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In the heart of Kenya's Rift Valley, tectonic shifts deep in the Earth's crust generate immense heat that you might see as billowing white clouds of steam dotting the stillness of the land just south of Lake Naivasha. This place is the home of geothermal energy in Africa, with an estimated potential of over 2,000 megawatts: the continent's largest source of clean, green and sustainable energy.

It is in Olkaria that Nation Media Group and KenGen hosted the first ever Sustainable Energy Conference, bringing together industry thought leaders to design and drive critical strategies that will shape the sector across the country and the region at large, exploring the themes of access, sustainability and innovation.

This could not come at a more crucial time, as the need for energy alternatives in the light of a global climate emergency becomes ever more urgent. Kenya is favourably positioned to take the lead on this, seeing that the energy sector in the country is one of the most active in Africa due to its proven potential of renewable sources of energy such as wind, solar, biogas and geothermal as well as multiple opportunities for increased investment and active government support.

The country's ambition has already been well set out - by 2030, Kenya aims to achieve 100% use of clean energy and 100% access to clean cooking by 2028.





Africa has been part of many conversations around energy, but rarely have we been at the heart of it.

~ Frank Ochieng', Communication Manager, KenGen



Olkaria Naivasha, Nakuru County

Straddling the Rift Valley escarpments and floor, Nakuru County has taken the lead in investing in clean energy, owing to the County's natural endowments and focused attention in going green, said Lee Kinyanjui, Nakuru County Governor, represented at the conference by Festus Ng'eno, Minister for Water, Environment, Energy and Natural Resources - Nakuru County.

The County is working to leverage the readily available energy efficient technologies within the County and improve access to clean energy for cooking and lighting at household level.

In addition, the County Government is in the process of creating eleven energy centres across the County, to raise awareness on sustainable energy, technologies and energy saving activities.

The County has also been working to rehabilitate, green and beautify public spaces, as well as establish new green parks, promote the use of non-motorized transport within Nakuru City, and efficiently manage solid waste disposal.



ENERGY SECTOR

DATA DIVE

Nakuru County aims to reduce emissions by at least 33% across all sectors and 58% in the energy sector by 2030. This will be achieved through prioritised, concrete actions in major sectors such as energy, transport and waste management.

~Lee Kinyanjui, Governor, Nakuru County (represented by Festus Ng'eno- Minister of Water, Environment, Energy and Natural Resources- Nakuru County)





Dr. Wilfred Kiboro (L) and Stephen Gitagama, welcome Amb. Dr. Monica Juma, CS Energy, to the conference.



L-R: Gen. [Rtd.] Samson Mwathathe, Amb. Or. Monica Juma and Dr. Wilfred Kiboro pose for a picture at the conference stage.



VIP Delegation from KenGen and NMG walk in to the conference hall at Olkaria Geothermal Spa.



-O- LIGHTBULB MOMENT

Going forward, fossil fuels are no longer a sustainable source of energy to power our economic growth.

Rebecca Miano, KenGen Managing Director and CEO

Africa occupies a unique position in the global context of the transition towards renewable energy, rich in natural resources such as geothermal, and also solar, wind, biomass and hydro power potential, said Rebecca Miano, KenGen's Managing Director and CEO. The imperative for transition is clear.

Yet this potential remains largely untapped despite the fact that African nations have made significant progress towards renewable energy development over the last decade or so. Nonetheless, Africa is one of the regions that could benefit most from investing in clean, energy resources. The true potential as a global leader in renewables has been overshadowed by its dependency on fossil fuels and especially coal which accounts for much of Africa's total installed generation capacity.

By missing out on the benefits of local, clean energy generation, African countries are exposed to high levels of price volatility of fossil fuels and have limited ability to influence or benefit from international agreements on climate change, mitigation and adaptation, the conference heard. "As global warming continues to threaten communities across the continent, it is critical that African nations act now to improve energy access while supporting economic growth, without compromising our environment," said Miano.

All over the world, leading global economies are looking at developing countries like Kenya to provide



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In 2020, only 9% of Africa's energy came from renewable sources. More than 90% came from other sources like thermal and coal.

~ Rebecca Miano, KenGen Managing Director and CED



Amb. Dr. Monica Juma

a model for how clean technologies can meet our future energy needs while also taking steps towards sustainable development. This is because Kenya has a long history of being at the forefront of the global climate change movement thanks to its unmatched track record in harnessing geothermal which today accounts for the electricity consumed by Kenyans daily.

Dr. Wilfred D. Kiboro, Chairman, Nation Media Group PLC, set the tone for the conference by highlighting the fact that energy is, in fact, a basic human need. "The way we are wired as human beings is that we have to be mobile all the time; and to be mobile in whatever capacity requires energy," said Dr Kiboro.

Many Kenyans cannot afford the current energy model, however, yet every Kenyan has a right to affordable security, education and shelter - all of which need energy. "Energy can no longer be a privilege, it needs to be accessible to all," stressed Dr. Kiboro.

On her part, Amb. Dr. Monica Juma, Cabinet Secretary, Ministry of Energy, stressed the need for governments to prioritise not just energy access, but energy security. "Majority of those referred to as the poorest in the global South, are those with the least energy security," said Amb. Dr. Monica Juma. "There is still a lot to be done. It is therefore imperative that we continue to find creative ways to ensure that Kenya remains at the forefront of sustainable energy development, by focusing on how we can increase energy efficiency and minimise carbon footprints across key sectors like agriculture and even transportation," she added.

The conference was an opportunity for all stakeholders to share their experiences and insights on how the country could meet both short term and long-term energy needs while taking steps towards sustainable development, all against the backdrop of achieving the United Nations

Sustainable Development Goals and in particular, SDG 7, which aims to ensure access to affordable, reliable, sustainable and modern energy for all by 2030.

