



# SNAS

## SCHOOL OF NATURAL AND APPLIED SCIENCES

### BI-MONTHLY BULLETIN



Volume 12 | Issue 6

November — December, 2023

## EDITORIAL

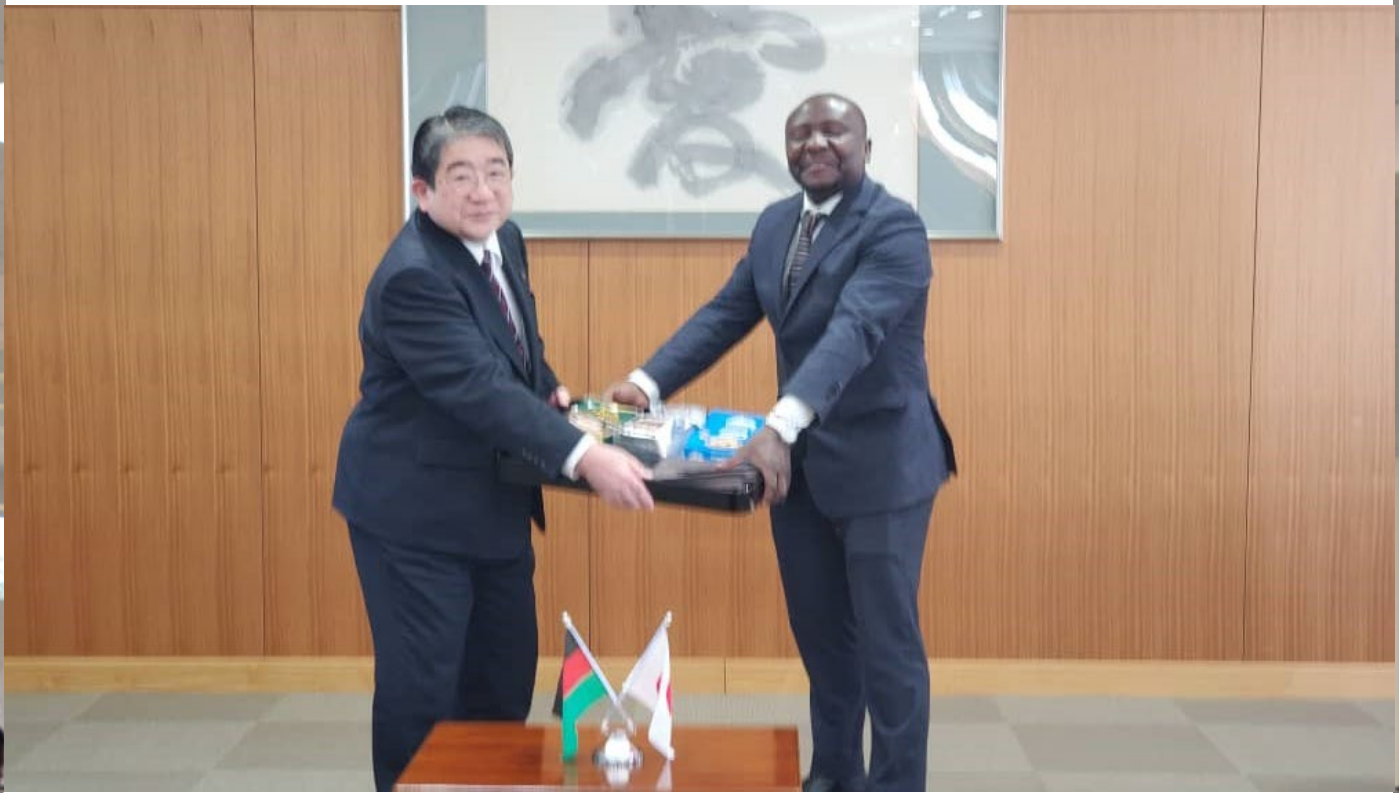


The year 2023 ended on a very high note in the School of Natural and Applied Sciences at the University of Malawi (UNIMA). This issue of the School's Bimonthly Bulletin captures some of the key events that happened in November and December. These include academic visits by staff and students to industry, project meetings and workshops, short courses, international conferences and academic exchanges in Australia, Japan (led by the Vice Chancellor of UNIMA), Mozambique and Zimbabwe and UNIMA

end of year staff excellence recognition through awards. We welcome new staff, those who undertook research visits, and we wish those proceeding on study leave productive endeavors and enriching experiences in their academic pursuits. The School showcases its continued strive for academic excellence through research publications in high tier journals. Enjoy the last 2023 issue of our Bulletin..

