



April - June 2022

# The Highlight

REREC Quarterly Newsletter

Issue No. 8



## SPEARHEADING USE OF Renewable Energy

**New Reign, REREC Gets a New Board of Directors**

**REREC & Emerging Technologies**

**REARBS Members Sensitized**

**REREC**  
A Green Energy Driven Nation

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**The Highlight**

# Editor's Note

Welcome to the last edition of The Highlight for the year 2021/2022.

Delve in and sharpen your knowledge on the renewable technologies that are quickly transforming how the world operates.

We also bring you news about the activities of the Corporation for the last three months. It is in this period that the Corporation ushered in a new Board of Directors. The new Board came in at a time when the Corporation is gearing up to fulfil its new mandate, which includes spearheading the country's green energy aspirations.

Further, we welcomed 234 new members of staff. The new employees comprise four General Managers in charge of; Finance & ICT, Human Resource & Administration, Renewable Energy Research & Development, and Internal Audit Directorates. The Corporation also hired 14 managers, 20 Principal Officers and 192 staff in various cadres.

We also took time to interact with our stakeholders through various initiatives; including ASK Show exhibitions in Eldoret, Meru and Machakos and won awards on different categories, other activities include; the Africa Public Service Day (National Celebrations) and CSR initiatives comprising of free medical camps and tree planting days.

During this period a delegation from the European Union visited REREC to discuss the DESIREE programme, which is a joint initiative developed by the European Investment Bank and the European Commission (EU-INTPA) and aims at fostering socio-economic growth through development of innovative business models for the provision of clean and efficient energy solutions.



We have these and many more articles lined up for you in this issue. We look forward to receiving your feedback as we strive to make the newsletter informative, educative and entertaining.

We love feedback.  
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*Wangari Githii*

# New Reign

## REREC gets a new Board of Directors



*New Board Members undergoing induction*

Rural Electrification and Renewable Energy Corporation officially ushered in a new Board of Directors which will be led by Chairperson Wacuka Ikua.

REREC's strategic direction is governed by the Board of Directors. Due to the strategic importance of the Corporation, the government moved with speed to avert any vacuum that might hinder the delivery of services to the citizens, with the appointment and subsequent gazette of new board members in March 2022. The previous Board's tenure ended in February 2022. The new team takes reign at a time when the Corporation is gearing up to fulfill its new mandates, which includes spearheading the country's green energy aspirations.

The new Board Members have already undertaken a vigorous induction programme to bring them up to speed with the Corporation's affairs and provide a platform for a smooth take-off.

Chairperson Ikua stated that the immediate focus of the new Board of Directors is to spearhead the use of clean and sustainable energy solutions and to electrify all rural areas and public facilities in a bid to achieve 100% connectivity.

Ikua lauded the previous Board of Directors who grew the electricity connectivity to public facilities from 65% at the time of appointment to an estimated 71% at the time of their exit.

The previous Board of Directors which was chaired by Prof. Simon Gicharu, CBS led the construction and operationalization of the Garissa Solar Power Plant which contributes 2% of the country's energy mix.

The Corporation also took over 16 energy centers across the country, occasioning the transfer of 142 staff members from the Ministry of Energy to the Corporation.

The new Board has already toured REREC's offices in Kisumu and Mariakani to familiarise themselves with the Corporation's mandate and also interact with the staff in regional offices.

The tenure of the board is expected to end in the year 2025.



*REREC CEO Peter Mbugua (Right) receiving new board Chairperson Wacuka Ikua during the induction ceremony*

# REREC Inducts 234 New Members of Staff



*New REREC Staff during the induction training held for 234 new members of staff who joined REREC have been inducted by the Corporation.*

Rural Electrification and Renewable Energy Corporation (REREC) ushered in 234 new staff members to the Corporation on 15th April 2022 in Nairobi.

The recruitment of additional staff in all cadres was necessitated by the enactment of the Energy Act 2019, that gave the Corporation an expanded mandate of spearheading Kenya's green energy drive, in addition to implementing rural electrification projects. The Act also saw Rural Electrification Authority (REA) changed to Rural Electrification and Renewable Energy Corporation (REREC)

The new staff members who were inducted through a special three days program were ceremoniously welcomed to the corporation by REREC's Chief Executive Officer, CPA Peter Mbugua.

Mbugua underscored the importance of cohesion among the entire REREC staff adding that the new staff should familiarize themselves

with Corporation's core values and strategic plan. The new employees comprise four General Managers, 14 Managers, 20 Principal Officers and 192 staff in other various cadres.

During the 3 day programme the staff were briefed on the history of the Corporation, nature of business, work culture, policies, procedures, departmental roles, rules and regulations that will guide them as they start working actively at REREC.

The strategic plan 2022-2023 was issued to each and every staff member attending the program, giving them a good reference on the organisational goals, work plans and performance reports.

The Corporation looks forward to have a more efficient and effective work force that will enable it serve Kenyans even better.



*Staff member posing a question during the induction training.*

# Africa Public Service Day National Celebrations at KICC



REREC's staff receiving an award on behalf of the corporation during Africa Public Service Day National Celebrations.

Rural Electrification and Renewable Energy Corporation (REREC) emerged 2<sup>nd</sup> under the Environmental Conservation and Climate Change Initiative category during this year's Africa Public Service Day National Celebration which was held from 21<sup>st</sup> to 23<sup>rd</sup> June 2022 at the KICC, Nairobi County.

REREC showcased innovations guided by five thematic areas;

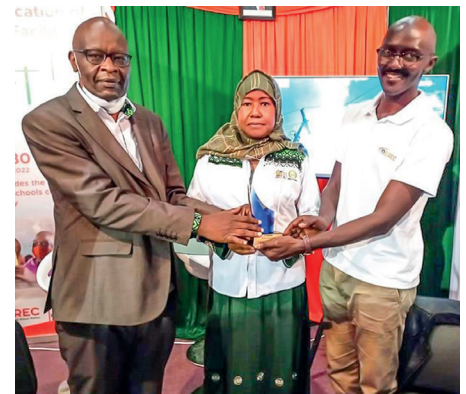
1. Business process re-engineering
2. Innovations for inclusive and equitable service delivery
3. Public Service digitization
4. Entrenching performance
5. Environmental Conservation and Climate Change initiatives

The celebration brought together Public Servants to showcase and reward excellence in the Public Service to promote and sustain quality in service delivery.

