

the **Steam**


A publication of the Geothermal Development Company

Issue 1 January - March 2010



Kenya Goes Big on Geothermal Energy

Thrill as GDC begins to drill

A glowing green lightbulb is positioned in the upper center of the frame. Below the lightbulb, a white plume of steam or smoke rises from a dark, vertical pipe. In the background, a landscape with green trees and a clear blue sky is visible. The overall image conveys a message of sustainable energy and innovation.

Harnessing Kenya's geothermal resource for a bright future

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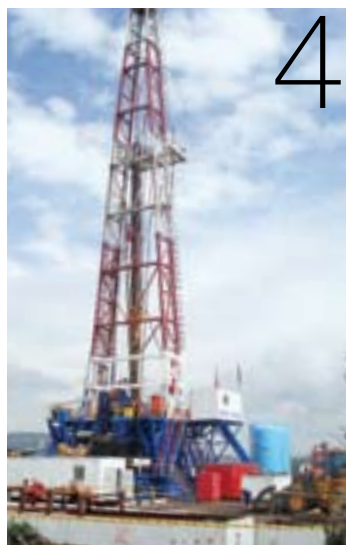
The Steam is an authoritative platform that reports on geothermal development activities in Kenya. It gives readers an understanding of the great potential that exists in Kenya and how GDC is providing an enabling environment for investors to play a key role in providing Kenya with green, reliable and affordable energy.

The 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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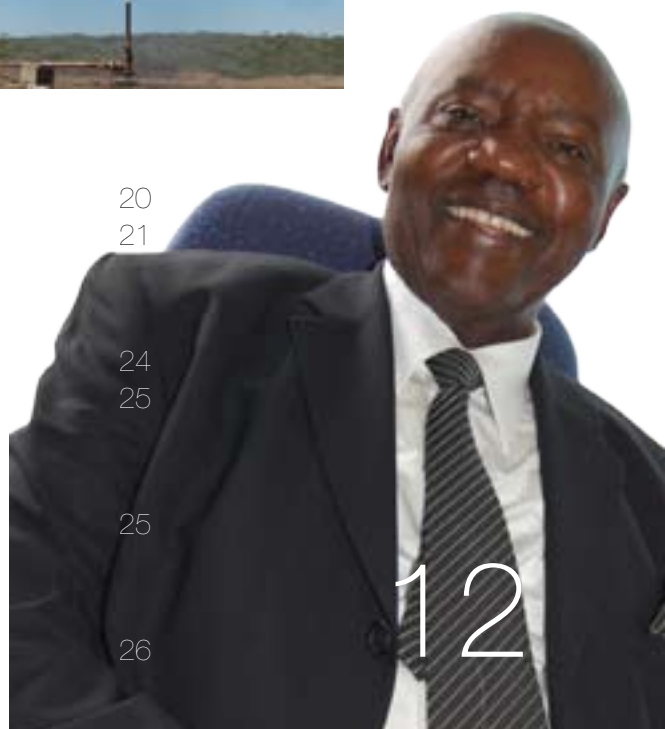
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The journey of a thousand miles starts with one step. And the adventure bidding goodbye to

perennial power outages in Kenya has begun- in earnest. With the entry of the Geothermal Development Company (GDC), things are looking up!

Thanks to the decision by the government of Kenya to un-bundle key players in the energy sector, GDC will accelerate the development of geothermal resources in Kenya. Many may not be aware that for more than 30 years, Kenya has managed to tap a meager 167MW of geothermal energy out of the more than 7000MW potential. Why would such a vast resource remain untapped for all these years? Well, with the entry of GDC, this question shall be no more.

We are in the business of producing and selling steam, the raw material that electricity generators so much need to power the turbines and give us affordable, reliable and green energy. In this debut issue of *the Steam*, read about how GDC is leading the way in the development of geother-

mal energy in our cover story *Kenya goes big on geothermal energy*.

True to our character, barely four months old, we are already drilling at Olkaria! We intent to drill 6 wells and supply enough steam for the Olkaria I & IV power plants operated by Ken-Gen. We are soon beginning drilling for steam at the Menengai. Find out how GDC intends to turn Menengai into a caldera of light on page 13.

And for investors, get ready for an investment opportunity of your lifetime. Page 25 highlights the investment opportunities available in the geothermal sector in Kenya. There is something to read for everyone, including the launch of our 10-year Business Plan, workplace tips, book review and much more.

Enjoy the smooth ride to a new dawn as you read on...

Ruth

What others say...



Geothermal Energy is the right idea

Understanding the realities of the electricity situation in Kenya, I'm happy that GDC has come to town to save us from high rates and blackouts. I'm impressed! Geothermal is the way to go!

S. Mwangi,
Nairobi

GDC should have been founded earlier. No doubt GDC is the solution to our energy crisis. The government and Kenyans should rally behind this noble Company. The future is bright.

P. Kabogo
Limuru

The creation of GDC is a brilliant idea, the time has come! Kudos!

Kennedy Oreje
Nairobi.

GDC has come at the right time. I can now see light at the end of the tunnel.

Opera Nyaroya
Nairobi

GDC has demonstrated that it has what it takes to transform the energy sector in this country. Indeed we are tired of the continuous electricity problems we face every day. Your

work is impressive. There is great hope in power supply! God bless!

George Nabutola
Nairobi.

I can't wait to see GDC taking off the ground. There is every reason to remain optimistic as we move towards Vision 2030. GDC, you are on the right channel. Good job. Keep it up and keep costs low!

S. Gitau
Nairobi.

GDC must succeed in development of geothermal energy

Prof. Francis Mwhurira Njeru,
JKUAT



The Editor welcomes letters on topical geothermal matters. Write to the Editor, Steam at Geothermal Development Company P.O. Box 1007646 00100 Nairobi, Kenya. You can also send email to steam@gdc.co.ke. The Editor reserves the right to edit the letters for space and clarity.

The making of a legend

Welcome to our first issue of *Steam* – our corporate magazine. We have called it *Steam* to reflect the nature of our business which is to drill for geothermal steam.

Steam will come to you every quarter and will provide authoritative geothermal information and development to our valued employees and other stakeholders.

The energy sector is undergoing interesting transformation locally and globally. And the global trend is a shift towards affordable, reliable clean energy. That is why we are in town.

True, high electricity bills and power rationing have affected all of us for long. Similarly, we are all worried about the future of our environment which fossil fuels have cheerfully violated.

That is why renewable energy, geothermal included, informs the current global and national social, economic and political discourse.

Our society needs a solution.

Part of that solution is in geothermal energy – a versatile and prolific resource that has previously received minimal attention. And so, our government created GDC - to usher in a new order of affordable, reliable and green electricity.

For us at GDC, the 'Grand Plan' is to deliver to Kenyans the promised 4000MWe in the next 20 years to power the realization of the Vision 2030.

Vast resource

This way we will make Kenya an attractive investment hub in the region. Of course electricity from geothermal will be far much cheaper and very reliable.

Indeed, God has blessed us with a great country. Underneath our surface, run miles and miles of enviable indigenous geothermal resource that if commercially tapped, it will provide solutions to the energy quandary we are currently trapped in.

Kenya has a geothermal potential of more than 7000MWe spread in 14 high potential sites. With this kind of reserve, never again should we bear the pain of expensive electricity.

I wish to affirm that the future is bright! If anything, is it not the celebrated Chinua Achebe, who in his classic, *Things Fall Apart*, rightly observed that a chick that will grow to a cock can be spotted the very day it hatches? GDC no doubt is a legend in the making.

Today, GDC has some of the best geothermal expertise in the world. And our team is raring to go to revolutionize the electricity situation of our country.

Green year

It is our President H.E. Hon. Mwai Kibaki who has declared 2010 a "Green Year" for Kenya. By proclaiming that "...we need to place our premium on energy production through green pathways, including geothermal and wind energy." Just recently, the world converged in Copenhagen in an effort to reduce green house gas emissions. These efforts will be fruitful through the adoption of clean energy practices. We at GDC are happy to be part of this green stride. Our products will ensure great protection for Mother Earth.

We at GDC are privileged to develop Africa's largest geothermal resource. Our activities will save over millions of tones of Co2 every year.



When operating at full capacity, GDC will earn Kenya some Kshs. 10 billion each year in form of carbon credits.

We are determined to ensure that Kenyans will soon start to enjoy the benefits of geothermal energy which is their indigenous heritage.

All these successes are possible because of the government's commitment towards developing and exploiting geothermal energy. I also want to acknowledge the support we are enjoying from development partners like AfD, World Bank, European Investment Bank, kfw and JICA.

The geothermal sector of this country has many opportunities for investment. Room is available in drilling, supply of equipment and putting up power plants. GDC is happy to invite interested investors into this lucrative and exciting realm.

Enjoy your reading.

Dr. Silas Simiyu,
Managing Director / CEO,
Geothermal Development Company.

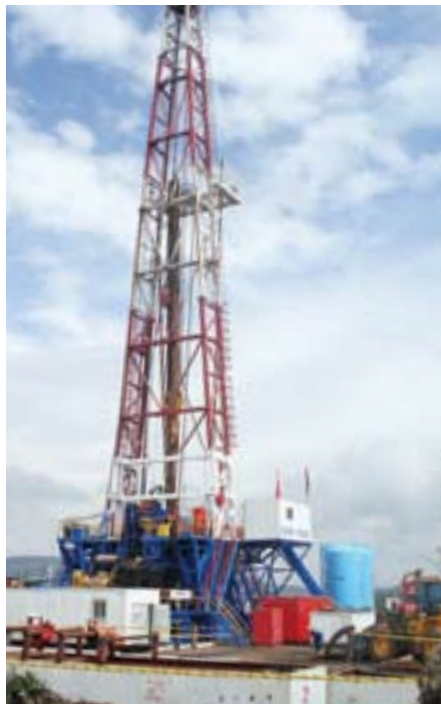
Thrill as GDC begins to drill

The journey to the 4000MW has started – in earnest. GDC is now drilling in Olkaria Domes. According to the Drilling Operations Department, the drilling began on December 18, 2009. The first well, OW – 910 was spud-in at 8:00 pm. The second was spud in on December 26, 2009 at 9am.