"KenGen is taking deliberate steps to reduce carbon emissions with actions and commitments both locally and internationally. As a company we have committed to the Caring for Climate working groups of the United Nations Global Compact. In June 2021 we joined the UN-backed global campaign to combat global warming, becoming the first Public Service Agency in Kenya to do so," said Miano.

"Let us ensure that we do not just focus on the end goal of installing more renewable energy technologies but rather how these technologies will help us achieve those goals," she stressed.



Gen. (Rtd.) Samson Mwathathe, KenGen PLC Board Chairman



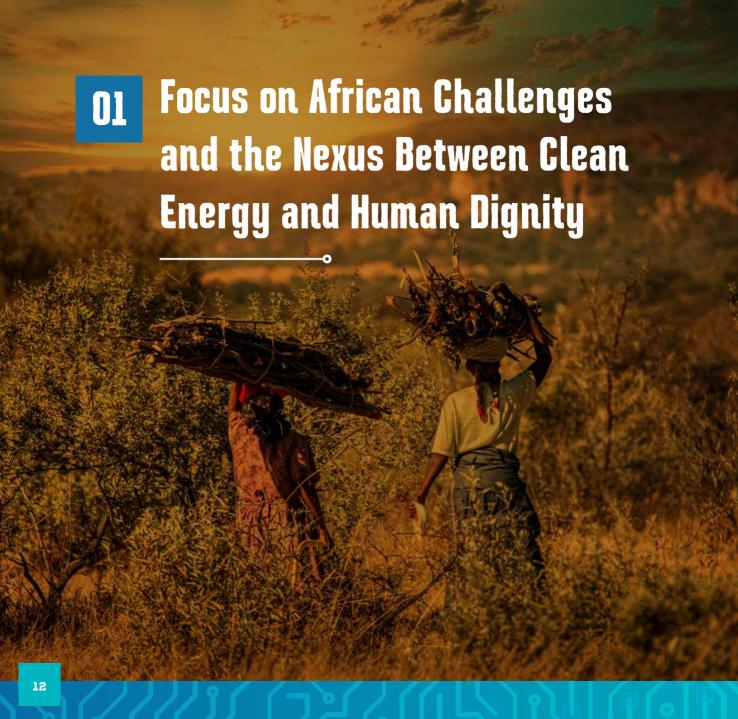
- C LIGHTBULB MOMENT

We need to get rid of the 'dark continent' tag by ensuring that a majority - if not all- of our population is on the grid. Let us fix this energy issue so that the rest of the world can view us as its equals.

~ Dr. Wilfred D. Kiboro, Chairman, Nation Media Group PLC

However, as we forge our way ahead, is it imperative that our solutions must still be practical, and African in every way possible. General (Rtd) Samson Mwathethe, KenGen Board Chairman, who was also setting the tone of the conference, emphasised on the need to stay true to our own ways and cultures. "Our ancestors found ways to power their lives without harming the environment or borrowing from Western methods. We can emulate what they did, advancing it just a bit to fit our current needs," said Mwathethe.







Amb. Dr. Monica Juma, EGH, Cabinet Secretary, Ministry of Energy

Dr. Kevin Kariuki,Vice President of Power, Energy, Climate and Green Growth. AfDB

Paolo Lombardo, Head Representation for East Africa, European Investment Bank (EIB)

Sophie Odupoy, Head of Public Affairs, KOKO Networks

Andrew Amadi, CEO, Kenya Renewable Energy Association

Julians Amboko, Business Editor, NTV (Moderator How has the present economic environment impacted our capacity to produce energy and purchase energy? How do we balance the tension between the cost of producing sustainable energy and ensuring its affordability and access? These are some of the questions that this panel explored.

According to Amb. Dr. Monica Juma, Cabinet Secretary, Ministry of Energy, the Kenyan government is working make tariffs power cheaper. The CS said rates were capped in January 2022 and are intended to remain there for the foreseeable future. because the government understands how important energy is.

Even with capped power tariffs, many poor Kenyans still struggle

to afford energy, and the options they have are sub-optimal. Sophie Odupoy, Head of Public Affairs of KOKO Networks pointed to the fact that a lot of energy sources available to the lower class are either illegal (like charcoal) or scarce (like firewood).

"We must start looking outside the box and using technology to provide clean and accessible energy to the people on the ground. It means the private sector needs to work closely with government in order to make energy solutions affordable to people in rural and arid areas. We have to be deliberate about energy provision, and make sure it's scalable," said Odupoy.

She shared that KOKO Networks is supplying clean energy in Nairobi,

Kisumu and Mombasa by providing small eco-friendly cookers and fuel that are affordable and re-fillable. Thus far, they have hit 500,000 cooker unit sales.

Andrew Amadi, CEO, Kenya Renewable Energy Association, supported Sophie's insights, stating that scalability is more a financial process than anything else. "We already have the technology to scale, what we need to do now is open up collaborations in the energy sector. There are a lot of projects on the ground that could help so many people and all they need is financial backing," said Amadi.

C LIGHTBULB MOMENT

If you take away someone's opportunity to work, you take away their dignity.

~ Paulo Lombardo, Hoad Roprosentation for East Africa, Furnnean Investment Rank (FIR)

On his part, Dr. Kevin Kariuki, Vice President of Power, Energy, Climate and Green Growth, AfDB, joining virtually, shared his vision for expanding energy access to the rural areas, which would entail heavy investment in distributed renewable energies, such as off grid systems, mini grids and solar panels.