Participation in the Africa Public Service Day National Celebration also provided an opportunity for the Corporation to engage with its customers for purposes of advocacy and addressing customer inquiries, and complaints, and getting feedback on its services.

Kula H. Hache, a member of the Corporation's Board of Directors visited REREC's stand and congratulated the team for showcasing and sensitizing the general public in line with this year's theme, "Celebrating Public Service Transformation: Ten Years and Beyond."

Hache averred that the Corporation will remain committed to its vision of having 'A green energy driven nation' while furthering the national vision and continued contribution towards the achievement of Sustainable Development Goals (SDG) specifically SDG No. 7 and No. 13 on affordable and clean energy for all and combating effects of climate change respectively



Kula H. Hache, (Center) a member of the Corporation's Board of Directors.

Dr. Julius Muia, Principal Secretary, National Treasury who also visited REREC's stand said that rural electrification in the Country through REREC has surpassed expectations and the Country is moving towards 100% rural connectivity in the near future.

Muia cited the Garissa solar power plant which is the largest solar power plant in East & Central Africa and is a national initiative aimed at promoting the use of renewable energy.

# REREC Scoops Top Awards at Meru National Show



**REREC stand enlightened residents on the services provided by the Energy Centres**

*Meru County Governor H.E Kiraitu Murungi (left) awards REREC's Manager Advocacy (Center) with the (three) 3 trophies at the official opening ceremony of the Meru National Show.*



Rural Electrification and Renewable Energy Corporation (REREC) emerged 1<sup>st</sup> in three judging categories in the Meru National Show held from 1<sup>st</sup> to 4<sup>th</sup> June 2022.

Out of the four (4) stand judging categories that REREC participated in at the show, the Corporation emerged 1<sup>st</sup> position in; the best organization/association in community service, the best non-agricultural based statutory board, and the best energy services and conservation sector.

Meru County Governor, H.E Kiraitu Murungi awarded REREC with the three (3) trophies at the official opening ceremony of the Show. The Governor hailed the Corporation's effort in spearheading the use of renewable energy technologies in line with Kenya's vision 2030.

During the show, the Corporation focused on sensitizing the general public on its mandates, milestones, achievements, and future plan for spearheading the Country's goal of having a green energy-driven nation.

Kenya Methodist University Vice Chancellor Prof. David Gichoya who visited the Corporation's stand applauded REREC's team for sensitizing the general public in line with this year's theme, "Promoting Innovation and Technology in Agriculture and Trade."

Corporation's stand also enlightened residents on the services provided by the Energy Centre in the County as a one-stop shop for renewable energy solutions aimed at benefiting local communities

The VC further commended the Corporation's effort in electrifying public facilities like Primary and Secondary schools. He said that the electrification of such facilities has enabled the country to bring up fully baked students who are enrolling at higher learning institutions.

Since its inception, the ASK Shows bring together participants from different regions and sectors of the economy in the country who come to exhibit their products and services.



*Kenya Methodist University Vice Chancellor Prof. David Gichoya signing visitors book at RERE's stand*

# Spearheading Use of Renewable Energy Solutions at Machakos Show



REREC' Kitui Energy Center's staff demonstrate to students how the parabolic solar cooker works

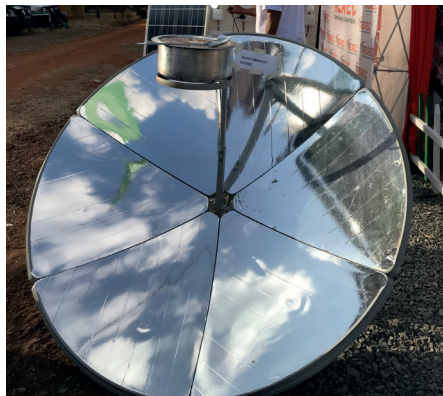
Following the enactment of the Energy Act 2019, REREC has been on the forefront in spearheading Kenya's green energy drive in addition to implementing rural electrification projects.

In collaboration with Kitui's Energy Centre, the Corporation showcased various renewable energy solutions at the Machakos show including a biodigester, solar PV, solar parabolic cooker, energy saving Jikos and fireless cookers.

Some of the key technologies on the renewable energy solutions that REREC showcased at the show included:

## Parabolic solar cookers

A solar cooker that uses a parabolic-shaped reflector to direct sunlight to a small area in order to generate heat for cooking. These cookers are able to reach high temperatures, 350 °C or higher, which allows them to be used for grilling and frying.



Parabolic solar cooker

## Process of cooking using a parabolic solar cooker

1. Keep the solar cooker in the sun in open space free from any shadow for at least for 45 minutes before loading it with cooking pots.
2. Adjust the cooker in such a way that the reflecting mirror faces the sun and the reflected rays fall on the transparent glass lid.
3. Open the glass lid of the solar cooker, place the cooking pots inside it and close the lid properly.

**Green energy can lead to stable energy prices as these sources are often available locally**

4. Open the lid fully once the food is cooked to remove the cooking vessels after the food has been cooked.

Using parabolic, box, or panel cookers means no gas or electricity costs. They are pollution free and safe, also easy to build and maintain.

Kenya has been the center of solar cooking activity in East Africa. A number of organizations have endeavoured to promote the technology in this country, which has been the commercial hub of the area for several decades.





Bio digester system

## Bio-Digester System

A bio digester system may be implemented in any rural or urban area with sufficient space and with a generation of at least 100 kg of organic waste a day.

Since a bio-digester is a closed system that does not give off any foul smell; which eliminates flies and rodents from the area therefore increasing hygiene. Further, the water soaks into the surrounding soil, thereby increasing the amount of underground water. In addition, there is no wastewater discharge in the streets, making it cleaner and safe.

In developing countries bio digesters are becoming an effective solution to convert manure into biogas.

Since its rich in organic nutrients, such as nitrogen and phosphorus, farmers can use the digestate to fertilize crops, improve soil quality, or even increase revenue by selling it as fertilizer.

## Fireless Cooker

The 'fireless cooker' uses stored heat to cook food over a long period of time. The food is precooked on a traditional stove first, before it's transferred to the fireless cooker. The cooker is well insulated, keeping the heat in the food and allowing it to continue cooking inside.

Some of the benefits of fireless cookers is that it accomplishes a saving in fuel, especially where gas, kerosene, or wood stoves are used. Through the use of sealed fireless cookers it is possible to cook for long periods of time using only retained heat.