“We are thrilled. It is an exciting experience. It means that GDC is up and running,” enthuses Mr. Michael Mbevi the Manager, Drilling Operations.

According to Mbevi, GDC will sink 36 production wells that will provide close to 280 MWe to the Olkaria IV power plant.

“We’re actually doing what we promised Kenyans. Initially we didn’t know we will manage this soon, but



A drilling rig on site. GDC is drilling 36 wells at Olkaria Domes

operations are going on very well,” Mbevi says. The first two wells have now been completed.

GDC is using two hired rigs for this exercise. By mid of this year, GDC’s two new rigs are expected to land and therefore fast track the core business – providing steam for electricity.

It is Unep Executive Director Achim Steiner who, during the Green Energy Conference in Nairobi late last year, noted that the Kenya has the potential to achieve a green economy in less than 10 years.

“With the right policies and private sector partnerships, Kenya could become the regional powerhouse in green energy, generating enough for domestic market and exporting surplus green energy to neighbouring States,” Steiner said.

The public meets GDC, and likes what it sees

GDC had its debut at the Public Service Week in 2009. Scores of curious Kenyans thronged our tent to see what we had to offer. Here, they met our very knowledgeable engineers, who took them through what we have been mandated to do, and how we will contribute to solve the energy crisis in Kenya. The response was nothing short of overwhelming. Questions poured in, keeping us on our toes; the public was happy to hear that truly the future of Kenya is geothermal.

With success messages abounding, everyone now looks at GDC to solve the energy crisis. We won’t let them down!



“That is how you get geothermal energy”. Wilson Rutinu, a chief engineer explains to a member of public who toured the GDC stand during the Public Service Week

President visits GDC



"Your Excellency, this is how we do it," GDC Managing Director Dr. Silas Simiyu elaborates the geothermal process to H.E. President Mwai Kibaki during the ASK show

The most anticipated day at any agricultural show in Kenya is when the President officially opens the exhibition. All participants wait with eagerness and expectation, hoping that he will make a stopover

at their stand. During our debut exhibition H.E. the President visited our stand. On his arrival to the GDC stand, Dr. Silas Simiyu, the Managing Director elaborated the process of geothermal exploration, as the Head of State

listened attentively, very impressed. The interaction was record breaking, with everyone excited about how much time the President had spent at the GDC stand.

GDC's the Company to watch

The Minister for Energy Hon. Kiraitu Murungi (*pictured*) has assured the GDC Board and Management of the government's full support in the quest for an additional 4000MWe by 2030. Speaking during a recent meeting with GDC, Hon. Murungi observed that "GDC is at the right place at the right time and geothermal is a resource whose time has come." The Minister has asked GDC to fully undertake its mandate that entails the development of all geothermal fields in the country in order to provide steam



for the generation of electricity.

"With 7000 MW geothermal potential of electricity, why should Kenya not be a leading producer of geothermal electricity in the world? For Kenya, there will be no more power cuts," Hon. Murungi says. With climate change and the green revolution, low carbon economy is a major agenda locally and

globally thus making GDC's entry into the Energy sector quite timely.

Hon Murungi has expressed high expectations for excellent results from GDC saying that GDC should become the largest parastatal in the ministry of energy. The Minister has commended the GDC management for the massive activities they have undertaken in the last few months noting that within record time, GDC has become one of the key players in the Ministry of Energy. He now calls upon everyone to "continue beating the drum for GDC" so that the Company can help move this country away from the current dependence on fossil fuels for electricity generation. "GDC's success will be measured by how many megawatts it will contribute to the national grid, in the shortest time possible," the minister concluded.

Launching the Ten-year Business Plan



The MD, Dr. Silas Simiyu, signs the Business Plan. On his right is Paul Ngugi, Manager Planning. Looking on is the Chief Manager, Energy Research and Development, Dr. Peter Omenda

We made a major historic milestone with the launch of the very first ten-year business plan. The blue print, according to the Managing Director, Dr. Silas Simiyu, is a key indicator of the path the company will tread for it to succeed in its critical assignment of providing the country with 400MWe

by year 2030.

According to Dr. Simiyu, the first step for GDC staff is to familiarize themselves with the business plan.

"It is important therefore that we read the plan, read the prospectus and internalize the philosophies, appreciate the strategic vision and understand our path toward the suc-

cess of GDC in the efforts to power Vision 2030," he says. The historic occasion of the signing held on Nov 13, 2009 was also witnessed by a section of GDC managers, including Dr. Peter Omenda, who is the Chief Manager, Energy Research and Development (ER&D) and Mr. Paul Ngugi, Manager, Planning, among others.

GDC hosts UNU trainees

Geothermal Development Company Managing Dr. Silas Simiyu, has reaffirmed the company's commitment towards continuous investment in training geothermal experts. Speaking at Naivasha's Simba Lodge recently when he hosted United Nations University (UNU) trainees for a dinner, Dr. Simiyu considered continuous training as indispensable to the success of the geothermal sector.

Dr. Simiyu was accompanied by

Prof. Hiroyuki Hino, the Economic Advisor to the Rt. Hon. Prime Minister Raila Odinga, who expressed confidence that geothermal energy is the answer to the energy needs of a 21st century. He applauded GDC's efforts in providing leadership in the geothermal sector. He further stated that geothermal energy is at the core of economic strategy at the PM's office.

"Geothermal is a winner for Kenya's energy needs because hydro-electricity is no longer reliable due to unpredictable weather patterns. Geothermal is also an answer to global warming," he said. The two later addressed a joint press conference

at the hotel. The annual three-week training is a precursor to a six-month advanced diploma in geothermal related matters. According to Mr. Cornel Ofwona, one of the organizers and trainers, Kenya is preferred because it has the most developed geothermal industry in Africa. Kenya too, has the best facilities, a vast geothermal field and some of the best scholars and experts in matters geothermal. He argues that the training is important for creating awareness in the region about geothermal energy, training experts who will develop the geothermal sector further. GDC also sponsored a field trip to Bogoria.

France grants GDC Kshs 7.2B

With more and more financial pledges on the way, the Geothermal Development Company continues to smile all the way with donors and partners pledging more support to facilitate its noble duty of geothermal exploration. The French government is offering GDC a concessionary loan of Kshs7.2 billion to buy two rigs and for capacity building.

This follows a successful meeting held recently between Rt. Hon Prime Minister Raila Odinga and the Director General of the French Agency for Development (AFD) Michel Severino. The Minister for Energy Hon. Kiraitu

Murungi, PS, Patrick Nyoike, GDC Chairman, Paul Gondi and Managing Director Dr. Silas Simiyu, were part of the PM's delegation. Dr. Simiyu said he is pleased with the development so far and exuded confidence that GDC will deliver on its mandate. It was good news for GDC when Paris pledged to help Kenya shift from reliance on fossil fuels to green energy.

"People relying on fossil energy will find life more difficult in the coming years.....green energy is the best investment a nation can make in the coming years. You can count on us for this," said Severino.

Chairman, MD at Green Energy Conference

Matters of green energy came knocking right at the GDC's doorstep when chairman Mr. Paul Gondi and Managing Director Dr. Silas Simiyu, joined key dignitaries who graced the opening of the green energy conference held on November 23 and 24, 2009 at the

Hilton Hotel, Nairobi.

The conference unanimously underscored geothermal energy as the only reliable, affordable and green energy that will power Vision 2030. Speakers echoed each other in championing for the accelerated development of geothermal energy. Dr. Simiyu, informed the conference that GDC had adopted an innovative strategy that would reduce the long gestation period from seven years to just a few months.

The United Nations Environment Programme (UNEP) Executive Director Achim Steiner told the conference that Kenya has abundant renewable potential which if exploited, could see it become a world leader in the production of green energy in the next 11 years. "Kenya sits on five or even 10 times more electricity in the Rift Valley of geothermal power than its entire installed generating capacity right now. The irony is, you are so close to it now but literally walking away from it," he said.



Prof. Hiroyuki Hino, Economic Advisor in the Prime Minister's office

BEYOND FRONTIERS

Bali to host congress

Bali will host a World Geothermal Congress at the Bali International Convention center, Nusa Dua on April 25-30, 2010.

The World Geothermal Congress 2010 will be officially opened by President Susilo Bambang Yudhoyono, Dr. Herman Darnel Ibrahim, and Chairman of the Congress organizing committee, said.

Around 2,500 people including ministers, dignitaries and experts from different countries will take part in the meeting, he said.

Prior to the World Geothermal Congress and Exhibition, the organizing committee will run courses with 21 lecturers among others from Japan, Indonesia, Australia, France, and New Zealand.

The subjects of the courses will include Drilling, Completion and Testing of Geothermal Wells, Operation of Geothermal Plants, Geothermal Heat Pumps, Financing Geothermal Projects, Reservoir Assessment, and Introduction to geothermal Energy.

The congress, which is held every five years, was organized for the first time in Italy in 1995, and later in Japan in 2000 and in Turkey in 2005.