"It is absolutely essential for us to increase publicprivate partnerships, and include the private sector more in order to boost the efforts in electrification of the country," said Dr. Kariuki.

Paolo Lombardo, Head Representation for East Africa, European Investment Bank (EIB) echoed these sentiments, stating that the private sector requires clear, stable legislation and a supportive environment in order to provide clean, sustainable, affordable and accessible energy. The viability of this sector rotates around the crucial issues of liquidity and well-designed risk mitigation. Creating awareness is another factor - ordinary citizens need to know that these options are available to them, said Lombardo.

"Structuring the right partnerships is important too. We need structures that share both burden and risk, unlike what we have seen in the past, where consumers shouldered the burden of cost whilst the producers reaped the benefits," concluded Dr. Monica Juma.



DATA DIVE

By 2030, 50% of new connections will be through distributed renewable energies.

~Dr. Kevin Kariuki, Vice President of Power, Energy, Climate and Green Growth, AfDB



Kariuki Ngari,

Managing Director and Chief Executive Officer at Standard Chartered Bank Kenua

Fredrick Amariati,

Energy Economist, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Mari Kato.

Senior Consultant, JICA Kenya Office

Maurice Nduranu, KenGen Board Member

Habiba Ali,

MD & Chief Executive Officer, Sosai Renewable Energies

George Aluru,

Chair, Energy Board, KEPSA

Eric Naivasha.

Associate Director- Energy and Environment, Equity Group Foundation

Julians Amboko,

Business Editor, NTV (Moderator)

The falling cost of key clean energy technologies offers a tremendous opportunity to chart a new, lower-emissions pathway for growth and prosperity.

Financing clean energy is still a challenge as emerging economies grapple to find ways to develop in a way that meets the aspirations of their citizens while avoiding the high-carbon pathway that other economies have pursued in the past. What new methods of funding do we need in order to attract capital? Are the projects we are coming up with bankable, can they inspire partnerships in the private sector, government and from financial development partners too?

These and other expansive questions were explored in this panel, with Mari Kato (JICA) emphasising the need for investors and project implementers to



Kariuki Ngari



Fredrick Amariati



Mari Kato



Maurice Nduranu



George Aluru



Eric Naivasha



LIGHTBULB MOMENT

The financing challenges cannot be met by one partner, they need to be multilateral. Forums like these that bring together key players should really be taken advantage of. Instead of competing, we need to collaborate.

~Kariuki Ngari, Managing Director & Chief Executive Officer at Standard Chartered Bank Kenua



Julians Amboko





DATA DIVE

Africa is polluting less than 3% on the global scale but bearing the brunt of the rest of the world's emissions.

~Eric Naivasha, Associate Director- Energy and Environment, Equity Group Foundation

do their due diligence and understand the market and risks that might arise in any given investment.

"Investors must also make sure that their projects include public participation, because that is the wheel that drives any form of business," said Kato, underscoring the importance of situating any energy investment in the lived experience of local communities.

Fredrick Amariati, Energy Economist with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), pointed to the need for doing deep research to understand the needs in the market. "What are the financing needs of each energy sector? The best way to find this out is by connecting the producers and consumers so the products are sensible for their target market," he said.

Like Kato, Amariati stressed that consumers should be included in conversations about products that are going to the market, before they hit the shelves, to ensure that every technology is user driven and responsive to real problems. Local solutions - like generating income from within, applying for grants and pitching to donors - are important when it comes to funding energy projects.







SAVINGS
INSTITUTIONS
CAN REALIZE BY
TRANSITIONING TO
CLEANER FUELS

DATA DIVE

There is about 1.4 trillion pension sector assets in Kenya. A lot of countries have developed by using pensions into public infrastructure.

65% of Kenyan households still rely on wood and charcoal as their primary sources of energy. From a health perspective, and from studies done by the Ministry of Health (MoH), the use of wood fuel and kerosene by Kenyan households is estimated to cause up to 21,560 deaths annually as a result of illnesses caused by household air pollution.

Equity provides financing for the equipment and other installation costs based on an institution's needs. By transitioning to cleaner fuels like LPG, institutions can realize up to 40% savings in their cooking and lighting budget with better health and environmental outcomes, improved kitchen hygiene and motivation of workers.

Habiba Ali, who joined the panel virtually, explained how her company, Sosai Renewable Energies, managed to raise local financing in Nigeria. The company has gone from grants, to debt and self-generated equity.

Is equity a solution for local funding? "It could be, since it is such a huge part of funding, but how do we go about it? How do we package it well enough for funders to be interested and actually dip into their pockets?" posed Ali.

Business owners also need to understand that their money needs to come back. It's not sustainable to run loss-making operations, because at some point production will halt. The challenge is how to build systems and processes to ensure that our startups and companies keep running, the panel heard.

Trade interconnectedness and local investment is the key factor that will release all this potential, the panel heard, with George Aluru, Chair of the Energy Board at KEPSA weighing in. "We need to actively look at what the locals are investing in, and put financing into that. As a ripple effect, it would reduce our dependence on loans," he said.

Financing needs are also different, so we need to customise our markets to fully suit our needs, said Maurice Nduranu, KenGen Board Member.

His insights were in conversation with sentiments shared by Kariuki Ngari, Managing Director and Chief Executive Officer at Standard Chartered Bank Kenya, who pointed out that banks are key players in unlocking



LIGHTBULB MOMENT

Let's push for a non-debt funding more and more to help us de-risk our projects.



Noreen Araka, Senior Relationship Manager, Infrastructure and Energy, shares a case study of green lending at KCB Bank prior to the panel session

energy financing. Ultimately, if energy transitions are to be successful, then developers and financiers need to increase the allocation of capital towards clean energy in emerging markets and developing economies.

