



National
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Authority

IRRIGATION NEWS

“ Lower Eastern and Coast Region Special Edition ”

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To download a copy of our Newsletter and share feedback, visit our website

www.irrigation.go.ke/Newsletter/

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Editor's Note



Mr. Daniel M. Nzonzo, HSC.
Principal Corporate Communication Officer

It is a great pleasure to present to you the 18th issue of Irrigation News, our premium publication that keeps you informed about irrigation. This issue is packed with insightful information on the future and the impact of irrigation.

In this issue we are focusing on the Lower Eastern and Coast region, specifically Rombo Cluster Irrigation Project in Kajiado County, Njukini Irrigation Project and Kimorigo Irrigation Scheme in Taita Taveta County and Household Irrigation Water Harvesting Programme in Kilifi, Kajiado and Makueni counties.

Additionally, we had the honour of speaking with Eng. Raphael Mutiso, an exceptionally brilliant Irrigation engineer whose expertise and enthusiasm are essential to the Authority's mission. Eng. Mutiso is the Regional Coordinator for the Lower Eastern and Coast region. He gives his thoughts on the future of irrigation while advising the upcoming engineers who are either in school or are recent graduates.

We'd like to thank our readers for taking the time to read our newsletter, sending comments and for your continuous support. Your ongoing readership and support fuel our commitment to providing a more compact publication every issue. We appreciate your participation and look forward to providing you with more entertaining and useful articles. Thank you for being a part of our community and journey.

Enjoy the read.

Chairman's Note



Eng. Gilbert Maluki
Chairman of the Board

On behalf of the Board of Directors, Management and staff, I welcome our new Cabinet Secretary Mr. Zachariah M. Njeru, who was deployed by His Excellency the President to the Ministry of Water, Sanitation and Irrigation. The National Irrigation Authority (NIA) is looking forward to the guidance and support of the CS in the execution of our mandate of supporting food production through irrigation. We are committed and pledge to support you as we work together to deliver on the promises of THE PLAN on food security.

During the Quarter, I welcomed four new Board members. I congratulate my fellow directors Mr. George Gatongu Githae, Ms. Mary Kanana Mwit, Ms. Ubah Kahiye and Mr. Daniel Odhiambo Odero on your appointments. The Board had an induction to familiarise them with the Authority, their roles, and guidelines of executing their duties among others.

In response to the National Tree Growing Restoration Campaign launched by H.E the President, Hon. Dr. William Samoei Ruto, PhD on December 21, 2022, my fellow Board chairpersons from various

State corporations and the National Government Administration leaders from Mavoko sub-county and I led the residents of Kyumvi, Mavoko sub-county, Machakos County, in a tree planting drive. The Authority donated 5,000 assorted tree seedlings.

Additionally, I paid a courtesy call to the Kisumu County Governor, Prof. Anyang' Nyong'o, accompanied by members of the Authority's Management. We discussed, among others, the operationalisation of the new Ahero Rice Mill recently bought by the County Government, a crucial step towards boosting rice farming in Kisumu. As a Board, we are keen on enhancing partnerships with the County Governments to ensure our farmers get the maximum support in quest to produce enough food to feed this nation. We will continue to engage all County Governors to operationalise the County Irrigation Development Units and other relevant clauses of the Irrigation Act.

The Authority is working closely with the Counties and other development partners to firm up value addition in the agricultural value chain to contribute towards food security as is well captured in the Bottom-Up Economic Transformation Agenda (BETA). The partnerships we have forged with government bodies, development agencies and local communities have boosted our progress. We will continue to nurture and expand these collaborations to enhance uptake of irrigation technologies to enhance income generation and improve self-reliance among Kenyans.

Finally, I appreciate our development partners, other stakeholders and staff for their unwavering support. May your commitment to driving sustainable irrigation remain firm as we work towards a more food-secure future nation.

Ag. CEO's Note



Eng. Charles Muasya

Ag. Chief Executive Officer

In the first quarter of this financial year, the Authority's efforts to contribute to Kenya's food security as is espoused in the Bottom Up Economic Transformation Agenda (BeTA) registered significant milestones.

First, our efforts to boost maize production yielded positive results with the private investor in Galana Kulalu Food Security Project — Twiga Foods — starting to harvest. The harvesting on the 495 acres for the trial maize crop was done in October 2023. Out of the 30 regimes put on trial, the best has given a maximum of 35 bags per acre. As Twiga Foods harvests, plans to start implementation of the Galana Dam are in top gear with the project implementation proposal that was submitted by another private investor entering the last stages of review.

Second, the signing of the High Grand Falls Dam Project Development Agreement (PDA) between the National Irrigation Authority (NIA) and GBM Consortium Limited is a significant step in the NIA's efforts to enhance water harvesting and storage for irrigation. The PDA gave

the British investor permission to set up at the project site in Kitui and Tharaka counties and begin preparations including feasibility studies. According to the PDA, the investor is required to conclude the following within the initial six months: ground mapping and geological drilling, technical financial and economic feasibility, Environmental Social Impact Assessment (ESIA), risk assessment and other analyses to determine the scope of works for the High Grand Falls Dam.

The dam is a privately initiated proposal under Public Private Partnership (PPP) to be built at the confluence of River Mutonga and River Tana, just after Seven Folks cascade project, with the main reservoir covering more than 165 square kilometres. Going by its size, it will not only be Africa's second largest fresh water dam after the Aswan Dam in Egypt, but will also be the single biggest Government undertaking aimed at addressing the perennial challenges of food security, domestic water and power supply.

