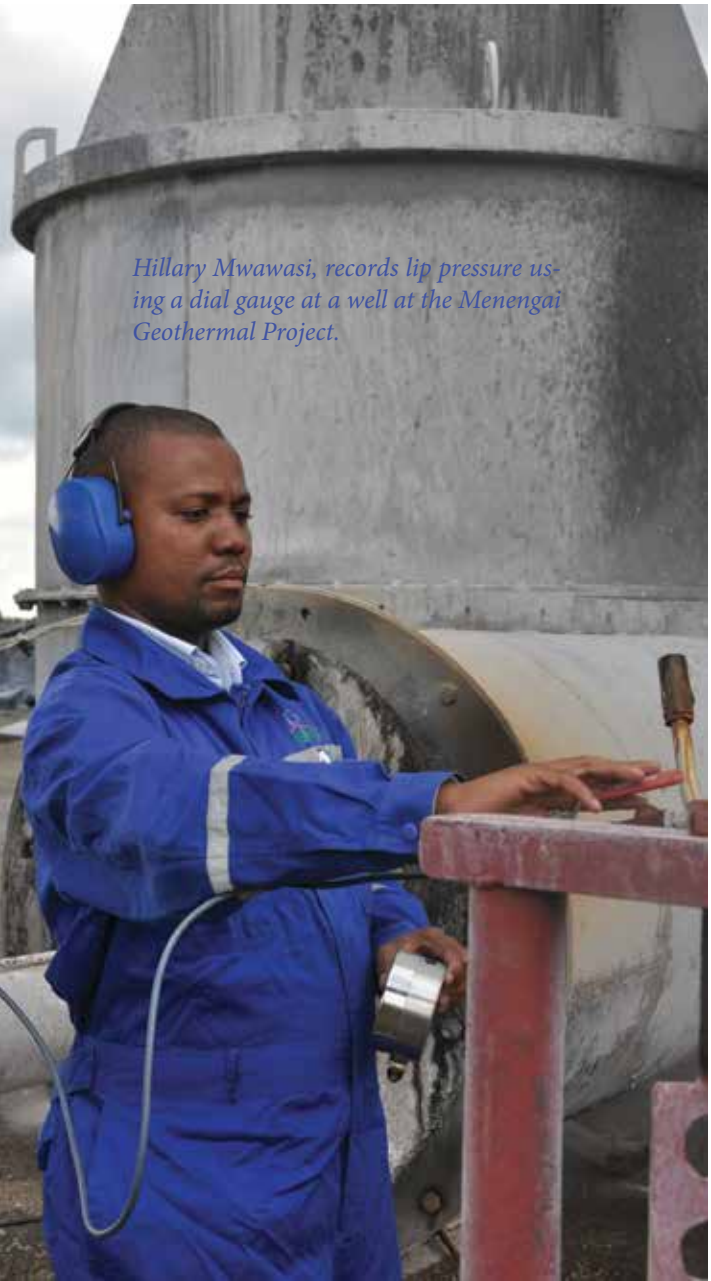
On a breezy July evening, Hillary Mwawasi moves closer to a gauge of a discharging well in Menengai to take the readings. The ground is vibrating as the steam roars out through the silencers – two huge-metallic cylinders. Clad in a royal blue apron, a red helmet and ear muffs, he records what he sees, as a cheeky smile plays at the edges of his lips.

Mwawasi and team have been measuring temperature and pressure of Menengai Well-13 to ascertain its productivity.

"It's a good well; it's very promising," he would later conclude on the road to Nakuru Town. "There are very few reservoir engineers in this country," he continues thoughtfully. And the few need to enhance their expertise time and again.

The expertise gap is what the Shs. 1.6-billion-grant from JICA to GDC seeks to bridge.

Sometimes in late June, Japan granted GDC funds for capacity building. The grant deal which was penned in Nairobi by Mr. Davis Chirchir, the Cabinet Secretary for Energy and Petroleum and Mr. Hidetoshi Irigaki, Director General, Japan's Industrial Development and Public Policy Department, was tipped as "timely for the geothermal sector."



Hillary Mwawasi, records lip pressure using a dial gauge at a well at the Menengai Geothermal Project.

Dotted lines

"To achieve on its mandate of delivering 5, 000 MW by 2030, GDC requires continuous capacity building of equipment and human resources," a cheery Mr. Chirchir explained shortly before inking on the dotted lines.

The grant will support the development of geothermal projects in Menengai I and II, Suswa and other geothermal fields.

The training will last for five years. It is an on-the-job module where experts from Japan will train the Kenyan crew at different sites in Kenya. This makes the module unique. It also means that instead of incurring costs of travel and accommodation in Japan, the same can be saved and thereby train a bigger number.

Indeed, it's not only Mwawasi who is primed to benefit. About 500 GDC staff drawn from geo-sciences, engineering, environment, planning and business as well as legal disciplines will have an opportunity to deepen their knowledge.

By every standard, this is a massive training campaign that will definitely change the way geothermal enterprise is performed. And this is important because Mwawasi and company will have many more wells to test as GDC opens new fields and seeks to meet the energy chasm that bedevils the land today.

Dr. Silas Simiyu, GDC's Managing Director and Chief Executive Officer notes that enriched training increases efficiency and thereby accelerates geothermal production in the country.

For instance, precision in well-siting is critical because it saves on money and time. Drillers record a high rate of success when the sites they drill are well-targeted.

Japan, itself sitting on geothermal deposits, has developed technology and a culture around geothermal energy. It is also a manufacturer of geothermal turbines and other power plant related structures. Recently, following the Fukushima Nuclear plant tragedy, voices are loud to embrace geothermal energy. It is this passion, techno-how that the Asian giant seeks to transfer to GDC.

Dr. Simiyu explains that Kenya requires 15 rigs to drill continuously for the next 17 years in order to achieve the set targets. Currently, Kenya has 14 rigs drilling at different geothermal sites. Seven of the rigs are hired and seven are owned by the government. GDC is expected to receive three more rigs in 2014 that were financed by the African Development Bank.

"I'm looking forward to the training," an enchanted Mwawasi beams. "To speed up our business, we need more exposure to diverse technologies and approaches. It's about continuous learning," he says.

- Eric Wamanji

The courses

JICA will support training in the following areas:

- Well siting
- Drilling operations
- Drilling logistics management
- Health, safety and environment
- Theory of drilling techniques and reservoir evaluation
- Wellbore data analysis
- Reservoir evaluation
- Database development and management
- Environmental planning and monitoring
- Plant engineering
- Public/ private scheme planning
- Structuring agreement and negotiating with IPPs
- Multipurpose/ direct use of geothermal energy.

A section of the Tanzanian government delegation at the Menengai Geothermal Project

Tanzania seeks GDC's support

Country technocrats extol GDC's model; want it to be replicated continentally

The geothermal-rich Kenya is set to play a pivotal role in the green energy aspirations of Tanzania.

The country is looking to Kenya's Geothermal Development Company (GDC) to provide crucial lessons on capacity building, institutional framework design, research and development and attracting financiers.

Recently, a high-powered delegation toured Kenya for an experiential exposure. The mission comprised of senior government officials and members of Tanzania's Parliamentary Committee on Energy and Mining.

"We're very impressed with what GDC has accomplished in the past four years," stated an elated Hon. Victor Mwambalaswa, Tanzania's Chairman of the Parliamentary Committee on Energy and Mines.