Eric Naivasha, Associate Director, Energy and Environment, Equity Group Foundation, mentioned that there is a need to develop a pipeline of bankable energy projects. One of the key pillars that will aid Africa's recovery is environmental protection. "Future cash flows are also important. need to look at things like re-financing unlock capital for the next projects.

When it comes to carbon credits, another important part of financing, Africa is disenfranchised. The challenge we have is setting up our own carbon markets locally. Rwanda is working on setting up a carbon trading platform in Kigali so that they can negotiate better prices for carbon. There are carbon buyers all over the world, but we are not getting paid enough, said Naivasha.

He also shared how Equity Bank Foundation is cognisant of the challenges that fossil fuels bring.

While these traditional sources of energy may seem more convenient and affordable in the short run for both households and institutional consumers, available statistics show that they are costly in the long run, promote environmental degradation and have negative impacts on health. "It is with this in mind that Equity Group Foundation chose to support initiatives aimed at addressing climate change mitigation, adaptation and reducing negative environmental impact caused by deforestation and other economic activities through clean energy transitions," said Naivasha.

For institutions, hotels, schools, Technical and Vocational Education and Trainings (TVETs) and universities, Equity Foundation is enabling the purchase of energy efficiency solutions such as solar water heating equipment and LPG for cooking by providing financing for both individuals and institutions, plus linking them with credible suppliers who offer decent prices. "The Foundation also encourages environmental conservation in more ways than just planting trees; for example, we have 'clean cooking projects', and offer green financing to encourage sustainability in business," he added.





DATA DIVE

Today, the renewable energy sector employs about 32% women, compared to 22% in the energy sector overall, according to a 2019 report from the International Renewable Energy Agency (IRENA). In 2020, a McKinsey study revealed that in Africa and the Middle East, women make up less than 8% of technical jobs in the oil and gas sector and 9% of senior management positions in the energy industry.





Dr. Anna Mwangi and Zilper Abongo



Michelle Boit

Rebecca Miano



Rebecca Miano, Managing Director & CEO. KenGen PLC

Zilper Michelle Abongo, GM Strategy and Compliance, Kenya Pipeline Company

Norah Magero, Director, Drop Access (Kenua)

Dr. Anna Mwangi, Senior Geophysicist, KenGen

Eng. Michelle Boit,
Petroleum Consultant & Chair- SPE KU - Chapter

Smriti Vidyarthi, Editor, Current Affairs, NTV (Moderator) Women lag behind men in leadership and technical jobs in the renewable energy sector and represent just one third of the renewable energy workforce worldwide, (International Renewable Energy Agency). The gender gap is driven by unequal access to education, limited access for women to technical training opportunities, company policies, and other factors.

Women however bring value and perspectives that drive innovation, and although there have been gains in the sector in regard to inclusivity and diversity, the gaps still remain. This panel tackled the issues that have kept women and other groups marginalised, and what can be done to build a decent and inclusive work environment for everyone.

Setting the tone, Rebecca Miano,

Managing Director & CEO, KenGen, highlighted the imperative to enhance women's participation in energu innovation and leadership, "Women are significantly under-represented in executive roles across all sectors. However, the energy sector in Kenya is amongst the top 5% industries that have women at the helm, because We. understand how inclusivitu breeds innovation." she said.

"We need to envision a future where energy consumption is more sustainable, accessible and inclusive, and we have a sector with people from every background, not only women and minorities, but also people at every skill level." she added.

On her part, Norah Magero, Director, Drop Access (Kenya), highlighted that this exclusion sometimes starts



as early as primary and high school. "A lot of women do not know what it takes, and do not have enough people to look up to. We need women to have a wide variety of careers to pick from," she said, linking this exclusion to the subtle but deeply rooted attitudes that STEM careers are appropriate for men, and that women in those fields would always be outliers.

Dr. Anna Mwangi, Senior Geophysicist at KenGen, stated that the company is working on ensuring that more women get into these science and engineering courses, a sentiment echoed by Eng. Michelle Boit, Petroleum Consultant & Chair - SPE KU - Chapter.



As we empower women, we need to ensure that society does not feel threatened and retaliate with gender based violence.

~ Norah Magero, Director, Drop Access (Kenya)

For Boit, who has often worked as the only female engineer in the field, a supportive team is also crucial in ensuring that women have an inclusive work environment.

Dr. Anna Mwangi also spoke about the Pink Energy Initiative, a project created by KenGen to educate and inspire young women. A brainchild of Rebecca Miano, the initiative was formed in November 2016. A survey was conducted that the women's morale within the organisation was low, relative to men's. When the initiative kicked off, there was a significant rise in the confidence of women in the workplace.

"The Pink Energy Initiative has three pillars that aim to tackle the issues women face in the workplace. The first one is to promote the women. The second is to create a stress-free work environment, and the third is to bring gender awareness into the company. The initiative has been rolled out to all branches, and KenGen is now seeing women pitch ideas, lead teams and get promoted too," said Dr. Mwangi.

She added that seemingly small things like having breastfeeding and day-care centres in the workplace also goes a long way in showing that you value women and their contributions in the sector.

It is not just women who are historically marginalised. Kenya, and East Africa at large, has a high population of young people. "It is important to include more people into your workforce - especially the next generation - who do not have the same biases as their older counterparts, hence ensuring that the field is inclusive enough, not only for women but also for the youth, and people with special needs," said Eng. Michelle Boit, Petroleum Consultant & Chair- SPE KU- Chapter. In conclusion, the energy industry as a whole needs to take an introspective look and commit to diversity, the panel heard. Diversity breeds unique ideas and solutions to problems, which will lead to higher profits in the sector.