WGC2010 is supported by many governments with high-level representatives attending from China, Germany, Iceland, Indonesia, Italy, Japan, Kenya, Mexico, New Zealand, The Philippines, Uganda and USA. Also international institutions and financial organizations such as The World Bank, UNEP and European Union will take part.

News by International Bali Post





When Sopa converged Nakuru and Nairobi

Features

Cut, cut, cut... GDC Chairman Paul Gondi and Dr. Silas Simiyu cut a cake during the end year party. GDC Directors, Joseph Kariuki and Rhoda Loyor, cheer on

They came, their nerves on the edges. When they left they were just electrified.

They started streaming in one after another as dusk descended. At the reception, a glass of juice and a kikoi hamper was all in wait, (poor me, I didn't get one.) I was rushing to set up my kit.

The ladies were in their best element. Their nails well-manicured, their hair nicely done as they strutted to the venue glittering under the Naivasha moonlight. The men too had taste.

Hugs and hi-fives were in plenty followed by tete-a-tetes. Nakuru and Nairobi finally met. This was during the end of the year-party at Sopa Lodge Naivasha, when the GDC staff joined directors for a dinner party. The tended venue was hemmed by hymning acacia grooves which gave a feel of the wilderness.

When the beats called, they all sashayed to the stage putting their best foot forward. Carnival was in the air. And they stunned all with the finesse of dance fit for prize. They danced with agility that I wondered whether their bodies contained any

bones. And yours truly thinks "The Dancer of the Night Award" should go to Benjaa. Remember him!

The climax came during the internal launch of the new-look logo. And everyone held their breath stiff – anxious. Then went up the rollup banner – and our new logo was unveiled. Clap, clap, clap... the tents did.

Then to celebrate the new logo, came the Mugiithi train, and shoulder to shoulder they held, led by Employee Number One who is the Chairman - Mr. Paul Gondi. It was swing this way and that. For the MD, Dr. Silas Simiyu, elegantly clad in a neatly-pressed tuxedo, his talk was snappy. His wisdom oozed in refreshing doses.

When the beats called, they all sashayed to the stage putting their best foot forward.

And in his characteristic wit and charm, he reminded all that there is room for everyone at GDC, and that each one should have a vision just as GDC has a vision to be a world leader in geothermal energy development.

Came in the chairman and there was assurance of his commitment to the GDC dream. If anything, he has a 'Midas Touch', he reckoned, and nothing he touches fails! What a relief!

And for yours truly, life behind the camera seemed to be the most enchanting, and clicking the Nikon button I did – soberly

The cake cutting was perhaps an anticlimax to the real icing of the day's cake – the dance floor. They swagged to the grounds –again- and danced to the beat. They demonstrated all the styles in the books and before long, crowed the early bird. And since it is a taboo for day to meet night, everyone fled to wherever they were spending the night – or was it the morning!

I cried for more, but as they say, Christmas comes but once a year.

10 Questions for Michael Mbevi, Manager Drilling Operations

1. Briefly, what is your department concerned with?

My department is concerned with the drilling of geothermal wells. To achieve this there is foreword planning for drilling resources such personnel, funds, equipment among others.

2. Recently you started to drill at Olkaria Domes, what is the progress?

Drilling in Olkaria Domes (Olkaria IV) started on December 18, 2009. The wells are being done by a Chinese Drilling Contractor who is supposed to drill 36 wells using 2 rigs. The first well OW-910 was spud-in on December 18, 2009 at 8:00 pm using rig GW116. The second well was spud- in on December 26, 2009 and is being drilled by the second rig GW188. The two wells are complete.

3. Why did you choose to drill 36 wells?

Thirty six wells were the additional production wells for the 280 MW Olkaria I and IV power plants. Other wells already drilled in this field include: three exploration wells, six appraisal wells and 10 production wells.

4. What does this mean to GDC?

This is a big milestone for GDC towards achieving its mandate of availing geothermal steam for power generation and eventually alleviating power shortage in Kenya.

5. How does the drilling team link with other departments?

Drilling department cannot achieve its goals without the other departments. We complement each other. For instance, HR has to recruit people for us; Finance has to provide funds while PR & Communication do publicize our work and ensure that we are well understood by the public... I mean all departments are very important

6. What does it mean to work in drilling?

Drilling is a 24/7 operation and working in the drilling department means hard work, commitment and self-sacrifice. Our drilling engineers are on call or stand-by round the clock. Some were even working on Christmas Day! We also work during weekends and public holidays!

7. What is the most exciting thing about your department?

To drill a well successfully and to see it producing steam. This gives the drilling crew energy and morale to move forward and to realize that after all it was not a waste of time.

8. What else are we expecting from drilling department in the near future?

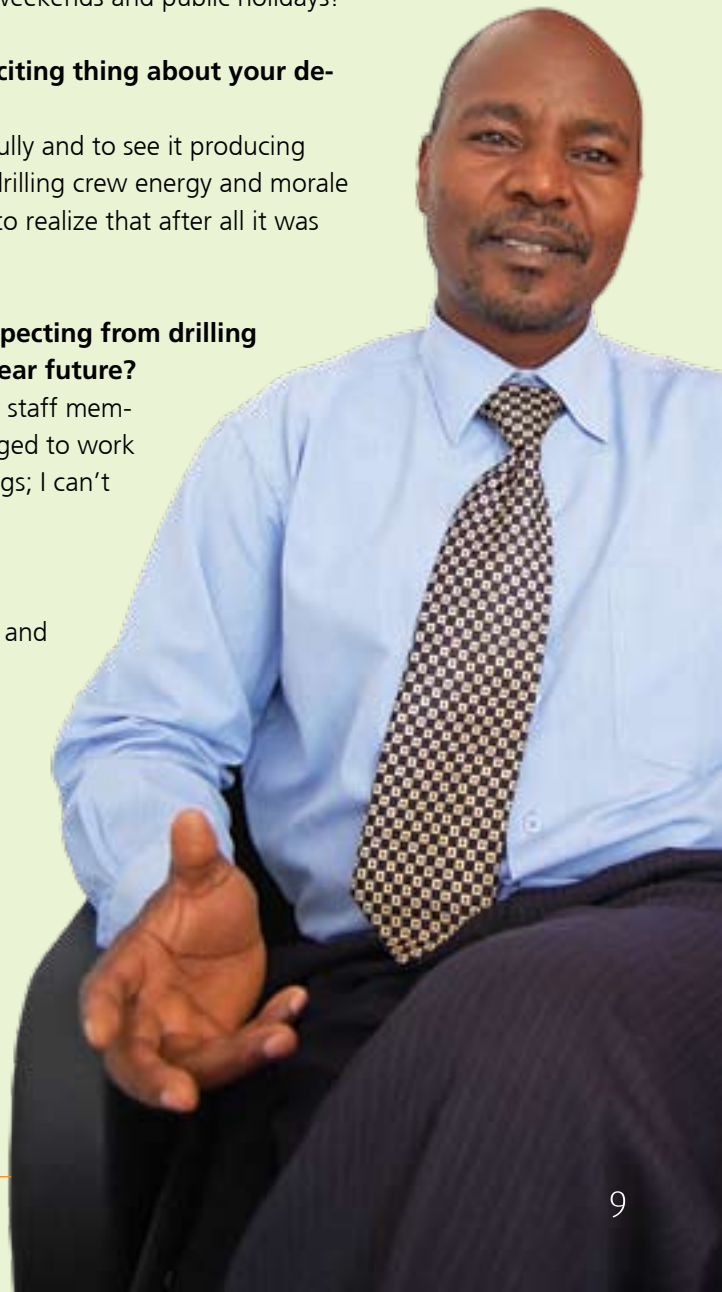
We are expecting new staff members who will be engaged to work with two brand new rigs; I can't wait!

9. Describe your team

Its the most dedicated and interesting crew. It is the right team.

10. What is the most important thing you want to see GDC achieve?

To avail steam enough to meet and exceed Kenya's electricity demand.



Sojourn on the hills



A geothermal field. GDC staff took a tour of the Olkaria Geothermal Complex and were satisfied.

GDC staff come across blooms, plumes and steam as they make a fascinating excursion of Olkaria geothermal fields. Writes **Erick Wamanji**

Naivasha, 8:00 am: Mr. Cornel Ofwona calls to say he is five minutes away. At this time I'm just from a cold shower. Four hours earlier, an attendant had harassed me that I should settle the balance before resting my spinning head. Then someone bangs something and it wakes me up from the forty winks. Soon, it is sunshine. At the dining room, nothing is cooking. No breakfast till I prove that I actually cleared the balance...The Ofwona van is here. We pick some colleagues at Fish Eagle. Then off we zoom. This is a maiden tour of the Olkaria fields for GDC staff to get up and close with steam. At this time the bus is animated with recaps of the previous day's dinner party. A few are nursing hangovers and some are just anxious.

Our first stop is Oserian Flow-ers. This is home to Well 101 with a capacity of 2.5 MW. It is also a masterpiece of floriculture where geothermal energy is used to power virtually everything – warming the greenhouse, lighting the farm and as a fungicide. We meet Mr. Bruce Knight, the Engineering Director, who has been waiting. He happily takes us around. Oserian is the largest farm in the world to employ the geothermal energy for her 50 hectares of flowers. Then we take the winding path past the expansive farm to OrPower4. With an installed capacity of 55 MW, it is the leading private geothermal power producer in Kenya. This plant is adjacent to the Olkaria Hills, a picturesque creation that gives the area her name. I release the camera and start to click.