"In particular, the Menengai Project is a classic model that we need to replicate in Tanzania. We want GDC to help us out," Mwambalaswa reiterated.

The mission was composed of 32 delegates led by Mr. Eliakim C. Maswi, the PS Energy and Mines.

While Tanzania is known for mining, it is yet to develop geothermal energy. It is GDC that will come on board to support the country's renewable energy desires. First, GDC has a clear-cut understanding of the technical and economics of geothermal. Second at GDC's disposal are top of the range scientific equipment and laboratories and third, and most important, GDC has cutting-edge expertise.

GDC has already offered to train four experts from Tanzania on geothermal sciences. Additionally, the Africa Development Bank is planning to sponsor more experts to GDC for capacity building by leveraging on the Climate Investment Fund's (CIF) grant.

"Its better to seek local solutions other than going elsewhere. GDC is our model and it understands the regional geothermal dynamics than anyone else," Hosea Mbise, the Tanzania's Commissioner for Energy and Mines, told the press at the Menengai Geothermal Project.

The delegation to GDC was interested in understanding Kenya's institutional and legal framework on geothermal energy. This is very critical to ensuring a thriving geothermal sector; Kenya seems to have pressed the right button.

Dazed the world

Though Kenya has been exploiting geothermal resources since the late 50s, the development was sluggish and almost hitting a comatose in the 90s. Then, in 2008 the government changed tact. It created GDC as a Special Purpose Vehicle to spearhead the development of the sector. And voila! All of a sudden, the industry blossomed. It was like a magic wand.

Indeed, GDC came to town with a strategy that has dazed the world; it is why the region is scampering to emulate this turnaround wiz. Now, Menengai, is Kenya's pride of innovative energy development, is primed to stream at least 90 MW to the grid by 2014. This is a record considering that operations in Menengai began in 2010.

Tanzania has no tradition of geothermal development and that is why the mission desired to understand such critical issues like capacity building, fundraising and attracting investors.

Green energy belt

Dr. Silas Simiyu, the Chief Executive Officer of GDC held lengthy discussions and presentations with the team.

"Our interest is to support Africa to develop her geothermal resources which are in plenty," Dr. Simiyu told *Steam* on the sidelines of the meetings. "If we develop as a block, the cost of procuring materials and equipment will come down dramatically."

That makes sense. Importantly, such an approach will allow the region to emerge as a green energy belt. Tanzania sees hope in that. In 2012, H.E. President Jakaya Kikwete visited Kenya's geothermal installations and pledged to pursue development in his country. Tanzania is also set to host the ARGeo-C5 conference in 2014.

"We have come to the conclusion that we need to diversify our energy mix in order to boost our economy and to attract investors," noted Hon. Mwambalaswa.

"In fact, to begin with, we are welcoming GDC to our country to work with our people in scientific exploration," indicated Hon. Mwambalaswa.

For Tanzania to accelerate its geothermal portfolio, it will rely on Kenya's established geothermal tradition, expertise, experience and equipment.

"We were encouraged by the kind of expertise that GDC has, particularly Dr. Silas Simiyu. He has passion and excellent mastery of the geothermal discipline. He is also a world-class authority that Africa and indeed the world should greatly make use of," noted Mbise.

Conservative estimates put Tanzania's resource at 650 MWe. Key prospects are Lake Ngozi, River Mbaka and Songwe around the Mbeya region. It has identified 52 sites for further studies.

Previously, GDC's experts have provided consultancies to Rwanda, Comoros, Mozambique and Yemen.

- Eric Wamanji

Students from Kiamaina Secondary School demonstrate how a home-made milking machine works during the recent GDC-Nakuru High Technical and Career Fair.

GDC MOULD FUTURE EXPERTS

GDC takes the onus of stimulating interest in technical careers as part of its commitment towards an industrialised nation.

Esther Wanjiku's eyes were fixed on the model of a drilling rig in Nakuru. Then, her eyes darted from one component to another and occasionally raising her head to catch a glimpse of the engineer who was explaining to other students. She stopped to listen to the explanation.

It was not long before she bombarded the GDC experts with a torrent of questions.

How does geothermal energy contribute to the Vision 2030? Does Geothermal Energy contain any harmful gases? Why it is that Menengai was said to be full of demons? How do you know where to get geothermal energy? What do I need to study to work for GDC…?

The question and answer session lasted for over 45 minutes. At the end she declared: "I think I want to be an engineer. I just like the way geothermal works."

Wanjiku was not alone. She was just one of the hundreds of students who graced this year's GDC-Nakuru High School Technical and Career Fair held mid-year. It is rare to come across students who put you on the spot. The Kiamaina School did, and so did many others.

The career fair, a GDC-sponsored event, ignited new fire among students to pursue that which will enable the nation to industrialise-technical skills. It also affords students an opportunity to be innovative and to be in the desirous spirit to search for solutions.

Indeed, when GDC offered to take the title sponsorship of the fair, it was by extension a milestone in the preparation of future geothermal experts.

And so, on June 8, 2013, Nakuru High School, the venue of the event was all green with GDC flags flapping vivaciously all the way from the gate, about 150 meters from the main road.

Participants were as vivacious too. Hundreds of students came to see, to learn and dream. Tens of speakers too were at hand to inspire and to guide the students.

The event aims at minting future technical

Cont'd. pg. 22

experts who will be part of the community of industry leaders to drive Kenya's industrialisation ambitions. GDC sponsored the event and also provided technical resource persons as speakers.

And the theme was just apt: *Powering the Vision through Innovative Technology.* The event and its organizing committee were a joint effort between GDC and Nakuru High School.

"The partnership and exclusive sponsorship by GDC is a fruit of consistency in providing forums for improving student performance levels…" noted Paul Kibet, the Principal Nakuru High School.

"I looked forward to this day," Wanjiku, a Form Two student intoned cheerily. "I have learnt a lot. I know my dreams to take technical courses will be true," she noted thoughtfully.

Right on point. It is GDC's cardinal tenet to power people's dreams. And so, when such an effort opens a wider window for people like Wanjiku, it makes lots of sense. It gives GDC a reason to soldier on with its efforts to discover and stimulate dreams.

At the end, after all had been done and speeches made, Kiamaina Secondary School clinched the overall best performance prize. Their project design of a briquette making machine convinced the assessors. The students won, they cheered.

It is fulfilling to bring meaning to students. And so, when the time for prizes came the hall exploded to screeching screams, ululations and whistles. Wait until the grand prize was announced, and our eardrums almost raptured.

But, unlike other preceding awards where winners posed for a picture, this one, the whole school scurried to the podium and snatched the trophy from the guest! It's the joy of winning. And from where we sat, we smiled at how much meaning GDC had offered the students in a simple but original way.

Later, the school, which borders the Menengai caldera, got an opportunity to tour the project.

"We're humbled by the opportunity accorded to us by GDC. We have always been looking forward to visiting this project, now we have resolved to remain number one so that we can have more of such tours," said Nancy Mwangi, a teacher at Kiamaina and the project coordinator.

Other schools won different awards and certificates neatly branded with the GDC logo. And the wins stirred jubilation and dance.

Some of the schools that participated include Mang'u High School, Alliance Girls High School, Naivasha Girls Secondary School, Nakuru High School, Kiamaina Secondary School and Lubinu Secondary School from Kakamega County.

GDC sponsored the fair and acquired the naming and branding rights for the event.

