



# KeSEBAE NEWS

A Publication of Kenya Society of Environmental, Biological and Agricultural Engineers

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## The Future of Water in Kenya

Emmah A. Odhiambo



Ever wondered what the future of water infrastructure will look like in a decade to come? Or has it ever occurred to you that maybe, just maybe someday you'll wake up and you won't be able to carry out your daily routine simply because there is no water or that the water around you is polluted to the point that you won't even dare look at it? Let's be realistic for a bit, if something isn't done and a quick fix made to slow down the rate of water pollution in the country, then the problem will escalate from being just one polythene paper or one banana peel in the river, to an unfixable mess or even if it would be fixed, it would take a long period of time and a lot of resources to bring the ecosystem to a balance. But not to worry about a thing, it's being worked on.

Water being a major resource, not needed by many but by everybody, its scarcity raises an alarm and brings concern when it's inaccessible to the majority of the people.

*Continued on Page 2*

### DEAR READER

Welcome to KeSEBAE Newsletter

A fortnightly Newsletter touching on topical issues affecting our environment.

KeSEBAE NEWS is a Newsletter of the Kenya Society of Environmental, Biological and Agricultural Engineers (KeSEBAE).

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Kenya's access to water and sanitation has barely shown much improvement over the last decade. Following the last census statistics, the country recorded a total population of 50 Million out of which 40% rely on unimproved sources like ponds, rivers and shallow wells, while 70% lack access to basic sanitation, mostly experienced in urban slums and rural areas where connectivity to piped infrastructure is very low or not at all.

The questions start to arise, is the government of Kenya and the ministry of water really concerned? If yes, what exact measures are they putting in place and what is the timeline to ensure that the 70% receive connectivity to piped infrastructure and improved water sanitation and hygiene? We wonder if something is cooking that we don't know about. Should we keep our hopes high and expect something or just abandon hope and have no expectations about the matter at all?

Of course not, people cannot overlook the situation and neither can they abandon hope because water is life, for basically everything on earth from plants to animals and to the humans themselves. The poor condition of this important resource has led to loss of lives to water-borne diseases such as Cholera in the past and we still continue to see hospitals flooded with patients suffering from such kinds. In fact, an article published in May 20th 2018 by Faith Nyamai, recorded 3000 cases of cholera in the month of April the same year, a statistic that was obtained from the Kenya Red Cross.

Coming back to the government plans about the whole situation, we see that our leaders are working towards achieving a stabilized water supply system both in the urban, rural and the rural slums which has been stated as the major component in the Big Four Agenda and is also in the vision 2030 development plan.

We've seen the government roll out several programs like dam constructions in different parts of the country, some which are still under construction e.g. the Thwake dam whose construction began in 2017 and has not come to a stop regardless of the Corona global pandemic. This is just but one of the many projects that are underway, and with the new water management policy that was finally drafted in December 2018 as the "STRATEGIC PLAN 2018-2022", there is a promising sustainability development on this infrastructure.



*Thwake Dam Under Construction*

While the government works on these plans to serve the people, it's then important for the public and the beneficiaries of these projects to be sensitized on how to handle, manage and protect the projects after they are handed over to the communities they are meant for. Cooperation between the government and the people would render these projects a success and thus being sustainable.



*Water Pollution in Kenya in 2019*



*Ground water pollution*

## References

1. Water Pollution Crisis Kenya 2022 – Statistics, Causes & Impact, <http://lotus.co.ke/water-pollution-crisis-kenya-statistics-causes-impact/>

Kenya Society of Environmental, Biological and Agricultural Engineers held its Annual Conference VIRTUALLY on Thursday, 17 December 2020. The theme of the conference was **ENGINEERING THE FUTURE**.

The Conference attracted attendance of **one hundred fifty-five (155) Engineers** (*Professional Consulting Engineers; Professional Engineers and Graduate Engineers and Student Engineers*) and **Stakeholders** from Kenya, United State of America, South Africa, China, among others. In attendance was Prof. Bitange Ndemo, who made a presentation on Use of Blockchain Technology for Smart Contract Crowd Funding.

