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KENYA WATER INSTITUTE KEWI Fountain Of Water Knowledge

WEEKLY Newsletter

June 1- 7 2024

KEWI and FESTO Didactic Hold Talks on Setting up a Modern Aquatronics Training Centre

KEWI CEO Dr. Leiro Letangule EBS (left) with the Vice President Global Education, Dr. Nader Imani.

BY: PIUS KIMANI

As a mean to enhance competence based education and training in water technology which is responsive to the technological advancements in the water sector, KEWI is seeking to develop a state-of the-art Aquatronics Training Centre, with the support of FESTO Didactic, a global partner of WorldSkills International, responsible for the design and implementation of Water Technology Competition infrastructure based on WorldSkills Occupational Standards (WSOS).

Once developed, the Aquatronics Centre that consists of labs which include Physics/ Chemistry, Biology, Automation and Information Technology,

HIGHLIGHTS

KEWI and FESTO Didactic Hold Talks on Setting up a Modern Aquatronics Training Centre

Mechanical Engineering/ Materials Science, Electrical Engineering/Electronics and Digital Training all linked together will mimic actual scenarios of field practice thereby enhancing knowledge and competencies that are critical for the Kenyan water industry.

KEWI Chief Executive Officer Dr. Leiro Letangule, EBS noted that the discussions around the establishment of the state-of-the-art training centre in Aquatronics were coming at a time when the institute was making major strides in aligning its training competencies to match and meet the increasing demands for qualified Water Technicians with globally competitive skill and who can promote high standards for practical training. Once equipped with these specialized skills, the technicians are thereafter deployed across the country and even beyond its borders to support Water infrastructure development.

The recent adoption of Competency-Based Education and Training (CBET) and Dual Technical and Vocational Education and Training (DUAL TVET) models by the institute which are pivotal components of Kenya's education system and which emphasize on

the mastery of skills and knowledge, will ensure that learners are well-prepared for the workforce by helping integrate their theoretical knowledge with practical experience.

With Kenya having been recognized, as the 84th member of WorldSkills International which comes up with a set of WorldSkills Occupational Standards (WSOS), the institute was assigned the role of spearheading the Water Technology Skill Competition Internationally for the country by the Technical and Vocational Education and Training Authority- (TVETA), the official agency coordinating WorldSkills Kenya chapter. WorldSkills organizes biannual global competitions in different parts of the world to champion vocational skills which help ease of mobility of professional skills across these countries.

Once developed, the Aquatronics Training Centre at KEWI will help deliver CBET training programs in Water Technology based on international standards thereby enhancing the quality and global competitiveness of Kenya's workforce. By incorporating WorldSkills' Occupation Standards, Kenya and KEWI by extension aims to bridge the gap between its educational curricula and the dynamic needs of the global job market. The centre will further support and prepare students for a system approach that is important for the design, commissioning, operation, maintenance and repair of modern water facilities and their components.

With the demand for Aquatronics set to increase due to the global demand for water specialists, the centre will directly create excellent job opportunities for skilled technicians, expert technicians and engineers who will have gained competence-based education and training in well-equipped laboratories as an integral part of the new curriculum.

A Model for Sustainable Water Management at Chiakariga Campus

BY ENG. CASTRO NYAGUDI

Rainwater harvesting has been adopted by the Kenya Water Institute (KEWI) Chiakariga Campus, as a pillar of their water management plan. Since the campus is located in a region where water scarcity can present serious obstacles, its dedication to rainwater gathering not only guarantees a steady supply of water but also acts as a hub for student education and real-world training for the neighborhood. This project is a great example of innovative water resource management techniques, cost-effectiveness, and environmental preservation.

Rainwater harvesting is the process of collecting and storing rainwater for later use from rooftops, surface catchments, or other surfaces. This allows you to collect and store water that would otherwise run-down supply drains.

In areas like where the campus is located, in Tharaka Nithi County, where conventional water supplies are scarce and inconsistent, this method is extremely important.

