Volume 2 Issue 28

REPUBLIC OF KENYA

KENYA WATER INSTITUTE KEWI
Fountain Of Water Knowledge

WEEKLY Newsletter

July 20 -26 2024

Advancing China-Africa Water Collaboration: Vice Minister Lin Xin Visits KEWI

Ms. Lin Xin, the Vice Minister and Secretary General, Ministry of Science and Technology (MOST), the People's Republic of China records her visit by signing the guest book in the CEO's office. Dr. Letangule looks on.

The Bilateral Cooperation in Research Science Technology and Innovation (RSTI) has been expanding significantly between the Republic of Kenya and the People's Republic of China. To further foster a mutually beneficial bilateral cooperation for economic growth and technological advancement between the two countries, the Ministry of Education (MoE) officially hosted Ms. Lin Xin, the Vice Minister and Secretary General, Ministry of Science and Technology (MOST), the People's Republic of China and the delegation.

Further to this, the Vice Minister and Secretary General and the delegation visited KEWI Nairobi Campus, the China-Africa Partner Institute on Rainwater Harvesting and

HIGHLIGHTS

MAIN

Advancing China-Africa Water Collaboration: Vice Minister Lin Xin Visits KEWI

engaged in in-depth discussions with the CEO Dr. Leiro Letangule EBS.

During the visit, Ms. Lin Xin and the accompanying delegation toured the institute's facilities, and engaged with the institute's campus staff. The visit highlighted the significant advancements and collaborative efforts in rainwater harvesting technologies aimed at addressing water scarcity issues in Africa.

China's delegation having discussions with the institute's CEO and the Deputy Directors at the KEWI Conference room.
Below: KEWI CEO Dr. Letangule.

Ms. Lin Xin emphasized the importance of international cooperation in tackling global challenges and reiterated China's dedication to supporting innovative solutions for sustainable development.

The visit came at a time when the institute had conducted a comprehensive Training Workshop on Rainwater Harvesting (RWH) by the Gansu Academy for Water Conservancy. The training, sponsored by the Ministry of Science and Technology of the People's Republic of China, had drawn participants from key water agencies within the Ministry of Water, Sanitation, and Irrigation, as well as representatives from various County Governments.

Discussions focused on expanding the existing partnership between the two institutions. Dr. Letangule highlighted the possible areas of collaboration which included: Improving Water Sector Training through Modernization of Training Workshops, Laboratories and Technologies, Collaboration in Improving the National Rainwater Harvesting Capacity, Collaboration in implementation of Sanitation, Wastewater and Water Supply Projects in Kenya, Collaboration in capacity building for practitioners in the Water Sector, mainly the WSPs, and Collaboration in the reduction of the Non-Revenue-Water Levels in Kenya, and capacity building of the Water Police Unit.

The Kenya Water Institute expressed its gratitude for the continued support and collaboration with MOST, and looks forward to the fruitful outcomes of the partnership in the years to come.

Progress Evaluation of Irrigation Building Block at Chiakariga Campus

BY KORIR KIPKIRUI

The Kenya Water Institute's Director/ CEO, Dr. Leiro Letangule, and distinguished members of the Governing Council including, Dr. Nancy Koech, Ms. Jane Muthoni Nyoko, and Mr. Solomon Kiptarbei Maritim, undertook a thorough tour of the Chiakariga Campus, which was hosted by the Campus Principal Mr. Paul Rarieya. This visit represented a significant step towards improving the campus' facelift in the region. This visit was centered on the assessment and evaluation of the irrigation building block initiative, a critical effort meant to support the quality studies and strengthen irrigation capacities.

Tharaka Nithi County's Chiakariga Campus, has served as a hub for cutting-edge water management and irrigation techniques. A key element of KEWI's dedication to tackling the problems associated with water scarcity and advancing sustainable water resources throughout Kenya is the irrigation building block initiative.

During the visit, the CEO and the Council Members were briefed on the current status of the irrigation building block. They were presented with detailed reports outlining milestones achieved, challenges encountered, and future projections of the project.

Members of the Governing Council at Chiakariga Campus.

The visit provided an opportunity for the council members to engage directly with those involved in the project, fostering dialogue on best practices and future strategies for sustainable water management.

In his remarks during the visit, Dr. Letangule underscored the institute's commitment to supporting initiatives that harness water resources for the benefit of students.

The council members expressed satisfaction with the development that has been made so far, and committed to supporting the irrigation building block effort going forward. They highlighted the project's potential as a model for replication in other regions facing similar irrigation and water management challenges across Kenya.

Stakeholders anticipate increased outreach initiatives, improved capacity building projects at the Campus, and additional breakthroughs in irrigation technology in the future. It is anticipated that these initiatives would have a major impact on Kenya's national agenda, which includes environmental sustainability, economic development, and food security.