The excited students moved from stand to stand getting tips on what career paths to take and the obligatory subject combination for their choices.

GDC's stand was abuzz with curious students desiring to know what it takes to work for the company. Of greater attraction was the GDC rig model. GDC engineers had an eventful time explaining to the continuous stream of students, teachers and parents how geothermal energy is extracted.

Apart from the exhibition stands, there were several professional clinics. Different professionals took the students through the various careers available in the market. The GDC technical team was handy to the students' inquiries.

In a speech delivered on his behalf, the GDC MD & CEO Dr. Silas Simiyu urged the students to be the specialists that Kenya requires to deliver the 'Vision 2030' dream. He assured them that opportunities for jobs abound albeit with a catch that to get them, one has to be competitive. He urged them to read widely and acquire knowledge now that the economy has changed into a knowledge-based economy.

Dr. Simiyu was however quick to advise the students that to live a rewarding life, they need to cultivate their spiritual and physical lives.

Kenyatta University led by its Vice Chancellor Prof. Olive Mugenda pitched camp to exhibit its course offerings. Riara University and KCA University were there to exhibit too.

The future for this engagement is bright as stakeholders desire to make it a regional event. For Wanjiku and her friends, her future looks brighter, thanks to the career fair.

-Eric Wamanji

Nakuru Girls High School students interact with GDC staffer, Dan Odongo, at the career fair.

"students should be the specialists that Kenya requires to deliver the 'Vision 2030' dream

A stranger in the house

By Evans Mutai

It is a chilly Monday morning in Nakuru. Everyone is in heavy clothing. As I make my way to the room for the workshop, my notebook in my left hand and a cup of coffee in the other, I notice that my colleagues are charmed up the cold notwithstanding.

But, I'm a bit disturbed. I wonder how the day would turn out to be. "Will I be out of place? Will I appear a mediocre before my colleagues? or do I just walk right in and remain silent?" I asked myself silently; unbeknown to me that this would turn out to be one of the most interesting workshops I ever attended.

The occasion is Geothermal Energy Utilisation Training course sponsored by USAID through East African Geothermal Partnership (EAGP) at Merica Hotel. The menu here is all science, yet, here I am, from the arts – communication.

Inside the 'classroom', everyone is set and upbeat. On a quick count, I notice that we are 22.

"Hamjambo uhali gani," posed Steve Hirsch with a mixture of broken Swahili, heavy with American accent, wearing a broad smile. He is the man of the moment. We all responded with a chorus of "hatujambo," – with a chuckle.

This, I would later learn,are Steve's first Swahili words. And judging from the authority and pride with which he spoke, I could easily tell his desire to master some of our Swahili words and the hunger to coin a conversation out of it.

Steve is the programs director, East African Region; he is based in Nairobi. And after briefly introducing his fellow instructors, he invites John Lagat, Manager Geothermal Resource Assessment (GRA) to officially open the workshop.

Speakers shared a little insight of the geothermal industry, specifically the technical bit. Every single one of them glowing with passion for what they say is the best job they can ever want; passing knowledge on the tidbits of geothermal world.

As the training proceeded, you could clearly feel the mood of the class- warm and fun. Everyone engaged the instructors in one subject or the other. My colleague Stephen Nato keenly conversed with one of the facilitators.

Trainer Phil Molling with a team of GDC scientists during a field visit to Suswa

This was the general frame of things: warm, educative and fun.

As I keenly follow the proceedings, one speaker in particular steals my attention. Nathaniel Lindsey, a researcher with Lawrence Berkley National Laboratory, California. Nate, as he popularly preferred to be called, is a trove of brilliance, a reserve of knowledge and a true definition of talent.

> *"I could easily tell his desire to master some of our Swahili words and the hunger to coin a conversation out of it*

Let's put it this way. At 24, he is a lead researcher in one of the top laboratories in the world. And that's not all, he is also the one tasked with preparation of the course materials for the entire training. He is no doubt armed with vast knowledge of geothermal energy and I might say, just might say an emerging star in the broad field of geothermal energy.

"I enjoy researching on geothermal energy, and possibly making numerous discoveries that will help the transition from fossils to renewable energies," he says.

The passion he possesses in discharging his tasks is amazing, and at one point during our field trip, I notice how enthused he is at the sight of steaming Menengai field and the rumbling sound of the rigs in progress. With his finger on the shutter release and his eye glued on the view finder, he snaps numerous scenes for memory.

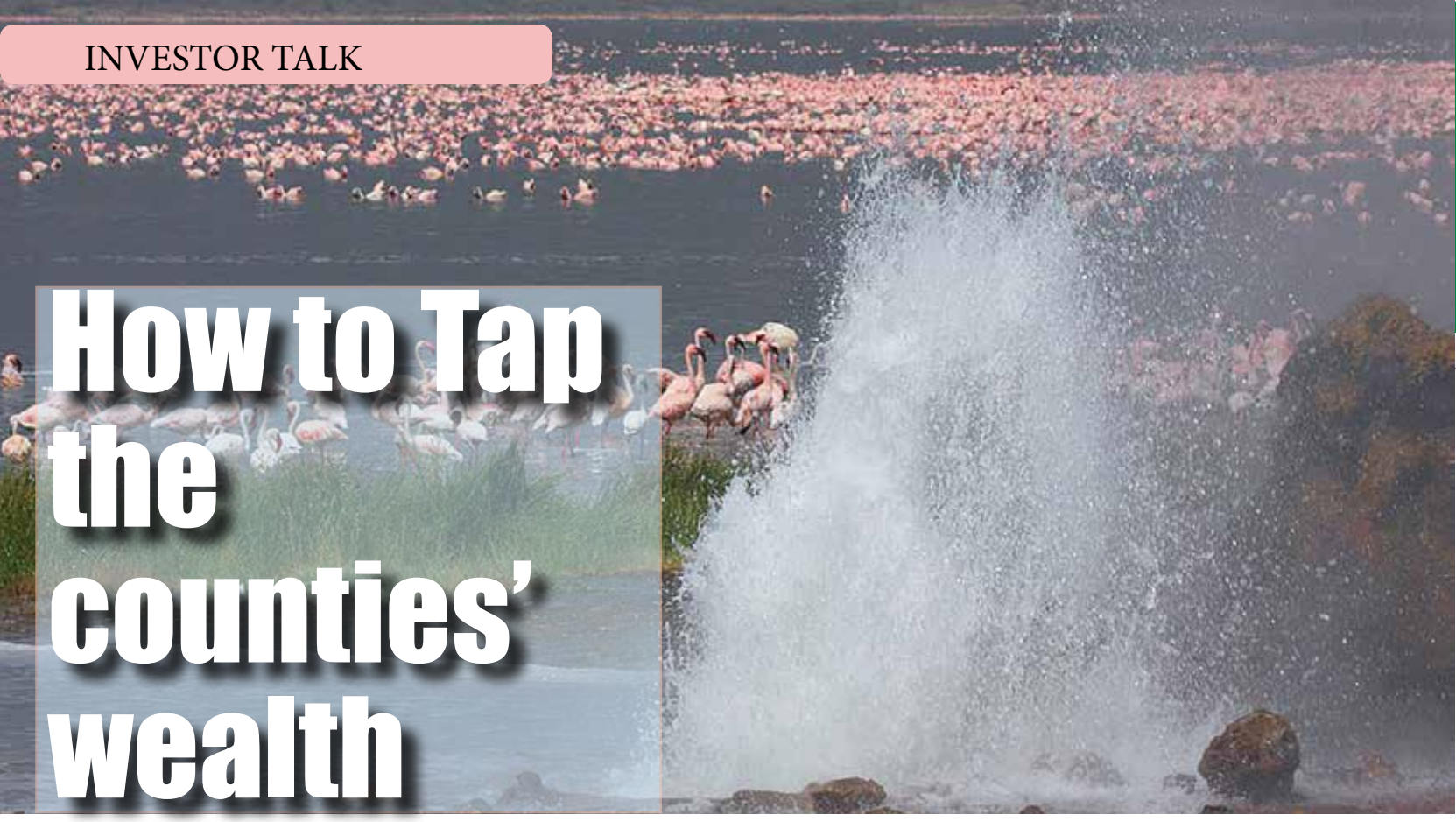
"Do you love photography?" I posed curiously.