The rainwater harvesting effort is notable for its contribution to student research and training. By offering practical experience, encouraging interdisciplinary learning, supporting research, promoting sustainable practices, and interacting with the community, it has a significant impact on training. With this hands-on approach to learning, students are guaranteed to have the information, abilities, and experience necessary to tackle the problems associated with managing water resources and promote sustainable development. With creative projects and practical problem-solving, KEWI equips students to take on leadership roles in the sustainable water management industry.

Chiakariga Campus rainwater storage tanks.

The Campus's rainwater collection system makes a substantial contribution to environmental sustainability and water conservation. Sustainable water management is exemplified by the Campus's 100,000-liter rainwater storage tank, which is built to maximize water collection and utilization. The system establishes a standard for sustainable practices by supplying a steady supply of water for irrigation, improving learning opportunities, encouraging environmental conservation, and realizing substantial cost savings.

At Chiakariga Campus, rainwater collection serves as a spark for upcoming advancements in technology, sustainability, education, and community building. The campus is at the forefront of developing creative solutions to water scarcity and advancing sustainable water management techniques by promoting an environment of research and real-world application. These inventions have an influence that goes beyond campus; they have an impact on policy, stimulate economic growth, and enhance water security and sustainability in the larger community.

Rainwater harvesting is included into KEWI's curriculum and campus operations to prepare students for leadership roles in sustainable water resource management while simultaneously addressing the issue of water scarcity. This programme establishes a standard that other institutions can follow in terms of innovation, sustainability, and community involvement.

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Slam Dam Technology: The Future of Water Management in Kenya

BY: ERIC OMONDI

There are so many challenges facing developing countries like Kenya, however, water scarcity remains the utmost challenge. More than 80 per cent of Kenya is classified as Arid and Semi-Arid Lands (ASAL), hence the need for sustainable water management. Conventional water management techniques that have been used in the past have proved to be unsuccessful, evidenced by the floods that recently ravaged the country, with some parts of the country experiencing droughts just a few weeks after the floods. Slam technology offers a transformative remedy to these challenges that the conventional methods have failed to address.

The technology was first introduced in Netherlands and has rapidly spread to the rest of the world. In Kenya, counties like Laikipia have already adopted the technology, and it helped to abate the recent floods witnessed in Kenya in the county. The technology makes use of flexible and easy-to-deploy plastic materials that can be used for permanent or temporary water storage. The plastic material used is high-strength and long-lasting hence capable of withstanding the harshest environmental conditions. These dams are less intrusive compared to the conventional ones and therefore they offer an eco-friendly option to water and flood management. They can be used anywhere without having to remove large amounts of earth or having to displace local communities. They are also cost-effective, versatile, and easy to transport and install therefore can be used where urgent remedy is required.

Slam dam deployed in Laikipia County. Photo courtesy: Daily Nation

Widespread adoption of slam dam technology in Kenya can help improve water management and conservation, especially in areas that experience frequent droughts. Slam dams can also help improve the livelihoods of the residents of ASAL areas by ensuring reliable water supply in these areas. The technology can help farmers in the affected areas who can rely on the water stored in the slam dams for irrigation and their animals.

Adopting this technology is instrumental in ensuring food security which is part of The Bottom-up Transformation Agenda (BETA). The main advantage of the slam dam technology is the possibility of rapid deployment, and therefore it can be adopted as a