The dam will provide more than 5,600 million cubic metres to irrigate about 400,000 acres while generating up to 1,000 megawatts of power.

The dam is billed as the panacea for the water problems in Ukambani and flooding menace in Garissa and Tana River counties while making Kenya food-secure. It will control flooding along the Tana River, provide water for irrigation to several arid counties and enhance pasture availability while generating power for the whole country.

Thirdly, rice plays an important role in Kenya's quest for food security, creates jobs and drives the progress of the nation's economic development. We are intensifying rice production by increasing

the area under irrigation to help produce enough for local consumption and export. The benefits of Thiba Dam in Kirinyaga County are already being felt by farmers as the scheme navigated the last dry season without water challenges. The 30,600 acres under rice production is a source of food and income to thousands of farmers in Mwea and beyond as players benefit from the rice value chain.

As we reflect on these achievements, there is an urgent need for additional dams to improve water security considering the rising population and climate change woes that cause

unpredictability. We appreciate the efforts by the government to implement strategic investments to boost water harvesting and storage as a way of addressing food challenges. We encourage more private investors to tap into the lucrative opportunities in irrigation. Data on the dams for implementation under PPP is available on our website www.irrigation.go.ke or at our head office on Lenana Road in Nairobi.

Let's work together to make Kenya food-secure through a thriving irrigated agriculture. This way, we can create a better future.

How water pans are changing fortunes in arid lands



Olookil Community Water pan in Kajiado County



By Johnbosco Obonyo

Modern agriculture needs irrigation, especially in areas where rainfall is erratic and insufficient, to feed the expanding population. In Lower Eastern and Coast region, household irrigation water harvesting has made a big difference in improving quality of life, enhancing

food security and boosting agricultural production.

This has been made possible through construction of water harvesting and storage reservoirs to harness surface water (runoff) for irrigation in the arid counties. The household water pans range from 1,000 to 3,000 cubic

meters and are positioned to collect as much water as possible from natural depressions/drains and storm water from roads.

The agricultural landscape of Lower Eastern has changed significantly as a result of this programme that has improved living standards by enhancing food security and agricultural output. This initiative has not only been crucial to tackling the region's urgent agricultural problems, but they has also prepared the ground for long-term and diversified economic growth. To guarantee more benefits, it is essential to keep investing in irrigation infrastructure and technology.

In the heart of a vast, arid region in Kilifi County lies Chonyo village. It has defied odds and is slowly emerging as a beacon of agricultural prosperity. The area was synonymous with hardships inflicted by water scarcity that barred farmers from participating in any substantial agriculture. Crops were wilting, livestock were struggling, and the village's economic prospects were gloomy.

However, the household water harvesting is bringing change and hope.

Patience Chiru, a farmer in the area, has witnessed an increase in water availability thanks to the construction and rehabilitation of Lutsangani community water pan. "It has allowed us to prepare ahead of time and enabled us to crop throughout the year," says Chiru. She is practising crop diversification on her two-acre farm and plans to use the modern irrigation systems such as drip irrigation to help in water effective water utilization while also increasing food production.

"We can now plant more than simply drought-resistant crops since yields have increased and our community's general quality of life has also improved" she adds.

Essau Chando says the National Irrigation Authority's initiative that residents call a "goldmine" has "changed everything for them. For years, the fight for water has been an ongoing problem, but with these water pans, we can see a brighter future ahead of us," says Chando

The Authority is transforming Kajiado County into a thriving agricultural region. "Water supply has always been a challenge, but it is now easily accessible," said Gladys Kipaya, a farmer at the Olookil community water pan.

Farmers in this region are growing horticultural crops such as tomatoes that generate an annual income of up to Ksh 450,000 per acre. This translates to enhanced access to food of high nutritional value as well as income and employment.

In Makueni County, an area formerly known for its unforgiving weather, a remarkable turnaround has been experienced, owing to the construction of water pans. Farmers are collaborating seamlessly to improve their quality of life." Our dreams of achieving sustainable farming are steadily coming to reality. We frequently take turns using the shared water pumps for irrigation," says Justus Kanandu.

The water harvesting programme includes the building and rehabilitation of community water pans and small dams. In the Lower Eastern and Coast region about 11.5 million cubic metres have been completed and is supporting an acreage of above 7,500 for community water pans and small dams and 15.5 million cubic metres supporting about 15,500 acres for household water pans.

The government has identified new major dams and irrigation infrastructure for construction as a response to climate change and support to irrigated agriculture. This will require public-private partnerships and collaborations in resource mobilisation, research innovation, technology diffusion, community mobilisation, sensitisation, and policy development.

Because of the threats of climate change, improving access to water will have the greatest impact on increasing resilience and reducing vulnerability.



Rice farm in Taita Taveta County
Insert: A farmer in her rice field in
Taita Taveta County

Taita Taveta taps irrigation to expand rice production



By Rhoda Mbuvi

While Taita Taveta farmers have been growing rice since 1997, irrigation is giving the county the much needed energy to expand.

Mr. Abraham Mteta, a 57-year-old farmer at Kimorigo Irrigation Scheme, has been on rice farming for 10 years, the last two giving him hope. He is growing Komboka rice on two acres and is seeing the

potential of doubling in the next cropping season.

