



Jan - Mar 2023

The Highlight

Quarterly Newsletter

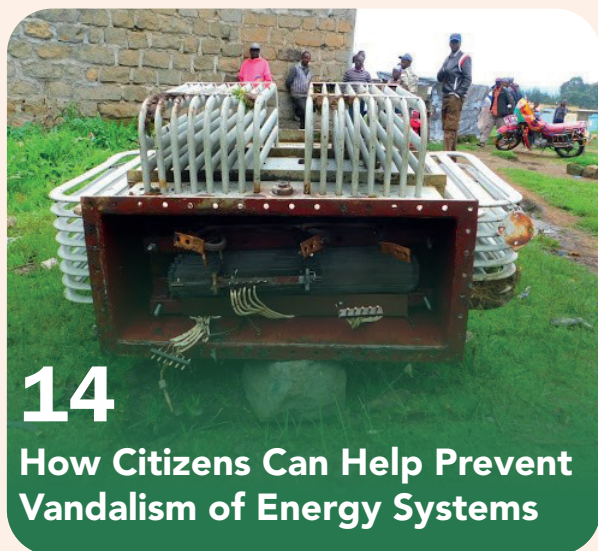
Issue No. 11



**Plant a Tree,
Grow a Forest**



INSIDE



- 04** **Solar-Powered Boreholes Improve Lives and Livelihoods**
- 06** **Now Come the Italians: Geothermal Sector Woos Investors**
- 08** **REREC, Counties Partner to Boost Electricity Connections**
- 12** **Mini-Grids a Godsend for Residents of Frontier Counties**
- 16** **Bioenergy: Yes, It's Renewable, But Over extraction Has Its Perils**

Editor:
Wangari Githii

Editor-In-Chief:
CS Dr. Rose Mkalama

Design & Print:
Avant Communications
Isaac Gicheha

Editorial Team:

Kioko Maithya
Jackson Kamau
Irene Diwan
Allan Salbei

Owen Chiaji
Fiona Wamaitha
Kendi Ngentu
Avant Communications Team



Copyright © 2023 REREC

Reproduction of this publication for educational and other non-commercial purposes is authorized with written permission from the copyright holder provided the source is fully acknowledged.

Reproduction of this publication for resale or other commercial purposes is prohibited, unless with written permission of the copyright holder.

Editor's Note

Welcome to the first edition of the Highlight for 2023!

The beginning of the year is a precise moment to leave some things in the past while embracing change and new challenges. Moreover, it's a chance to officially take pride in our accomplishments and make our non-successes a thing of the past, rejoice in time spent well, and plan to make up for time lost.

For the Rural Electrification and Renewable Energy Corporation (REREC), the new year started with a bang – with hard work, a sense of positivity, and enthusiasm for new beginnings.

A lot has happened since then, and in this issue of the newsletter, we welcome the new Board of Directors, who underwent induction to align themselves with the mandate of REREC in the Government's delivery agenda on 100% last mile connectivity.

Internationally, the Government, through the Ministry of Energy and Petroleum, and the Government of Italy have partnered to explore areas of collaboration to enhance the production of geothermal electricity. Is geothermal electricity worthwhile to embrace in Kenya? We explore the subject in this issue.

We further explore mini-grids as an option for rural electrification in Kenya, where a percentage of the population not connected to the national grid lacks access to power.

Finally, we also outline various partnerships the Corporation has struck, especially with county governments, aimed at enhancing electricity connections in devolved regions in our Matching Fund programme, a cost-sharing initiative where REREC matches contributions shilling for shilling.



We bring you these and other articles highlighting the Corporation's undertakings in the last three months.

We love feedback. Engage us through:

info@rerec.co.ke

Wangari Githii

Editor

In Sunny Kenya, Solar Power Saves Money, Protects Our Planet



“Solar energy is the most reliable energy because it can be harnessed even when the sky is cloudy.”

Renewable energy is a natural source replenished at a higher rate than it is consumed. Sunlight and wind, for example, are such sources that are replenished constantly. Generating renewable energy creates far lower emissions than burning fossil fuels, e.g. coal, oil and gas, which cause harmful greenhouse emissions when burnt to produce energy. These non-renewable energy sources will lead to a climate crisis if we don't switch to renewable energy.

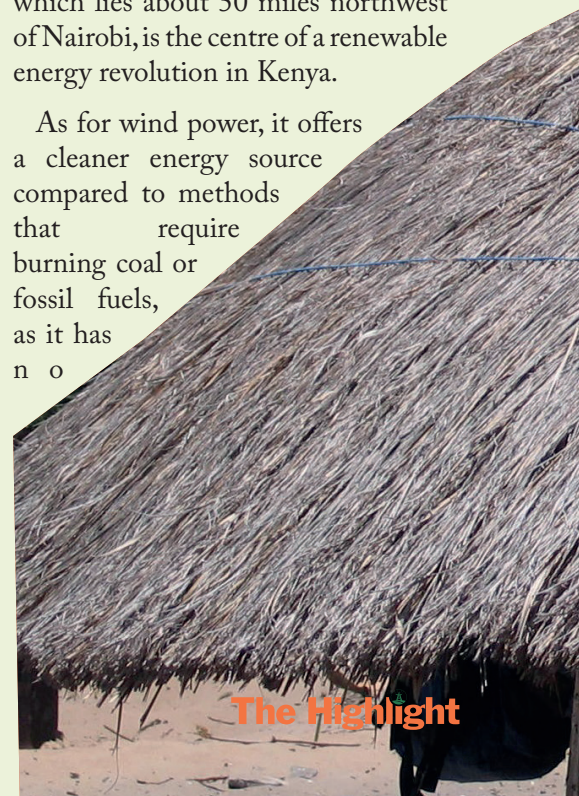
Solar energy is the most reliable energy because it can be harnessed even when the sky is cloudy. It is sunny most of the year in Kenya and, therefore, solar energy can be utilised all year round. Solar panels

are relatively affordable to make and install and have a lifespan of around 30 years, thus making solar power the cheapest form of electricity. The Garissa Solar Plant spearheaded by REREC is the largest grid-connected solar power plant in East and Central Africa. This power plant harnesses abundant solar energy to diversify the power generation mix and reduce energy costs.