Professor Cosmo Ngongondo

**Executive Dean of School of Natural and Applied Sciences**



Professor Samson Sajidu (UNIMA VC) receives a gift from the Hosts in Japan

## Malawi SATREPS Project Team Visits Japan

A five-member Malawian delegation of the JICA-funded SATREPS project in the School of Natural and Applied Sciences visited their Japanese counterparts at Ehime University and Tokyo University of Agriculture in Japan from 20 to 28 November 2023. The team was led by the Vice Chancellor of the University of Malawi, Prof. Samson Sajidu. Other members of the visiting team included Dr Bosco Rusuwa (UNIMA), Prof. Daudi Kassam (LUANAR), Dr Friday Njaya (Department of Fisheries) and Mr William Mgoola (Department of Parks and Wildlife). Apart from attending a joint international symposium on the ongoing SATREPS project at Ehime University and a research meeting at the Tokyo University of Agriculture, the Malawian team paid a courtesy visit to the President of Ehime University, where they had fruitful discussions with the President and his top management crew. The discussions revolved around how best to enhance research collaboration between our Malawian universities and Ehime University. In the picture, the Vice Chancellor of the University of Malawi exchanges gifts with the President of Ehime University.



Malawi Team at the PERSuADE regional partners' meeting

## Staff members of NAS attend the PERSuADE Regional Partners' meeting in Harare, Zimbabwe

Staff members from the School of Natural and Applied Sciences namely Dr Jupiter Simbeye (Team Lead), Professor Cosmo Ngongondo (Executive Dean), Dr. Halima Twabi and Dr. Tiwonge Manda participated in the PERSuADE regional partners' meeting that took place from 11th to 13th December, 2023 at the Rainbow Towers Hotel & Conference Centre in Harare, Zimbabwe. The theme of the meeting was to consolidate cross-country peer learning. The Partnership to Enhance Technical Support for Analytical Capacity and Data Use in East and Southern Africa Region (PERSuADE) is a Global Fund supported initiative that brings together Faculty from 12 Universities (led by Makerere University School of Public Health) and 12 Country Ministries of Health in Southern and Eastern Africa to work together in disease programs of HIV, Malaria and TB to institutionalize disease data analysis and use at national and district levels. Over the years, one of the key contributions for Malawi is the digitisation of data analytical processes and the University of Malawi has ably developed Malaria and TB indicators dashboards and scorecards that can now be accessed and used within the DHIS2 platform (<https://dhis2.health.gov.mw/>). These tools cover indicators in the Malaria test-and-treat pathway and TB case notifications and treatment outcomes pathway. They can be used for analyzing data at national, district as well as health facility level. PERSuADE looks forward to enhanced data analysis and data use for decision making at both national and district level through use of these analytical tools.



Participants at the annual and project phaseout review meeting at Thope Lodge in Mponela

## **HECAS conducts the Afikepo annual and project phase-out review meeting**

The Human Ecology and Agricultural Sciences conducted the Afikepo annual and project phaseout review meeting at Thope Lodge in Mponela, Dowa, from 20th to 22nd December, 2023. The meeting was graced by the Vice Chancellor of University of Malawi, Professor Samsom Sajidu. The objectives of the review meeting were to: (a) present the progress of the implementation of activities, (b) review the overall project implementation (successes, challenges and lessons learnt), (c) share field experiences, find solutions and map way forward to improve implementation, (d) explore how best to capture qualitative data, and (e) get feedback from UNICEF and agree on the best ways to improve implementation.

The meeting was attended by UNIMA project members, Project interns based in the 11 Afikepo districts in Malawi, Project officer for Mulanje District and Vice Chancellor of University of Malawi. Doreen Matonga from UNICEF attended the meeting virtually on the second day.

The review meeting was made possible through the generous funding support from UNICEF, signifying a continued commitment to advancing research and development in Human Ecology and Agricultural Sciences.



Part of participants of the training workshop posing for a photo together with Prof Bahman Rostami-Tabar (center)

## CRAFS Delivers a One-Week blended Regional Short Course on Tidy Time Series & Forecasting

As one way of contributing to Agri-food systems transformation in Africa through training highly qualified human resources and delivering high-quality research outputs in Agri-food systems related areas in East and Southern Africa, the Centre for Resilient Agri-Food Systems (CRAFS) at the University of Malawi in collaboration with Cardiff University delivered a one week blended workshop on **“Tidy Time Series and Forecasting in R”** at the Brown Chimphamba Labs in the University of Malawi from 11 to 15 December 2023. Dr. Elias Mwakilama of CRAFS and Prof. Bahman Rostami-Tabar of Cardiff University were the lead resource persons during the short training course.