# REREC has been in the forefront in spearheading Kenya's green energy drive



Maendeleo jiko

Embracing fireless cookers can reduce fuel use by 40 per cent, preserve food nutrients and save time as your meal continues cooking while you attend to other chores.

## Maendeleo Jiko

The Maendeleo jiko is a simple stove that helps improve the conditions of a traditional kitchen, and also helps reduce the amount of firewood needed. The jiko is made from a ceramic clay liner which is designed in such a way that the wood burns as efficiently as possible.

Maendeleo jikos are more efficient in wood use. It saves firewood by retaining heat for a long time and they are made entirely from local materials and are affordable for rural households.



Energy centre staff demonstrate how a Fireless cooker works at the REREC Stand

# REREC Officers Embark on S/4 HANA Training in Nairobi

REREC management staff have undergone an executive training on the new data management system (S/4HANA) that aims to specifically enhance the implementation of the Corporation's mandate by improving efficiency, transparency, and accountability in service delivery.

The transition from REA to REREC, came with an expansion of mandates from 6 to 19 functions with an increase in the scope of operations for projects being implemented and consequently, increased user requirements for REREC's System Application Products. This therefore called for the need to have a system that will accommodate the increased user load, and hence the launch of project RIDS, which is a SAP S/4HANA business suite that allows companies to perform transactions and analyze business data in real-time.



The project further aims to upgrade the current SAP system by automating and making business processes straightforward, to achieve operational efficiency, transparency, accountability and improved transactional processing.

In the new system, one can access SAP through tablets and mobiles and get key metrics in an easy-to-understand dashboard. S/4 HANA also uses Memory technology as the primary area where data is manipulated. Processing data in the memory is much faster than doing it at the hard disk level.

The project implementation has been divided into four distinct phases i.e. Prepare, Explore, Realize and Deploy. These phases will be comprised of a workstream, tasks, and key deliverables.



*REREC staff attending executive training overview of S/4HANA*

SAP S/4HANA is anticipated to bring about the changes required to boost productivity by improving efficiency and effectiveness. SAP S/4HANA application will further be able to enhance;

- Cash Flow Analysis
- Asset balances
- Project Milestones
- Purchase Requisitions List Display
- Material Document Listing
- Stock Overview
- Vendors accounting document such as invoices and payment
- Customers accounting document such as invoices and receipt
- G/L Accounting documents such as Journal Voucher
- Procurement documents such as PR, PO, and Goods Receipt.
- Employee transactions such as leave and travel requests
- Procurement processes such as Purchase Requisition or Purchase Order
- Accounting transactions such as post invoices and process payment.
- Customer Ageing
- Vendor Ageing
- Budget Availability



# Pushing the Green Button



Green energy is vital for the environment as it replaces the negative effects of fossil fuels with substantial benefits for our climate, economy and lives. Derived from natural resources, green energy is also often renewable and clean, meaning that it emits little or reduced greenhouse gases and is often readily available.

Even when the full life cycle of a green energy source is taken into consideration, they release far fewer greenhouse gases than fossil fuels, as well as few or low levels of air pollutants. This is not just good for the planet but is also better for the health of humans and animals that consume the air.

Green energy can also lead to stable energy prices as these sources are often available locally and are not as affected by the geopolitical crisis, price hikes, or supply chain disruptions. The economic benefits also include job creation in building the facilities that often serve the communities where the workers are employed.

It is estimated that renewable energy saw the creation of 11 million jobs worldwide in 2018, with this number set to grow as we strive to meet targets such as net zero.

## Green energy can lead to stable energy prices as these sources are often available locally

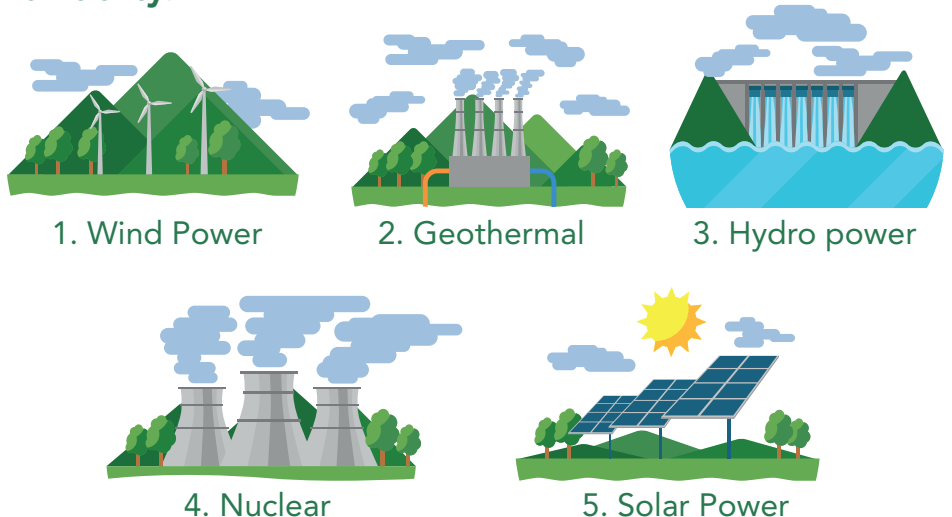
Due to the local nature of energy production through sources like solar and wind power, the energy infrastructure is more flexible and

less dependent on centralized sources that can lead to disruption as well as being less resilient to weather-related climate change.

Going green therefore represents a low-cost solution for the energy needs for many parts of the world. This will only improve as costs continue to fall, which is vital to the world's developing economies.

Green energy solutions also have the benefit of not needing additional energy expenditure after they have been built.

**Renewable energy sources are currently ranked as follows in efficiency:**



# REREC & EMERGING TECHNOLOGIES

## What the ICT is doing to create change?

REREC's ICT department provides cross-cutting functions that address the optimal connectivity and operations of computers, and harness the emerging technology to enhance training, research, and information dissemination capability of the Corporation through, backup upgrade, disaster recovery, troubleshooting, maintenance, and repairs of system with the provision of technical support, and also to conduct a series of Computer and ICT related training for education planners and managers for effective service delivery.

While the benefits of computerization in REREC cannot be disputed, there are several concerns about the current systems which are being addressed by the RIDS Project in various business functions. The implementation of an ICT project constitutes a major change for any organization.