The ride is long and windy; it seems to take an eternity. It's like an odyssey. This is a world of rough terrain, sun-burnt thorns and thistles. My eyes lock with one of the greatest volcanic complexes of the world. The hills are smoking, and it's nothing but enthralling. "Those are called fumaroles," Ofwona offers.

When in such an excursion, remember your camera, your notebook, sunglasses and yeah, a binoculars where possible. It is a field intertwined by smoke and pipes forming a capti-

vating site. The team stops and squats for shots.

To the bus again, and up the hill, down the valley, the GDC crew goes. Olkaria IV here we come. Now I'm hungry, I suspect my friend Rutinu too. But here we are served with some of the finest samosas I've eaten in recent times. I want to carry some but Diana gives me reproving looks that I dunk. Putting on yellow helmets; the GDC team takes a tour of the geothermal plant.

1:00 pm: we are at a drilling site.

Here we are up close with a drilling rig. The rig is such a massive beast that courageously dissects the belly of the earth in search of the coveted steam. Mr. Michael Mbevi is at home here. He is all smiles, and quickly takes charge to explain how a drilling rig works.

We snake through the dusty roads past the Fishers Tower, a pillar of a rock that has braved erosion to stand tall. Finally, we are at a well testing site. The silencers spew white steam you will be forgiven to think that you are in Vatican. Here Ofwona is king. He is a reservoir engineer. And he takes charge. We learn the testing could go on for three months to ascertain the well's productivity. The journey homewards begins. GDC staff has come face to face with the stuff they will be dealing with. The tour to the Greater Olkaria Geothermal Power Stations has come to a fulfilling end.

Wamanji is the Chief Officer, PR and Communication in charge of Media and Publications



TOP: Wilson Rutino explains a point to Mrs. Praxidis Saisi, the GDC Company Secretary.

ABOVE: GDC staff at a power plant

About the Greater Olkaria

- Geothermal potential is 800MWe
- GDC has started drilling at the Olkaria Domes to supply steam to Olkaria I and IV power plants.
- GDC will drill some 36 wells that will provide 280MWe.
- Olkaria has three power plants operated by KenGen and Ormat.
- Olkaria IV power plant is under construction.
- There is one Greenhouse heating facility operated by Oserian Flowers.
- Number of wells already sunk 110 (KenGen 103; IPP 9).

By all accounts, Paul Gondi is an ambitious man. He joined banking as a young man, rose through the ranks to be a general manager; he resigned, formed companies, sold some, and presided over a number of school boards... today, he is the Chairman GDC Board of Directors.

Gondi's main duty is to chair board meetings that eventually provide guiding principles on leadership and policy development; he also guides the company to meet its goal. Sometimes, he represents GDC in donor meetings locally and abroad.

Donning a black suit, a white shirt and a pin-striped tie to match, Gondi easily ushers us to his private office on the fourth floor of Embassy House. Here, the hue is blue running from the carpet, the fridge, seats and to the curtain.

It is here, this bright Wednesday mid-morning, that our interview chirps off albeit spontaneously.

"I was on an India-bound flight when I was appointed as the chairman of GDC Board of Directors... I first heard the news from friends who called to congratulate me," he

reminisces as if it were only yesterday.

"It was a mixed feeling of sadness and happiness: sad because at that time I was mourning a dear friend; happy because the ap-

From money to steam

It was a great banking career, but now I want to fully support Dr. Simiyu in his duties to get the 4000MWe to Kenyans, **GDC Chairman Paul Gondi** tells Steam Writers.

pointment was a new challenge to my life; a demonstration of great honor by H.E the President," he recalls.

Back from India, he didn't know where to begin. Even before he could read his letter of appointment, he was required to attend a meeting with donors. "I enjoyed this meeting since it was about financing. Something I was familiar with," he says.

Mr. Gondi appreciates that the PS in the Ministry of Energy, Patrick Nyoike, was supportive -he provided technical staff to assist him. In the meantime, the new chairman had to dig into literature to get the basics of geothermal energy. Together with the board they had to scout for the most qualified CEO to run the company. "We got just the right person – Dr. (Silas) Simiyu."

Today he looks back and appreciates that in the past six months since Dr. Simiyu was appointed, GDC has registered phenomenal growth – the company has set up offices in Nairobi, Nakuru and Naivasha, it has recruited key staff and has started drilling in Olkaria Domes.

Now he hankers for GDC to play a critical role towards solving the electricity needs of Kenya and the region.

"I know GDC will succeed. I'm an achiever and anything I concern myself with, succeeds," he says.

The telephone rings and temporarily disrupts his train of thought. After a brief conversation, he comes back to us. Through the window we can see the huge clock on parliament building striking 10: 30 am.

Legacy

"I want to leave behind a legacy. In line with the Vision 2030, I'm sure we are going to provide Kenya with 4000MW of steam equivalent in the next 20 years," he says.

"I have been out in meetings and everyone is singing geothermal energy. Many people are interested in our activities, I don't see why we should not deliver," he insists.

He argues that the Board of Directors appreciate that GDC must run as a serious corporate company without interference from political quotas.

Indeed, it is not lost on him the import of electricity to the nation.

"Today, electricity is top on the agenda of the needs of most Kenyans and the business community. Those who have it want it to be affordable and reliable; those who don't have, especially in the rural areas, are deeply craving for it. Yet, for long we have never had enough of this treasured commodity," he said during a meeting with Minister for Energy, Hon. Kiraitu Murungi.

Gondi, the banker

The chairman, a strict timekeeper, is an early-riser. His day begins at 4:30 am and ends around 8:00 pm. "I never waste time. I believe in hard work and success," he says and then answers a phone call.

Gondi who also plays golf, hates clutter, goes to the gym at least four times a week because exercise makes him alert. He also rears poultry and dairy cattle.

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This is the big document, Paul Ngugi, Manager, Planning hands the Business Plan to MD, Dr. Silas Simiyu as staff cheer on



PHEW! a GDC team at Kapedo takes a rest



A geo-scientific team collecting data at Menengai



Amidst 'white smoke' GDC staff are engulfed by steam at a drilling site



On the dotted line..., Dr. Simiyu signs a contract in his office



The ABC of geothermal...Barbara Kenya and Deborah Kalei take pupils through the basics of geothermal energy when they visited our stand at the ASK show

Kenya Goes Big on Geothermal Energy

Affordable and reliable electricity for Kenyans in sight as GDC rolls up the sleeves to start drilling.

Writes Erick Wamanji

Today, if you are living in Kenya, you should be smiling. You can even go to the coffee dispenser and get a hot shot. Reason: an era of affordable, reliable and green electricity is dawning.

True, it has been tough with *shida za stima* (electricity problems). The lights have been on and off, the bills have been high, and we have been living in darkness - literally.

When the goddess of rain was upset, hydroelectric turbines were almost grounded as dams receded. In a state of panic we ran to diesel generation which is rapidly losing favour as the preferred source of energy due to its adverse effects on the environment, besides making electricity one of the most expensive commodities. Further, oil prices continue to soar in the world market making the cost of doing business too high. Therefore, the most logical and acceptable alternative now is geothermal energy.

Studies indicate an estimated geothermal potential of more than 7,000 MW in Kenya. These fields are strewn in the western parts of the country along the Great Rift Valley. But, even with this enviable potential, today the country exploits a mere 167 MW from plants situated in Olkaria, Naivasha, 120 KM west of Nairobi, more than 30 years since geothermal exploration began.

This perhaps explains the government's policy on energy clearly

articulated in Sessional paper No. 4 of 2004, and the energy Act No.12 of 2006. These two documents are no doubt some of the boldest the Kenyan government has made on energy. The documents seek to un-bundle the key players in the electricity sector with a focus on improving efficiency. GDC is a product of this smart move. And we are set to provide leadership in this sector.

"Our biggest concern is to see that power is affordable, reliable and green. We at GDC are interested to see that even the remotest village in this country is lit. We also want to see that this country can attract and retain investors because electricity is readily available and affordable," explains Dr. Simiyu.

Already GDC has mapped out potential areas to drill. It has also signed contracts to procure drilling rigs. GDC is currently drilling about thirty six wells in Olkaria Domes. The project is expected to supply steam for the Olkaria IV power plant.

... in the long run,
geothermal energy
is the most cost-effective source of
energy.



Once this resource is tapped, the cost of electricity will come down by almost a half – this time round, the consumer will smile. Today, a Kilowatt Hour costs (Kwh) 17 US cents, KPLC sells the same power at 9 US cents because the government subsidizes the cost. But GDC hopes to sell the same at 4 US cents.

Early Generation Model

GDC envisions that 200MW will be added to the national grid annually. This supply will be cumulative year after year. This will be realized thanks to the unique innovative early generation strategy using modular containerized 5 MW -10MW power plants. Already the idea is proving popular in the country and among investors. According to Dr. Simiyu, GDC will provide adequate steam for the generation of electricity enough for this country and even for export.

"Ours is a paradigm shift on tapping geothermal resources. Our model of early generation will shrink the gestation period of electricity production from seven years to six months. At this rate every year a cumulative of 200MW will be added to the national grid," Dr. Simiyu says

"Today the world is going green, and we are firmly committed to contribute to this global agenda. Clean, renewable and sustainable energy is the only way to save planet earth from collapsing. That Kenya is endowed with abundant geothermal resources



Patrick Nyoike, PS Energy

is a privilege. All our efforts should now be channeled toward this environmental-friendly source of energy," says Dr. Simiyu.

In fact, according to Mr Patrick Nyoike, PS Energy, Kenya's electricity base load will shift from hydro-based to geothermal in the next 10 years.