Delegates register and are accredited ahead of the start of the conference.



KenGen staff takes Dr. Amb. Monica Juma and Dr. Wilfred Kiboro through the organization's innovations models.



Eng. Geoffrey Muli, Ag. Managing Director, Kenya Power, gives his remarks at the conference



Band performs during the conference opening ceremony.



Audience members listen in keenly to conference proceedings.



Zachary Ayieko, CAS, Ministry of Energy, awards Zilper Anyango, 6M, Strategy and Compliance, KPC, an appreciation award during the conference gala dinner



Members of NMG and KenGen teams donate text books to Olkaria Primary Golfers tee off at the Nakuru Golf Club, following the conference. School following the close of the conference.





Team pose for a picture during the Olkaria Geothermal Spa tour



Students from Olkaria Primary smile for a picture following the text books donations



Fireside Chat

Impact of Energy Sector on Community Development. Select reflections from Alexander Obwocha, Director of Energy, Environment & Climate Change, Kisii County, in conversation with Winnie Pertet, Board Member. KenGen

The impacts of sustainable energy are first seen at the community level. It is often assumed that deforestation for fuel or energy uses is a deliberate, malicious act, but in rural areas, there is almost no other accessible option except firewood.

We need to provide methods for people in these areas to access clean and affordable energy, which in turn will be extremely helpful to the environment.

When we have these discussions in the boardroom, the household should be the number one priority as mentioned in previous panels. In a village, does each home have electricity, and is it affordable to them? Energy services now have to be planned from the grassroots point, and this is a major responsibility of the county government.



Cyprian Nyakundi,
Director, Enforcement & Consumer Protection EPRA

Dr. Macharia Irungu, MD & CEO Kenya Pipeline Company

Harun K. Mukiiri, Participant Engagement Manager, Global Compact Network Kenya

Moses Nderitu, Chief Revenue Officer, BasiGo

Dann Mwangi,
Digital & Innovation Editor, NTV (Moderator)



Cyprian Nyakundi



Dr. Macharia Irungu



Harun K. Mukiiri



Moses Nderitu



Dann Mwang

Many countries are facing what experts have called an 'energy trilemma', with three challenges that have to be addressed when facing investment in energy and demand, that is: ensuring energy security, providing energy affordability, and achieving environmental sustainability. These three challenges imply a trade-off when choosing one over the other. This panel unpacked the implications of the trilemma, exploring the potential solutions that might be on the table to ensure win-win scenarios.

To start with, we must concede that we will still use fossil fuels even years to come, stated Dr. Macharia Irungu, MD & CEO, Kenya Pipeline Company. "Aviation, for example, is one sector where fossil fuels are still necessary. The focus now is to ensure that they are going green."

The good news is that Kenya is poised to take the lead on mainstreaming renewable energy. Renewables provided 92% of Kenya's electricity generation in 2020, said Moses Nderitu, Chief Revenue Officer, BasiGo, pitching in that innovative ideas like electric buses are the future.

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#80

KENYA'S RANK IN THE ENERGY TRILEMMA INDEX

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According to the World Energy Council's Energy Trilemma Index, Kenya is ranked #80 out of 101 economies listed on the Index. Kenya scores fairly well on environmental sustainability in energy, owing to its present reliance on renewables for electricity generation, as well as a fairly high score in energy security. However, the country ranks low in energy equity, with electricity and petroleum prices being out of reach of many Kenyans.

"Currently, we have very few electric buses on the roads, and as such cannot see their benefit to the environment and people. But if we look at them from the angle of reducing emissions, smoke pollution, and in effect respiratory diseases, this is the way to go. Noise pollution and fare prices will also go down." said Nderitu.

For Cyprian Nyakundi, Director, Enforcement & Consumer Protection EPRA, policy uncertainty is part of the hindrance to implementation. "The issue we are facing at hand includes a lack of specific regulations on things like the distance between petrol stations and residential areas. Some stations also do not meet the proper requirements, and they must simply be shut down for the sake of people's safety," he urged.

"Sustainability also means rehabilitation of extraction sites," added Dr. Irungu. "When you are done with a site, you do not just leave it to go to waste. If we take extraction pits as an example, developers should fill them up with water and put fish in to feed the people in the area." he suggested.

This will require the participation of youth and local communities. According to Harun K. Mukiiri, Participant Engagement Manager, Global Compact Network Kenya. "Ideally, it is not only the government's responsibility, but also that of the people on the ground. All of us must take action to ensure we are transitioning to green."





Eng. Jared O. Othieno, Managing Director & CEO GDC

Eng. Geoffrey Muli, Ag. Managing Director, Kenya Power

Carol Koech, Country President, East Africa, Schneider Electric

Iwasuke Shimada, Managing Director, Toshiba Africa (Pty) Ltd.

Catherine Nyambala, Business Process Improvement Manager, KenGen

Peketsa Mangi, General Manager, Geothermal Development, KenGen

Julians Amboko, Business Editor, NTV (Moderator)

The world is moving into smart grids, which are electricity networks enabling a two-way flow of electricity and data with digital communications technology in order to detect, react and proactively respond to changes in usage and multiple issues like electricity transmission losses and power outages. One of the major components of smart grids is the ability to store energy, which traditional grids do not have the capacity to do. This panel discussed the nexus of electricity, data and storage solutions, all with the imperative of maximising Kenya's renewables potential.

"Energy conversations focus on generation, but we do not talk about saving it, which is the most efficient way to maximise use whilst cutting down on costs. We can only talk about saving energy if we know what that energy looks like, and how it is being used. Digitization helps improve the efficiency of grids," said Carol Koech, Country President, East Africa, Schneider Electric.