Mr. Alex Kangethe, Manager of ICT, and his team are currently working on several projects designed to improve overall efficiency. Some of these projects have been completed and are already helping shape the Corporation's ICT landscape.

"With the emergence of Information and Communication Technologies (ICTs), it is possible to improve efficiency and effectiveness of internal administration within REREC and automate virtually every process. With the benefits of ICT in mind, it requires proper strategies through planning with enough resources for you to succeed," says Mr. Kangethe.



*The Manager, ICT, Mr. Alex Kangethe at the newly installed server room equipment in Kawi Complex*

**Some of these projects have been completed and are already helping shape the Corporation's ICT landscape**

### NetApp Backup System Upgrade

With the ever-growing volume of data at REREC, it is necessary to efficiently store and back up data. The new 43 Terabytes capacity, S/4 HANA, and mail exchange server space are greatly improved.

The NetApp backup system upgrade was completed in the 2<sup>nd</sup> quarter of FY 2020/2021.

### Network Core Switch Upgrade

A core switch is a high-capacity switch positioned in the physical core, or backbone, of a network and serves to interconnect edge switches at REREC's regional offices. It became necessary to upgrade the Core Switches to ensure reliable connectivity across the network at all times. This was completed in the 1<sup>st</sup> quarter of 2020/2021.

## Garissa Network Infrastructure & Connectivity Project

ICT department undertook the implementation of the Internet, Wide Area Network connectivity, and local infrastructure optimization. Garissa power plant can now seamlessly communicate with the headquarters and transmit their hourly reports as required by the Network Operations Center (NOC). This was completed in the 2<sup>nd</sup> quarter of 2020/2021.

### ONGOING PROJECTS

#### REREC Integrated Data System (RIDS) Project

This entails the Supply, implementation, installation, configuration, data migration, integration, testing, training, commissioning, maintenance, and support of SAP ERP.

The project was started in September 2019 and it is expected to run till October 2022 with the following partners: -

LOT	PARTNER	DESCRIPTION
1	BSK Global Technologies	Implementer
2	Digital Vision Global	Project Management
3	Tivella Technologies	Quality Assurance
4	EIM Solutions	Licensing

The project is being implemented following the SAP recommended Activate Methodology which has the following phases: Prepare, Explore, Realize, Deploy and Run.

The project is currently in the realization phase estimated at 88% complete.



IBM Power9 servers

#### RIDS Project Hardware

IBM Power9 servers that have been certified to run the S/4 HANA environment and Cisco Blade Servers where the GIS and Windows servers will run. The Hardware has been delivered, configured, and virtual servers to support the RIDS project deployed.

#### Data Centre Fire Suppression Project

The ICT department has a new data center which will further the new hardware acquired for RIDS Project. The ICT Department intends to install a complete flooding fire detection and suppression system in the primary Data Centre. This will automatically extinguish a fire without the need for human intervention at the data center. The million-shilling investment server room can therefore not be wiped away by fire.

#### Data Centre Back up Power Upgrade

The current Data Centre has had challenges with power redundancy. This has been affecting the availability of servers and services. The Corporation wishes to have a dedicated power room to house the existing APC UPS and new UPS to increase its DC level of redundancy on power as per the modern configurations which present no single-points-of-failure.

Encapsulated Ltd has been contracted and has completed the project.



APC UPS

#### Biometric Access System

The Corporation intends to automate employee access to its premises and manage their time and attendance by installing and configuring a new biometric time attendance system taking into consideration the existing system. The project has already been finalized.



Data Centre Fire Suppression Systems

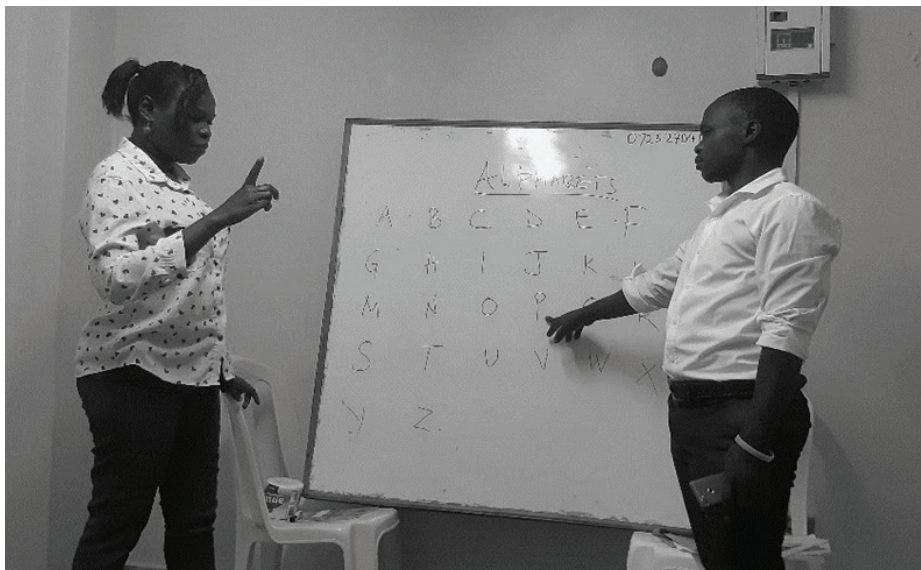
#### Challenges

It's expected that once the programs are complete, the Corporation will have a new and improved working environment with modern systems that support both personnel and equipment. However, these changes continue to weather challenges posed by the Covid-19 pandemic. This is especially with the user requirements gathering for the S/4 HANA project and change management plan.

In addition, the Presidential directive prohibiting procurement of ICT goods and services delayed procuring the much-needed ICT services.

However, Mr. Kangethe and his team are upbeat that the programs will nonetheless be implemented and desired outcomes realized sooner rather than later.

# REREC Staff Trained On Sign Language Interpretation



*REREC Staff trained on Sign language*

Article 7(3)(b) of the Constitution provides that the State shall promote the development and use of indigenous languages, Kenya sign language, braille and other communication formats and technologies accessible to persons with disabilities.

The Kenya Sign Language is recognized as an official mode of communication in courts, government offices and schools.

This is meant to help integrate the deaf into society and to ensure they get equal opportunities with the rest of society.

It's against this background that the Corporation, in compliance with the requirement to train sign language interpreters, recently nominated staff for training on sign language interpretation.

A tailor-made course for two (2) weeks provided by the Deaf Ability Initiative was adopted to offer a platform for REREC staff to learn the basics of the Kenya Sign Language.