There was hope and a renewed determination to achieving the irrigation building block initiative's full potential as the visit came to an end.

The partnership between stakeholders, Chiakariga Campus, and the Kenya Water Institute sets a positive standard for upcoming initiatives in water resource management and sustainable agriculture throughout the nation.

Insights - Opportunities in Rainwater Harvesting, Storage, and Utilization

BY: VIRGINIA NANETIA

The Kenya Water Institute participated in the Belt and Road Initiative training on rainwater harvesting, storage, and utilization in Lanzhou City, Gansu Province, China, represented by Mr. Ang'anyo M.O and Ms Virginia Nanetia. This training was an opportunity for deepening knowledge in water conservation and management, following an earlier session at the Institute in December 2023. Sponsored by the Chinese Ministry of Commerce and the Gansu Academy for Water Conservancy, the training attracted 35 participants from diverse countries, including Ethiopia, Gambia, Nigeria, Sri Lanka, Laos, Pakistan, Antigua and Barbuda, and Malaysia, highlighting the global relevance of water management challenges and solutions.

A group photo of the participants at Gansu Province China.

The training addressed critical water issues exacerbated by population growth, urbanization, and climate change, with 1.8 billion people projected to face water scarcity by 2030. China's approach combines advanced technologies with community collaboration, leveraging subsidies for modern agricultural practices and government intervention in food pricing to improve environmental conditions and agricultural productivity.

Kenya, with a 2024 population density of 96.84 people per square kilometer, faces significant water management challenges. Despite receiving 354 billion cubic meters of rainfall annually, only 55.4 million cubic meters were harvested in 2021/22. The Medium-Term Plan IV (MTP IV) underscores water and irrigation's role in socio-economic development, planning to construct 1,000 water pans and 200 small dams in arid and semi-arid lands (ASALs), promote water harvesting in 23 ASAL counties and urban areas, and support 1,150 water harvesting projects. Key obstacles include high infrastructure costs, land acquisition issues, and socio-cultural barriers, but Kenya has made progress with infrastructure development and expanding irrigated land.

Participants in the Gansu training engaged in lectures, experience sharing, and field excursions, exploring projects like: Huining County: Zhangchengbu Village's rainwater harvesting system uses roofs and courtyards for collection and cement mortar cellars for storage. The

TRAINING

Insights - Opportunities in Rainwater Harvesting, Storage, and Utilization

Gangouyi Rural Drinking Water Supply Project provides a reliable water supply for over 153,000 residents, Anding District: The RWH Supplementary Irrigation and Greenhouse Farming Project uses ridge-furrow planting and greenhouse surface collection to combat water scarcity and boost agricultural productivity, Taibai Mountain Watershed Management Project: This project focuses on soil and water conservation, with an investment of over 32 million RMB for terrace construction, field greening, and reforestation, and Xianyang City: The Lake Rainwater and Flood Utilization Demonstration Project and the Pilot Project of Sponge City Construction in Xixian New Area showcase innovative urban water management techniques.

Participants also visited historical and cultural sites like the Xi'an Ancient City Wall and the Great Tang All Day Mall, blending technical training with cultural insights. Projects like the Hancheng Lake Urban Water Conservation Project and Small-Scale Water Supply Projects for Photovoltaic Pumping Systems in Qinghai Province illustrated effective urban water management and sustainable agricultural practices.

Field visits to Tinqhi revealed key strategies in rainwater harvesting and water management, including underground water storage to prevent contamination, using plastic membranes in agriculture to minimize water loss, and community initiatives like tree planting and terracing supported by special funds.

The training underscored critical lessons in research, documentation, long-term conservation efforts, technology application in water resource management, and the sponge city concept for managing urban runoff and flood management. For Kenya to advance its rainwater harvesting efforts, it must adopt emerging technologies, support microprojects, foster collaboration with the private sector, and embrace an integrated approach involving various stakeholders. Enhancing research linkage to policy development and promoting continuous awareness are crucial.

By learning from China's experiences, Kenya can enhance rainwater harvesting, soil conservation, and agricultural productivity, paving the way for sustainable development and improved livelihoods.

Mr. Anganyo M.O and Ms Virginia Nanetia at Gansu Province, China.

CONSULTANCY

Ground Water Development and the Institute's Drilling Consultancy

BY: GEOL. P. K. KURGAT

Groundwater is the water present beneath Earth's surface in rock and soil pore spaces and in the fractures of rock formations. About 30 percent of all readily available freshwater in the world is groundwater. A unit of rock or an unconsolidated deposit is called an aquifer when it can yield a usable quantity of water. The depth at which soil pore spaces or fractures and voids in rock become completely saturated with water is called the water table. Groundwater is recharged from the surface; it may discharge from the surface naturally at springs and seeps, and can form oases or wetlands. Groundwater is also often withdrawn for agricultural, municipal, and industrial use by constructing and operating extraction wells. The study of the distribution and movement of groundwater is hydrogeology, also called groundwater hydrology.