Geothermal power comes from the accessible thermal energy in the Earth's interior. Heat is extracted from geothermal reservoirs using wells or other means. Once on the surface, fluids of various temperatures can be used to generate electricity. The technology for electricity generation

from hydrothermal reservoirs is mature and reliable. Hell's Gate, which lies about 50 miles northwest of Nairobi, is the centre of a renewable energy revolution in Kenya.

As for wind power, it offers a cleaner energy source compared to methods that require burning coal or fossil fuels, as it has no





Lake Turkana Wind Power Farm in Loiyangalani District, in Marsabit County

carbon emissions. As a result, wind turbines can produce substantial power, while simultaneously contributing to climate change mitigation and providing access to affordable energy for accelerated economic development.

The Lake Turkana Wind Power (LTWP) project comprises of 365 wind turbines, each with a capacity of 850kW, and a high-voltage substation. LTWP provides reliable, low-cost energy to Kenya's national grid – approximately 17% of the country's installed capacity.

REREC encourages the use of bioenergy in the push for a green energy-driven nation.

Bioenergy

i s

produced from a variety of organic materials, called biomass, such as wood, charcoal, dung and other manures for heat and power production, and agricultural crops for liquid biofuels. Most biomass is used in rural areas for cooking, lighting and space heating. Modern biomass systems include dedicated crops or trees, residues

f r o m

agriculture and forestry, and various organic waste streams. The energy created by burning biomass produces greenhouse gas emissions, but at lower levels than burning fossil fuels.

Kenya has been able to maximise utility scale generation of wind, solar and geothermal power, while opening up extensive opportunities to provide electricity for rural communities through Sustainable Housing Solutions. This has enabled technological solutions to be tailored to energy needs and varying contexts. The benefits of renewable energy are clear and that is why the Kenyan Government is embracing and investing in renewable energy solutions to create a more sustainable and prosperous future.





Solar-Powered Boreholes Improve Lives and Livelihoods

Solarization of boreholes can go a long way in mitigating this drawback in areas where access to reliable and affordable electricity is limited, but abundant solar energy is available.

Kenya faces water scarcity, especially in rural regions, due to unpredictable rainfall patterns, protracted droughts, and climatic change.

According to the United Nations Development Programme (UNDP), 44% of Kenyans do not have access to clean water, and this number is even higher in rural regions. Women and children suffer the most from water scarcity, as the tiresome and time-consuming activity of fetching water is traditionally their responsibility.

Water is a basic resource that is critical to many facets of human, animal, and plant life and the environment, and its significance cannot be underestimated.

The Water Act of 2016, the Water Sector Trust Fund, and the Energy Act of 2019 that established the Rural Electrification and Renewable Energy Corporation (REREC) are some of the interventions the Government has undertaken to improve access to safe water in rural regions and end water shortages.

Abraham Maslow's 1943 paper, "A Theory of Human Motivation", introduced the famous theory of human needs, commonly known as the hierarchy of needs. According to Maslow, human needs can be divided into a hierarchy of five levels, which are placed in order of their significance. At the foundation of the hierarchy are the physiological demands, which

include things like food, water, shelter, and sleep. These needs are classified as fundamental, without which life cannot exist if they are not met.

People and livestock find it difficult to access water in arid places due to the scarcity of surface water sources. Drilling boreholes to gain access to groundwater sources is one approach to solving this issue. To access subsurface water, a drilling rig will often dig a small, deep hole into the ground called a borehole. A borehole's depth varies based on its location and the height of the water table. Boreholes have gained popularity as a preferred solution to water scarcity in Kenya, particularly in rural areas.

Boreholes offer a different way to access subsurface aquifers as a source of water. Communities in dry regions often depend on these boreholes for their survival, as they need dependable and consistent water for livestock, irrigation, and drinking.

But how do you move water from the ground to the surface? A pump is used to move water from the well. However, this pump must have a power source, such as electricity or thermal power. Existing boreholes in rural Kenya have generally been run on thermal power due to a lack of grid-connected electricity, which is expensive and environmentally unfriendly.

Installing solar power on boreholes can thus help mitigate this drawback in areas where access to reliable and affordable electricity is limited but where abundant solar energy is available. Solarisation of boreholes involves harnessing energy from the sun to power the pumps that extract water from underground aquifers.

Solar-powered boreholes have several advantages over traditional diesel or grid-powered ones. They are more environmentally friendly and have lower operating costs, since they do not require fuel. They also provide a reliable and consistent source of

“Water is a basic resource that is critical to many facets of human, animal, and plant life and the environment, and its significance cannot be underestimated.”

water, which is essential for agriculture, livestock, and household use, and this can have a significant impact on health, education, and economic development.

REREC, the government agency responsible for promoting and implementing rural electrification projects in Kenya, has rolled out a concerted programme in collaboration with development partners to solarise boreholes.

The Corporation, through funding from the World Bank under the Kenya Off-Grid Solar Access Project (KOSAP), intends to undertake the supply, installation, and maintenance of solar PV pumping systems for community facilities.

In total, 380 boreholes in 14 counties – Garissa, Mandera, Wajir Lamu, Kilifi, Kwale, Isiolo, Samburu, West Pokot, Turkana, Tana River, Marsabit, Taita Taveta, and Narok – will be equipped with solar power, thus enhancing the sustainability of these facilities as the operational costs associated with diesel-based systems will be eliminated.