"I like to keep collections of the sites I visit. It forms part of my future talks when called upon," he says. No formal training but on the job.

When curtains draw to close on the training, it was time to bid my new-found buddy good bye. I would boldly say that Nate and his crew did tremendously fabulous in simplifying what would otherwise have been a complex workshop.

And as Colleen Barrett once put it, 'Work is either fun or drudgery. It depends on your attitude'; I chose to go with the fun part and surely made the training enjoyable.

"*Asante sana*," was my parting shot to Nate and hopefully a new word for him in Kiswahili.



How to Tap the counties' wealth

Wealth of the County: *It's a jewel like no other. Flamingoes enjoy the geysers at Baringo County's Lake Bogoria*

Governors, senators and MPs on Kenya's geothermal belt are a smiling and bubbly lot – and for a good reason.

Unlike before when only the central government could undertake investments, it is an epic moment for counties which now have an opportunity to attract and make money. It is geothermal energy that's stirring the winks and the smiles.

Goodies from geothermal energy are vast and electrifying and read like a list of the frills Santa showers well-behaved kids on Christmas. Yet, Baringo, Turkana, Homa Bay, Kwale, Nakuru, Kajiado, Narok counties… are not wonderlands of snowy north, they are part and parcel of us - Kenya.

Counties can tap on this wealth twofold: by creating a micro Public Private Partnerships, or by directly investing in the energy projects. Investment in energy is costly at start, but it is one of the most lucrative ventures an investor can bet his bucks. The beauty of the new constitutional dispensation is that now counties have a right to invest independently and to seek investors in search of homegrown solutions.

It's by going hundreds of meters beneath the earth's belly that the geothermal gem will transform this scrub and stony scenery into a money-minting machinery.

And Baringo's senator, Hon. Gideon Moi knows as much. "Geothermal is really sexy energy," his baritone boomed in the conference room at Bogoria where GDC was hosted a workshop with senators.

Moi was ebullient. He continued: "Twelve billion is a whole hell of money. We need this kind of energy in Baringo."

He was obviously thrilled by this prolific resource that's so vast in his county. The Shs. 12 billion he mentions is projected CDM cash that will come with GDC's effort of developing 3000 MW in block. Yet, there is more that his county, just like many others can do to induce flow of cash and development.

And what sparks for Baringo, sparks for any other county with geothermal resource.

These include power plants, communal commercial utilisation of the resources in the cottage industry, in horticulture, tourism…and the list is endless. I bet, geothermal is to these counties what the golden egg of the Samruk is to the Kazakhs – life and hope. The Samruk is a mythical bird that as legend has, lays golden eggs.

Well, is geothermal not a golden energy? And of course, it is a matter of sheer logic that the counties with reliable and affordable energy will attract the most industries in the land. It is here that Africa's 21st century metropolis will rise.

Interestingly, everything seems to be going well for these counties. Demands of global green enterprises have spurred tech-wizardry in the geothermal realm. Tapping on the emerging technology to stimulate economic growth here has never been easier. This is quite inspiring to the investor- and especially if the investor has some social and political obligation to a constituent. Counties have.

The effect of such a brave effort will be epical. In sum, there will be improved lifestyles. Counties with geothermal will create employment and even spur auxiliary industries. No doubt, if everyone does his bit, the rift belt will be one of the greenest and most glowing parts of Africa.

That is why, by now, counties need to have modeled their energy portfolios along geothermal lines with attendant geothermal coordinators. By now, they should also be seeking technical guidance from GDC on how best to tap this energy. And by now, a blue print, containing the possible financiers, possible investors and possible expertise should be in the making.

And lastly, my two pence is that to strategically engage the counties, it would be wise for organisations that champion geothermal energy to appoint special coordinators to handle the emerging county portfolio.

-Eric Wamanji

Towards quality

By Rose Tindi

Departments charged with logistics have diverse mandates namely building works, maintenance of property, fleet management, camp administration as well as the management of hospitality, front-office and outsourced services. For the department to suceed, structures and systems are created for a conducive work environment.

"Conducive work environment" is generic. It may not hold much substance. For a department to attain its set goals, it should focus on strategy and invest heavily in management of quality.

That is how we have done it at GDC's Property Management Department. We have created a departmental quality control team. The team of six serves at a supervisory level.

The purpose of the team is to come up with creative ideas in all areas for continuous improvement in the Department. Area of operation and gender representation was keenly considered thus no one gender exceeds a two-thirds threshold. The team players bring in an assortment of necessary skills and expertise which when intertwined result in a masterpiece of a quality management mosaic.

The main purpose of constituting the Quality Management Team is to develop a platform from where the members would bring together and consolidate ideas, develop service improvement initiatives, inculcate innovation and creativity, realign the department so as to be in-sync with emerging trends, and remedy existing or latent gaps in work processes and procedures.

The team is heavily engaged not only in brainstorming but in intensive and extensive networking, benchmarking for best practices with competitive entities as well as exploring for viable options which would better and sustain desired quality of services provided and as a result, satisfy the clientele.

We pledge our loyalty to our own version of the kaizen philosophy.

The team's mandate can therefore be narrowed down to strategic and quality management. Strategic management in this regard refers to a highly consultative and inclusive process of strategy diagnosis, formulation and implementation. Through strategy, the department will be able to achieve its targets, set up not only SMART but SMARTER goals, utilize resources better, maximize profits and be able to cope up with competition not only from within the organization but from other globally competitive corporations. Strategy does instill quality in the planning and service improvement process.

Quality management is not narrowed down to mean quality assurance in terms of the end product or services offered by the department, but rather it should be viewed from a wider perspective to incorporate the aspect of quality planning, quality control and quality improvement. By so doing, the department endeavors to provide products/services that are consistently of good quality.

French-born Indian business magnate and TATA Motors founder, J.R.D Tata once acknowledged the essence of strategic struggle for quality and outstanding performance. He wrote: "Productivity and efficiency can be achieved only step by step with sustained hard work, relentless attention to details and insistence on the highest standards of quality and performance."

It is evident therefore, that in order to achieve desired results as department there is need to establish efficient and effective systems. This can only be realized by putting a lot of effort and undivided interest in streamlining internal processes. It is productivity through efficiency that the Property Management's quality team seeks to accomplish.