“Rice production here is taking a new turn. I am seeing the population growing. We began with 200 acres and now have 700 acres under rice production and I foresee us growing to 1,000 acres next season. In fact, with the population going up, and the new irrigation structures coming up like the canals, I see Taita Taveta County having the potential to bridge the gap of Kshs.25 billion spent on importing rice,” he says.

Ms. Florence Wauda Lukila, 63, now in her second season, attests that farmers are finding rice more profitable than maize and beans. “I am a farmer here at Kimorigo

Irrigation Scheme. I have cropped rice in my two acres, now in the second season. It is very profitable compared to maize and beans, since for the eighty 90kg bags I anticipate to get enough for my family, educating my grandchildren and have a surplus.”

Ms. Lukila says a kilogramme goes for Kshs.55.00 and can earn Kshs.396, 000.00 from 80 bags, getting a profit of Kshs.296,000 having deducted Kshs100,000 cost of production.

Mr. Davies Alawera, popularly known as Uncle Davies Success, says rice farming is everything. “I am because of rice farming here at Kimorigo. I took two children to secondary school the other day, and I have another child

in college and am not worried. Rice farming has enabled me to take care of their education, other needs in the family and have surplus.”

The same is true for Jomo Lekimakwa, who had left rice farming but came back in November 2021. “I used to crop rice, but left because the profits were not promising. I went into beans, but now I am back. Rice farming is taking shape. It is profitable,” said Mr. Lekimakwa.

The county is creating a name in rice farming due to the NIA’s projects and activities, including desilting the main and branch canals in Kimorigo Irrigation Scheme between March and October 2022. The project has 795 acres and about 530 farmers.

Eng. Raphael Mutiso, the Lower Eastern and Coast coordinator, says the region has the potential to bridge the national rice production deficit. Towards this goal, the Authority is expanding rice production in Tana River County (Bura, Hola irrigation Schemes), Mwea, Lower Kuja, Bunyala, Western Kenya Schemes (Ahero and West Kano), Lower Nzoia Irrigation Project, Kimira Oluch, Rahole, upper Nzoia, Bondo clusters among others.

The NIA is introducing rice production in other areas, including Taita Taveta, where it is targeting public-private partnerships to increase production to about 566,440 tonnes by putting an additional 202,300 acres under the crop.

The efforts are meant to bridge the deficit of approximately 700,000 tonnes of milled rice and guarantee Kenyans food security since consumption of has steadily increased and rice is now the third most consumed staple food in Kenya behind maize and wheat.

According to Eng. Mutiso, rice has a huge potential in Taita Taveta as the region eyes new areas to scale up rice production in places such as Lumi Irrigation Development Project (Kimorigo Irrigation scheme). “Farmers in Kimorigo Irrigation Project have fully embraced rice farming. The project has a potential to produce rice in 3,952 acres with

1,235 acres already under production and 2,717 acres planned for expansion with projected yields of 7,608 tonnes of paddy amounting to Kshs1,584,600,000”.

In Taita Taveta’s Buruma area, the Authority is targeting 1,235 acres with 500 already under production while 735 are planned for expansion. The projected yield here is 2,058 tonnes of paddy amounting to Kshs.183,750,000.

To meet the rice production targets as espoused in THE PLAN, the government’s blueprint, the Authority is keen on achieving a stable water supply to support rice production across all its schemes producing rice.

The largest rice producer is Mwea Irrigation Scheme with 30,600 acres under the crop with potential yields of 85,680 tonnes followed by Ahero with 7,868 acres looking at 22,030 tonnes of paddy. South West Kano has 5,500 acres, projecting yields of 15,400 tonnes of paddy (9,240 tonnes of white rice), Bunyala has 3,126 acres projecting 8,752 tonnes of paddy (5,251 tonnes of white rice), West Kano has 2,830 acres, projecting 7,920 tonnes of paddy (4,752 tonnes of white/milled rice) yields. Others are Tana, Bura, Lower Kuja, North Kano, Maugo, Kimira Oluch and Tana Delta.

The PLAN emphasises supporting farmers to raise production to not only enable them get volumes for consumption but also generate surplus to the national food basket.

Agriculture has the highest employment multiplier effect, meaning agricultural growth creates more jobs in other sectors than any other, according a Kenya Institute for Public Policy Research and Analysis research that shows four of the five value chains with the highest job creating impact are agricultural. The five are livestock, hotels and restaurants, poultry, vegetables and rice.

Gallium Tech unveils cutting-edge smart irrigation system



Climate Smart Irrigation System at the National Irrigation Authority Nairobi International Trade Fair stand.



By **Brendah Rajwayi**

The National Irrigation Authority participated in the Nairobi International Trade Fair 2023 targeting to use the platform to educate Kenyans on irrigated agriculture and

modern farming. Passing down this information using its seasoned experts that demonstrate how the latest technologies work is a sure way of not only empowering Kenyans but also getting the community to effectively take part in ensuring food security in line with the Bottom-up Economic Transformation Agenda (BETA).

During the Trade Fair, the Authority partnered with several players in the sector among them Gallium Tech, which is a smart technology

firm.