In collaboration with the Nyeri County Government, REREC has already installed solar power on 17 boreholes, which will supply water for domestic and kitchen garden irrigation to approximately 700 households.



Solar powered borehole

Now Come the Italians: Geothermal Sector Woos Investors



“ Kenya is currently producing less than 1,000MW. This leaves a huge potential of 9 GW untapped. Currently, geothermal accounts for nearly 50% of total power generation in the country

The Government of Kenya, through the Ministry of Energy and Petroleum, and the Government of Italy have partnered to explore collaboration areas to enhance the production of geothermal electricity and foster partnerships between companies and institutions operating in the energy and environment sectors.

An Italy-Kenya geothermal business investment forum was organised in collaboration with the ministry, the Geothermal Association of Kenya (GAK), and Unione Geotermica Italiana (UGI) as a part of UNIDO's Rome-based Investment and Technology Promotion Office's (ITPO) mission to Kenya for Italian business.

Kenya has prioritised geothermal energy development as the de facto base load among its vast renewable energy sources. The Government, therefore, plans to increase the national installed capacity of geothermal electricity generated to about 10,000MW.

This was announced by the Principal Secretary in the State Department of Energy, Mr. Alex K. Wachira, during the Italy-Kenya Business and Investment Forum on Geothermal energy held on 27 March 2023 at the Kawi Complex auditorium in Nairobi.

Mr. Wachira said the energy will be derived from various sources as outlined in the National Least Cost Power Development Plan for 2017–2037, with the bulk being drawn from geothermal energy.

Kenya currently produces less than 1,000MW from geothermal sources. This leaves a huge potential of 9GW untapped. Geothermal energy now accounts for nearly 50% of total power generation in the country, with an installed capacity of 949.13MW as of June 2022.

Mr. Wachira added that attaining Kenya's geothermal development targets still requires investment at a level beyond what the Government can make available, and this calls for enhanced private-sector participation. However, he said that whereas the private sector is interested in developing the power supply, a combination of significant capital investment needs and high resource risks has translated into reduced private-sector interest in geothermal exploration.

To enhance interest from the private sector, Mr. Wachira said the Government has issued licences for geothermal resources exploration and development to two public power companies and 14 Independent Power Producers (IPPs). These entities are set to develop 23 existing geothermal fields.

One such field is Menengai Geothermal, which has been developed under the model that combines public and private financing.

Along with the risk mitigation instruments, Menengai Phase I is now ready to provide steam to generate 105MW of power.

Mr. Wachira applauded the partnership, saying the collaboration has made it possible for the parties to meet for this important bilateral engagement to explore areas of convergence in business and investment.

The Italy-Kenya Business and Investment Forum aims to foster Italian geothermal investment in Kenya by highlighting opportunities

“The Forum aims to foster Italian Geothermal investment in Kenya by highlighting opportunities and potential whilst discussing areas for improvements

and potential whilst discussing areas for improvement in geothermal investment.

The Italian delegation was led by the Deputy Head of Mission, Ms. Lorenza Gambarcorta, and the head of UNIDO ITPO Italy, Ms. Diana Battaglia. The delegation will visit various geothermal sites, including the Menengai, Olkaria, Akira and Oserian projects, with the objective of promoting Kenya as a business destination and identify trade and investment opportunities for job creation, and sustainable and diversified growth.

Ms. Battaglia said the tour was organised following a geothermal tour held in Italy in October 2022 that comprised three representatives from the Geothermal Association of Kenya (GAK), the Geothermal Development Company and Dedan Kimathi University of Technology. Delegates visited geothermal sites and took part in an exhibition and conferences on geothermal energy to learn and assess knowhow and best practices, exchanging views and experiences on the geothermal sector.

In 2022, UNIDO ITPO Italy in collaboration with GAK organised and held two online geothermal-focused conferences, both of which attracted over 100 participants featuring Italian experts while Kenyan institutions and associations provided valuable insights into the unique challenges and opportunities in the market.

These activities, Ms. Battaglia said, culminated in the Italian-Kenya Business Investment Forum with a focus on geothermal energy to foster partnerships between institutions and companies.





REREC CEO CPA Peter Mbugua (left) and Homa Bay County Governor Gladys Wanga sign an MOU at the County headquarters. REREC will contribute Kshs 40 million under the Matching Fund programme for electricity connections. The County government will provide the same amount.

REREC, Counties Partner to Boost Electricity Connections

The Corporation has signed a memorandum of understanding (MOU) with the Homa Bay County Government aimed at enhancing access to electricity in the devolved region.

In an arrangement that will see REREC contribute Sh40 million in matching funds, Homa Bay will also contribute the same amount in line with the Corporation's objective of connecting key facilities in the upcoming financial year.

“Through this collaboration, REREC and the county will work in tandem to increase access to electricity in rural areas, improve the quality of life for local communities, and promote sustainable development.

The total sum of Sh80 million contributed by the Corporation and the County Government will be distributed in all eight constituencies: Homa Bay Town, Kabondo Kasipul, Karachuonyo, Kasipul, Suba North, Suba South, Ndhiwa and Rangwe.

The Matching Fund programme is a participatory innovative approach in financing community projects through a cost-sharing initiative where REREC matches shilling for shilling contributions made by other entities – county governments and the



National Government Constituency Development Fund (NGCDF) – up to a predetermined sum or percentage but up to a maximum of Sh5 million per constituency on a first come, first served basis. The aim is to supplement traditional sources of funds.

The rural electrification and renewable energy programmes had been funded mainly through the Exchequer, and a shortage of funding has been a major challenge for REREC in carrying out its mandate. The Matching Fund programme has been a great success and has enabled the Corporation, constituencies, and counties to leverage additional resources and multiply the impact of a project or initiative. It has also enabled the implementation of additional projects, thereby allowing more public facilities and households to be connected to electricity.