The writer is the Manager, Property at GDC

GDC 's Property Manager Rose Tindi (seated) with her department's quality control team during a brainstorming session

Dreams are rather personal

By Kiprotich Bii

First, let us agree. To be successful, you have got to have a mentor(s), aside from acquiring the requisite knowledge and skills. And there are no better ways of benefitting from your mentor than being his/her 'apprentice'. If you are working under somebody who 'has made it' then you are lucky. If not, then don't despair. You can read articles, biographies and autobiographies.

If you are onto some dream, then by now you will have known that success is hardly ever a jackpot. It is an accumulation of effort. Your own personal effort. Like they say in Swahili, 'watu hutoka mbali'.

Now to dreams being personal and the effort thing. Have you ever told a friend, colleague or family member about this grand idea you have that you hope will land you a promotion, launch you in big business or earn you some fame? For those who have tried, the familiar response is either one of three or all of them.

Some will shoot down your idea; how impractical and hard it is, citing your supposed deficiencies and insurmountable challenges that will most definitely block your success. If you listen to them, your dream is dead. A second category will go further and quote numerous case studies of failure, even throw in some statistics: "90% of business start-ups fail in the 2nd year, having burnt the entire entrepreneur's seed capital…" OK, it is true but can't you be one of the ten percent that make it? A third category will even mock you, 'So how is your million dollar project panning out?' This they do with unmistakable sarcasm in the voice.

If you are not intrinsically motivated and have a burning ambition to succeed, these comments may puncture your confidence and sow doubts in your ability to be anything better than what you currently are.

A few however, will give you the support needed.

Lesson 1: Don't set out expecting a red carpet treatment for your dream anywhere. It is always a tough sell.

Lesson 2: Few understand your dream, not because they are mean but chiefly because they cannot see it the way you see it. You can scarcely ever explain an idea to another person to the extent that he/she sees it the way you see it in your mind and feel it in your guts. That is why your dream is a personal thing; the world will embrace it only once it comes to live. Nobody gets TV interviews for the brilliance of a dream, but many have been interviewed for the success of a dream.

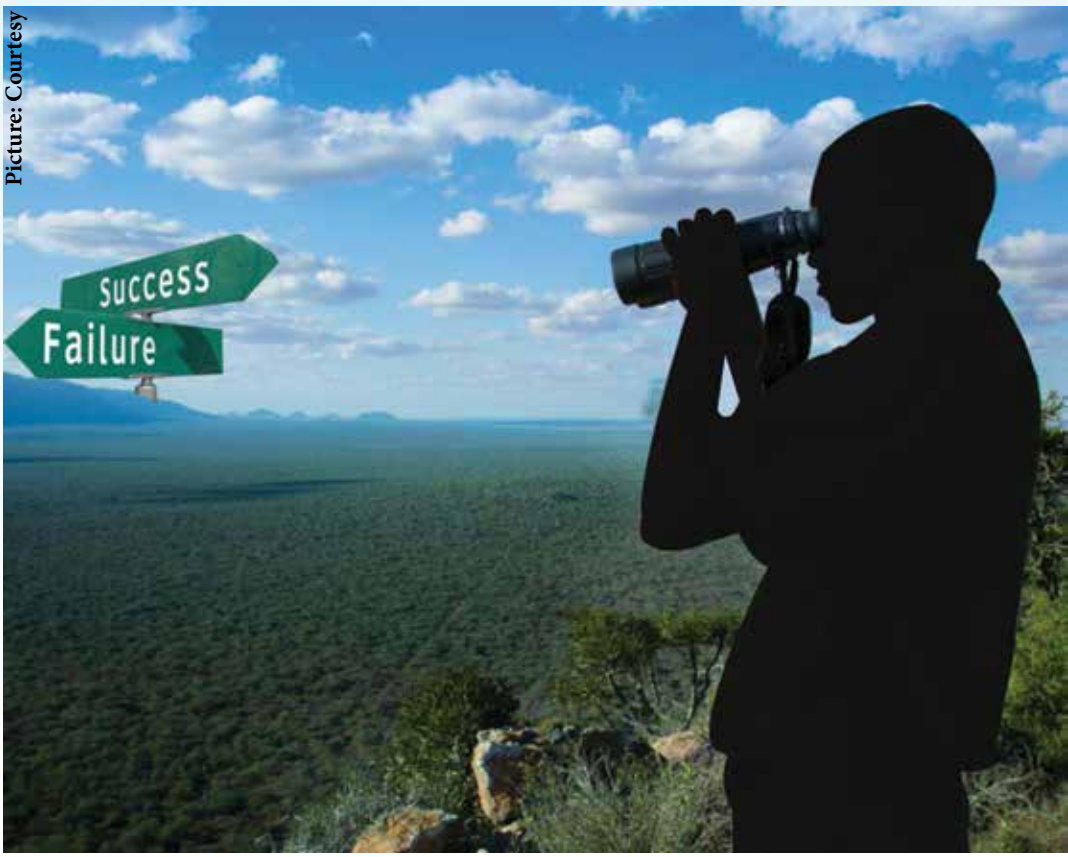
> *If you are onto some dream, then by now you would have known that success is hardly ever a jackpot.*

You knew Oprah Winfrey not when she was born to a single poor teenage mother in Mississippi, not even when she started out on radio. Only when she was big on TV did we know her. The effort she put to actualize her dream are rarely discussed. What went into creating them are bygones.

What about Soweto-born mining magnate Patrice Motsepe, South Africa's first and only black billionaire? He used to help his schoolteacher father in a shop selling stuff to miners. He must have harbored dreams of owning mines. Only when he started buying disused mines on the cheap did investors notice him. And when he hit it big, Forbes and Wikipedia brought us his story.

Don't cry that nobody understands your dream. They are not supposed to. Put in the hours, accomplish it and they will. American author Erma Bombeck said, 'Dreams have only one owner at a time. That's why dreamers are lonely.' Dream on and best of luck!

The writer is a Communications & Marketing Officer at GDC



Picture: Courtesy

Just shred that cert

...and go back to class

Erick Wamanji

Recently, I had an interesting chat with a pal over coffee. One of the local dailies had splashed the runaway academic dishonesty so rampant in the city. But, my coffee chum wondered what the big deal was.

"Everyone wants certificates for promotions or for new jobs," she mused.

"If I don't have time, the bureaus in town will come in handy; they'll develop my papers and I'll pass," insisted the lass 'pursuing' an MBA-something.

She was right – firming up one's academic credentials is strategic and noble. Sadly, she was wrong - this enterprise need not be attained fraudulently.

Is it not that the kind of integrity expected of academic quest be absolute? The search for such a prize is akin to the search for justice or the Kingdom, and cannot be corrupted.

It means that chastity of credentials should be beyond reproach. Those papers should not be a product of merchandising along the grey and grimy streets where, with a few dimes, you come out with a term paper or a thesis.

If things were so, then it would mean that all the wealthy would be garlanded with cum laudes; all the rich would buy justice and only the rich would go to heaven.

Yet, the truth is different. It is out of such realities that no purchase can afford some fundamentals of life for doing so would be unfair and immoral.

Courtesy

Unfortunately, those glowing academic honours accrued deceptively are the bane of our society.

Academic accomplishments, justice or the Kingdom of God are just but a few examples. Ever wondered why Martin Luther in 1517 pasted his famous 95 theses that spawned the protestant reformation? The theses harshly critical of indulgences (issues money) and the purchase of the Kingdom, which to Luther defeated the logic of death and resurrection.

Red flag

If you are an academic fraudster, you can get some comfort –It's global; it has been around for a while. Still, the scale and the abandon with which it is practised today raise a red flag.