In a significant fusion of technology and agriculture, Gallium Tech has introduced its revolutionary smart irrigation system, setting new standards for sustainable farming practices. This pioneering system promises to enhance crop yields, conserve water, and promote energy efficiency, steering the agricultural sector into an era of productivity and environmental stewardship. This system uses a series of modules including:

Water Storage & Control

It has ultrasonic sensors that monitor water levels in storage tanks in real-time. A centralised processor, the ESP32 microcontroller, activates or deactivates the water pump for efficient water use.

Electricity Generation via Turbine

The system harnesses sustainability by converting the outflow of water from the tank into electricity through a turbine, using electromagnetic induction in its generators. This eco-friendly approach not only conserves energy but also harnesses nature to power the system.

Leakage Detection

Flow sensors monitor water distribution. By comparing flow rates at different sections, potential leakages are identified and automated

alerts are dispatched for timely intervention, minimising wastage.

Smart Irrigation

Soil moisture sensors, buried at specific depths, provide real-time data on soil water content. The system's processor activates a solenoid valve to release water to the crops when the soil's moisture falls below a certain level, ensuring crops receive water precisely.

According to Mr Brian Olasya, CEO, Gallium Tech Limited, the smart irrigation system is cost-effective in the long term for both small and large scale farmers, benefiting entire farming communities and amplifying environmental and economic impacts. Its proactive leak detection and efficient water management result in significant operational cost reductions over time, ensuring long-term

savings.

Additionally, it reduces carbon emissions and farmers may earn carbon credits, tradable in international markets, generating additional revenue. Through the integration of AI-driven algorithms for irrigation control and predictive analytics, this innovation offers insights into soil health, crop cycles, and more, reflecting a vision rooted in sustainability and technology.

The NIA continues to collaborate with partners in the irrigation and agriculture sector with the aim of increasing acreage under irrigation and optimising it to increase agricultural productivity for food security.

For more on Gallium Tech Limited contact the CEO; 0729795010



National Irrigation Authority Ag. Chief Executive Officer Eng. Charles Muasya being taken through Climate Smart Irrigation System at the Authority's Nairobi International Trade Fair stand.

Kajiado harvests springs water for food production.



By Rhoda Mbuvi

Rombo Cluster Irrigation Project is one of the many under the National Expanded Irrigation Programme in the National Irrigation Authority's Lower Eastern and Coast Region in Kajiado South's Loitokitok. The cluster covers Kisioki, Oltepes, Matepes and Esosian irrigation projects.

The cluster gets its irrigation waters from Kisioki and Olchoro springs with the former serving Kisioki and Oltepes projects and the other taking care of Matepes and Esosian. Kisioki Spring also serves other projects in the region including Oleshiro, Kisopia and Kidoku irrigation projects. Olchoro spring also serves Canaan Irrigation Project; Entarara spring serves Entarara Irrigation Project while Engumi serves Namelok Irrigation Project.

According to Eng. Raphael Mutiso, the regional coordinator, the springs that never dry up get their waters from Mt. Kilimanjaro. During the dry season, the rate of snow melting is high, producing more run off that



Spring water directed to farms for irrigation through lined canals in Kisioki Irrigation Scheme.

enhances the springs whose waters the National Irrigation Authority directs to farms through canals.

Because the region's temperatures are high, the springs usually have enough water to sustain the schemes and keep farmers busy throughout the year, making the region food-sufficient as the rest of the country also benefits.

Mr. Tipape Ipite of Kisioki started farming in 1998 on an acre but now has six thanks to irrigated agriculture. "This project started in 1998 implemented by JICA with about 300 farmers. In those days water was directed to one canal but after the intervention of the National Irrigation Authority, the canals have increased to three while farmers have risen to 700 covering 900 acres," Mr Ipite says.

"We used to crop only maize and beans. Now, we have tomato, capsicum and other horticultural crops. In 1998 to 2003, from one acre we could get five to 10 bags of maize but through irrigation we are getting over 20 bags. Other times we sell around 26,000 pieces of green maize at between Kshs.5.00 and Kshs.10.00 each."

Mr. Ipite says he depends on farming to educate his children, provide for them, meet his other needs and is a source of employment for his neighbours and the rest.

Ms. Susan Nzioki and her husband Joseph are in tomato growing. "We are farmers here at Kisioki Irrigation Project. I have depended on irrigated farming to feed my family and to do everything in my household. Farming is good," she told Irrigation News.

At Njukini Irrigation Project, Mr. William Mwangangi has been a farmer for 20 years and counts the benefits of irrigated agriculture. “Before the National Irrigation Authority constructed canals here, farming was hectic. Now, with the canals, water is plenty. I have harvested two acres and expect to make more money out of it. This project has been very beneficial. We have not experienced drought for the longest now,” says the banana farmer. Beans farmers here sell a 90-kilogramme bag at between Kshs.8,500 and 12,000. Mr. Joseph Ivuso says he gets 12 bags from his two-acre farm and sells one at Kshs.9,800.

The farmers are upbeat that the canals have turned their lives around, giving them enough food, earnings from selling the surplus, getting water for domestic use as their animals also gain.

To continue enjoying the benefits of the springs, they want them protected since “they

are our only means of survival”.

The National Expanded Irrigation Programme provides irrigation infrastructure for abstraction, conveyance, distribution and application of water for irrigation. Its achievements galore:

1. Over 240 community-based irrigation projects have been developed across the country and more are in the pipeline to increase the area under irrigation and achieve food security.
2. Rehabilitation, expansion and modernisation of public irrigation schemes that has increased irrigation area from 23,327 acres to more than 82,506.
3. Installation of 714 greenhouses complete with drip kits as a pilot on efficient irrigation practice benefiting more than 11,200 women and youth.
4. Completed feasibility studies and detailed designs for more than 30 projects covering about 430,000 acres.