The Conference was divided into three (3) Technical Sessions:

- I. Future Trends in Engineering**
- II. Future Infrastructure and Tools**
- III. Future Systems**

A total of **twelve (12)** papers were presented under the **three (3) Technical Sessions** as follows:

***Technical Session I: Future Trends in Engineering***

No.	Paper	Presenter
1.	Future of Agricultural Mechanization for Transformation of African Agriculture	Eng. Prof. Lawrence Gumbe
2.	Engineering Education for The Future	Eng. Prof. David Some
3.	Future of Renewable Energy	Eng. Shiribwa Mwamzali
4.	Environmental Protection for The Future	Ezekiel Oranga
5.	Use of Blockchain Technology for Smart Contract Crowd Funding	Prof. Bitange Ndemo

***Technical Session II: Infrastructure and Tools***

No.	Paper	Presenter
1.	Future of Irrigation in Kenya	Eng. Richard Kanui
2.	Future Tools for Mechanizing Agriculture	Eng. Prof. Ayub N. Gitau
3.	Bioprocessing in The Future	Eng. Dr. Duncan Mbuge
4.	Effect of Conventional Bulk Packaging Materials, Storage Temperature and Duration on Quality of Dried Mopane Worm ( <i>Imbrasia belin</i> )	D.S. Monyetware

***Technical Session III: Future Systems***

No.	Paper	Presenter
1.	Future of Agricultural Mechanization for Transformation of African Agriculture	Eng. Prof. Lawrence Gumbe
2.	Engineering Education for The Future	Eng. Prof. David Some
3.	Future of Renewable Energy	Eng. Shiribwa Mwamzali
4.	Environmental Protection for The Future	Ezekiel Oranga
5.	Use of Blockchain Technology for Smart Contract Crowd Funding	Prof. Bitange Ndemo

**KESEBAE NAIVASHA TRAINING**

KESEBAE held a training in Naivasha from 8 to 12 February 2021. The theme of the training was on **Procurement and Contract Management** for Ministry of Agriculture DRSLP and SIVAP Project Staff.

The conference attracted the attendance of **project managers, contract managers and other professionals** involved in the world of contract.

**Proceedings of the Naivasha Training**





**Participants at Naivasha Training**



**Training Proceedings**

In the 3-day event, **thirty-five (35) Senior Project Managers** were trained on the following topics:

<b>No</b>	<b>Topic</b>	<b>Facilitator/Trainer</b>
1.	Introduction to Project Development	▪ Ezekiel Oranga
2.	Introduction to Procurement	
3.	Introduction to Contracts Management	
4.	Contract Preparation, Award and Administration	▪ Eng. Nderitu Macharia
5.	Contract Effectiveness	▪ KESEBAE Team
6.	Use of Subcontracts, Contract Payments and Generation of Interim Payment Certificates	▪ Eng. Nderitu Macharia
7.	Site Organization, General and Particular Conditions of Contracts	▪ Eng. Mwamzali
8.	Challenges in Contract Performance and Management	▪ Prof Lawrence Gumbe
9.	Contract Documents (Designs, Design Reviews, Bills of Quantities, ESIA Etc.)	
10.	FIDIC Contracts	▪ Eng. P Wambulwa
11.	Contract Variations and Adjustments	
12.	Standard Management in Contracts	▪ Eng. Nderitu Macharia
13.	Defects Liability	
14.	Dispute Resolutions in Contracts	
15.	Termination of Contracts by Employer/Contractor	▪ Eng. Omedi Jura

**Proceedings of the Naivasha Training**



**Eng. Nderitu Presenting on Introduction to Contract Management**



**Eng. Mwamzali Giving his Presentation at the Training**



**Mr. Ezekiel Oranga Giving his Presentation**



**Eng. Patrick Wambulwa Giving his Presentation**

## ANNUAL GENERAL MEETING 2020

The Kenya Society of Environmental, Biological and Agricultural Engineers (KeSEBAE) held its Annual General Meeting (AGM) VIRTUALLY on Thursday, 17 December 2020.