During the two weeks training, the following are some of the fundamentals learners were taught to help aid those living with this disability;

## Challenges & Opportunities

Unlike other voice-coded languages, signs enrich and enhance an individual's cognitive processes, leading to higher abstract and creative thinking, better problem-solving skills, greater cognitive flexibility, better listening skills, and greater academic achievement. It also promotes cultural awareness, literacy, and other intellectual benefits

## Enhanced Ability To Interpret Body Language

Because it involves facial expressions and body language as well as hand gestures, learning sign language could also enhance your ability to recognize and interpret body language.

Learning sign language can give us the ability to recognize non-language actions, which is a valuable skill to develop, whether you're interviewing job candidates or working in a public-facing role.

## Improved Spatial Reasoning

Spatial reasoning is the ability to perceive the visual information in our environment and think about objects three-dimensionally. It's an essential part of math and science, but it also plays an important role in creative tasks such as drawing and painting.

## Better Reaction Times & Peripheral Vision

Reaction time refers to the amount of time that passes between the moment we perceive something and the moment we respond to it. Peripheral vision is what we can see around us without having to turn our heads.

Both of these things play a key role in sports such as basketball or tennis, but also in day-to-day activities like driving a car or cycling.

## Stronger Bond Between Parents & Infants

Research has found that when parents teach infants and toddlers how to sign basic words it can improve parent-child communication and may even positively impact a child's confidence and self-esteem in the long term.

Why? Young children's inability to communicate what they're feeling can often be a source of anger and frustration, both for the parents and the children. When a child is distraught, the ability to sign can prevent tantrums and frustration by allowing them to communicate their basic needs, whether they're hungry or in pain.

Sign language can also increase opportunities for parents and children to bond, because of the eye-to-eye and tactile contact it requires.

The complex nature of this language makes it necessary for trainees to obtain a full course according to the prescribed curriculum. This would enhance competency and strengthen institutional capacity to handle persons living with hearing impairment.

Additionally, fully trained and equipped sign language interpreters would help the Corporation entrench the culture of aiding the disabled in so far as its public is concerned e.g. ease of communication during events, training, etc.

# REARBS Members Sensitized



Members can now access up to **40%** of their funds to purchase a house with a capping of **Ksh 7 Million.**

Members of the REREC Retirement Benefits Scheme (REARBS) have been sensitized on the implications of the Retirement Benefits (Mortgage Loans) (Amendment) Regulations 2020 and the Corporations Post-Retirement Medical Scheme (PRMS).

The REARBS was established as a contributory scheme under an irrevocable trust on 1<sup>st</sup> July 2008 to provide pension benefits to eligible employees in the Corporation. The rate of contributions is 5% for an employee while the employer contributes at the rate of 10% of an individual's basic salary. The funds can be accessed by members on retirement, ill health or death. From the sensitization session, the members were made aware of the amended mortgage regulations that now allows members to use their pension funds to purchase a residential house. The members can access up to 40% of their funds to purchase a house with a capping of Ksh 7 million and the purchase price should not exceed the market price. The house should also be certified for occupation, meaning, it should be ready for immediate occupation.

The sensitization to a greater extent highlighted that;

- Additional voluntary contributions could be used to top up the portion of the benefits available for the purchase of the house.
- The funds contained in the Post-Retirement Medical Scheme (PRMS) fund could not be used to determine the accrued benefits.
- A member belonging to more than one scheme of the same sponsor could combine benefits to determine the available portion.
- The mortgage facility could only be utilized once.
- Members who had attained retirement age were not eligible for the facility.
- Spouses, who were either members of the same scheme or different schemes could combine their benefits and assign them jointly.
- A member could not use these Regulations to offset an already existing mortgage with other institutions

- The trustees would encumber the title of the house and only lift the charge upon retirement, death, immigration, or incapacitation of the member due to ill health.
- All the transaction costs and taxes relating to the purchase would be borne by the member.
- PRMS is a fund established within a scheme to which contributions are made.
- The fund is administered and managed jointly with the Scheme funds but shall be invested and reported separately in the statutory reports of the Scheme.
- A member shall not be permitted to access the benefits while the member remains in the employment of the sponsor.
- A member may, subject to the approval of the trustees, be allowed to access the medical benefits on the ground of ill health or if the member becomes incapacitated due to ill health.

It was revealed that if a member exit before retirement, the funds will be retained in the scheme, transferred to a registered PRMS, or utilized for medical purposes.

# AN OVERVIEW OF WIND ENERGY IN KENYA



The movement of air currents and water, sunlight and the warmth in the earth are all sustainable sources that can be harnessed to generate clean renewable electrical energy.

Wind power is the kinetic energy in moving air that can be converted to electricity through various technologies. Wind turbines are used to transform the kinetic energy in the moving mass of air into electrical energy although mechanical wind power can also be utilized directly for specific tasks such as water pumping and grinding grains.

Three processes lead to the formation or enhancement of wind phenomena:

- Uneven heating of the atmosphere by the sun
- Obstacles and irregularities on the earth's surface
- The rotation of the earth

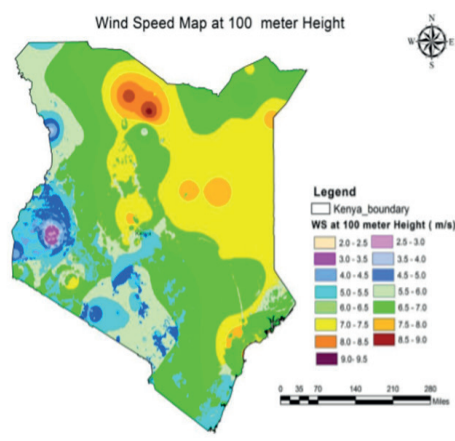
The blades used in wind power generation are aerodynamically constructed to create a lift which causes the rotor blades to spin. The spinning rotor blades are attached to the shaft of the generator through a gearbox hence the shaft also rotates generating a voltage on the stator windings of the generator.

The output power of a wind turbine is proportional to the dimensions of the rotor and the cube of the wind speed.

Theoretically, when wind speed doubles, wind power potential increases by a factor of eight.