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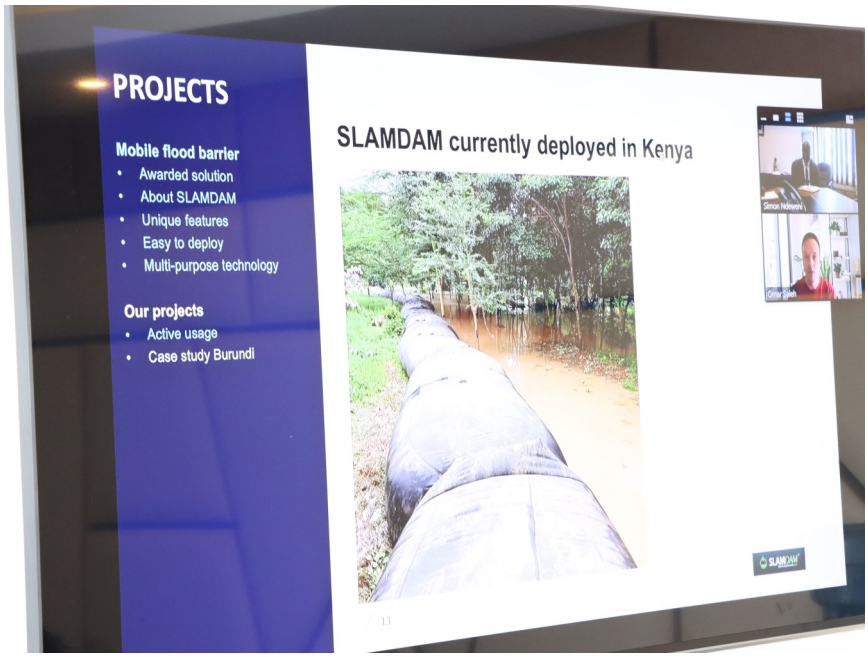
Slam Dam Technology: The Future of Water Management in Kenya

that have poor access to water infrastructure or in areas where water utilities consider not to be commercially viable.

Furthermore, the environmental intrusion associated with the implementation of the technology is very low, and therefore it can be used in environmentally sensitive areas where endangered species are conserved. As opposed to conventional dam construction that causes massive displacement and habitat loss, slam dams require minimum groundwork therefore no displacement or habitat loss is witnessed. This makes them a more suitable and sustainable eco-friendly water management.



Besides the ecological benefits, the economic benefits of slam dams are worth noting. Conventional dam construction processes are mostly capital intensive, with the Government of Kenya allocating billions of shillings annually for dam projects, consuming a lot of the taxpayers' money. For instance, Thwake Dam which is still under construction will cost the taxpayer 82 billion, while Itare Dam is estimated to cost 28 billion. However, the use of slam dams is relatively cheap, with counties like Laikipia investing more in slam dam technology. The dams are also reusable, thereby enhancing their resource efficiency.

Although slam dams have many advantages, there are a few challenges involving the technology. The main challenge in the implementation of the technology is the limited technical capacity associated with the installation, operation, and maintenance of the technology. To address this challenge, institutions like KEWI, can partner with SLAMDAM to spearhead capacity building and effective rollout of the technology in the country. The strategic position of KEWI makes it an ideal institution to help the country realize the future of water management through the use of this technology. The other challenge is the successful integration of the slam dam technology into the existing water management framework. It cannot exist in isolation, and can only exist as a part of a greater strategy, which may not be part of the existing water management strategy in Kenya.

The slam dam technology holds a significant place in the transformation of water management in Kenya, ensuring effective flood control and ensuring water availability. Its rapid deployment and environmental sustainability make it a viable option for addressing the water scarcity problem in Kenya.

Student Spotlight of the Week: The Journey of Mahboub Ali Khalif

BY: FAIZAH JEPKORIR

The story and journey of Mahboub Ali Khalif from the arid Sabuli District of Wajir South Constituency in Northeastern Kenya exemplifies dedication, leadership, and an unwavering commitment to finding water solutions in arid regions like his home county. Currently on his last phase of industrial attachment at Garissa Water and Sewerage Company (GAWASCO), Mahboub is a man on the move. Here is his story:

Early Education:

Growing up and studying in Wajir County, Ali experienced firsthand the challenges posed by limited access to clean water, which fueled his passion for water engineering and sustainable water management.