Lined canals with spring water for irrigation in Njukini Irrigation Project

Show Trade Fair

Mombasa & Nairobi International Trade Fair



Prime CS Hon. Dr. Musalia Mudavadi, EGH at the National Irrigation Authority Nairobi International Trade Fair stand on September 28, 2023



Malaysian High Commissioner to Kenya, Ruzaimi Mohamad, at the National Irrigation Authority Nairobi International Trade Fair stand on September 28, 2023



National Irrigation Authority Ag. Chief Executive Officer Eng. Charles Muasya at the Authority's Mombasa International show on September 7, 2023



Urban Kitchen Gardens displayed at the Mombasa International Show 2023 courtesy of Lavington herbs (0714080532)



Prime CS Hon. Dr. Musalia Mudavadi, EGH issuing the Authority with a trophy for securing number one under the category of promotion of national cohesion and integration 2023 at Nairobi International Trade Fair on September 28, 2023.



The Botswana High Commissioner ; Andrew Sesinyi (center) issuing National Irrigation Authority staff a trophy for being the best agro-processing stand at the Mombasa International Show 2023 on September 8, 2023.

Pictorial

1



2



3



1. Mr Felix Koskei, Chief of Staff and Head of Public Service (center), PS State Department for Irrigation Mr Ephantus Kimotho (Right) and other officials from NIA, Ministry of Water Sanitation and Irrigation and County Government of Kilifi during a visit to Galana Kulalu Food Security Project on July 5, 2023.
2. PS State Department for Irrigation Mr Ephantus Kimotho (Third left) NIA Ag. Chief Executive Officer Eng. Charles Muasya (fourth Right), Scheme Manager Mwaa Irrigation Scheme Mr. Innocent Ariemba (Right) and other leaders from NIA and County Government of Kirinyaga during a visit to Thiba Dam on July 10, 2023
3. PS State Department for Irrigation Mr Ephantus Kimotho (Right), Ag. Chief Executive Officer Eng. Charles Muasya (Second Right), Ag. Deputy General Manager, Operations Mr. Joel Tanui (center) and farmers from Bunyala Irrigation Scheme planting rice during a field visit to Bunyala Irrigation Scheme and Lower Nzoia Irrigation Project on July 24, 2023.

Pictorial



4. NIA Ag. Chief Executive Officer Eng. Charles Muasya (left) and the Head of GBM Consortium Limited a British Construction Mr Michael Short (Right) signing the Project Development Agreement (PDA) to undertake final project studies and designs before evaluation and determination by the PPP Committee on award financial close and concession agreement for actual implementation of the High Grand Falls, one of the 100 mega dams earmarked for implementation under Botton Up Economic Model on September 21, 2022.

5. Former CS Ministry of Water, Sanitation and Irrigation Hon. Alice Muthoni Wahome



- (Right) PS State Department for Irrigation Mr Ephantus Kimotho (center), NIA Ag. Chief Executive Officer Eng. Charles Muasya (second left) and Ag. Deputy General Manager, Operations Mr. Joel Tanui (left) during a field visit to Galana Kulalu Food Security Project on August 11, 2023.
6. PS State Department for Crop Development Mr. Phillip K. Harsama (center), Kirinyaga Women Rep Hon. Njeri Maina (left), Ag. Deputy General Manager, Operations Mr. Joel Tanui (Right) and other leaders from NIA and County Government of Kirinyaga during a visit to Mwea Irrigation Scheme on August 7, 2023.

Staff News

The Authority had a busy quarter thanks to a committed top leadership to service delivery and active participation in Key national events. Here, we share the highlights.



During the Mombasa International Show and Nairobi International Trade Fair, the Authority had a firm representation that unlocked various awards.

In Mombasa, the Authority emerged:

- Number 1: The best agro-processing stand (a trophy and certificate)
- Number 2: The best seed-producing and marketing stand (awarded a certificate).
- Number 3: The stand that best interprets the show

theme (agricultural based) (awarded a certificate).

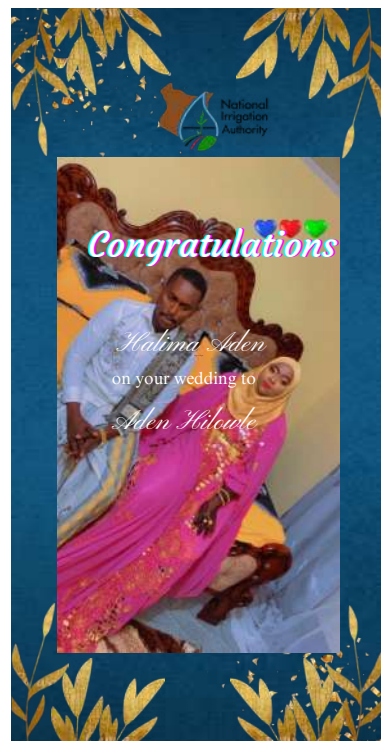
Number 3: The best stand in youth activities, empowerment and capacity building (awarded a certificate).