Sustainable storage is the game changer offered by smart grids, said Eng. Geoffrey Muli, Ag. Managing Director, Kenya Power, a sentiment echoed by Catherine Nyambala, Business Process Improvement Manager, KenGen. Battery technology has come a long way in recent years, and now, from the traditional alkaline or lithium-ion batteries, there are battery solutions that can power domestic households or even entire neighbourhoods.



Eng. Jared O. Othieno, GCD CEO



Eng. Geoffrey Muli



Carol Knech



Iwasuke Shimad



Catherine Nuambala



Peketsa Mangi



Digitization helps you understand where all the power you are generating is going.
Is it disappearing because of inefficiencies in the

Is it disappearing because of inefficiencies in the network, or was it not metred?

~Carol Koech. Country President. East Africa. Schneider Electric

"The grid has a 'heartbeat', a frequency that beats at 50 cycles per second. An interference to this frequency can result in a national blackout, so it is necessary for us to think about these larger batteries that can save power in situations like those," said Nyambala.

She compared the price of solar panels to batteries, which are currently considered expensive. The prices of solar panels have been decreasing as more companies produce them. The increased supply of batteries is therefore expected to make them more affordable. However, even at the current prices, batteries are cheap, relative to the cost of power to consumers.

Peketsa Mangi, General Manager, Geothermal Development, KenGen, highlighted that just because energy is renewable does not mean it is unlimited. "Our aim should be reusing this energy and putting it back into the ground using backup pathways to be generated

again, thus renewing reserves. This will enable us to get as much of it as possible before it is depleted. Reservoir management is therefore the name of the game."

International partnerships are also part of the solution, with companies like Toshiba Africa working to collaborate with local companies to supply affordable energy, said Iwasuke Shimada, Managing Director, Toshiba Africa (Pty) Ltd.



DATA DIVE

The good news is that overall, access to electricity in Kenya has increased from under 30% in 2013 to 75% in 2021.

~Jared O. Othieno, Managing Director & CEO GDC





George Njenga,

Chief Executive Officer, AP Moller Capital, East Africa Platform

Kiprono Kittony,

Board Chairman, Nairobi Securities Exchange (NSE)

Janice Kotut.

Sustainable Link, Founding Member

Fred Ishuga,

Renewable Energy GM for Rural Electrification and Renewable Energy Corporation (REREC)

Julians Amboko,

Business Editor, NTV (Moderator)











Janice Kotut

Renewables can bring tremendous benefits to cities, including cleaner air, modern services and improved living spaces. At the same time, cities are crucial to the world's transition to a low-carbon economy, accounting for 65% of global energy use and 70% of man-made carbon emissions, according to the International Renewables Energy Agency (IRENA). This panel examined the policies and technologies by which cities can bring about a renewable energy future.

The need to effectively match capital and investment opportunities came out strongly in this discussion, with Kiprono Kittony, Nairobi Securities Exchange (NSE) Board Chairman, emphasising the need to structure projects to become valid for funding.

"There is a lot of capital in the sector, it just needs the right recipients. We need more local incubators, where our enterprises can learn the skills needed to make their projects grow enough to get proper funding and technical assistance," Kiprono Kittony said. Capital is in abundance, it's all about matching it, the panel heard.

We need to have more products that are climate friendly and still produce an adequate amount of energy, said Janice Kotut of Sustainable Link. "We can look for funding within pension funds, but since they deal with people's retirement money, the project needs to be fully risk averse, which brings us back to the topic of having [business] incubators in order to make sure that our projects are fundable," added Janice.

Business owners are not the only ones who need education – potential funders also need to learn about the sector in order to pique their interest and encourage them to invest.

The panel also explored the apparent hesitancy between private sector and government collaborations around renewable energy. This in turn, leads to the generalised notion that Africa is a risky market to invest in.

Fred Ishuga, the Renewable Energy GM for Rural Electrification and Renewable Energy Corporation (REREC), weighed in, highlighting that the government is willing to work with the private sector. "The funding



The long-term horizon investment you take must be matched with your investment appetite horizon.

~George Njenga, Chief Executive Officer, AP Moller Capital, East Africa Platform

for projects is also available, but there are gaps that make it hard to access said funds. This is where the government would like the private sector to come in, since it would be easier for them to bridge or even fill these gaps," said Ishuga.

Ultimately, municipal leaders and administrators - including county governments in the Kenyan context - can accelerate the switch to renewable energy at the local level by acting as planners, regulators, financiers and operators of urban infrastructure. It would take commitments to a greener, cleaner future and active investment in innovative solutions for more sustainable living.





SPEAKERS

Eng. Francis Gitau,

Ag, DG, Nairobi Metropolitan Area Transport Authority (NaMaTa)

Ogutu Okudo, Founder & MD, Guuru Energy Eng.

Eric Ohaga,

Technical Affairs Director, Nuclear Power, and Energy Agency

Julians Amboko,
Business Editor, NTV (Moderator)



ENERGY Consumption of A Car to a bus

DATA DIVE

The energy consumption of a car is 40 times what you expect from a bus.

~Eng. Francis Gitau, Ag, DG Nairobi Metropolitan Area Transport Authority (NaMaTa) All over the world, cities are playing an increasing role in the crucial transition into renewables, and Kenyan urban areas are no different. Faced with the realities of fast urbanisation, they are embracing new and innovative solutions to meet development and climate objectives.