## Current installed capacity and future projects

Kenya is endowed with favourable wind speeds with three quarter of the country experiencing speeds of more than 6 m/s. The Ministry of Energy developed the Wind Atlas in 2003 and recently updated it in 2021 (DTU WIND ENERGY, 2021) to provide investors with indicative data on the strength and location of wind resources in Kenya.



courtesy of epra.go.ke

## The uptake of wind energy is slow in the country though wind energy has numerous advantages.

Currently wind provides only a small percentage in the country's generation mix. Wind power installations in Kenya include;

- Lake Turkana Wind Power; which is a private independent power producer (IPP) with an installed capacity of 310 MW.
- Ngong Hill Wind Farm; which is owned by Kenya Electricity Generating Company (Kengen). It has an installed capacity of about 25.5 M

REREC has implemented two pilot wind projects in North-Horr Boys Secondary School and St. Patterson Memorial Secondary School in Marsabit and Kajiado County respectively.



As much as the uptake of wind energy is slow in the country, wind energy has numerous advantages that include;

1. Wind Power is a renewable resource
2. Non-polluting
3. Low maintenance costs
4. Cheap energy
5. Wind turbines can be built on existing farms or ranches

### How Is Wind Energy Generated?

Three processes lead to the formation or enhancement of wind phenomena:

- Uneven heating of the atmosphere by the sun
- Obstacles and irregularities on the earth's surface
- The rotation of the earth

It is evident that wind as a source of energy is renewable because the above three phenomena are always at play.

The blades used in wind power generation are aerodynamically constructed to create lift which causes the rotor blades to spin. The spinning rotor blades are attached to the shaft of the generator through a gearbox hence the shaft also rotates generating a voltage on the stator windings of the generator. The output power of a wind turbine is proportional to the dimensions of the rotor and the cube of the wind speed. Theoretically, when wind speed doubles, wind power potential increases by a factor of eight.

### Types or Classes of Wind Turbines

Wind turbines are generally classified as either being;

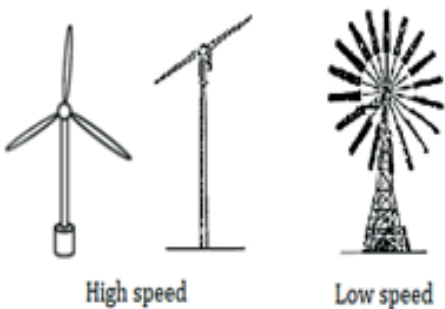
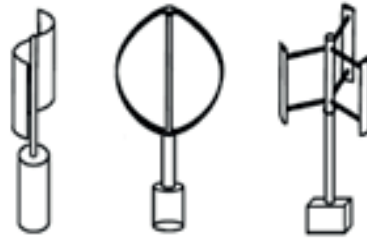


Fig. 1. Types of wind turbines

• **Horizontal axis type:** They have a horizontal rotor shaft and an electrical generator that are both located at the top of a tower.



Savonius Darrieus H-Rotor

• **Vertical axis type:** They have a vertical rotor shaft, a generator, and a gearbox that is placed at the bottom of the turbine.

Horizontal axis wind turbines are usually preferred for electrical power generation compared to vertical axis wind turbines because higher wind velocities at higher heights can be used by increasing the height of the tower and also horizontal axis wind turbines have a more silent operation.

### Main Components of a Wind Turbine

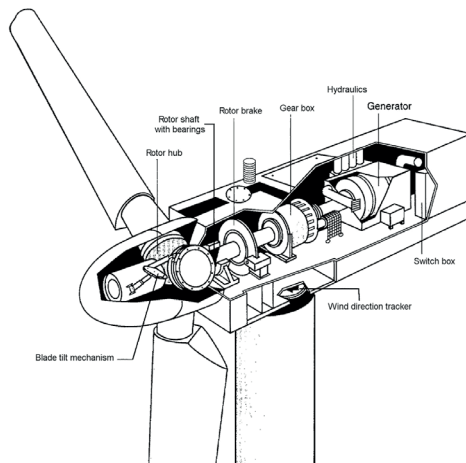


Fig.3. Main components of a wind turbine

### Wind Turbine Technologies

To achieve the desired output, either of the following three technologies is applied;

- **Constant Speed Turbine** – Runs at a single speed regardless of wind velocity and tends to be cheaper and more robust. They are noisy
- **Variable Speed Feed Induction Generator** – As the turbines run at a variable speed it offers greater aerodynamic efficiency, reduced mechanical stress, and lower noise levels. They are, however, more expensive

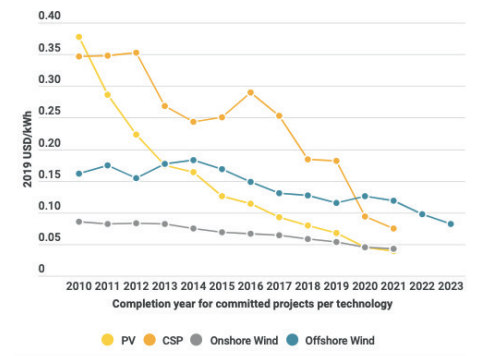
- **Variable Speed Direct Drive** – This type eliminates the gearbox and their associated mechanical issues and offers improved performance through the choice of components utilized. They are expensive.

### Emerging Wind Energy Technologies

- **Offshore wind farms:** higher wind speeds are experienced offshore compared to on land hence offshore wind farms have a higher capacity utilization factor compared to those on land for the same installed capacity.
- **Direct drive wind turbines:** They eliminate the need for a gearbox which is the most maintenance demanding component of a turbine.
- **Permanent magnets with the rotor on the outside:** Siemens has designed a wind generator with a thin rotor and permanent magnets on the outside like a bicycle dynamo.

### Price Trends Of Wind Power Generation

In 2020, the cost for onshore wind energy worldwide averaged 1,355 U.S. dollars per kilowatt, a decrease of nine percent in comparison to the previous year. This figure has been continually declining since 2012 when it stood at nearly 2,000 dollars per kilowatt.



World Economic Forum

# Priorities



## Don't Prioritize Your Schedule, Schedule Your Priorities

Most of us have heard the common cliché “Failure to plan is planning to fail”. For us to be more productive, we need to plan our time better and be intentional about what areas of our lives we spend the most time on.

Instead of us prioritizing our schedule, we need to schedule our priorities. When we make our schedule our priority, we lose focus on the important things. We begin to focus on the things that are urgent but not important to us and we begin to feel frustrated because we are always doing urgent things and never have time to sit down and focus on the important things.

We are going from urgent crisis to urgent crisis which can make us feel that we are going round in circles every day and handling the same problems.