How the NIA performed at the Nairobi International Trade Fair:

- Number 1: The best in promotion of National Cohesion and Integration Development (a trophy and certificate)
- Number 2: The best agro-processing stand (awarded a certificate)
- Number 3: The best innovation and invention (a certificate)



Apart from the activities, a newborn arrived. Congratulations to Mr. Ephraim Wanjau and Eng. Stephen Mutinda for the blessing of baby boys. Children are precious gifts from God.



Status of Lower Eastern and Coast Region irrigation projects



By Rhoda Mbuvi

The Lower Eastern and Coast Region covers Machakos, Makueni, Kitui, Kajiado, Taita Taveta, Kilifi, Kwale and Mombasa counties. The region was established in 2021 and is part of the seven regions under the National Irrigation Authority. The others are Mt. Kenya East, Mt. Kenya West, Central Rift Valley, Upper Rift Valley, Northern, and Nyanza. The regions are established to bring services closer to farmers and enhance supervision of irrigation projects.

Lower Eastern and Coast Region is characterised by inadequate water whose common sources include seasonal rivers and streams, springs, wells and boreholes. Tana River and Athi River/Galana are the only permanent rivers in the region. Consequently, the Authority has invested largely in water harvesting and storage and is promoting irrigated agriculture through the following project categories:

- Community water pans and small dams with 11.5 million cubic metres of water

- Household water pans: 15.5 million cubic metres of water
- Expanded National Irrigation Programme (ENIP) with the following projects implemented or on-going:

1. Yikita Irrigation Project in Makueni County,
2. Kako Kathonzeni Irrigation Project in Makueni County,
3. Kwa Miui Irrigation Project in Mukaa Sub-County, Makueni County
4. Mukuku Irrigation Project in Mbooni West Sub County in Makueni County
5. Kakuswi/ Kyeni Kya Musyi Irrigation Project in Mbooni East Sub-County in Makueni County
6. Kwa Majee-I Irrigation Project in Kibwezi East Constituency in Makueni County
7. Kwa Majee-II Irrigation Project in Kibwezi East Constituency in Makueni County
8. Iviani Irrigation Project in Kibwezi East Constituency in Makueni County
9. Kibwezi Irrigation Project in Kibwezi East and Kibwezi West constituencies
10. Rombo Cluster Irrigation Scheme in Kajiado South Constituency, Kajiado County
11. Rehabilitation and Expansion Works for Rombo Cluster Irrigation Scheme, Kajiado County
12. Rehabilitation Works for Tuhire Challa Irrigation Development Project,

Taita Taveta County Lot 1
GPS Location -3.180687 and 37.737709

13. Rehabilitation Works for Tuhire Challa Irrigation Development Project, Taita Taveta County Lot 2
GPS Location -3.180687 and 37.737709,
14. Rehabilitation Works of Njukini Irrigation Development Project, Taita Taveta County Lot 1 and 2
15. Desilting of Canals in Kimorigo Irrigation Scheme, Taita Taveta County
16. Desilting Works of Lower River Lumi and Murabani Irrigation Project, Lot 1, 2, 3, 4, 5, 6, 7, 8 and 9
17. Rehabilitation Works of River Lumi-Majengo and Afrika Kusini Irrigation Project
18. Rehabilitation Works of flood protection works of Mboghoni ward, Kiwalwa and Kimoringo Irrigation Project
19. Rehabilitation works of Kamuleza Irrigation Scheme and Marondo Irrigation Scheme Phase 2.

The region depends on subsistence agriculture, livestock and bee-keeping. A considerable number of the local population practices mixed farming, pastoralism, and bee-keeping. Says Eng. Raphael Mutiso, the Lower Eastern and Coast Region coordinator: "We are not badly off, since when rain-fed agriculture is combined with the irrigated agriculture in the areas the Authority has

projects, significant progress has been realised with some of counties like Kajiado majorly depending on irrigation. To achieve the full potential in terms of production, enhanced

water harvesting needs to be prioritised”.

Other projects in the Region:

No.	Irrigation Project Name	County/ Constituency/Ward	Components	Start Date	Completion Date	Area Irrigated(acres)	No. of farmers	Impact	Project Status
								Crops Grown	Estimated Annual Gross Income Generated
1.	Chakama Clusters	Kilifi County, Magari Constituency	Supply of pumps, pipes and construction of green houses	May 2016	June 2017	100	200	Maize, bananas, fruits	Completed, under production
2.	Challa Tuhire	Taita Taveta County	Rehabilitation of intake, Lining of Canals and Construction of division boxes	July 2012	February 2013	3,000	1,000	Maize, horticulture	Completed, under production
3.	Njukini Phase 1 and 2	Taita Taveta County	Lining of Canals and Construction of division boxes, Construction of road crossings and construction of office block	May 2013	February 2020	350	350	Maize, horticulture	Completed, under production
4.	Njoro Kubwa	Taita Taveta County	Desilting of Canals	April 2019	July 2019	3,000	3,000	Maize, horticulture	Completed, under production
5.	Kavisuni phase 1 and 2	Kitui County, Kitui Rural	Construction of wells, supply of tanks and installation of infield irrigation systems	August 2012	October 2012	1,000	120	Maize, horticulture	Completed, under production
6.	Kitui cluster boreholes	Kitui County, Kitui Urban	Drilling of borehole and equipping, water conveyance pipeline	July 2012	January 2013	300	200	Horticulture	Completed, under production using green houses
7.	Wingo	Kitui County, Kitui Urban	Construction of shallow wells, stands, water conveyance pipeline, installation of green houses.	February 2013	August 2014	20	100	Maize, horticulture	Completed, under production using green houses
8.	Ngomano	Kitui County, Muthu	Construction of shallow wells, stands, water conveyance pipeline, installation of green houses.	February 2013	February 2015	800	150	Maize, horticulture	Completed, under production using green houses
9.	Usueni	Kitui County, Mwingi North	Construction of intake works, installation of pumps, establishment of water conveyance pipeline, construction of canals, installation of infield irrigation systems, construction of office and establishment of an electric fence	April 2013	June 2015	600	500	Maize, horticulture	Completed, under production