KEWI's Consultancy and Technical Services Department where drilling is domiciled provides technical and objective advice on expressions of interest and proposals from clients for consultancy services for improved utilization of ground water resources by undertaking business-based consultancy in water related services to include but not limited to hydro geological surveys, environmental impact assessments, borehole drilling services, water quality analyses and water treatment techniques. The department also provides technical evaluation on emerging water technologies; provide cost benefit analyses related to the new technologies, or upgrading existing technology and performing tests to ensure technology works for the intended purpose whereas well, ensures that technical reports and documentation meet government regulations and standards of relevant profession

KEWI drilling is committed to conducting all of its operations in an environmentally responsible manner. To fulfill our objectives, the institute provides highly qualified technical team with the requisite expertise and experience to deliver the objective. The team is drawn from the fields of Geology and Drilling Technologists, Water Engineers, Mechanical Engineers and Civil Engineers. The team observes the environmental laws and water resource regulations that are in tandem with the water Act 2016 and subsequent related revised Acts.

The ground water development is majorly controlled and regulated by the Water Resources Authority (WRA). Amongst some of the requirements for any client to observe before ground water is abstract includes the requirement to perform hydrogeological survey that is conducted by a qualified, registered and licensed Hydrogeologist and the report is submitted to WRA for evaluation and award of authorization to drill permit.

Where deemed necessary an Environmental Impact Assessment (EIA) is conducted and the client shall then submit together with authorization to drill, permit to NEMA for EIA permit. The client will now be

Ground Water Development and the Institute's Drilling Consultancy

ready to request for drilling service from a registered and licensed driller by the Ministry of Water.

The average depth of boreholes drilled for ground water abstraction in Kenya depends on the hydrogeological survey report. It ranges between 50 and 400 meters depending on the location. However deeper boreholes to over 3km are done in other drilling sectors like for the case of geothermal sector. The average cost of drilling a borehole in Kenya ranges between Ksh 7,000- 14,000 per meter, depending on the hydrogeological survey and also the location.

The actual borehole construction/drilling involve several steps, upon signing of contract with the client. The drilling team mobilizes to the site and step by step performs;

- Rigging and/or actual shaft opening of the hole beneath the ground
- Casing of the borehole
- Gravel packing the hole
- Well development
- Capping the hole to await test pumping
- Test pumping
- Collect a water sample for water quality testing
- Equipping of the borehole
- Upon completion of all the above items a Borehole Completion Record (BCR) is compiled and a copy submitted to WRA for coding and putting in the data base the details of the borehole

KEWI Drilling operations at a client's site.

It goes without saying that sometimes the drilling team encounters Down The Hole (DTH) problems which includes but not limited to; lack of circulation, snapping of one the drill string of tools, emition of dangerous gases from the hole and collapsible formation causing the sticking of drill string. Few tools are available for fishing lost tools during drilling but many times, tools are fabricated on site for specific drilling fishing expedition. This normally calls for very highly critical thinking, inferences and hypothesis of which the tool being fished would be gripped and pulled out. It also requires a good welder to put up a strong weld and fabrication technique to achieve the desired fishing tool.

Our clientele base ranges from our own training mandate for the long term program KEWI students, and the tailor made short course in drilling for special groups, recognition of prior learning for already practicing drillers in the field, government institutions from National to County governments, CBOs and individuals.

A success of every borehole completed to production augment to this scarcely available resource of water and it always brings a sense of satisfaction to the drilling team and our clients

The writer, is a Consulting Hydro Geologist and a Senior Consultancy and Technical Services Officer at KEWI.

Institute Empowers Staff with SPAS Training

BY: FAIZAH JEPKORIR

The Kenya Water Institute (KEWI) recently completed a rigorous two-day course on Staff Performance Appraisal Systems (SPAS), which marked a major advancement in the organization's public service delivery. This training, conducted across all campuses, has effectively equipped employees with vital skills for managing performance and aligning their efforts with KEWI's strategic goals.

The training was spearheaded by Ms. Dar Nyanchoka, Ag. Manager Human Resource and Administration, and facilitated by Ms. Ethel Bulili from the Public Service Commission. It focused on critical aspects of SPAS, including work planning, target setting, and structured feedback mechanisms. The sessions aimed to integrate SPAS with other key human resource functions such as recruitment, training, career progression, and rewards. This holistic approach is designed to foster better communication between staff and supervisors, ultimately enhancing overall productivity and nurturing a high-performance culture within KEWI.