To change this, try and schedule your priorities. You can do this by asking yourself the following questions:

1. What is the most important thing I need to achieve this week?
2. What will I do this week that will have the greatest impact on me and those around me?

When we focus on our priorities, we will begin to feel more fulfilled about ourselves because we are achieving the most important priority for our week. By doing this, you will feel more confident and motivated about your work.



# REREC Free Medical Camp in Bomet County



*Patients undergoing free medical checkup in Chebunyo health centre.*

REREC in partnership with the County Government of Bomet conducted a free medical camp in Chebunyo health center, Chepalungu constituency where over 360 residents were attended to.

The Camp is part of the many CSR initiatives that the Corporation is undertaking in various parts of the country with an intention of making a positive impact in the communities that REREC interacts with during project implementation.

During the event which was held on 3rd of June, 2022, locals were educated on the prevention of lifestyle diseases and measures to take when affected. Screening for diabetes, hypertension, general health check-up, nutritional education and medication was also undertaken.

REREC General Manager (GM), Information Education and Communication directorate (IEC) CS Dr. Rose Mkalama applauded the

County for partnering with REREC in implementing electrification projects through the matching fund, noting that since 2013 Bomet has so far remitted Ksh. 47,911,267.00, with the Corporation matching the same with Ksh. 47,911,267.00.

Dr. Mkalama further educated participants on the importance of granting leave of passage of electricity lines and infrastructure. She implored the community to also protect power projects from vandalism noting that vandalizing of transformers and

other power infrastructure results in project completion delays and leads to power loss to the beneficiaries. Any suspected vandals should be reported to authorities promptly.

The County government commended REREC for the initiative noting that besides the provision of electrification to the area, the REREC Camp had gone a long way to benefit area residents where access to medical facilities rate was low.

Other partners present were; Beyond Zero, Red Cross and World Vision.



*Patients undergoing check-up in Chebunyo health center, Chepalungu constituency, Bomet County*

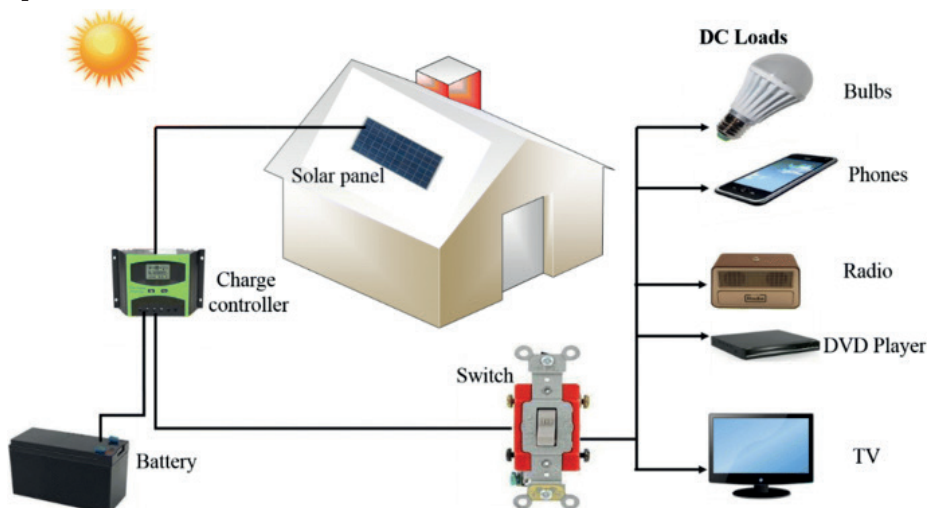
# How to Make the Sun Work for You



The sun provides a tremendous resource for generating clean and sustainable energy, and with the proper tools and techniques to harness its power, there are so many things you can do with that energy. The question is how do we make the sun work for us?

## Here are a few ideas: A Modest Start Works Best

It is advisable to start small, with a solar-powered light here and a solar battery charger there. The advantages of solar power for homes are many. Starting small is a great way to familiarize yourself with the benefits of solar before scaling up your operation.



**The greatest advantage of solar energy is that it does not pollute the environment.**

## The Bigger The Better

Solar panels come in a wide range, in this case, it is fair to say the bigger the better, the initial cost may put a dent in your pocket, but compared to the long-term energy savings it is worth every coin and will put money back into your pocket. Installing bigger solar panels is a great way to maximize the absorption of solar rays from the sun.

## Connect to Clean Energy Merchant

Not everyone can purchase and install solar panels, it is for this reason that some organizations have come up with off-grid solar power solutions. A clean energy provider can harness solar power as well as other sources of renewable and clean energy.



## Solar Energy is our Future

There is enough solar power to go around, the greatest advantage of solar energy is that it does not pollute the environment. With dwindling natural resources and harmful and toxic gases being released into the atmosphere every day, our best bet to save our planet is using solar energy. With the current technological advancements on how to better harness the power of the sun and better utilization of electricity like the uptake of electric vehicles in our daily commute. Our future is even brighter with solar energy.

# Through the Lens



Konza Technopolis Development CEO Eng. John Tanui, MBS paid a courtesy call to our CEO, CPA Peter Mbugua to discuss areas of collaboration including innovation. Investments opportunities were also part of the discussion.



A delegation from the Embassy of the Slovak Republic in Nairobi, the Slovak Investment and Trade Development Agency and the Kenya Private Sector Alliance (KEPSA) visited REREC to discuss opportunities for continued and enhanced bilateral cooperation between Kenya and Slovakia. The delegation was received by CEO Peter Mbugua.



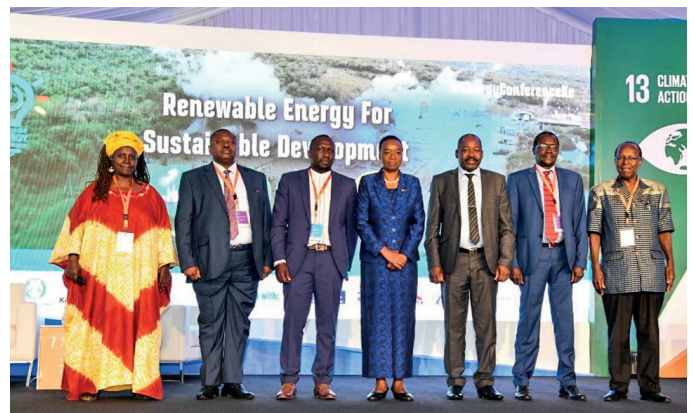
A delegation from the European Union visited REREC to discuss the DESIREE programme. This a joint initiative developed by the European Investment Bank and the European Commission (EU-INTPA) which aims to foster socio-economic growth through development of innovative business models for the provision of clean and efficient energy solutions. The EU delegation was led by Project Manager, Milan Jezic von Gesseneck. The delegation was received by CEO Peter Mbugua.