Speaking during the signing of the MOU at the county headquarters in Homa Bay town, H.E. Governor Gladys Wanga expressed delight at the collaboration framework, noting that it will ensure that people in the remotest parts of the county have access to electricity. She added that the partnership will equally maximise exploiting renewable energy, a step in the right direction, as the county seeks to reduce its carbon footprint and mitigate the effects of climate change. Governor Wanga noted that the establishment of an energy centre and a climate change resilience hub demonstrated that the County Government is serious about its commitment to sustainable development.

REREC CEO, CPA Peter Mbugua, who led the Corporation's delegation to the county, pledged to foster the partnership on renewable energy and to continue supporting various projects in rural areas, adding that REREC will soon commission an electrification project on Lake Victoria.

Since the 2016/17-2022/23 financial year, REREC has received a total of Sh890,315,362.90 from counties and the NGCDF and matched it with Sh801,870,136.65. Commitments for FY 2022/23 stand at Sh174.87 million and Sh114.67 million, respectively.

Partnerships can be quite important for financing the production of electricity. They can aid in funding projects, including through joint ventures – associations of two or more entities that decide to collaborate on a particular energy project. Joint ventures can help ease the project's financial burden and provide access to a larger range of resources and expertise.

The collaboration framework between REREC and the Homa Bay County Government comprises the following:

Identification of areas to be electrified: REREC and the County Government is working together to identify areas that need electricity.

This involves conducting surveys and consultations with local communities to determine their energy needs.

Design and implementation of electrification projects: REREC and the County Government is working together to design and implement electrification projects in the identified areas. This includes installing solar panels, power lines, transformers, and other necessary equipment.

Financing of electrification projects: REREC provides financing for the electrification projects, while the County Government provides land and other resources necessary for implementing the projects.

Monitoring and evaluation of projects: REREC and the County Government jointly monitor and evaluate the electrification projects to ensure that they are achieving their intended objectives and to identify any areas for improvement.

Through this collaboration, REREC and the county will work in tandem to increase access to electricity in rural areas, improve the quality of life for local communities, and promote sustainable development. The collaboration also creates job opportunities for locals during the project implementation, maintenance, and service delivery, hence boosting the local economy

Busia County Governor H.E. Paul Otuoma also led a team from his county during the same period to pay a courtesy call on REREC and held discussions with the REREC CEO, Peter Mbugua and other officials on potential areas of collaboration, including the Matching Fund, land for energy centres, and the county energy plan. Corporation officials also made a courtesy call on Kisii County Governor H.E. Simba Arati to discuss areas of partnerships.

The counties and REREC agreed to sign MOUs on the areas of collaboration and partnership discussed.

Plant a Tree, Grow a Forest: REREC Lends a Hand

REREC participated in the National Tree Growing Restoration Campaign through a donation of Sh5,000,000, which is equivalent to providing 500,000 tree seedlings.

In addition, a team from the Corporation participated in planting trees in Kajiado, Narok and Nyeri counties during the campaign.

These activities came after His Excellency President Dr. William Ruto declared a tree planting initiative with a target of growing over 15 billion trees in Kenya to restore the degraded environment and ecosystems. The programme subsequently received Cabinet approval on 6 December 2022. The intention is to scale up forest cover to 30 per cent by 2030.

The presidential declaration is in accordance with the United Nations Decade of Ecosystem Restoration. The planet faces the triple crises of climate change, biodiversity loss and pollution. Trees help combat these crises, as they not only act as carbon sequesters, but also provide the necessary habitat and support system for various organisms.

The initiative was launched on 21st December 2022. A central national launch was presided over by President Ruto at Kona Baridi in Kajiado County, with concurrent launches in 46 counties presided over by Cabinet Secretaries and Principal Secretaries.

The tree-growing campaign aims to restore and preserve forests and other natural ecosystems across a nation in order to reduce deforestation, combat climate change, and promote biodiversity. The programme often involves planting new trees and safeguarding old ones.

Depending on the nation and the environmental issues it is facing, the tactics and precise objectives of such a campaign may change but the basics are the same:

- I. Bringing back to health damaged wetlands, forests, and other ecosystems
- II. Planting new trees in suitable places, such as once forested regions

- III. Improving the general public's understanding of the value of forests and trees for both the environment and human welfare

- IV. Promoting environmentally responsible land use methods that safeguard forests and other natural ecosystems

- V. Engaging locals in preservation and conservation

The United Nations Decade on Ecosystem Restoration seeks to enhance the productivity and health of ecosystems throughout the world. The programme runs from 2021 to 2030 and was endorsed by the UN General Assembly in 2019. The major goal in the decade will be to encourage and promote initiatives to stop, prevent, and reverse ecological degradation on a global scale. Many ecosystems, such as forests, wetlands, grasslands, and oceans, are part of this.

In order to address a number of urgent global concerns, such as climate change, biodiversity loss, food and water insecurity, and poverty, the UN decade seeks to advance ecosystem restoration as a crucial instrument. It is feasible to improve the capacity of ecosystems to offer essential services, such as soil fertility, water purification, and carbon sequestration.

REREC CEO CPA Peter Mbugua plants a tree during the National Tree Growing Restoration Campaign presided over by His Excellency President William Ruto at Kona Baridi, in Kajiado County.

The UN decade intends to inspire action on ecosystem restoration at all scales, from governmental and non-governmental organisations to local ordinary people and others. It will serve as a forum for exchanging best practices, information, and creative approaches to ecosystem restoration.

The UN decade is anticipated to have considerable influence on international efforts to address the planet's urgent environmental concerns. It will contribute to the development of a more sustainable and resilient future for both people and the environment by igniting action on ecosystem restoration.

Mini-Grids a Godsend for Residents of Frontier Counties



“The mini-grids will bring dependable, reasonably priced energy to rural communities, enhancing their quality of life and fostering economic growth.”