Joining KEWI:

In May 2021, Ali embarked on a new chapter by enrolling at KEWI. Over the ensuing three years, he not only excelled academically but also demonstrated exceptional leadership and initiative, earning respect within the institution. Pursuing a Diploma in Water Engineering, he acquired a diverse skill set encompassing plumbing, pipe fitting, drilling technology, AutoCAD, WaterCAD, and ArchCAD. His dedication to his field was evident through his participation in various training programs, notably the SATO training.

Leadership Roles at KEWI:

His leadership journey at KEWI began in May 2022 when he was elected as the school treasurer, a position he fulfilled with dedication for a year. Recognizing his leadership acumen, he was later appointed as the Muslim Society leader at KEWI, where he served with merit for another year.

Achievements:

Mahboub's achievements at KEWI reflect his commitment to addressing water challenges, particularly in arid regions like Wajir County:

SATO Training: Mahboub's participation showcased his dedication to mastering advanced water engineering techniques, vital for tackling water scarcity.

Industrial Attachment at Gawasco: During his attachment at Gawasco, he gained extensive hands-on experience in water engineering. He developed a deep understanding of water treatment technologies, quality standards, distribution systems, and wastewater treatment processes, reinforcing his commitment to solving water challenges.

First East Africa Leadership Summit: Representing KEWI at the event, he demonstrated his leadership and networking prowess, advancing sustainable water solutions.

Mentorship Program: His organization of a successful mentorship program benefited numerous students, fostering a community of learning and support.

Community Leadership

His leadership extends beyond KEWI, serving as the Chairman for the Muslim Society and representing Muslim students in northeastern Kenya, underscoring his dedication to community service.

Future Aspirations

Set to graduate later in the year, he is actively seeking opportunities in the water engineering sector. He aims to apply his skills to make a significant impact on water management, particularly in regions like his home county.

Mr. Ali epitomizes the potential of dedicated leadership and community service. His journey at KEWI is marked by perseverance, leadership, and a steadfast commitment to making a difference, especially in addressing critical issues like water scarcity.

The Role of Genetically Engineered Cotton in Sustainable Water Management

The advancements in agricultural biotechnology have opened new frontiers for sustainable farming practices in tandem with saving our climate. One of the notable breakthroughs is the development and propagation of genetically engineered (GE) cotton, a subject that has recently gained attention in our country and beyond. As a biochemist, I had the opportunity to be part of a scientific team that delved into the development (using genome editing tools) and propagation of GE cotton. Of the numerous benefits derived from genome-edited cotton, my most notable concern was particular to water usage—a critical concern in our region.

Genetically Engineered Cotton: A Game Changer

Genetically engineered cotton, also known as Bt cotton, has been modified to express a bacterium-derived toxin that protects the plant from certain pests. This modification reduces the need for chemical pesticides, which in turn has several environmental and economic benefits. However, one of the less discussed but equally important advantages of GE cotton is its impact on water management.

Water Usage and GE Cotton

Conventional cotton farming is notorious for its high-water requirements. In many parts of the world, including Kenya, water is a precious and often scarce resource. Our other research

WEDNESDAY, MAY 29, 2024 ENTERPRISE

INVESTMENT

Embu farmers now jump on cruising **Bt cotton** bandwagon

CONFERENCING

Nairobi hosts over 30 global entrepreneurs

An extract of the story as covered by the Standard Newspaper.

focused on comparing the water usage between GE cotton and non-GE cotton. The findings were promising: GE cotton requires significantly less water due to its enhanced resistance to pests and diseases, which often stress the plants and increase their water consumption.

By reducing the need for pesticides, GE cotton also minimizes the contamination of water sources. Pesticides from conventional farming can leach into water bodies, causing harm to aquatic life and posing risks to human health. GE cotton, therefore, represents a more sustainable option by lowering the agricultural runoff of harmful chemicals.