"We are at the tail end of hydro-power production. We can only add another 75 MW from this source to the national grid and it is important to explore alternative sources," Nyoike said.

With affordable and reliable electricity, pressure on wood fuel will be eased consequently saving forests. Besides, it will spur the growth of cottage industries and by extension economic development, argues Dr. Simiyu.

Apart from early generation, investors will install large power plants using the steam developed by GDC. By 2030, GDC plans to produce steam equivalent of 4000 MW.

Underwriting upstream risk

"Geothermal energy is a capital intensive industry. This is why the government chose to take the initial investment risks as a deliberate measure that would ensure affordable and reliable electricity. Still, we want investors to come on board. There are vast investment opportunities in the geothermal sector. GDC will facilitate this investor entry," Dr. Simiyu promises.

Furthermore, despite demanding heavy initial capital inlay, in the long run, geothermal energy is the most cost-effective source of energy. Geothermal experts affirm that the steam-wells have a shelf life of over 25 years, by which time an investor will have recouped all costs.

In addition to the government, other players that have expressed interest in this sector include: Japanese International Cooperation Agency (JICA), US Department of Trade and Development, kfw (Germany) European Investment Bank (EIB), AFD, World Bank and the Green Energy Fund. In fact the latter has promised some \$ 600 million.

"This way, Kenya will grow while at the same time cut down on carbon emissions and provide long-term sustainable electricity. While hydro-

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**A geothermal field in Kenya.
Kenya is shifting to geothermal energy**

Of hot springs, deities and a chilling journey



Daniel Ng'enh

Daniel Ng'enh revisits Kapedo and shares his experience...

When the GDC team left Nakuru for the hinterland in Kapedo, little did the members know that they were venturing in to a world of medicinal springs, rain-gods, and a comely community.

That is why as the Land Cruisers gallantly roared over the valleys and hills of a tricky Kapedo terrain the GDC crew was full of "oohs" and "ahas!" I'm not new to Kapedo though. I was there first in 1983, then a staff at the Ministry of Energy. As new employees, we had to make reconnaissance tours. I loved it. I still love it! That's why recently I happily accompanied the new GDC staff for a maiden tour of the area. And for

ten days we traversed the length and breadth of the region as we introduced GDC to the local communities.

We arrived in Kapedo on a hot Thursday afternoon, tired and wasted. The warm welcome from the provincial administration and community headmen was like balm. Headmen led villagers to welcome our team with song and dance.

And thence, we got a platform to articulate our mission -GDC became an instant hit. I was given a walking stick – a sign of eldership -to allow me to address the barazas. Occasionally, I would be called upon to speak, and no doubt I enjoyed the talk at Kandinding, Nginyank and Tangelbei. The curiosity on GDC was just overwhelming – residents even wanted us to commence work immediately! Still they were curious. They wanted for example to go to Olkaria and see

a geothermal power plant. They also wanted us to repair boreholes, rehabilitate schools... in short, what would GDC offer? They wondered. They will not be dissatisfied, because I know that we at GDC are committed to impacting positively every community we interact with.

This delegation comprised of geologists, geophysicist, geochemists, reservoir scientists, reservoir engineers, environmental scientists, Geographical Information System (GIS) analysts, liaison officers, surveyors and technicians. One quite supportive chap was Joseph Kitilit. He speaks the local *tongue* and this made it easy for us to reach the community.

The heat was searing about 34 degrees; the grounds dry, and the few thorns and thistles were so sun-burnt that they cried for water.

This is the land of many medicinal

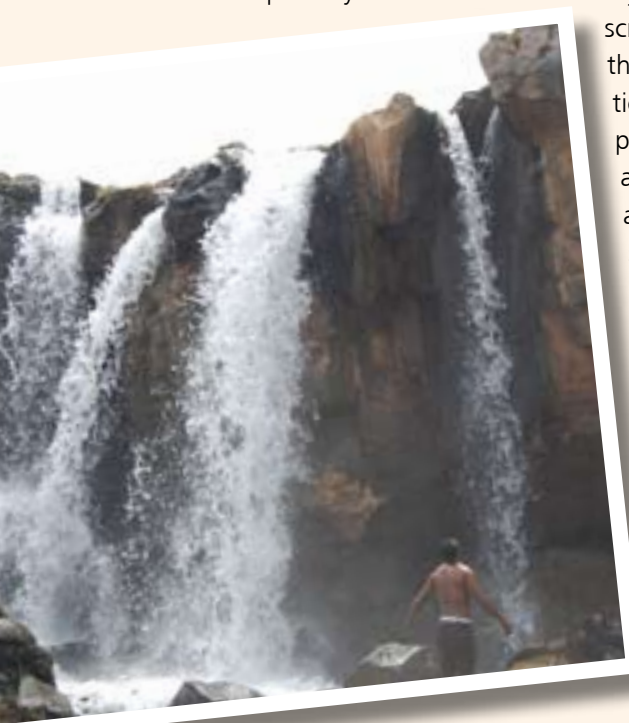
springs. Villagers say the hot springs cure skin diseases as evident by the visiting tourists.

The Kapedo springs were irresistible – as usual. Water cascades from a cliff with a murmuring flow forming a silverfish splash that glides on rocks creating one of the most breathtaking postcard pictures I've seen in recent times. The crew was so enchanted that it had to stop and pose for a photo and also take a shower.

Rain-god of paka

At Paka, some 80 kilometers north of Marigat, we came closer to the rain-god. Apparently, legend has it that the steam that jets from this area is a wonder of a rain deity. One of the worries here was, if GDC comes, will the rain god be disturbed? But we assured them that, GDC is environment conscious as it is cultural friendly.

Driving in these areas is a tricky affair. In some places you



have to deal with soft ground such that the car can't move, then in some stretches you have to maneuver through huge stones, jutting objects, pebbles, sharp turns, steep ascends and descends. To first timers, their hearts were in the hands!

Staff members quickly struck a rapport with locals, and soon cameras were clicking away.

10:00 am: Tangelbei, our truck got a puncture in one of the sharp bends, and I wondered silently: "in all these fields, aren't there gods to protect visitors from punctures." Some members sighed in and were speechless, but then they calmed after a while.

And getting to the villages was even more exciting. Staff members quickly struck a rapport with locals, and soon cameras were clicking away.

Beyond pictures, there was also scramble to buy antiques right from the villages. These included traditional seats, which also double as pillows. But despite all the fanfare and colour, work had to be done at the end of the day- visiting the springs and the people.

Land of milk and honey

In these areas, food is available but one must take lots of caution when choosing where to eat for water scarcity abounds. However, one can order for a special food like chicken or goat. I went for *kuku choma*. Honey, camel and goat milk are also in plenty here.

At Kadingnding, there was even lunch for the team – such is hospitality unbeatable.

I hope to have a chat with the rain-god next time I go to Kapedo.

Mr. Ng'eno is the Deputy Manager in charge of National Programmes

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Kenys Goes Big on Geothermal Energy

electricity is renewable, no one wants to take chances with the unreliable weather patterns. Besides, room for creation of hydropower dams that can produce enough electricity to sate the power needs of this country, is virtually lacking," explains Dr. Simiyu.

Unlike hydroelectric plants which demand large land mass resulting to displacing communities and eating into arable land, geothermal energy has minimal negative effect on communities and the environment. In the Olkaria geothermal plant for example, wildlife, communities and the power plant mingle like buddies.

"In terms of human capital, GDC has the best expertise in Africa - a team of highly qualified and extensively experienced staff. However, the country still needs capacity building especially for the youth who are developing a lot of interest in the geothermal sector," Dr. Simiyu explains.

"Therefore, we will establish a geothermal training complex in the addition to partnering with countries that can train our staff," he concludes.

1. Kenya's installed electrical capacity is 1350 MW.
2. Currently, geothermal energy constitutes 22% of all electricity consumed
3. Vision 2030 aspires to turn Kenya to a mid-income nation.
4. Kenya needs 10,000MW in the next 20 years.
5. GDC will provide at least 4,000 MW by 2030.
6. GDC's mandate includes to explore, drill and competitively sell steam wells to investors.

How Menengai will light Kenya

Science trounces superstition and promises Kenya over 800MW

By Erick Wamanji

Menengai Caldera...from superstition to great hopes

Menengai – that caldera in the Rift Valley that is heavily woven in eerie lore and myth – is one of the promising spots that will shed light to Kenya.

A product of volcanic activities, Menengai has been popular with legend and tourism in equal measure, but now it will earn another title - the 'Caldera of Light'.

However, from a cursory glance of Menengai, one would be forgiven for dismissing it as nothing beyond the aesthetics it offers. Yet, beneath it, lies a treasure trove that will drive and light our country. Thanks to scientific studies, Menengai is said to boast of a geothermal potential estimated at 800 MW.

And as our company moves to the caldera, it is symbolic – it is about triumph over darkness literally and figuratively. But is GDC not a legend in the making? At the rim top it is breezy and electrifying even, offering a spectacular vista of Lake Nakuru and other physical features around. It is also a source of ecstasy for hikers. Historically, Menengai was a battle

ground for different communities. With time, a religious sect considered a section of the caldera as sacred. Others think they are close to God whenever they pray at the crater, and as such, it is a pilgrim's hotspot. And now, Menengai's history is getting richer and modern with time.

Yet, beneath it,
lies a treasure
trove that will
drive and light
our country

Devil on the motorbike

If you are into superstition, Menengai is the place for you. Tales of demons and ghosts abound. This is because of the steam that is seen wafting in the area. In fact some call it *Kirima kia ngoma* (the devil's mountain). Indeed,

some people have confounding tales about the crater. Some say that human beings vanish without a trace, while others lose sense of direction while at the caldera.