Communities that are not connected to the national grid can now receive power using mini-grids, which are localised electrical distribution systems.

Mini-grids are typically powered by renewable energy sources like hydropower, solar, and wind. The Kenyan Government has set aggressive goals for the growth of renewable energy sources and has put in place rules and regulations to promote investment in the area.

Driven by the imperative to provide equal opportunities across the country, and the national target of achieving universal access to electricity by 2030, the Government seeks to close the access gap by providing electricity

services to remote, low-density, and traditionally under-served areas.

The Government received \$150 million from the World Bank to fund the Kenya Off-Grid Solar Access Project (KOSAP). The objective of the electrification project is to increase access to modern energy services in 14 underserved counties. These counties collectively represent 72 percent of the country's total land area and 20 percent of its population. The counties targeted are West Pokot, Turkana, Marsabit, Samburu, Isiolo, Mandera, Wajir, Garissa, Tana River, Lamu, Kilifi, Kwale, Taita Taveta, and Narok.

Mini-grid development is being carried out by several organisations, including the Ministry of Energy,

KPLC, and REREC, in partnership with the World Bank. Under the initiative, 120 mini-grids will be developed – 48 under REREC and 72 under KPLC – to serve areas where electricity supply through mini-grids represents the least-cost option. REREC will develop mini-grids in Turkana, Marsabit, and Isiolo counties.

The mini-grids will bring dependable, reasonably priced energy to rural communities, enhancing their quality of life and fostering economic growth. All electricity consumers supplied through mini-grids will be KPLC customers and pay the same tariff for each category charged to users connected to the national grid, ensuring the effective implementation of a national uniform tariff policy.

Another advantage of mini-grids is that they will help lessen reliance on costly and polluting diesel generators. This is by providing a dependable and economical source of electricity for settlements and towns that are too small or distant to be served by the

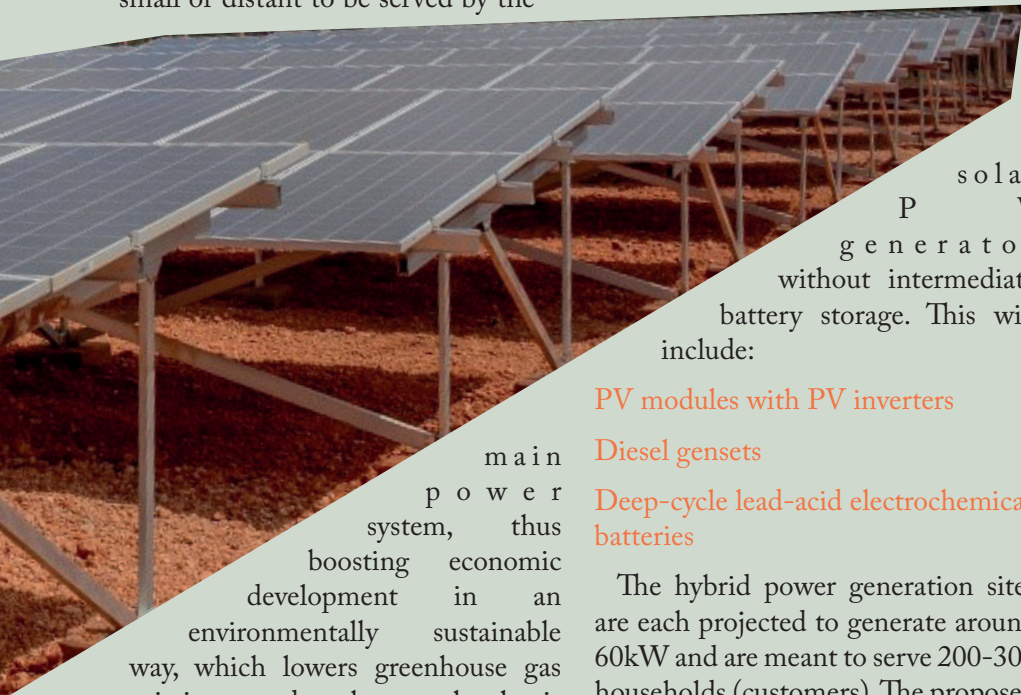
The system will be modular to ensure future updates to meet supply needs. The proposed power plant will be configured as AC-coupled due to the significant portion of daytime loads that can be fed directly from the

solar panels will be connected to the batteries through underground cables. The standby generator will also be connected to the system as a backup.

This generator will have 100KVA with a fuel tank capacity of approximately 300 litres. To optimise this hybrid system, HOMER software will be used. The goal of hybridising diesel systems is to reduce fuel consumption by switching off diesel generator sets for several hours a day, to reach photovoltaic (PV) energy, and to share in the final mix of at least 60% or more. The power will be distributed to customers by overhead lines. A power-generation site is expected to serve clients within a radius of 2km.

The PV plant and the battery capacity have been sized according to the daily demand and available solar resources. In addition to this design architecture, each project site will have an office that will also have an adjacent control room and a guard house.

Through public funding, REREC has developed a further 28 mini-grids, of which 26 are operational and two are at different stages of completion. The mini-grids are in the northern counties of Turkana, Wajir, Garissa, Marsabit, and Mandera.



solar
P V
generator
without intermediate
battery storage. This will
include:

PV modules with PV inverters

Diesel gensets

Deep-cycle lead-acid electrochemical batteries

The hybrid power generation sites are each projected to generate around 60kW and are meant to serve 200-300 households (customers). The proposed mini-grid installations will be built to comply with the International Electro-Technical Commission (IEC) standards. They will have an installation of approximately 240 solar panels of 250 watts and a building to house 96 batteries of 800Ah each. The

main power system, thus boosting economic development in an environmentally sustainable way, which lowers greenhouse gas emissions and enhances local air quality.