KeSEBAE **Vision** is to promote and advance the development of our member's profession in Kenya and beyond. We also seek to become a key knowledge partner and visible policy advocate on the role of engineering and technology in the transformation and industrialization of the environment, food, energy and water towards achieving sustainable development in Kenya.

KeSEBAE **Mission** is to promote professional development of its members and best practice to spearhead sustainable development in Kenya.

The Chairperson emphasized on the objectives of the Society as:

1. To promote the science and art of engineering in the environment, biology based production processing and management systems and agriculture: to encourage original research; to foster relevant engineering; to advance the standards of engineering; to increase and extend the association of relevant engineers among themselves and with allied scientists and technologists; to encourage the professional improvement of its members and severally and in cooperation with other groups to broaden the usefulness of relevant engineering.
2. To adopt any report, standard code, formula, or recommended practice, but shall forbid and oppose the use of its name, emblem, or initials to indicate official or implied approval if of any commercial work or business except, to indicate conformity with its standards or recommended practices.

With the Society having embarked on KeSEBAE 2020 Webinar Series, a number of 10 webinar series were conducted. The webinar series attracted attendance from our members, engineers and stakeholders from Kenya, Africa and internationally. The society will continue engaging its members, engineers and stakeholders through virtual and physical training in the year 2021.

With relaunch of the Journal of Engineering in Agriculture and the Environment (JEAE) in 2019, the Society urge researchers to submit manuscript with complete work in relevant topics. In addition is the publication of the fortnightly Newsletter (KeSEBAE NEWS).

The Society membership committee developed criteria for another class of membership – **Institutional Member**. The Society encourages more institutions to join the Society.

## RENEWAL OF MEMBERSHIP



### MEMBERSHIP RENEWAL

Members of all grades are requested to renew their **2021** Membership.

The annuals fee are as follows:

Membership Category	Annual Subscription Fee (KES)
Fellow	5,000
Member	2,000
Ass. Member	1,000
Aff. Member	500
Student Member	300

## PAYMENT DETAILS

### M-PESA PAYMENT DETAILS

Pay Bill No.	: 4002575
Account No.	: Membership No. / Your Full Name

### BANK PAYMENT DETAILS

Bank:	: Absa Bank Kenya Plc
Branch	: Nairobi University Express Branch
Account Name	: Kenya Society of Env. Bio. & Agric. Engineers
Account No.	: 2038150696
Swift Code	: BARCKENX
Currency	: Kenya Shillings

## NOTE:

For bank payment, mail us a scanned copy of the receipt to: [info@kesebae.or.ke](mailto:info@kesebae.or.ke)

In addition, the Society wish to CALL FOR MEMBERSHIP in the following categories:

1. Fellow
2. Member
3. Ass. Member
4. Aff. Member
5. Student Member

For more information, contact us via **email**: [info@kesebae.or.ke](mailto:info@kesebae.or.ke) or **phone**: +254 788 712 156

## JOURNAL OF ENGINEERING IN AGRICULTURE AND THE ENVIRONMENT (JEAE)

The society published its current edition of the Journal of Engineering in Agriculture and the Environment: **JEAE Vol. 6 No. 2** in **December 2020**.

To get a copy of the Journal:

**CONTACT US**  
 Email: [info@kesebae.or.ke](mailto:info@kesebae.or.ke)  
 or  
 Phone: +254 788 712 156

Submit a **MANUSCRIPT** for publication to JEAE via

email: [info@kesebae.or.ke](mailto:info@kesebae.or.ke)

or online at:  
[https://www.kesebae.or.ke/journal/manuscript\\_submit.php](https://www.kesebae.or.ke/journal/manuscript_submit.php)

For more information, check on our **CALL FOR PAPERS TO THE NEXT EDITIONS OF JEAE** on *Page 5*

## EXECUTIVE COMMITTEE MEETING

The Executive Committee held its meetings on **2 February 2021** to deliberate on Society matters.

Matter discussed were:

- Professional training and growth of Society members in their areas of profession.
- Membership registration
- 2021 membership renewal
- Journal of Engineering in Agricultural and the Environment (JEAE)
- Articles to subsequent editions of KeSEBAE NEWS
- Among others.