10.	Thua farm	Kitui County, Mutomo	Construction of a dam wall, excavation of reservoir, supply of pump house, installation of rising mainline, installation of green houses, drilling and equipping of borehole	March 2025	September 2019	11 green houses and 12 acres under drip irrigation system	100	Horticulture	Completed, under production
11.	Kalundu phase 1 and 2	Kitui County, Kitui Central	Construction of missionary water storage tanks, installation of pipelines, construction of pump house, connection of power and installation of infield irrigation system.	July 2016	September 2019	100	80	Maize , horticulture	Completed, Awaiting power connection to commence production
12.	Mutuyu Kayata	Machakos County, Kangundo	Drilling of borehole, construction of 2No water storage tanks, pipe network, 2 No. water kiosks. 12 No. greenhouses and drip kits	January 2013	June 2013	10	30	Maize , horticulture	Completed, under production dependent on borehole water
13.	Kaati	Machakos County, Kathiani/Kangundo	Installation of greenhouses, groups and schools	November 2012	March 2013	10	210	Maize , horticulture	Partly under production(most farmers neglected the green houses after the first supported crop)
14.	Kamuthambya	Machakos County, Yatta	Construction of intake, water conveyance system, infield irrigation system	February 2013	February 2014	500	500	Maize , horticulture	Completed, under production
15.	Kwa Kilui	Machakos County, Kangundo	Dam rehabilitation, construction of 2No. tanks, pipe network and drip	June 2012	April 2013	25	80	Maize , horticulture	Completed, under production
16.	Kalama Clusters(Lumbwa dam)	Machakos County, Machakos town	Desilting of dams, water conveyance pipelines, installation of green houses	July 2013	June 2014	50	50	Horticulture	Completed, under production
17.	Kondo phase 1 and 2	Yatta	Installation of pump, repair of water storage tank, installation of water conveyance pipelines	February 2013	September 2019	50	100	Maize , horticulture	Completed, under production
18.	Kiboko	Makueni County Kibwezi West	Construction of intake works and installation of water conveyance pipelines	July 2012	January 2013	500	300	Maize , horticulture	Completed, under production
19.	Galana Kulalu Irrigation Project	Tana river and Kilifi Counties	Construction if intake, installation of drip and centre pivot irrigation systems, construction of logistics centre and supply of machines and equipment	September 30, 2014					



A Household water pan in Makueni County

SILL: Its Construction and Use

A sill is a structure built on minor streams or as part of a dam's spillway to increase the water holding capacity and to pass excess water to a lower elevation while controlling its energy and velocity.

Eng. Raphael Mutiso, the Regional Coordinator for Lower Eastern and Coast with the National Irrigation Authority (NIA), says a sill is constructed at the outlets of dams, large water pans, and canals to increase the water holding capacity of the facilities. In canals, they are used to control the flow and prevent the formation of gullies.

In Lower Eastern and Coastal Region, specifically Makueni County, the NIA has constructed 11 community water pans across constituencies. After excavation, a sill is constructed at the spillway or outlet to increase the water holding capacity of the pan. This means that only excess water flows out during the rainy season. The intended volume will be retained in the pan to be used for the intended purpose — irrigation.



Construction of a sill at Kyamusoi Community water pan in Makueni County

Word Search

Answers for the previous word puzzle

X	A	S	I	N	D	A	N	O	S
I	V	Y	Q	C	M	J	U	Z	U
T	M	K	O	M	B	O	K	A	P
A	P	C	E	R	Q	T	W	G	E
M	I	T	A	V	L	I	F	Z	R
S	B	P	I	S	H	O	R	I	I
A	E	M	B	X	L	Q	P	D	R
B	I	B	I	R	I	Y	A	N	I

Try to locate the mega dams

O	L	E	N	K	I	R	I	O	N	I	T	O	P	V
C	G	W	K	B	Q	U	M	B	A	Z	F	Y	Q	T
R	K	A	A	L	T	G	X	M	A	A	R	A	I	H
W	E	L	R	O	H	A	A	X	M	J	R	T	E	I
A	B	P	E	W	I	L	U	R	A	D	A	T	C	G
B	E	U	M	A	R	A	H	S	I	E	V	G	Z	I
U	N	I	E	T	I	N	T	M	F	J	C	X	A	T
R	M	B	N	G	K	A	Z	V	A	X	B	N	C	H
A	P	K	O	J	A	M	N	A	R	O	M	O	R	U



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Eng. Raphael Mutiso

Raphael Mutiso: A high flying Engineer who wanted to become a banker



By **George Maina**

Eng. Raphael Mutiso is the Regional Coordinator for Lower Eastern and Coastal Region.