In the days of yore, there was some shame, so cheating was done in hiding. Today, the very conscience that ought to guide us on right and wrong seems to have gone to the dogs. It explains why bureaus are registering a booming business.

Unfortunately, those glowing academic honours accrued deceptively are the bane of our society. Consequently, most organisations suffer from an acute bareness of transformative ideas. This causes society to get stuck in the rut of consumption, indolence and dalliance with deceitful habits as honed in academic days.

Indeed, people who outsource brains at college, feel most insecure at work. If they are bosses, they become fascistic. It is also established they are likely to be more corrupt, divisive and even unfaithful.

If I brag of a First Class that was fraudulently accrued, I am worse than one who genuinely scored an 'E'. He of an 'E' may not be an academic star, but he is honest.

Besides, society today cherishes those with values. Haven't you read Chapter Six of our constitution that talks of integrity?

Marks purchased on the streets unfairly disenfranchise an otherwise brilliant, hard-working, and innovative person some opportunities to work and transform society.

My coffee partner has the temerity to argue that societal demands of success from everyone are to blame hence the search for papers through hook or crook.

Wait a minute. True, academic accomplishments are glorified; can be a pathway to terrific success too. However, to reason that fraud is invoked because we need to please, is flawed reasoning. Why is it then that many are the folks, who genuinely work hard, do not plagiarize, they don't hire brains, still, they excel?

Trooping back to class not for the burning desire to develop intellectual faculties but simply as a means to a new job or promotion is the most unfortunate ideology construct of our time. Unfortunately, it seems employers too have fallen into this trap because little due diligence, if any, is conducted on these papers, otherwise the vice wouldn't be thriving.

But what will happen if today, for heaven's sake, all employers decide to engage employees in rigorous tests? Just how many will survive?

Let's face it, one can still excel academically even with a busy schedule. The trick is to bite a bit, not a mouthful, sacrifice some pleasures for the books, and just remember, while that certificate is good, it's not a matter of life and death. Ever wondered what Bill Gates, Steve Jobs, Mark Zuckerberg, Ted Turner have in common? They're super billionaires; they dropped out of school.

My suggestion is simple. If anyone ever hired someone to write some academic work, that certificate is not worth the ink and paper it is written on. Just shred it and go back to class.

The writer is the Deputy Manager Communications & Marketing at GDC

GDC to clear town's trash

Nakuru town can now breathe some fresh air. GDC will help rehabilitate the Gioto dumpsite along the Kabaranet Road. The trash has been overflowing to the road impeding movement.

Work on the dump involves bulldozing the trash back to its original site. The team will also fence the area and plant trees to act as a buffer zone to prevent future spillages.

"GDC supports a clean environment," says Gabriel Wetangula, the Deputy Manager, Environment. "We all want a clean Nakuru where we manage our waste sustainably."

This effort is just one of the many environmental conservation initiatives that GDC engages in. The new development is welcome news at the Town Hall. Richard Rop, the County's Minster for Environment notes that waste management is one of his greatest headaches, but he is grateful for the partnership with GDC.

"This rehabilitation project will save the image of the town," Rop notes.

Gabriel Wetangula: Deputy Manager Environment Depu & Central Rift

Wetangula explains that GDC will continuously partner with the county in environmental matters. He reckons that GDC has a vast environmental expertise that will be useful to the County going forward.

Rop is optimistic that once the trash menace is contained, he will breathe a sigh of relief. Poor waste management attracts litigation from environmental authorities like the National Environment Management Authority (NEMA).

A rising population in the Nakuru County vis-à-vis the allocated disposal site has resulted in the haphazard dumping of garbage in the town.

GDC wants to make a contribution and save the situation that is threatening to ruin the face and image of the fastest growing town in the republic.

Gioto dumpsite was established in 1974 as a waste disposal site. However, Nakuru town's population has expanded beyond the capacity of the dumpsite.

Environmental consciousness

Greening Menengai... GDC staff members, Jacinta Nasambu (L) and Nelly Kirisia, participate in the 2013 World Environment Day at Menengai in Nakuru. Over 1,000 trees were planted during the day marked worldwide every June 5. Seven schools also participated in the event where GDC donated seedlings to schools in the Central Rift region.The event was attended by GDC Chairman Paul E. O. Gondi, a section of the board, management, staff and members of the Nakuru County administration.

The World Environment Day is meant to stimulate global awareness on environmental issues as well as advocate for political and opinion leadership involvement in environmental matters. This year's event was premised on the theme; 'Think. Eat. Save'

GDC has a social afforestation programme whereby, through women, seedlings are donated to neighbouring communities and public institutions.

Friends of GDC support run

A participant at last year's marathon celebrates his victory in the 5KM category race

The Menengai Geothermal Half Marathon is here once again. And friends of GDC are coming out one by one to support the noble course.

By press time, motor dealer CMC, Merica Hotel and Lake Bogoria Spa Hotel were among the early supporters of the great run 2013.

"We're proud to join GDC in this marathon. We want to nurture upcoming talent among the youth. It's our interest too to build peace initiatives in a cross-culture environment for one Kenya," read a statement from CMC.

For Bogoria Spa, it's all about giving back to society.

"We decided to sponsor GDC Marathon as a way of giving back to the society as stated in our corporate responsibility policy. The participants are drawn from across the region and we have always been glad to support such worthy activities. Besides, GDC is a good friend.

On the other hand, Merica Hotel in Nakuru sees the Marathon as a fit to its CSR philosophies.

'Charity begins at home' this is what we at Merica Hotel believe and live by.

Menengai Geothermal Half Marathon presents an opportunity for Merica Hotel to support the event through sponsorship and as a result realize one of our CSR Pillars -To support the spirit of sportsmanship in our Community. ...we're committed to backing this great cause that is promoting the talent of our athletes in the region.

This year's marathon is slated for October 13th. Interested sponsors can contact Pauline (0715199281)or Victoria (0725446505)

Come join us!

Marathon 2013 Categories

Menengai Geothermal Half- Marathon 2013 will feature the following categories:

1. Half-Marathon 21KM
2. Corporate Race (team of 5-10pax) 10KM
3. Schools Race (1 team per school) 10KM
4. Fun/Family Race 5KM
5. Junior Race 3KM
6. Wheelchair Race

Sponsorship Opportunties

Opportunity for partnership in the following categories:

Gold Sponsors - Kshs. 500,000 (2 slots)
Silver Sponsors - Kshs.250, 000 (4 slots)
Bronze Sponsors- Kshs.100, 000 - open
Product/In-Kind Sponsors
Corporate teams- Kshs. 30,000

Mr. President, here's a Model of a rig...*H.E. President Uhuru Kenyatta is shown a model ofa rig by Dr. Silas Simiyu, the GDC CEO at the Nakuru ASK Show.*