So, they say that the crater is a devil's place who capture animals and human beings and hide them. Others have it that in the 50s the devil could be seen riding motorcycles, or even plough, planting and harvesting wheat within an hour. When it rained, they allege, there were flying umbrellas all over! But this is not to scare you about Menengai. I have been to this grand artistry severally and even descended to the caldera – it is just about geography and earth formations. Nothing mystical!

However, it is a bewitching piece of beauty that is largely irresistible. In fact, Menengai is a tourist magnet for local and international travelers. It is also popular with students. Most of them come to marvel at this scenic site and study geographical features. Now students and visitors will have something else to marvel at - geothermal power plants.

Why Menengai

Beyond the incredible steam potential that Menengai is promising to offer, this caldera is critical because it is close to power lines, has the best infrastructure and besides for its proximity to Nakuru Town.

The Caldera

Menengai is an extinct volcano; the caldera is a product of millions of years of volcanic activities. The highest point, stands at 2,300 m above sea level. It is a caldera of mountains and valleys, covering a surface area of 70 square kilometers, and has a circumference of 12km. The lowest point is at 200 meters.

Menengai is about three hours drive west of the capital Nairobi. From Nakuru town it is eight kilometers.

The local community is thrilled about the presence of GDC. Most residents see it as an opportunity for the area to open up and develop. According to Dr. Peter Omenda, the GDC Chief Manager Energy Research and Development, we are already making a mark on the ground in Menengai. Currently, detailed scientific work has been done. GDC has also paved roads inside the caldera to access the site. According to James Wambugu, the Manager, Resource Development, five boreholes are being sunk to provide water for drilling.

And now a big one - GDC will start drilling for steam at Menengai in mid this year. Already some drilling sites (well pads) have been marked. These are the areas where the actual drilling will be done.

Community stands to benefit

The local community no doubt is going to be a major winner with the entry of GDC. Now, they can enjoy access roads in the short term. In the midterm, most young people are

"GDC will also rehabilitate the Menengai Forest."

going to get employment as casual labourers. The local traders and gardeners will also enjoy an increased market from the personnel who will be working at the site.

Once upon a time, the caldera was thick with trees. It is not the case. Still, GDC is committed to restoring the forest - to reclaim the lost glory of the Menengai greenery. Tree nurseries will be established for this purpose.

"GDC will also rehabilitate the Menengai Forest. We are now discussing with the Kenya Forest Service to see how we can collaborate. We will also sensitize the local community to engage in tree planting activities," Ben Kubo the Nakuru Area Manager, and Manager Environment and Safety says.

GDC is also committed to turning Menengai and adjacent areas to a world of progress and cottage industries. By working closely with communities, GDC will ensure that everyone has something to smile about. The

community will also benefit from availability of clean water.

There are also opportunities to directly utilize geothermal energy for leisure and for agriculture production, says Martha Mburu who is the Area Manager, South Rift Region.

Though it is called a crater, that is an anomaly, geologists now confirm. A caldera normally has near-vertical walls while a crater takes a 'V' shape. This is because their formations are different.

No one knows what surprises Menengai will pull next, but for sure its legend would go on and on as the GDC turbines start to roll and the green blubs glitter.

Additional information from the internet

Facts about Menengai

1. It is a Caldera created as a result of volcanic activities
2. It has a circumference of 12 KM
3. The highest peak is 2300 M above sea level
4. It has an estimated geothermal potential of 800 MW
5. GDC will develop this steam fields.



A GDC team in Menengai at one of the youngest lava rocks



Dr. Silas Simiyu,
Managing Director / CEO



Abraham Saat
Manager, Supply Chain



Benjamin Kubo
Area Manager, Central Rift/Manager, EHS



Bruno Linyiru
Manager, Finance



Cornel Ofwona
Area Manager, North Rift/ Manager Reservoir Engineering



Godwin Mwawongo
Manager, Performance Management & PA to MD



James Wambugu
Manager, Resource Development.



Johnson Mungania
Manager, Infrastructure



Martha Mburu
Area Manager, South Rift/Manager External Programmes



Michael Mbevi
Manager, Drilling Operations



Moses Ole Sakuda,
Manager, Administration



Nicholas Weke
Manager, Quality Assurance & ICT



Paul Ngugi
Manager, Corporate Planning & Strategy



Dr. Peter Omenda
Chief Manager, Research & Development.



Praxidis Saisi
Company Secretary



Rosemary Olonde
Manager, Internal Audit



Rose O. Tindi
Manager, Human Resources



Ruth Musembi
Manager, PR & Communication



Unpacking the Employment Act 2007

Adam and Eve set a lot of precedents for the human race, first human beings, dominion over the earth, and formation of a society with laws. The keeping of these laws for them produced an excellent life. On the other hand, when they did break the laws negative repercussions logically followed. The cycle has not changed. Abiding by laws has always begotten rewards, while the breaking of the laws has had less than pleasant repercussions. We live in a society that is governed by laws and regulations. Human nature is such that if we do not have set guidelines on how to act in different situations, we might not be able to sustain our very existence.

Laws are all over - the home-front, schools, churches, your local *chamaa*, and of course the state. The workplace is not exempt to the laws of the state. It is guided by the Labour Laws. These are a body of laws, administrative rulings, and precedents which address the legal rights of, and restrictions on employers and employees. Such laws are intended to protect the employee as much as to shield the employer.

The Employment Act 2007 is one of the many labour laws in the current constitution. The Act replaces the Employment Act Cap 226 and the Regulation of Wages and Conditions of Employment Act Cap 229.

This new Act establishes the basic minimum terms and conditions of

employment. With thirteen parts, the Act addresses a variety of issues that affect the workplace. Part I of the Act has provided definitions for a number of terms commonly applied such as probationary contract, migrant workers, and worst forms of child labour, dependant, forced or compulsory labour and HIV. This definition of terms solves ambiguity which can be used to unfairly profit either an employee or an employer.

Part II of the Act provides for general principles on prohibition against forced labour, discrimination in employment and sexual harassment. Discrimination can be on grounds of race, color, sex, language, religion, political or other opinion nationality, ethnic or social origin, disability, pregnancy, and mental status or HIV

The Act also provides that the employer will keep a record of all employee particulars for five years after termination of employment.

status. The Act clearly prohibits discrimination.

General provisions relating to employment relationship; the contract of service, records to be kept by the employer and the disciplinary rules and procedures are contained in Part III of the Act. "The employer shall hence be required to issue a written contract to a worker engaged for a number of working days, which amount in the aggregate is equivalent to three months as opposed to three months in the repealed Act. This means that a contract does not have to be for three consecutive months. It can take any random time, provided it adds up to three months.

The Act also provides that the employer will keep a record of all employee particulars for five years after termination of employment. The employer should also make reference in the employment contract about disciplinary rules applicable or refer the employee to the provisions of a document which is accessible to the employee which specifies the rules. This implies that that the employer should inform the employees of the disciplinary measures for the organization. In addition the employer shall also display employee rights under the Act in a conspicuous place accessible to all employees.

To be continued.

Muthengi is the Chief Legal Officer at GDC.

Looking to purchase a car?

Guide to popular car types

By Nancy Juma

Hatchbacks (Vitz)

These small or medium-sized cars have a trunk lid that's all one piece with the back window. **Advantages:** A practical, versatile layout that maximizes cargo space and provides a large loading door through the rear. Usually cheaper than trunk-equipped counterparts. **Disadvantages:** The sloping roofline of some designs can limit head room in the rear. Interior noise levels may be higher than in a saloon, and the rear cargo area is not as secure as an enclosed, lockable trunk, though roll-out covers are often available to hide cargo from curious eyes.

Minivans

These vehicles offer large interiors but are usually no longer than a medium-sized car. They are the most practical, utilitarian choice for moving lots of people or cargo. **Advantages:** Many have a carlike ride and are easy to drive. There's seating for up to eight passengers and plenty of room for cargo, especially with the seats folded down or removed. Fuel economy is generally good, considering what they can carry. Some offer all-wheel drive. **Disadvantages:** Smaller vans can take lots of people, but not their luggage.

Saloons

The biggest selling automobile segment, medium-sized sedans make a good choice for a family.

Advantages: They're usually roomy compared with small cars and should seat five in reasonable comfort. They're often more powerful and better riding than a small car. Some specialty "sports saloons - Subarus" may handle particularly well. **Disadvantages:** Some may seat only four people in comfort. Rear leg room can be tight.

Sport-utility vehicles (SUVs 4WDs)

These are very popular in Kenya at the moment for their look, power and versatility. The better ones have a carlike ride and are easy to manoeuvre in routine driving. **Disadvantages:** Many SUVs are costly to buy and maintain. Larger models can be ponderous and clumsy in emergency-driving situations and are more prone to rollovers than cars. Fuel economy is often poor.

(Additional information from the internet)

Nancy is the Chief Officer, PR and Communication

From money to steam

Continued from page 12

"My work ethic is that people should have self-drive in their work. They should not wait to be policed. We're past that era... That is why I strongly call for team spirit and continuous improvement of our skills," he advises.

A widely travelled man, Gondi has also served in school boards including Lenana and Alliance High Schools. He is also a member of Kenya Association of Manufacturers, and a member of Kenya National Chambers of Commerce. Between 1988 and 1992, he served as a commissioner for the Nairobi City Commission.

Gondi began his career as an accounts clerk in 1966 during his school holidays. With time he honed his skills and rose through the ranks to become a General Manager.