He has more than 25 years of experience as an irrigation engineer having worked with the Ministry of Agriculture, Japan International Cooperation Agency (JICA), African Development Bank (AfDB) and now the National Irrigation Authority (NIA) mostly in the Eastern and Coastal parts of Kenya.

Eng. Mutiso sat down with the Irrigation News team for an insightful tell-all interview.

Here are the excerpts.

May you tell us about your background and early life?

I was born in 1961 in Kangundo Constituency, Machakos County, and brought up in Yatta Constituency. I am the second born in a family of 11 children — five boys and six girls.

Could you share your academic journey?

I did my primary education in Kithimani Primary School, then joined Tala Secondary School from Form 1 to 4 and did my Form 5 and 6 at Maseno National School. I was the best performing student in the whole of Eastern Region, a record that gave me the opportunity to join Egerton University to study Irrigation Engineering. I graduated from Egerton University in 1993.

How was life after graduating?

Life after graduation was not simple. After graduating, I did not get my career job immediately. I hustled. I did some small jobs here and there to earn a living. I remember I worked at Eveready – the listed battery making firm that now does distribution — as a casual labourer, sold eggs for six months in Nakuru bus stage and in 1995 I was employed as a Board of Governors (BoG) teacher in Manyatta Secondary School. I taught Mathematics, Physics and Chemistry and got married during that period. I picked up the job that was available as I waited for my chance to practise engineering.

Did you dream of becoming an Engineer?

No, I wanted to become a banker. Having come from a humble background, we did not know what Engineering entailed. During that time, I looked up to someone in the village who was a banker and I wanted to be like him and have a good job such as his.

How did you get to know about Engineering?

Two boys in the neighbourhood seemed to have everything going their way, hence I sought to know what they were studying at university only to realise it was engineering. These boys looked sharp and the course seemed promising so I joined the School of Engineering. Later I came to realise these boys did not actually study engineering but Agricultural Economics, but I could not turn back!

If given a chance again, would you still choose Engineering? If yes, why?

I would still do Engineering. I came to love it and to understand the concepts; in fact, I attained a First Class Honours. I love what it

entails. I love doing it again and again.

Engineer, tell us how you got your career job and how you got where you are now as Regional Coordinator for Lower Eastern and Coastal Region.

In 1997, I was employed at the Ministry of Agriculture as the Divisional Irrigation Engineer and got posted to the then Malindi District to be in charge of irrigation activities such as survey and design, farmer trainings among other activities.

In 2002, I was transferred to Bura Irrigation Scheme, still as an Irrigation Engineer. In 2004, all graduates were dispersed by the then Permanent (now Principal) Secretary, transferred again to Taita Taveta in the same capacity. I worked for two weeks in Taita Taveta and was transferred to Kwale where I worked as a District Irrigation Officer two years.

I was transferred to Mombasa and got promoted to, among other things, supervise the District Irrigation Officers. I worked here up to December 2007. In 2008, I was transferred to Kajiado as a District Irrigation Officer. I supervised implementation of Ministry of Agriculture programmes such as Kidoko Irrigation Project and Canaan Irrigation Project.

In the same period, I started working with Japan International Cooperation Agency (JICA) to implement Kisioki Irrigation Project from the year 2008 to 2011 (Kisioki Irrigation Project is part of Rombo Cluster Irrigation Projects in Kajiado County). My duties included supervision of the project implementation, formation of farmer organisations; IWUA, and farmers' capacity building.

In 2009 to 2012, Small Holder Irrigation Development Project began; it was funded by the African Development Bank (AfDB). I oversaw the implementation of the programme, which led to the construction of Namelok Irrigation Project.

In 2010, the National Irrigation Board (NIB), now National Irrigation Authority (NIA), started implementing the Expanded National Irrigation Projects (ENIP).

In the Region, we had projects such as Entarara,

Isinet, Njukini, Challa Tuhire irrigation projects. I oversaw the implementation of the programme to the end.

In 2017, the NIA started implementing the National Water Harvesting and Ground Water Exploitation Programme. I was appointed in charge of the Lower Eastern and Coastal projects and oversaw their implementation up to 2018 when the Household Water Harvesting and Storage Programme was introduced.

In 2021, NIA subdivided regions to cover the whole country. The subdivision gave birth to Lower Eastern and Coastal Region where I was made the Regional Coordinator up to date.

Engineer, how did you join the National Irrigation Authority?

In the year 2010, when NIB started implementing Expanded National Irrigation Projects (ENIP), which I was overseeing its implementation, I was seconded to join the institution from the Ministry. That is how I joined the Authority.

How can you describe your work experience?

My work experience has been filled with so many challenges here and there but I thank God for helping me overcome them.

What motivates you to go again and again?

I just love my work. I love what I do and I cherish it.

Which is that one lesson life has taught you?

Never mix business. Never be a vendor and a consumer at the same time.

Biggest challenge in your area of work.

My biggest challenge was facilitation with a vehicle to enable me do my job. Sometimes I used taxis, motorbikes and very old vehicles to do my job but I want to thank the Authority for considering me and my team by giving us vehicles that help us to do our job effectively.

Hobby

I love travelling. Being alone. Reading. I hate alcohol.

Advice to your colleagues?

Be focused. Never choose a job. Anything you do, be focused.

What is your mantra?

Think widely. Think about what you can give humanity. Money will always follow you.



Chemosoi Community Water Pan in Makeni County, one of the many projects Eng. Raphael Mutiso has overseen their implementation



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