The mini-grids will be supplied by hybrid generation systems, combining solar photovoltaic power generation plants and thermal units running on diesel. The mini-grids will be constructed with associated power distribution lines. Electricity generated by the power plants will be connected to 33kV overhead lines that will cover the total length of distribution designs. Solar mini-grid power plants will have two components in one – a hybrid mini grid (PV and diesel generator) and the construction of power distribution lines. All lines will be overhead, mounted on wood or concrete poles.

The power system has been sized based on the following energy parameters:

The proposed residential and non-residential users available

The PV capacity in kilowatt peak.

The storage battery capacity

The inverter capacity in (kW)



Electrified household in Samburu county



How Citizens Can Help Prevent Vandalism of Energy Systems

“ Citizens who see someone transferring, loading, or interfering with our power infrastructure assets in our project areas have the right to ask them to identify themselves.

Vandalism of energy infrastructure is the premeditated and unlawful destruction or damage of power plants, transmission lines, and related structures such as machinery and other installations used in energy generation, transmission, or distribution.

Energy supplies can be severely disrupted by vandalism of energy and electrical infrastructure, including power lines, transformers, and substations, leading to power outages, fuel shortages, and other negative economic and social effects. It may also present considerable safety threats to nearby residents and workers.

This could have severe ramifications, particularly for rural communities where households, enterprises, health facilities, and schools depend on electricity. Electricity vandalism also may pose potential dangers to the general population and the vandals themselves. Electrical network tampering may result in electrocution or fires, which might also endanger lives and damage property. Electricity is vital for operating hospitals, schools, and other social services. The health and welfare of communities may suffer significantly when these services are disrupted as a consequence of vandalism.

The Energy Act of 2019 spells out the following penalties for those found guilty of the offences of vandalism, theft, and damage to streetlights and power installations:

- ✓ **Kshs 5,000,000 fine or five years' imprisonment or both**
- ✓ **Confiscation of vehicles used to transport vandalised materials and equipment**
- ✓ **Recovery to compensate for losses from vandalism**

REREC, in partnership with other agencies and the Government, is determined to safeguard electricity assets. We always endeavour to partner with communities to ensure the safety of power-line infrastructure. When initiating our projects, we always strive to collaborate with local National Government Administrative Officers (NGAO) and communities. To achieve this, the Corporation periodically organises stakeholder sensitisation meetings in areas where we are implementing projects. Locals meet our staff and learn more about our work.

Citizens who see someone transferring, loading, or interfering with our power infrastructure assets in our project areas have the right to ask them to identify themselves.

REREC employees can be identified by name tags and uniforms. If locals doubt that someone is a REREC employee, they can ask the person for their identification or contact REREC to verify their employment status. Our employees always travel in branded Corporation vehicles. We have a supervisor in charge of an area in each county. Citizens can also contact their local area (NGAO) officers and the police.

We encourage the Citizens to also contact us through email address, social media handles, or phone to inquire about our employees or seek any other project information they may need. They can also visit our offices, which are located in Nairobi and other parts of the country.



Hotline Number

0709 193 000

0709 193 000



Spot, Report Transformer Vandalism.

Bioenergy: Yes, It's Renewable, But Over extraction Has Its Perils



Kenya's energy mix is diverse. It includes bioenergy, oil products, and clean renewables such as solar and wind that are spearheaded by REREC.

In Kenya, studies show that the leading and primary energy source is bioenergy, which comprises about 64.6% of the total energy supply. Oil products such as petroleum come second, followed by solar, wind and other sources such as coal and hydroelectric power.

Biomass or bioenergy is a renewable organic material containing chemical energy from the sun. The chemical energy is heated or converted to a usable state like gas.

Biomass can be derived from plants and animals. Plants are the leading source of firewood, wood pellets, sawdust and agricultural crops and waste materials like maize cobs that are used for heating and cooking in Kenya's rural homes.

Animals are also considered a source of biomass because their waste can be fermented to produce gases and liquids

“Renewability of biomass cannot be compared to that of wind and solar. This is because, unlike wind and the sun that will always blow and shine

such as methane and biodiesel, which is combustible. This is commonly referred to as biogas and can be used for cooking, heating and lighting.

The enactment of the Energy Act of 2019 allowed the Rural Electrification Authority to change its name to the Rural Electrification and Renewable Energy Corporation (REREC), with an expanded mandate of spearheading Kenya's green energy drive, in addition to implementing

rural electrification projects. It defines biomass as “*nonfossilized and biodegradable organic material originating from plants, animals and micro-organisms and includes bio-ethanol, bio-diesel, biogas, charcoal, fuel-wood and agro-waste*”.

Biomass serves as the only source of energy for most people in developing countries, especially Kenya. It is the only source of affordable energy for some low-income segments of the population. Unfortunately, this socio-economic class makes up the largest percentage of Kenya’s population. Consequently, the Government, through REREC and other private development partners, want to ensure there are sufficient and effective regulatory and institutional frameworks for sustainable use of biomass energy.

Bioenergy in Kenya is primarily derived from what is termed as “traditional biomass”. This includes sources such as charcoal and firewood. Many rural dwellers rely on firewood for cooking and heating. This exerts pressure on forest resources and contributes to land degradation.

Land degradation has been a major concern in Kenya. This prompted President Ruto to launch the National Tree Growing Restoration Campaign, in order to reduce deforestation, combat climate change, and promote biodiversity. The programme often involves planting new trees and safeguarding old ones.

It is also notable that the renewability of biomass cannot be compared to that of wind and solar. This is because, unlike wind and the sun that will always blow and shine, uncontrolled extraction of biomass and inefficient utilization, runs the risk of making biomass a non-renewable source of energy. This is why enacting regulations to

ensure conservation and sustainability is imperative in any jurisdiction whose population relies heavily on biomass – firewood and charcoal – as a source of energy.

Kenya has made significant strides in formulating energy policies and regulations that are necessary for the proper regulation of biomass energy, but some gaps and overlaps still exist with these regulations and associated institutions.