Energy PS Maj. Gen (Rtd) Dr. Gordon .O. Kihalangwa, CBS addressing the new board of directors during the induction training in Nairobi. The new Board of Directors led by Chairperson Wacuka Ikua came in at a time when the Corporation is gearing up to fulfil its new mandate, which includes spearheading the country's green energy dreams.



REREC officials undertaking a sensitization session on the Competition Law & and the Public Procurement & Disposal Act. The sensitisation was undertaken by the Competitive Authority of Kenya (CAK) and Public Procurement Regulatory Authority (PPRA). The event was officially opened by the REREC CEO CPA. Peter Mbugua.



Energy CS Monica Juma (centre), REREC's chairperson Wacuka Ikua (left) and other delegates pose for a photo during a recently held Sustainable Energy Conference in Olkaria on 16th – 18th June 2022. The conference was set aside to discuss the future of renewable energy, among other energy related matters. Also present at the conference were REREC CEO CPA Peter Mbugua, Energy sector delegates and other invited stakeholders.

# Through the Lens



REREC's staff led by General Manager, IEC Dr. Rose Mkalama and Manager Corporate Communication, Christine Ndwiga held a tree planting exercise at Turkana University College in collaboration with Kenya Forestry Institute (KEFRI) on 9th June 2022. The exercise aims to contribute to the government's target of planting 50 million trees in the ongoing tree planting efforts geared towards increasing Kenya's forest cover 10%.



REREC's Coast regional staff in collaboration with the Ministry of Energy organized a tree planting exercise at Mtwapa Energy Centre; as part of REREC's annual tree planting programme aimed at increasing Kenya's forest cover to the targeted 10%. REREC is working in partnership with KEFRI to produce and distribute seedlings to various communities in Kenya. The Corporation has so far planted over 23,000 tree seedlings in different parts of the country over the last 5 years.



Officials from the Kenya Society for the Blind (KSB) led by the Executive Director Mr. Samson Wareru, met with a team from REREC led by Manager, Corporate Communication Christine Ndwiga to discuss measures that the Corporation has put in place to ensure persons living with disabilities easily access the provided by REREC.



REREC staff led by General Manager, IEC Dr. Rose Mkalama celebrate after emerging 1st and 2nd position in three judging categories at the Machakos National Show that was held from 22nd – 25th June, 2022 at the Machakos Show ground.

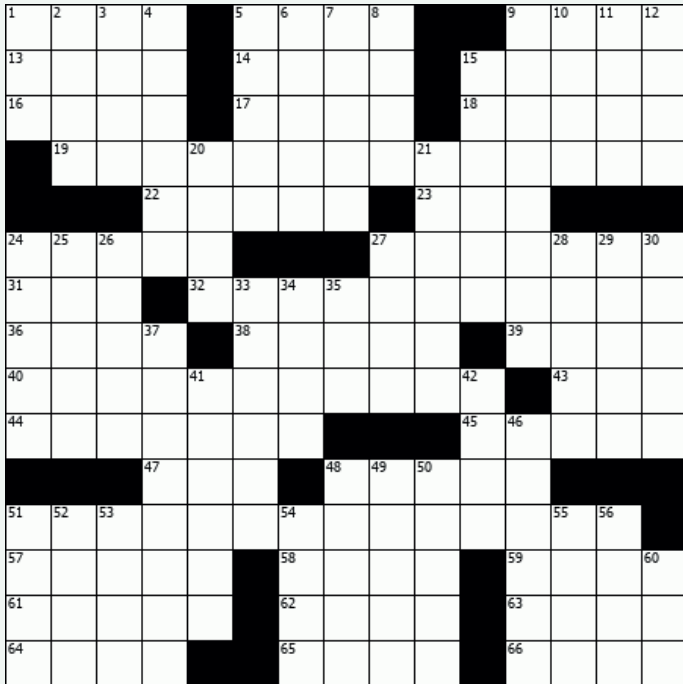


REREC staff led by General Manager, IEC Dr. Rose Mkalama and Manager, Corporate Communication Christine Ndwiga dancing with the locals during a tree planting exercise at Turkana University College in collaboration with Kenya Forestry Institute (KEFRI) on 9th June 2022.



REREC's General Manager, IEC Dr. Rose Mkalama takes a group of pupils through the benefits of electrification.

# Cross Word Puzzle



**Across**

- 1. Peck, e.g.
- 5. Betting sum
- 9. Faith's kin
- 13. Radar's effect
- 14. High point
- 15. Deep thinkers
- 16. Patricia of "The Fountainhead"
- 17. Witnessed
- 18. Move sneakily
- 19. Russ Columbo's theme song
- 22. Has in mind
- 23. It starts in Juin
- 24. Metallic sound
- 27. Dines at the diner

**Down**

- 1. Barbie's buddy
- 2. Knocks off
- 3. "Major Barbara" playwright
- 4. Mirthless
- 5. Ristorante fare
- 6. Indian, for one
- 7. Signs to beware of
- 8. Give, for now
- 9. Farm activities
- 10. S-shaped curve
- 11. Orange coat
- 12. Descry
- 15. Madam Butterfly portrayer
- 20. Cartoon cries
- 21. Cry before "lizards!"
- 24. Pie feature
- 25. Christine of "Chicago Hope"
- 26. "Don't make \_\_\_!" ("Freeze!")
- 27. Milady's case
- 28. Horse play?
- 29. Central New York city
- 30. Pamplona runners
- 33. Teensy attachment
- 34. River to the Danube
- 35. Tolkien tree creature
- 37. Took place
- 41. Stay out of sight
- 42. Tickle-me doll
- 46. In search of information
- 48. Kind of waste
- 49. Crhme de la crhme
- 50. Beau's gift
- 51. Flirtatious batter
- 52. "Garfield" character
- 53. Windmill blade
- 54. O'Hara's spread
- 55. 15-Down specialty
- 56. Lots and lots
- 60. Short break

## Sudoku

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

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

REREC Quartely Newsletter



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