"I'm also proud that as a Kenyan I'm able to employ and give others an opportunity to work. That is why I took early retirement, if there is anything I didn't like was to wait until I'm retired," he says calmly.

The father of four cherishes a vibrant family institution. On the curtain box of his office are portraits of his family. "I take pride in having educated all my children beyond degree level," he says with a smile.

Team Spirit

His office window allows a striking vista of parliament buildings. From here, it is easy to catch a glimpse of parliamentarians...but politics is not his thing.

"I don't want to get into politics. As an investor my concern is to see a stable political environment for business to thrive... for GDC I want to see team-spirit."

Another phone call comes, and the chairman has to rush for another meeting. We have to rush to the office to file this story.

Environment and geothermal why the twain meet



By Ben Kubo

A lot has been said about various sources of energy, with each claiming to be the best option. Geothermal energy is no exception, with talk right, left, and centre on how it will not only save the country from an energy crisis, but will also have a positive impact on the environment.

Talks in the Copenhagen conference in Denmark centred on how geothermal energy will play an important role in reducing carbon emissions and reduce global warming. Question however is: is all this a rehearsed script, or does the use of geothermal energy actually have potential to alleviate environmental degradation?

Energy in eternity

The first thing we say is that geothermal energy is renewable making it a viable source of energy. What does this really mean? Geothermal resources do not need geological times for regeneration as fossil fuel reserves do. The depletion of fossil fuels has the

world's leaders scratching their head as when these reserves do end, that is it, at least for a few billion years. However, the earth's heat is a constant source of energy that is essentially inexhaustible.

Heat has been radiating from the centre of the earth for some 4.5 billion years, and this will not end even billions of years to come. The only issue in geothermal energy generation would be water. The earth however has this covered. Rainwater and snow-melt continue to feed the underground thermal aquifers. With these two raw materials for geothermal steam production clearly in constant supply, we are good to go.

Gaseous Steam

Many people we interact with, and show the images of various geothermal power plants always have the same question: how can we say we do not pollute the environment, yet they see whitish gaseous matter coming from our plants? For air pollution

to take place you need smoke. This is what fossil fuel powered plants produce because the generation of electricity from these entails burning. For geothermal energy however, the emission is not smoke, but steam.

This steam can be likened to the same steam produced when you uncover a hot *sufuria*. The wastewater that may otherwise pollute surface waters is used to recharge geysers and geothermal reservoirs, and to irrigate land.

The danger of fossil fuel

Fossil fuels are also well known to emit very high levels of deadly gases such as nitrous oxide, carbon monoxide, sulphur dioxide, and the one we are all paying for –carbon dioxide. The medical effects of these emissions range from respiratory illness to cancer. The carbon dioxide emissions are responsible for the depletion of the ozone layer leading to global warming. Global warming sets the scene for glacial melting, causing a rise in sea



In harmony with nature...exploitation of geothermal energy has does not temper with witht the natural environment.

Corporate Social Responsibility at GDC

By Nelly Rwenji

Corporate Social Responsibility (CSR) has gained importance as issues of concern such as social inequality, environmental degradation, and corporate governance take centre stage. In addition core development issues such as human rights, labour, education, health care, child labour, conflict and environmental impact among others have become central issues. CSR has been used to cushion the issues at hand through collaborating with both internal and external stakeholders for change.

The future of any organization is measured by the level of its investment in the social sphere. At GDC, we seek to empower and create sustainability among the communities within

our areas of operation. Our projects are designed to impact the social fabric of our communities and contribute to changing lives in a sustainable way. We are also very keen on the environmental sustainability and we ensure that our business reduces carbon footprint and environmental degradation. GDC will facilitate economic independence for the inhabitants of our areas of operation by supporting them with their economic and social programmes.

Our CSR programme will be in line with our the core business of the company. It is for this reason that we will seek to provide sustainable solutions to issues regarding education, economic empowerment, water and sanitation, art, culture and sports

as well as public health intervention. The key to these projects will remain empowerment and sustainability to ensure that the future generations will also enjoy the work GDC does in these areas.

As a matter of procedure, GDC will regularly evaluate its compliance with all applicable environmental laws and regulations, and strives to employ the highest environmental standards to all operations. We not only seek to minimize the environmental footprint of energy production and promote environmental sustainability across our operations but also ensure partnership with the communities in development and prioritization of CSR projects.

Nelly is the Senior Officer PR & Corporate Branding

Environment and geothermal - why the twain meet

levels, creating a risk of flooding and displacement of coastal populations.

And that is just the beginning of the end for the human race. On the other hand, when it comes to geothermal energy, emissions are so negligible, and that they do not have an effect on the environment, or the ozone layer. We can therefore say with a clean conscience that as we work on geothermal energy, we are not polluting the environment.

Community friendly

When it comes to creating new industries in marginal areas, there are always fears of displacement of the locals, leading to resistance by the inhabitants of the land. Geothermal energy power plants however do not pose a threat of displacement. As compared to a coal facility which requires a massive 3632 square metres per gigawatt hour, a geothermal

facility requires a mere 404 square metres per gigawatt hour. Geothermal gets an upper footing because it is tapped directly at its source. The latest pollution talk in Kenya centres on noise pollution. Many people have

Talks in the Copenhagen conference in Denmark centred on how geothermal energy will play an important role in reducing carbon emissions and reduce global warming.

decried the move to by the Ministry of Environment and Mineral Resources to ban noise making, with bar owners and hawkers being major culprits. Geothermal energy producers however are cool calm and collected, knowing that they have got nothing to fear.

Geothermal power plants produce very low noise hence do not cause noise pollution. During drilling, temporary noise shields can be constructed around portions of drilling rigs. Turbine generator buildings, designed to accommodate cold temperatures, are typically well insulated, acoustically and thermally, and equipped with noise absorptive interior walls.

When NEMA comes calling, they will soon realize we are their best ally. Geothermal energy clearly epitomizes the concept of clean energy.

Ben Kubo is the Manager Environment and Safety, also the Area Manager, Central Rift Region

Opportunities galore

1. Does Kenya have commercially viable geothermal resource?

Geothermal resources in Kenya are concentrated in the Rift Valley with more than 14 fields extending from Lake Magadi to Lake Turkana. There are also low temperature fields outside the rift at Homa Hills (Nyanza) and Massa Mukwe (Coast Province).

The Government of Kenya (MoE) has continued to carry out detailed studies for geothermal energy in the Kenya rift and the potential has been estimated at over 7000 MWe. The resource is commercially viable. Currently geothermal energy contributes 167 MW which is about 14% of the country's installed capacity. With regard to direct use, a horticultural farm in Naivasha uses about 15 MWt of geothermal energy to heat 50 hectares of greenhouses of roses for export. A tourist hotel at Lake Bogoria is utilizing spring water at 38°C to heat a spa pool.

2. Is there ready market for electricity?

The demand for electricity is estimated to increase at the rate of 8% per annum. Besides, only 15% of the population can currently access power. However, the installed capacity has not increased to match the demand growth thus necessitating thermal emergency power generation to satisfy peak demand. This has drastically increased the cost of power in the country. The demand exceeds the installed capacity hence a ready market for affordable power is available.

3. At what stage of geothermal development can an investor come in?

Investors come in at any stage of the development of the geothermal resource. However, many investors are interested after a field has been proven up to the appraisal stage. The investor may invest at the surface exploration, exploration and production drilling, pipeline or power plant construction stages for electricity production and direct use applications.

4. If I am interested in the geothermal energy sector, which are the areas I can invest in?

- Geothermal field development (drilling and steam production)
- Power plant development and management
- Direct use applications (industrial and greenhouse uses)
- Touristic use of low temperature resources

5. How will I recoup my investment?

When a private investor has developed a field to power generation, they sign a Power Purchase Agreement with the Kenya Power and Lighting Company Ltd (KPLC) to supply electricity for a given period of time. KPLC also pays capacity charge. The investor can also sign a contract with other players in the industry to supply guaranteed steam if the investor has excess steam. The Olkaria III project is the first private geothermal power plant in Kenya. A 20-year Power Purchase Agree-

ment was awarded to Ormat by KPLC in 1998 under a World Bank supervised international tender for the field and plant development of up to 100 MWe.

6. Are there enough local geothermal experts that an investor can engage?

Geothermal experts in all the stages of geothermal development are available in Kenya. In anticipation of the growth of the geothermal sector, GDC is currently focused in training more staff in all aspects of geothermal development.

7. What role does GDC play when one wants to invest in geothermal energy?

GDC was established to fast track the development of geothermal resources in Kenya. The government is keen to reduce upfront resource exploration and appraisal risks by GDC taking over these initial activities. GDC's input includes, but not limited to:

- a. Carrying out surface exploration, exploration and appraisal drilling.
- b. Carrying out assessment and development of geothermal steam fields in the numerous potential areas within the Kenya rift valley.
- c. Manage geothermal reservoirs to ensure availability of high quality steam to the investors.
- d. Consulting on geothermal energy, other geo-science and resource projects, environmental studies and project management.

Ruth is the Manager, PR & Communication



Why geothermal is prolific

A hot bath...local tourists at Lake Magadi. Geothermal has many uses, below a flower farm

Geothermal energy has long been associated with electricity generation. But that is not the case. In fact, electricity is just but a drop of the range of uses one can put geothermal resources into.

Beyond steam, geothermal energy has the ability to transform an economy, not only by ensuring energy security, but by also supporting industrial development.

A visit to the various areas with geothermal potential gives you a sight to behold. Water jets from the ground, reaching very high heights. The highest recorded geyser eruption was in New Zealand reaching a cool 300 meters! It is a touristic attraction.