City planners and policy makers possess several available levers to steer urban energy systems towards renewables and reap their benefits, according to the International Renewables Energy Agency (IRENA). This panel explored how sustainable energy can be promoted at the urban level through thoughtful planning, regulation, and direct investment. Nairobi as a city is particularly well-placed to rely on wind energy, in close proximity to Ngong Power Station, East Africa's first grid scale wind farm. The farm on the northern part of the Ngong Hills has a capacity of 25.5MW. "However, connection costs to energy also need to be cut in order to be accessible to everyone," urged Ogutu Okudo, Founder 8 MD. Guuru Energy Eng.



25%

OF GLOBAL EMISSIONS FROM THE US

DATA DIVE

Africa's global cumulative emissions stand at 3%, whilst a single superpower like the United States are at a whooping 25%

~Ogutu Okudo, Founder & MD, Guuru Energy Eng

The transport sector also offers another opportunity to go green, with electric mobility being seen as one of the most promising ways to reduce pollution and greenhouse gas emissions. Nairobi's transport sector so far has been characterised by high costs for passengers and freight, weak public and private institutions, and low levels of investment.

"We need to shift urban residents from wanting to buy personal cars to using electric buses instead, which are cheaper and more sustainable," said Eng. Francis Gitau, Ag, DGNairobi Metropolitan Area Transport Authority (NaMaTa). According to Eric Ohaga, Technical Affairs Director, Nuclear Power, and Energy Agency, nuclear should be included in the energy mix because it is a source of energy that does not emit greenhouse gases and has reduced 60 gigatonnes of CO2 production globally over the last 50 years. "There are frameworks put in place to ensure the highest amount of safety and completely eradicate risk, so we definitely need to focus on nuclear energies," stressed Ohaga.

How does Africa alleviate her development needs while still making sure she remains green and sustainable? Governments come in here through policy and legislation, ensuring that we are growing but not in a way that is harmful to our environment.





Human beings cannot exist without energy, it is the literal fuel that powers our lives. The good news is that Kenya is already on the journey towards sustainable energy, leading the way for other African nations, and following trends that have already been set globally. To stay on this path, there are key questions we need to address, the conference heard. The trilemma of access, affordability, and environmental sustainability came up multiple times during the conference: can consumers access the energy they need to make their day to day lives better, is it affordable to them, and are their options contributing to global green energy goals?

Furthermore, sustainability is not a one-person job. The private sector, including banks and private equity,

can work with governments and regulators to unlock the investment that the sector so desperately needs, and get energy solutions to those who need it most.

This is an ongoing conversation that stakeholders must continue to have even after this conference, and they must all make concrete steps to include the end user, the local mwananchi (citizen) who is frequently not privy to these high-level discussions. Energy justice is increasingly becoming an important issue of our times, and this conference was just a starting point into crafting an energy future that works for all citizens.



Sustainable Energy Conference Action Points



The private sector and government need to look in to opportunities to work together and utilize technology to provide clean and accessible energy for citizens through Private Public Partnerships (PPPs)



Organizations introducing sustainable energy products should involve the consumers in their innovation & iteration journeys to ensure that their inventions are fit-for-use in the market



Kenya should look into following Rwanda's footsteps and setting up a carbon trading platform to enable us to negotiate better carbon prices in the global market



Developers and financiers to increase their allocation of capital towards clean energy in emerging markets

Sustainable Energy Conference Action Points



The energy industry needs to introspect and commit to diversity within its supply chains to drive innovation and unique ideas



The government should mandate organizations to rehabilitate extraction sites to repurpose them for use by the community



The transport sector to look into enhancing electric mobility within the country's metropolitan areas to reduce pollution and greenhouse gases





As the world continues to make notable progress on the two main challenges of the modern world, namely climate change and access to electricity, Africa, on the other hand, continues to lag behind. This points to a need, therefore, for African governments and private sector actors in the continent to come together and forge joint partnerships towards isolating and redefining the challenges facing the continent and come up with customised home-grown solutions. Africa has the opportunity to make the right choices now when climate change and related phenomenon like pollution and deforestation relatively low and manageable

FROM: Going for clean energy: An outline of national and continental progress and prospects by KenGen PLC



Dairy production is one of the enterprises that contribute the highest amount of GHGs in Nakuru's agricultural sector, and is therefore a great contributor to global warming and climate change. Sustainability therefore lies in ensuring that less emissions come from production by capturing of methane (CH4) in biogas as a source of fuel. The use of biogas and solar powered plants in the county therefore reduce use of fuelwood, thus conserving our forests while simultaneously reducing indoor pollution from smoke. Some 100 household biogas plants have been installed.

From: Nakuru's Renewable Energy for Sustainable Development by Lee Kinyanjui, Governor, Nakuru County



According to statistics by the International Energy Agency (IEA), world energy demand will increase by over 50 percent between now and 2030, with more than 60 percent of the increase coming from developing and merging countries. If policies remain unchanged, this would mean an increase of 52 percent in emissions of carbon dioxide (CO2), the main greenhouse gas.

FROM: Going for clean energy: An outline of national and continental progress and prospects by KenGen PLC



In an effort to reduce energy consumption, Nakuru County Government has upgraded its street lighting systems from electric to solar. This process has helped to reduce the over dependence on non-renewable energy sources for power generation. The switch to solar has also helped to reduce the impacts associated with climate change.

From: Nakuru's Renewable Energy for Sustainable Development by Lee Kinyanjui, Governor, Nakuru County



According to the report recently released by the Kenya Forest Service, Kenya's forest cover now stands at 8.8 percent with a tree cover of 12.83 percent. As a country, Kenya is on the right track on supply side issues of restoring forest cover. But there's a need to double our efforts on demand by reducing overreliance on woodfuel and charcoal. Learning institutions, for example, are using too much firewood to keep their kitchens running, and if this is not checked, may erode the gains being recorded. Available data indicate that our institutions of learning alone consume over 1 million metric tonnes of wood fuel each year.