Field Research and Data Collection

Our field studies, conducted across various regions in Kenya, involved rigorous data collection on water usage, crop yield, and pest resistance. The data indicated that GE cotton not only thrived with less water but also produced higher yields compared to its conventional counterpart. This dual benefit of water conservation and increased productivity makes GE cotton a viable option for farmers facing water scarcity.

Implications for Kenyan Agriculture

The adoption of GE cotton could have profound implications for Kenyan agriculture. By incorporating these genetically engineered crops, we can move towards a more sustainable agricultural model that aligns with our water conservation goals. This

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The Role of Genetically Engineered Cotton in Sustainable Water Management

is particularly important in regions prone to drought and water shortages.

Looking Ahead

As we continue to explore and implement innovative solutions for sustainable water management, the propagation of GE cotton stands out as a promising strategy. It is imperative that we disseminate this knowledge and encourage the adoption of such technologies to ensure a secure and sustainable future for our agricultural sector.

In conclusion, the research on genetically engineered cotton underscores its potential to revolutionize water usage in agriculture. As a researcher dedicated to sustainable practices, I am excited about the prospects of GE cotton and its role in enhancing water conservation efforts in Kenya.

Story narrated by:
Mr. Timothy Mutunga,
A Lecturer at KEWI Kitui Campus.

Quote of the Week

"A difficult time can be more readily endured if we retain the conviction that our existence holds

A **purpose,**

A **cause** to pursue,

A **person** to love,

A **goal** to achieve."

-John C. Maxwell.

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Round up of The Week's Events

Members of staff from Baringo National Polytechnic at KEWI's Industrial Area Laboratory during a benchmarking exercise at the Institute.

Long - Term Programmes

Diploma in Water Engineering Technology (DWET) Diploma in Wastewater
Diploma in Water, Sanitation Engineering Technology (DWSET)
Diploma in Water Resources Management Technology (DWRTM)
Diploma in Irrigation and Drainage Engineering Technology (DIDET)
Diploma in Information Communication Technology (DICT)-KNEC
Diploma in Water Laboratory Technology (DWLT)
Certificate in Wastewater and Sanitation Engineering Technology (CWSET)
Certificate in Water Resources Management Technology (CWRMT)
Certificate in Information Communication Technology (CICT)- KNEC
Certificate in Water Laboratory Technology (CWLT)
Certificate in Water Engineering Technology (CWET)
Drilling Operations and Management (DOM)
Plumbing and Pipe Fitting (PPF)
Water Operators Course (WOC) in:

- Water Supply
- Meter Reading
- Sewerage Operations

Short - Term Programmes

Use of Earth Observation Tools and GIS for Water Resources Management
Entrepreneurship and Financial Management for Water Managers
Operation and Maintenance of Water Supply Networks
Metering and Installation of Water Supply Networks
Leak Detection & Repair techniques
Drilling Operations and Management (DOM)
Operation & Maintenance of Pumping Stations
Pump Selection, Installation and Maintenance
Plumbing, Pipe Fitting and Solar Water Heating
Instrumentation for Water and Wastewater Systems
Water Governance, Management and Technology
Application of GIS for Water Utilities Mapping
Drilling Operations and Management
Water Quality Sampling and Testing
Microbiological Water Quality Assessment
Integrated Water Resources Management
Non-Revenue water
Water Management
Customer Care

Vision

A Technical Centre of Excellence in Training, Research, Innovation and Consultancy in the water, Sanitation and Irrigation Sector.

Mission

T o offer Competency-Based Training, Research, Innovation, Consultancy and Outreach Services in the Water, Sanitation and Irrigation Sector for sustainable development.

Core Values

Good Corporate Governance
Professionalism
Customer Focus
Innovativeness
Inclusivity
Patriotism
Integrity

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OTHER SERVICES OFFERED

Water Quality Laboratory Services
Drilling and Test Pumping Services
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Conferencing Services
Troubleshooting of pumps boreholes and distribution systems
Repair of pumps boreholes and distribution systems

Your feedback is crucial for our improvement

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