Participants delved into the nuances of performance contracting, learning how to set realistic targets, identify relevant performance indicators, and manage resources efficiently. A crucial takeaway was the directive to set performance targets by July 31st each year, with a requirement of at least eight measurable goals. This ensures that individual performance is closely aligned with KEWI's strategic objectives and national priorities, contributing to a more cohesive and goal-oriented work environment.

The training also highlighted the importance of ongoing education on performance appraisal systems. KEWI's Human Resource and Policies Procedures Manual mandates that staff conduct self-assessments against agreed targets, with subsequent evaluations carried out by supervisors. To reinforce this continuous learning, a refresher course will be organized, covering essential aspects such as departmental and individual work plans, monthly performance targets, and effective performance reviews.

Members of staff from the Transport Department discuss on their departmental targets.

In her closing remarks, Ms. Nyanchoka underscored the significance of the training, stating, "The knowledge and skills gained from this training will undoubtedly enhance our staff's ability to deliver high-quality services. It is our collective responsibility to ensure that KEWI remains at the forefront of water resource management education and training in Kenya. Staff Performance Appraisal Systems is a vital tool in achieving this goal."

The successful completion of this training not only reinforces KEWI's commitment to excellence in public service but also strengthens its role in the national development agenda. As Kenya progresses towards Vision 2030, KEWI is dedicated to preparing its workforce to meet future challenges with competence and efficiency, thereby contributing significantly to the nation's advancement.

Students Visit Kangundo Children's Home in Machakos County

BY: GUYO ABDULKADIR

The Kangundo Children's Home in Machakos County was the destination of a touching and memorable visit by students from the Kenya Water Institute (KEWI). The joyful and satisfying occasion serves as evidence of the students' commitment to community service and the significant influence their work has on the kids and staff at the home.

The visit, was filled with various activities designed to bring joy and support to the children. The students engaged in interactive games, storytelling sessions, and educational activities, creating a lively and warm environment. They also distributed essential items, including food, clothing, and educational materials, which were received with immense gratitude by the children and staff of the home.

In addition to the planned activities, the students took time to understand the daily routines of the children and the operations of the home. They learnt about the various programs implemented by the home to ensure the well-being and development of the children. The students were particularly impressed by the home's emphasis on education and skill development, which aims to equip the children with the necessary tools for a brighter future.

Participants also found the experience deeply rewarding. They had the opportunity to witness firsthand the challenges faced by the children and the incredible efforts of the home's staff to provide a nurturing environment to kids. This visit was not just about giving; it was also a powerful learning experience for the students, highlighting the importance of empathy, community support, and the impact of collective efforts in making a difference. The visit also provided an avenue for the students to reflect on their personal growth. Interaction with the children and the home's staff instilled in them a sense of responsibility and the importance of giving back to society.

The success of this visit highlights the ongoing commitment of KEWI to foster a spirit of service and community involvement among its students. It also shows the vital role that such initiatives play in supporting vulnerable communities and inspiring future leaders to continue making positive contributions to society.

Mr. Sheikh Abubakar, the Home Manager, expressed his

A group photo of KEWI staff and students at Kangundo Children's home.

CSR

Students Visit Kangundo Children's Home in Machakos County

deep appreciation for the students' visit and the positive impact they brought to the home. In his address, he stated, “We appreciate your coming and everything you did. May Allah (S.W.T) make you among the people of the highest rank in paradise, may your prayers be accepted and Allah make you the most successful people in this world and hereafter. Ameen.” His heartfelt words resonated deeply with everyone present, emphasizing the significance of the students' contributions.

KEWI students' visit to Kangundo Children's Home was a memorable and enriching experience for both the visitors and the residents. It served as a reminder of the power of compassion and the lasting impact of community service. The students returned with renewed inspiration and a deeper understanding of the value of giving back to the community.

Quote of the Week

“Are leaders born or made?

This is false dichotomy-leaders are neither born nor made. Leaders choose to be leaders.”

-Stephen M.R Covey.

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Round up of The Week's Events

Moments during the official visit of Ms. Lin Xin, the Vice Minister and Secretary General, Ministry of Science and Technology (MOST), the People's Republic of China and the delegation at China-Africa Partner Institute on Rainwater Harvesting and Utilization at KEWI, Nairobi.

Round up of The Week's Events

Moments during sensitization of the Institute's staff pension scheme at the Institute's Nairobi Campus.

Participants from National Employment Authority (NEA) pose for a group photo during the closing ceremony for the induction training of the new officials held at KEWI Nairobi.

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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Your feedback is crucial for our improvement

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