## CALL FOR ARTICLES TO KeSEBAE NEWS

KeSEBAE NEWS Editorial wishes to call for topical articles for publication in future editions of KeSEBAE NEWS.

Please transmit the same to the Editor:

CALL FOR  
ARTICLES

Ezekiel Oranga  
Email: [info@kesebae.or.ke](mailto:info@kesebae.or.ke)

CALL FOR  
ARTICLES

**NOTE:** A payment will be made to the author of each selected article.

## CALL FOR PAPERS TO THE NEXT EDITIONS OF JEAE

# JEAE

## Journal of Engineering in Agriculture and the Environment

### CALL FOR PAPERS



The Journal of Engineering in Agriculture and the Environment (JEAE) is a Publication of the Kenya Society of Environmental, Biological and Agricultural Engineers (KeSEBAE) through which researchers in the fields of Environment, Agriculture and related fields share research information and findings with their peers from around the globe.

The JEAE Editorial Board wishes to invite interested researchers with complete work in any relevant topic, to submit their papers for publication in the next editions of the Journal

Manuscripts may be submitted online or via email to:

**Prof. Lawrence Gumbe**

The Chairperson  
JEAE Editorial Board  
Email: [info@kesebae.or.ke](mailto:info@kesebae.or.ke)

or

Online Via: [https://www.kesebae.or.ke/journal/manuscript\\_submit.php](https://www.kesebae.or.ke/journal/manuscript_submit.php)



**Our expert reviewers are highly regarded globally and provide fast and rigorous review services**

### Criteria for Article Selection

**Priority in the selection of articles for publication is that the articles:**

- Are written in the English language
- Are relevant to the application of engineering and technology in agriculture, the environment and biological systems
- Have not been previously published elsewhere, or, if previously published are supported by a copyright permission
- Deals with theoretical, practical and adoptable innovations applicable to engineering and technology in agriculture, the environment and biological systems
- Have a 150 to 250 words abstract, preceding the main body of the article
- The abstract should be followed by the list of 4 to 8 "Key Words"
- Manuscript should be single-spaced, under 4,000 words (approximately equivalent to 5-6 pages of A4-size paper)
- Should be submitted in both MS word (2010 or later versions) and pdf formats (i.e., authors submit the abstract and key words in MS Word and pdf after which author uploads the entire manuscript in MS word and pdf)
- Are supported by authentic sources, references or bibliography

For additional details and online support visit: <https://www.kesebae.or.ke/journal/instructions.php>

Visit our JEAE website at: <https://www.kesebae.or.ke/journal/>

# CALL FOR MEMBERSHIP

^Call for^  
Membership

BECOME  
A MEMBER

The Kenya Society of Environmental, Biological and Agricultural Engineers invite interested individuals to register as members of the society.

The annual subscription fees, admission fees and reinstatement fees for members of all grades (except Honorary and Life Members who shall pay no dues or fees) are indicated below:

Membership Category	Annual Subscription	Admission Fees	Reinstatement Fees
Fellow	5,000	1,000	2,000
Member	2,000	1,000	2,000
Ass.Member	1,000	1,000	2,000
Aff.Member	500	1,000	2,000
Student	300	100	-

**NOTE:** All payments are in Kenyan Shilling

For more information, visit our website: <https://www.kesebae.or.ke/membership.html>

## KeSEBAE NEWS EDITORIAL

*The KeSEBAE NEWS is a Newsletter of the Kenya Society of Environmental, Biological and Agricultural Engineers*

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EBK	:	<a href="https://ebk.or.ke/">https://ebk.or.ke/</a>
IEK	:	<a href="https://www.iekenya.org/">https://www.iekenya.org/</a>

If you wish to get more involved in KeSEBAE initiatives, feel free to get in touch via:

**Email:** [info@kesebae.or.ke](mailto:info@kesebae.or.ke)

or

**Website:** <https://www.kesebae.or.ke/>

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**KeSEBAE:**

**"Promoting Engineering and Research for Environmentally Sustainable Biological and Agricultural Systems"**