From: Championing Access to Clean Energy, by Equity Bank Foundation



To remain globally competitive. Kenya has to manage and sustain her environment and natural resource base. The country subsistence and national economies, foreign exchange and significant contribution to GDP, depend on agriculture and agro-based industries, tourism, water resources and hydropower. Despite this reality, Kenya is facing many environmental challenges that include deforestation, soil erosion, and land degradation, desertification, and loss of biodiversity, water scarcity and pollution from Transition to renewable energy sources is a matter of necessity. The transition to full renewable energy could further boost Kenya's access to the national power grid and reduce manufacturing production costs.

From: Without renewables, Kenya's 2030 targets may slip away by Millicent Mwololo



In a report published by the International Monetary Fund (IMF), closing the energy access gap in Sub-Saharan African countries will require an estimated annual investment of \$28 billion up to 2030. Current financing commitments fall far short, with major gaps in countries such as Chad, Ethiopia, and Nigeria, which are all major population growth hubs.

From: Addressing the big challenge to Africa's quest for renewable energy: Funding by Millicent Mwololo



KPC has ensured its adaptation and mitigation programmes on climate change under the stewardship of the National Climate Change Policy has instituted various actions geared at meeting the nationally determined contributions (NDC) aimed at reducing our GHG emissions as a country and organisation as per Paris Agreement on climate change. As such, KPC is installing a 150kw solar plant at its headquarters in Nairobi to provide clean energy. The project is envisaged to be completed by December 2022.

From: Kenya Pipeline Company on track as it pursues the sustainability agenda

Appreciation to the Sustainable Energy Conference Speakers

NAME	ORGANIZATION	DESIGNATION
Amb. Dr. Monica Juma, EGH	Ministry of Energy	Cabinet Secretary
Maj Gen (Rtd) Gordon Kihalangwa, CBS,	Ministry of Energy	Principal Secretary
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Dr. Wilfred D. Kiboro	Nation Media Group PLC	Chairman
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Dr Kevin Kariuki	AfDB	VP-Power, Energy, Climate and Green Growth
Paolo Lombardo	EA European Investment Bank	Head, Representation for EA
Sophie Odupoy	KOKO Networks	Head of Public Affairs
Andrew Amadi	Kenya Renewable Energy Association	Chief Executive Officer
Habiba Ali	Sosai Renewable Energies	Executive Officer
Tilana de Meillon	International Finance Corporation (IFC)	Senior Operations Officer, Infrastructure, Upstream Africa
Noreen Araka	Kenya Commercial Bank	Senior Relationship Manager, Infrastructure and Energy
Kariuki Ngari	Standard Chartered Bank Kenya	MD and CEO
George Aluru	KEPSA	Chair - Energy Board
Mari Kato	JICA Kenya Office	Senior Consultant
Eric Naivasha	Equity Group Foundation	Associate Director – Energy & Environment
Frederick Amarati	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	Energy Economist
Maurice Nduranu	KenGen PLC	Board Member

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Dr. Anna Mwangi	KenGen PLC	Senior Geophysicist	
Zilper Michelle	Kenya Pipeline Company	GM-Strategy and Compliance	
Eng. Michelle Boitt	SPE-KU Chapter	Petroleum Consultant and Chair	
Alexander Obwocha	County Government of Kisii	Director of Energy, Environment & Climate Change	
Peter Odhengo	Greening Kenya Initiative Trust	Director	
Dr. Macharia Irungu	Kenya Pipeline Company	MD & CEO Kenya	
Harun Mukiiri	Global Compact Network Kenya	Participant Engagement Manager	
Moses Nderitu	BasiGo	Chief Revenue Officer CRO	
Cyprian Nyakundi	EPRA	Director Public Education, Advocacy and Consumer Protection	
Eng. Jared O. Othieno	GDC	Managing Director & CEO	
Eng. Geoffrey Muli	Kenya Power	Ag. MD	
Carol Koech	East Africa, Schneider Electric	Country President	
Iwasuke Shimada	Toshiba Africa	Managing Director	
Eng. Catherine Nyambala	KenGen PLC	Business Process Improvement Manager	
Peketsa Mangi	KenGen PLC	General Manager, Geothermal Development	
George Njenga	AP Moller Capital, East Africa Platform	Chief Executive Officer	
Kiprono Kittony	Nairobi Securities Exchange (NSE)	Board Chair	
Janice Kotut	Sustainable Link	Founding Member	
Eng. Francis Gitau	DG Nairobi Metropolitan Area Transport Authority (NAMATA)	Ag. Director General	
Okudo Ogutu	WEX Africa	Founder	
Eng. Eric Ohaga	Nuclear Power and Energy Agency	Technical Affairs	

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Smriti Vidyarthi, Editor, Current Affairs, NTV



Dann Mwangi, Digital & Innovation Editor, NTV



Winnie Pertet Board Member, KenGen PLC



Frank Ochieng', Communications Manager, KenGen PLC



"The world must act with resolve, in quantum, to reverse the detrimental impacts that non-renewable energy sources have had on our environment. The Sustainable Energy Conference is therefore a continuation of Kenya's commitment towards the NetZero journey."

Amb. Dr. Monica Juma, Cabinet Secretary, Ministry of Energy, Kenya



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Physical Delegates



315 Virtual Delegates



speakers



378M social media impressions

We thank every delegate, speaker, partner and supplier that made the inaugural conference a success

Partners























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