Kenya is alive to the important role that biomass or bioenergy plays in driving the economy and providing energy for those who cannot afford alternative sources.



Degraded Land due to cutting down of trees

Consequently, the country has put in place several policy and legal instruments to promote sustainable use and tap the great potential of biomass energy.

The leading instrument is the Constitution, which devolved planning and development in energy regulation to county governments. The devolved system of government prompted the enactment of the Energy Act of 2019, as the statutory framework needed to be aligned with the constitutional provisions.

The primary role of this Act in the management of biomass is that it lays the foundation for how to regulate energy. To begin with, it empowers the Ministry of Energy to develop, publish, and review energy plans relating

to different forms of renewable energy, which includes bioenergy.

Additionally, due to changes in technology and innovation that revolutionise energy sources, the ministry is required to ensure and, in consultation with others, review existing energy policy plans. This is key because technological advances have a broad effect

on energy sources like biomass, particularly when it comes to their extraction and sustainable use, such as the creation of energy-saving stoves, and review its policies in a manner that embraces change.

Moreover, the ministry is obligated to publish the Integrated National Energy Plan, which will guide the adoption of clean and affordable energy. This means that there is a need to reduce the use of biomass such as firewood and charcoal because these forms of renewable energy are not clean sources. Meanwhile, county governments are obligated to develop and submit their energy plans to the ministry