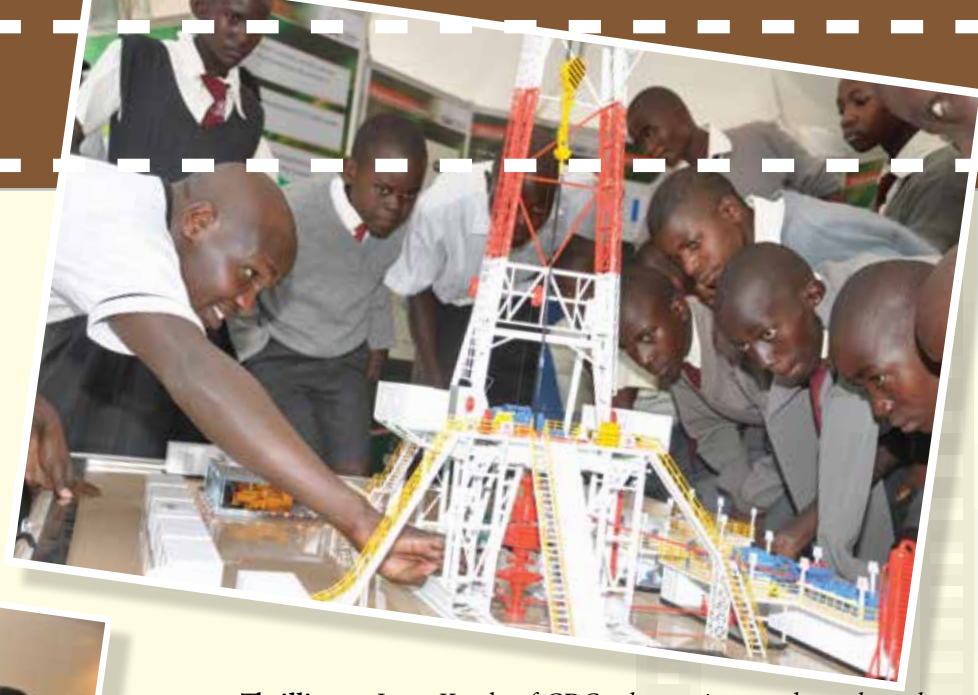
Heads together… *Godfrey Shitsama, the Manager, Finance (l) and Kiprop Kalelbei, an ICT Technician, compare notes during the GDC Inaugural Symposium held in Nakuru.*

We're ready with our papers... *Rosemary Olonde, Manger, Audit and Risk Management, Godwin Mwawongo, Chief Manager, Technical Services and Dr. Peter Omenda, Genereal Manager, during the GDC Symposium*

Lovely! Lovely…*Leakey Ochieng (L) and Frederick Mutua admire their certificates moments after being feted by the University of Nairobi for academic excellence in their respective undergraduate studies.*

The rock rover... *Tito Lopeyok, a GDC geologist at work carrying out field geological mapping*

In pictures

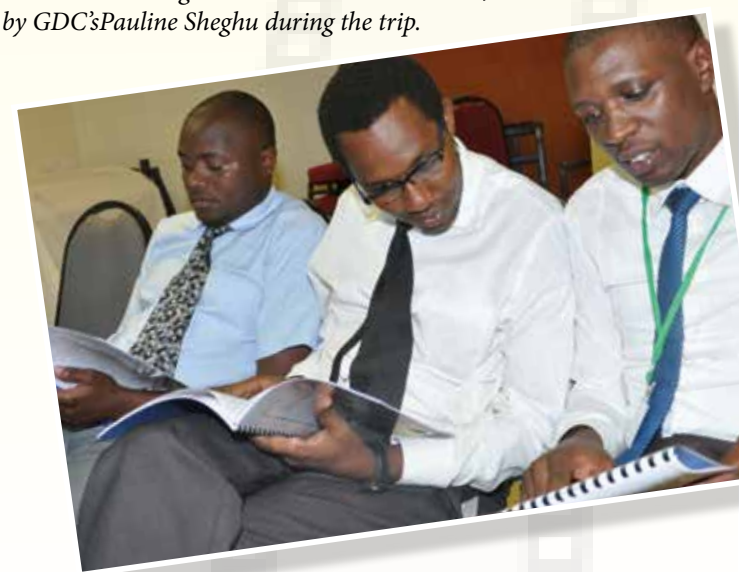


Thrilling… *Isaac Kanda of GDC takes curious students through the components of a rig during the Kisumu ASK Show.*

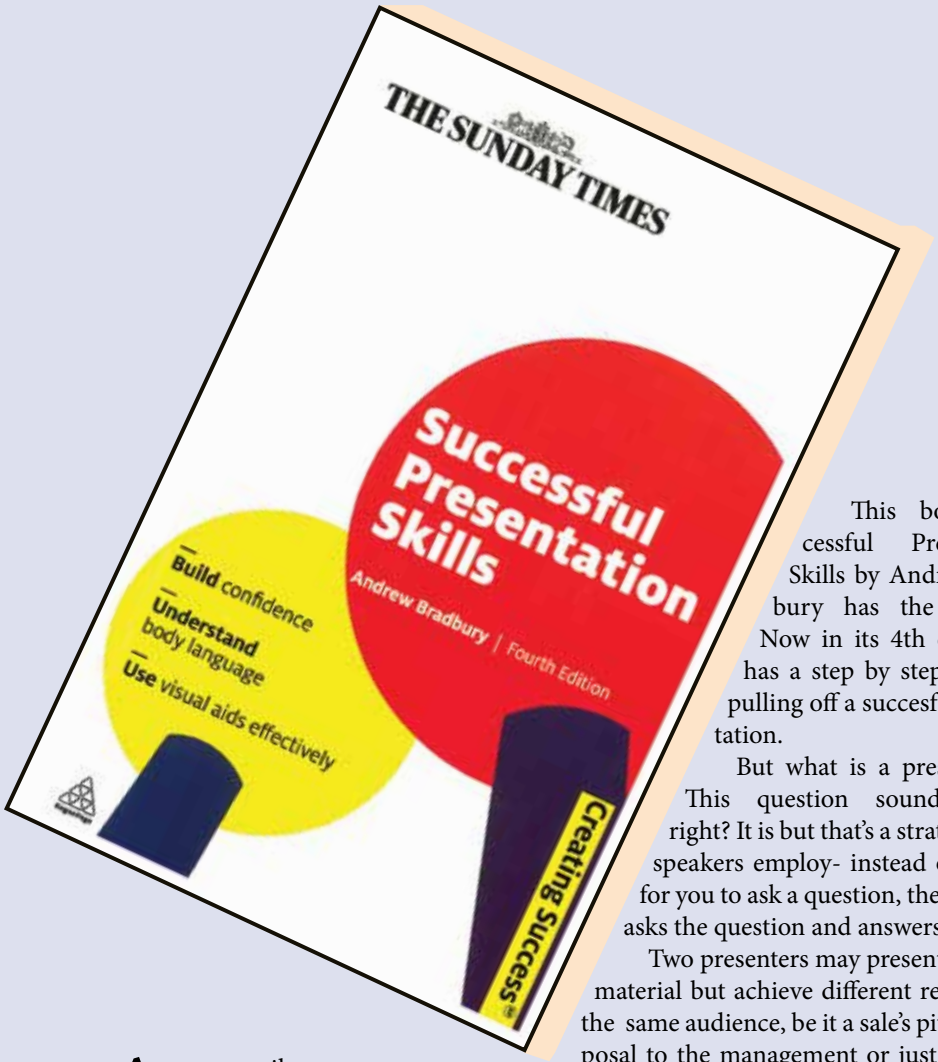
Yes, that one… *A section of GDC staff in a discussion with a facilitator during a Disability Mainstreaming workshop this year.*

When I grow up… *A student of Kiamaina Secondary School, which won a trip to GDC's Menengai geothermal site in the GDC-Nakuru High Technical and Career Fair, is interviewed by GDC'sPauline Sheghu during the trip.*

But even then…*Diana Macodawa, an Engineer in GDC, engages with a section of Energy Committee MPs who were on an official visit to Menengai.*



Serious academic matters…*Staff members; L-R, Nickson Osundwa, Leboo Leyiaro and Anthony Wamalwa scrutinise booklets containing abstracts which were presented during the last symposium. The trio also presented papers during the two-day event*



Title: *Succesful Presentation Skills*
Author: *Andrew Bradbury*
Reviewer: *Kiprotich Samoei*
Available at leading bookstores and supermarkets

An e-mail pops up on your screen, you click 'open' and the subject matter -'PRESENTATION'- sends a chill up your spine. You are not alone. Standing before a crowd is discomfitting even to the most experienced of public speakers. But, how can you defy the anxiety to deliver a memorable presentation?