Kenya is blessed to have such sites in Lake Bogoria. A hotel in the area uses the water from the natural hot springs to heat its swimming pool. The number of visitors to the hotel has greatly increased because of this attraction. The visitors are also quoted

as having said that the heated pool has had a positive effect on their skin. The same is true with the Lake Magadi pans which are a must visit over the weekends. Kenyans are getting more affluent, and are now more receptive to using their disposable income on leisure activities. An investment in warm swimming pools, warm spas and steam baths supplied with geothermal fluids is gaining currency. In the recent past, we have seen how climate change can affect the economy of a nation. In places that are reliant on solar energy for drying grains, extreme solar radiation has led to the destruction of crops. In order to salvage themselves, farmers turned to other energy sources, including fossil fuels. These are very expensive and environmentally unfriendly.

Geothermal energy, once again, saves the day. It is cheap, reliable and available all day and all year round. In some areas in Kenya, for instance

Beyond steam, geothermal energy has the ability to transform an economy by supporting industrial development.

in Eburru, though on a small scale, geothermal resources have been used to dry pyrethrum flowers. With proper coordination, such an undertaking would be quite beneficial and relatively cheap. Today, if you go to Oserian Flowers, Naivasha, you will be astounded. Oserian is the largest flower outfit in the world to use geothermal energy on the 50 hectare farm. The result is that costs are saved to the tune of 30 percent. Besides, through this model, Oserian control harmful pesticides that could otherwise harm the ecosystem.

Aquaculture

In some countries, for instance China, geothermal energy is used for aquaculture. This is the "farming" of water-dwelling creatures by warming water using geothermal heat thus speeding the growth. This technique works easily with the farming of fish, shellfish, reptiles and amphibians.

China sets standards in this field. It has fish farms that cover almost 500 acres. Other countries farm tilapia, catfish, trout, and even alligators. That is why, here at home, geothermal energy could prove to be the answer to our economic and nutritional insecurity especially on fish production. That is what we at GDC are promoting.

Martha Mburu is the Area Manager South Rift Region. She is also in-charge of direct geothermal uses

Tell Us...

Hellen M'maiti

What time do you work best? Morning and after five.

What impact do you hope to have in GDC? I would like to contribute towards GDC's ultimate goal by serving people timely and efficiently.

What has been your highest moment in GDC? When I learnt that I had been sponsored to go to South Africa for training.

How about your lows? Not really, there are challenges, but they make us better individually and professionally.

What has been your experience at GDC? It has been challenging, especially because of individual diversities, but as I said, challenges make us better.

Where do you see yourself five years on? I want to be in high position professionally, hopefully at GDC.

What about you don't people know? I always wanted to be a teacher.



Hellen

Gilbert Muthamia

What time do you work best? In the morning

What impact do you hope to have in GDC? Ensuring that there are improved accounting systems and that there is efficiency in the production of information.

What has been your highest moment in GDC? Receiving my first salary!

How about your lows? Honestly, none.

What has been your experience at GDC? GDC provides a good and cooperative environment to work in.

Where do you see yourself five years on? A manager in GDC.

What about you don't people know? Just give me a football.



Gilbert

Anthony Kiambi

What time do you work best? Morning hours, but generally before 3pm

What impact do you hope to have in GDC? To ensure all procurement deadlines are met.

What have been your highest moments? To have my own family.

How about your lows? When I'm not in good terms with my fellow employees or with my family, and when I'm broke.



Anthony

What has been your experience at GDC? GDC is a great employer! 80 per cent of the employees are young, there is open interaction and problems are quickly sorted out. The managers too are cooperative and they give you attention when needed. GDC is a model organization.

Where do you see yourself five years on? A manager at GDC.

What about you that people don't know?

Rebecca Tallam

What time do you work best? In the evening, and late at night when everyone is quiet

What impact do you hope to have in GDC? I have something special to offer, and I will make a difference. I want to help in the improvement of performance constantly.

What have been your highest moments? I'm not there yet, the sky is the limit, and I am headed there!

How about your lows? Losing my father, and my hero.

What has been your experience at GDC? So far, great!

Where do you see yourself five years on? I see myself as one of the influential people around who will empower the less fortunate.

What about you don't people know? I am energetic, capable, and outgoing. I can be bossy, but also a considerate leader. For me, setbacks in life do not break me, in fact, I yearn for challenges!



Rebecca

Morine Achieng'

What time do you work best? In the morning and after five.

What impact do you hope to have in GDC? I want to make GDC a better place with regard to the services offered, and help GDC meet its objectives. I want also help in ensuring we live together as a community.

What have been your highest moments? I can't single out one, for me, everything has been good.

How about your lows? When there is no coordination of activities, or when information is not passed at the right time.

What has been your experience at GDC? I have had fun, and though there have been ups and downs, they have all been worth it.

Where do you see yourself five years on? I see myself going higher, having improved myself both personally and professionally.

What about you don't people know? I have always loved machines and technology. I however would not mind diversifying to PR.

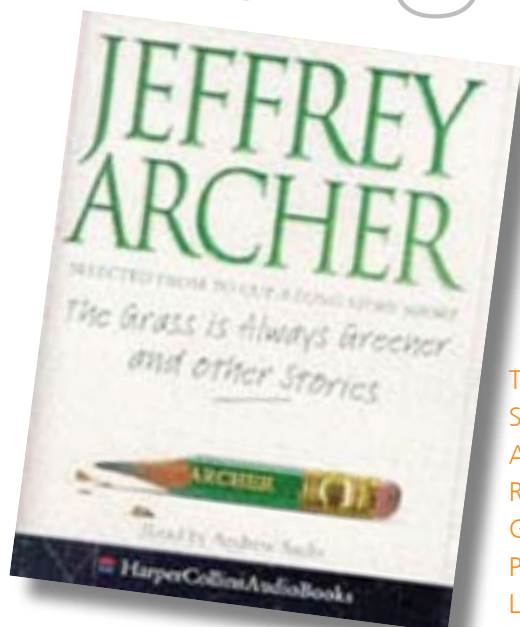


Morine

Text and pictures by Deborah Kalei.

To cut a long story short...

The grass is not
always green



Title: To Cut a Long Story Short
Story: The Grass is Always Greener
Author: Jeffrey Archers
Reviewer: Erick Wamanji
Genre: Fiction
Publisher: Harper Collins Publishers Limited

We always imagine that the next person in the career ladder has arrived. So we aspire and wish we could be them. In Jeffrey Archers in the *Grass is Always Greener*, the last short story in *To cut a long story short*, that is not always the case.

In his characteristic stylish and witty design, Archers explores the human mind and reveals the insatiable desires we have in our rat-race pursuits -sometimes, in vain.

Grass is Always Greener is about Critchley's Bank employees, and it captures what goes on in our mind. One of the characters is Bill, a vagabond of sorts and has the basement as his abode. Bill has to be up earlier before Kevin, the guard comes. And now, Bill just wishes that he had Kevin's job of saluting people: "Good morning sir. Hope you had a nice weekend." This way, then he will no longer be a vagabond and well, there

will be no police harassment.

True, Kevin has the opportunity of saluting all the board members. He also opens the car door for Philip Alexander. But Philip is not your kind guy –to him Kevin doesn't exist. So there is no "thank you."

But Kevin turns green every time he thinks of Mike Haskins, his supervisor. Kevin thinks Mike is lucky. To Kevin, there is warmth in the office – there is tea, and other nice things. So to Kevin, if only he could get Mike's job at the reception, there would be no problems. After all, Mike is just about to retire.

But Mike believes that some of his seniors are good for nothing. Some are late comers, some pretend to be exemplary in duty yet they lack depth in understanding and executing the dynamics of their jurisdictions, still some are sycophants so that they can win favors from superiors. Mike believes he could be better placed only if

his father took him to good schools.

Another classical chap at Critchley's Bank is Chris Parnell – the senior messenger. Chris, like some people, has made access to the CEO and Chairman's floor a no go zone for juniors. Characteristic of an insecure people, Chris has erected a strong iron curtain. According to him, opportunities are likely to arise, and they should not go to the low-ranking! Sounds familiar, eh?

But when Chris delivers mail to Rodger Parker, he finds him dozing. Rodger is the HR guy; Chris believes that he could do Rodger's job. But Rodger's worries are different. He needs a pay rise like yesterday to cater for medical bills, school fees and meet domestic needs now that his wife is jobless. If only he had Godfrey Tudor's job... Yet, Tudor is worried about Pamela's – the secretary- pregnancy. This has given him mental ulcers. It is a bad year too where bonuses are dry.

Tudor's problem is even bigger. His wife should not discover the escapades with Pamela. Besides there is no money yet his wife is a shopaholic – and a nagging one too. There seem to be wishes weaved in envy along the ranks in this company. It goes up to Sir William, the chairman who is forced to lay off about 70 employees so that his wrong financial decisions are not be laid bare. And so everyone goes home wishing they could just be like Bill the vagabond, who wishes he was Kevin...O.K to cut a long story short, the grass is not necessarily greener on other side, but strive to cross nonetheless.

"To Cut a Long Story Short" is an easy to read anthology where pages open others. Archers is a prolific writer, and the *Grass is Always Greener* is a worthwhile read for anybody who nurses dreams of growth just to know that money, really, is not the answer to our problems.

Our Mandate

- To promote geothermal development in Kenya.
- To undertake production drilling to provide steam for electricity generation.
- To manage all government resources required for the rapid geothermal development.
- To promote direct use of geothermal resources.





Geothermal, Our Heritage

GDC, Our Company

Powering the Vision