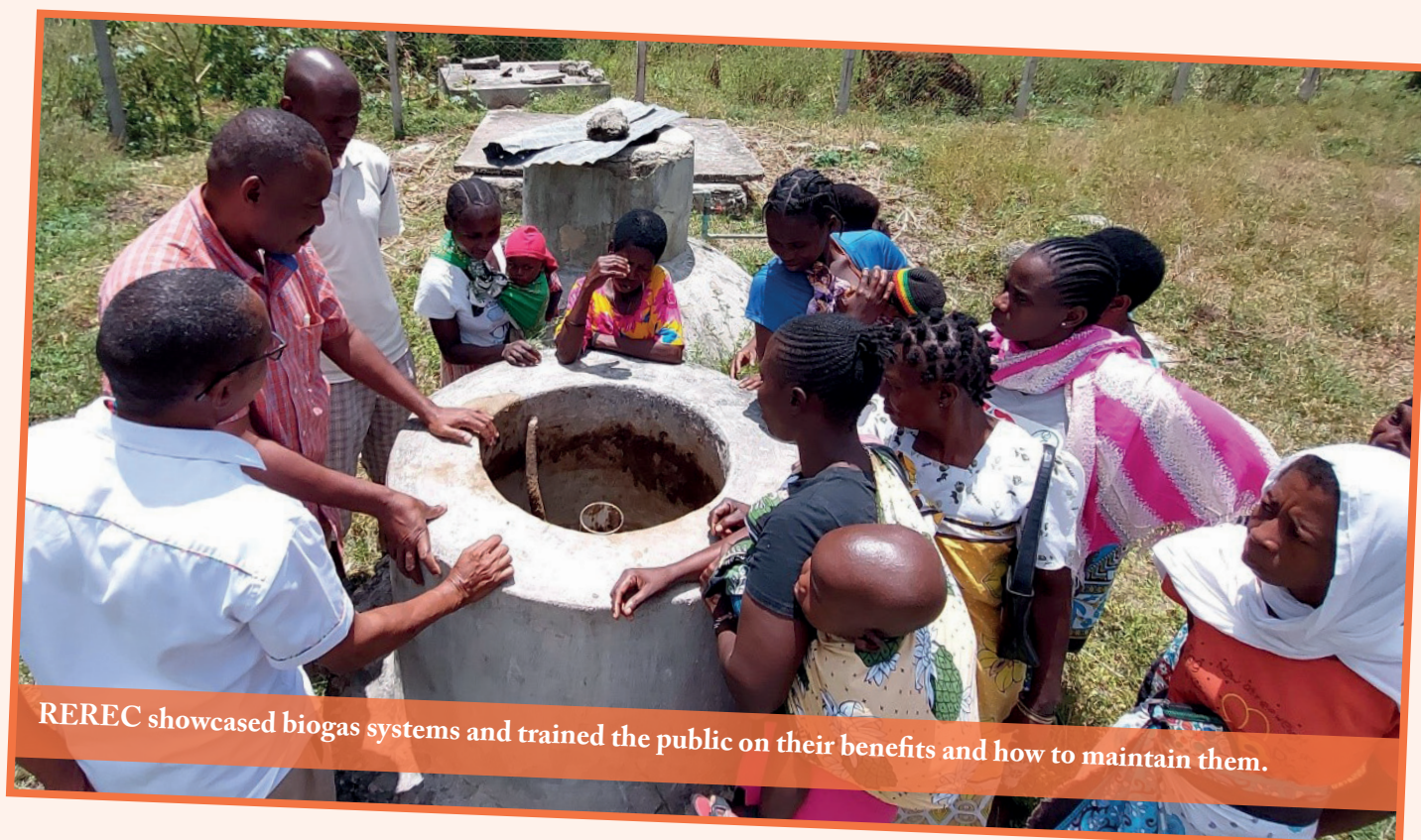


Degraded Land due to cutting down of trees

Through the Lens



Through the Lens



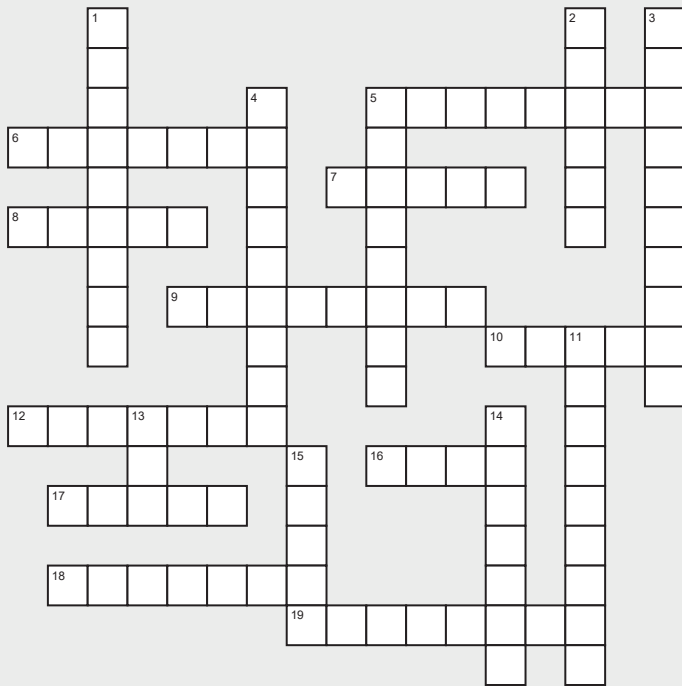
REREC showcased biogas systems and trained the public on their benefits and how to maintain them.



The Makeni County Chief Officer for Energy, Naomi Nthambi, visited the Jamhuri Energy Centre on a fact-finding mission.



Cross Word Puzzle



ACROSS

- 5) Nut collector
- 6) Emu's cousin
- 7) Bullwinkle, for one
- 8) Centaur, in part
- 9) Aquarium favorite
- 10) Sea spouter
- 12) Barnyard bird
- 16) Fox's prey
- 17) Furry swimmer
- 18) Bird with flippers
- 19) Aussie hopper

DOWN

- 1) Monarch, e.g.
- 2) Slowpoke
- 3) Lizard's relative
- 4) Quick change artist?
- 5) Desert stinger
- 11) Everglades denizen
- 13) Alley ____
- 14) Spotted stalker
- 15) Odor emitter

Sudoku

7	1		4					2
9					8	4		
				5	6	8		
		3	1					6
		1			4	3		8
2			3					
		6						
	5		9		7	2	6	
						7		

Fill in the Sudoku grid of 9 x 9 with Each row, column and square (9 spaces each) needs to be filled out with the numbers 1-9, without repeating any numbers within the row, column or square.

On a Light Note



The Highlight

Quarterly Newsletter



HEAD OFFICE

Rural Electrification & Renewable Energy Corporation

Kawi Complex, South C
P. O. Box 34585 – 00100 Nairobi, Kenya.
Cell: 0709 193 000/0709 193 600
Email: info@rerec.co.ke.
Website: www.rerec.co.ke

Regional Offices

CENTRAL RIFT REGIONAL OFFICE

Giddo Plaza, George Morara Road C
P. O. Box 16662, Nakuru.
Cell Phone: 0719 607 977
Email: centralrift@rea.co.ke

EASTERN & NORTHERN KENYA OFFICE

Off Mombasa road, Near JKIA turn-off
P. O. Box 34585 – 00100
Cell Phone: 0709 193 000/3600
Email: easternkenya@rea.co.ke

WESTERN KENYA REGIONAL OFFICE

Kondele (Carwash) – Kibos Road
P. O. Box 2604 – 0040100 Kisumu
Cell Phone: 0719 607 436
Email: westernkenya@rea.co.ke

SOUTH NYANZA REGIONAL OFFICE

Located within Kisii ATC
P.O. Box 2238 - 40200 Kisii
Cell Phone: 0709 193 440

COAST REGIONAL OFFICE

Mtwapa, Kilifi County
P. O. Box 32 - 80109 Mtwapa
Cell Phone: 0719 608 086

MT. KENYA REGIONAL OFFICE

1st Floor, Advocate Plaza, off Kamakwa Road,
P. O. Box 1970, Nyeri
Cell Phone: 0719 608 139
Email: mt.kenya@rea.co.ke

NORTH RIFT REGIONAL OFFICE

Kiptagich House, 9th Floor, off Uganda Road,
P. O. Box 3015 – 30100, Eldoret.
Cell Phone: 0719 608 207
Email: northrift@rea.co.ke

Energy Centres

Bukura Energy Centre
Within Bukura ATC
P.O. Box 92-50105 Bukura

Busia Energy Centre
Busia Town next to Busia Market
P.O. Box 421-50400 Busia

Garissa Energy Centre
Off Garissa to Sankuri Road
P.O. Box 1253-70100 Garissa

Uasin Gishu Energy Centre
next to Kiplombe cemetery
P.O. Box 9050-30100 Eldoret

Jamhuri Energy Centre
Nairobi, showground
P.O. Box 21552-00505 Nairobi

Kericho Energy Centre
Off Kisumu road
behind Siloam Hospital
P.O. Box 1959-20200 Kericho

Kisii Energy Centre
Within Kisii ATC
P.O. Box 2238-40200 Kisii

Kitui Energy Centre
Next to Kitui High School
P.O. Box 737-90200 Kitui

Lodwar Energy Centre
Off Lodwar to Lorgun road
P.O. Box 501-30500 Lodwar

Marsabit Energy Centre
Within Marsabit County
Commissioners Office
P.O. Box 143-60500 Marsabit

Migori Energy Centre
Migori town next to the County HQ
P.O. Box 329-40400 Migori

Mitunguu Energy Centre
Mitunguu market
P.O. Box 232-60204 Mitunguu

Mirangine Energy Centre
Mirangine, Nyandarua County
P.O. Box 142-20124 Mirangine

Mtwapa Energy Centre
Mtwapa, Kilifi County
P. O. Box 32 - 80109 Mtwapa

Wajir Energy Centre
Wajir town
P.O. Box 414 -70200 Wajir

Wambugu Energy Centre
Within Wambugu Farm,
Off Nyeri - Karatina road
P.O. Box 1400-10100 Nyeri