This book Successful Presentation Skills by Andrew Bradbury has the answers. Now in its 4th edition, it has a step by step guide to pulling off a succesful presentation.

But what is a presentation? This question sounds cheap, right? It is but that's a strategy many speakers employ- instead of waiting for you to ask a question, the presenter asks the question and answers it.

Two presenters may present the same material but achieve different results with the same audience, be it a sale's pitch, a proposal to the management or just a speech. This is because there are many things at play than just the material. The presenter's dress, poise, voice level, eye contact, and hand gestures affect the his/her credibility even before the projector is beamed on the wall.

As a speaker, always remember to set the mood at the onset, "uh umm, can you hear me at the back?" That is a display of confidence. Throw in that personal anecdote, or crack that joke, or show that cartoon, unleash those shocking statistic or that teaser. Point to note: the introduction of your presentation should be off-the-cuff. Don't start reading from the slides just yet. It shows you are well versed with your subject matter.

Andrew, in this book, observes that preparation is key to a succesful presentation. Know your audience, gather information, select the best way to deliver,create your visual aids, rehearse, then do it! Now to plenary questions, some you don't even have an answer. And how do you deal with an occasional heckler.

Don't let the audience remind you of the questions, before you finish, announce you will take questions for a given amount of time. Specifically the remaining time allocated for your presentation.

The heckler? Keep your cool, don't be drawn into a shouting match with him/her. The audience will be on your side if you answer the question and appear recollected.

Read this book and you will know how to deal with all these and more.

Bear in mind to stop when you reach the end!

Adieu.

Did you know ?

1 That the first known commercial use of geothermal occurred in the US Yellowstone area when a Mr. Asa Thompson charged one dollar each for the use of three spring-fed baths in a wooden tub in 1830?

2 That geothermal power plants use less land than coal, wind or solar?

3 That the Romans used geothermal water to treat eye and skin diseases?

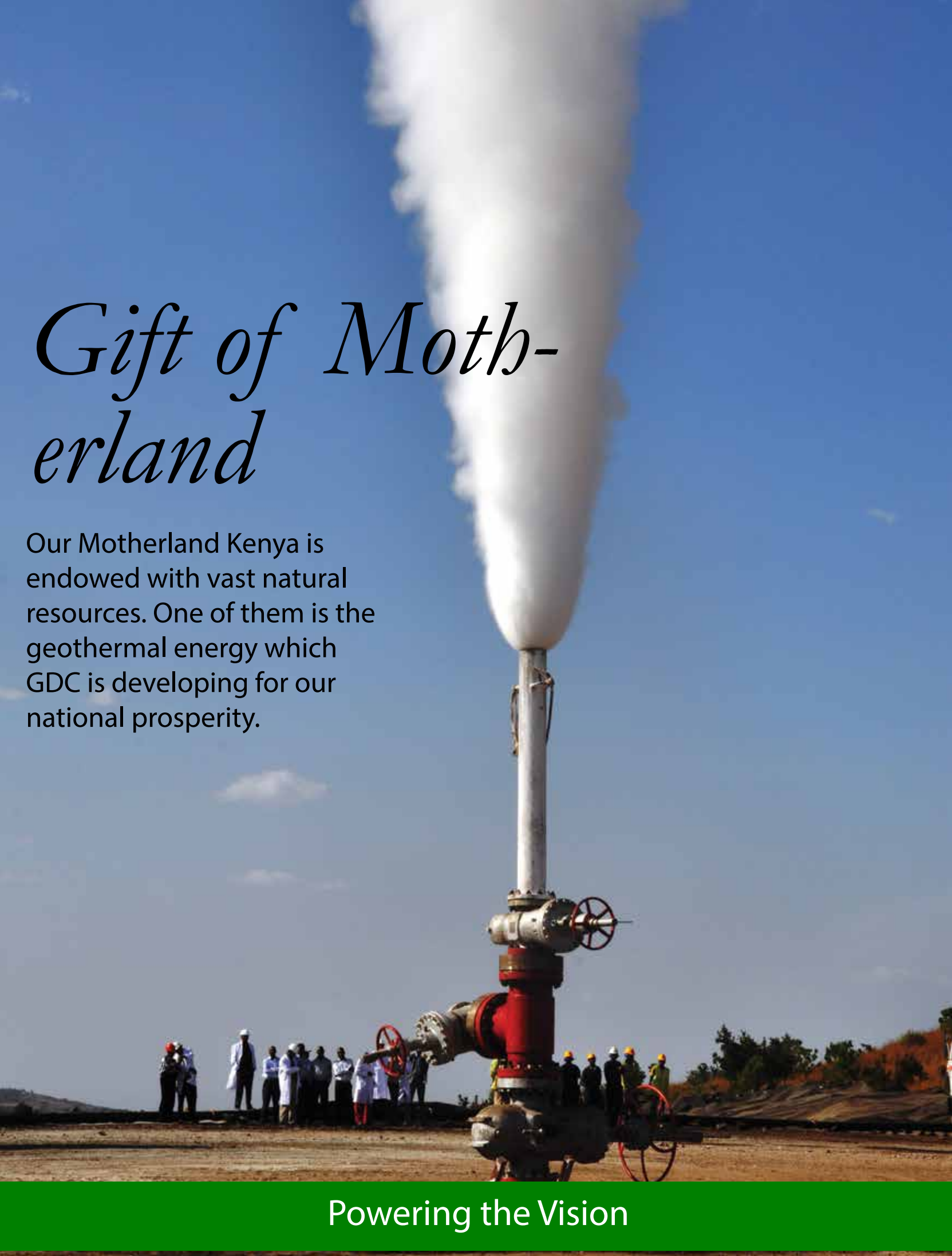
4 That the first geothermal district heating system in the US was in Boise, Idaho in 1892 and that the discovery was by accident after the Boise Water Works was drilling for water only for 77° C water to gush out instead?

5 That the word geyser comes from Geysir, the name of an erupting spring at Haukadalur, at the northwestern tip of Iceland?

6 That the first known "health spa" was established in 1326 in Belgium and that one resort was named "Espa" which means "fountain" and that is where the English word "spa" came from?

7 That in the US, hundreds of years ago, hot springs were also known as 'neutral ground' where warriors could rest from battle and recuperate without the danger of being attacked?

Geysers at Yellowstone National Park
Picture: Courtesy



Gift of Motherland

Our Motherland Kenya is endowed with vast natural resources. One of them is the geothermal energy which GDC is developing for our national prosperity.

Powering the Vision

The Great Run

"Powering Communities through sports"

Menengai Geothermal Half-Marathon

Powering Sports