Over 200 postgraduate students and Early Career Researchers (ECRs) across the region, including Malawi, Nigeria, Zambia, Kenya, Uganda, Benin, Mozambique, Tanzania, South Africa, Cameroon, Namibia, Zimbabwe, Ethiopia, and Rwanda registered and attended the blended workshop. Prof Bahman Rostami-Tabar of Cardiff University leads the Forecasting for Social Good (F4SG) initiative, an official section of the International Institute of Forecasters (IIF), and also directs a Data Lab for Social Good at the Business School in Cardiff University. Dr Elias Mwakilama is Associate Professor of Mathematical Sciences at the University of Malawi.



Dr Elias Mwakilama receiving his Extraordinary Publishing Prowess award from the UNIMA VC Prof Samson Sajidu

## NAS Academics Shines at the 2023 UNIMA Staff Excellence Awards

It was all smiles in the School of Natural and Applied Sciences on 22 December 2023 when efforts of Dr Elias Mwakilama and Professor Cosmo Ngongondo were recognized by the University of Malawi during the 2023 End-of-Year Get Together. During the ceremony presided over by the Vice Chancellor, Professor Samson Sajidu, Dr. Elias Mwakilama, an Associate Professor in the Department of Mathematical Sciences was awarded the UNIMA Staff Excellence Award for his ***“Extraordinary publishing prowess”***. He went away with a with a certificate and a prize of MWK 75,000.00. On the other hand, Professor Cosmo Ngongondo, the Executive Dean of the School was awarded the UNIMA Staff Excellence Award for his efforts in ***“Sourcing income for the Institution through research”***. He went away with a certificate and a prize of MWK150,000.00.



Prof Cosmo Ngongondo, WaterNet Trustee

## **Prof Cosmo Ngongondo Retained as Trustee in the WaterNet Board of Directors**

During the Annual General Meeting (AGM) of WaterNet held on 16 November 2023, Professor Cosmo Ngongondo was appointed to serve a second term as a Trustee of the WaterNet Board of Directors. WaterNet is a regional network of university departments and research and training institutes specialising in water and is a SADC subsidiary institution. The network aims to build regional institutional and human capacity in Integrated Water Resources Management (IWRM) through training, education, research and outreach by harnessing the complementary strengths of member institutions in the region and elsewhere. WaterNet member institutions have expertise in various aspects of water resources management and are based in Southern and East Africa. Professor Ngongondo will serve his second and last term from 2023 to 2028, and was first elected into the WaterNet Board in 2018. He currently Chairs the Research Committee of the Board.



Mr Martin Likongwe having a light moment with Mrs Christobel Chakwana, from UNICEF during the Partner Capacity Building training workshop

## **UNIMA staff attend UNICEF Malawi Emergency Implementing Partners' Training**

University of Malawi as a partner of UNICEF was invited to a UNICEF Malawi Emergency Implementing Partner's Training workshop that was conducted from 18th to 19th December, 2023 at Bingu International Convection Centre. The objectives of the training workshop were to: (a) foster results-based, quality programming and timely delivery of the expected results by implementing partners in emergencies, (b) provide an overview of UNICEF's procedures and work processes in emergencies, and (c) increase the understanding on UNICEF's procedures, commitment and expected compliances including PSEA, ECD, disability, HACT, AAP.

University of Malawi was represented by Mr Martin Likongwe and Mr Isaac Mtambo due to their roles in UNICEF Emergency funded projects in Mulanje. University of Malawi had two Nutrition Emergency Projects that were implemented in Mulanje in 2022 and 2023. These projects were implemented in collaboration with Mulanje District Council in response to effects of cyclones Anna and Freddy, which affected Malawi in 2022 and 2023, respectively.





Participants of CRAFS' Stakeholders Meeting pose for a group photo

## **CRAFS holds a Stakeholders Meeting Workshop at Sunbird Nkopola in Mangochi**

The Centre for Resilient Agri-Food Systems (CRAFS) held a stakeholder engagement meeting at Sunbird Nkopola Lodge in Mangochi from 4 to 5 December 2023. The Vice Chancellor of the University of Malawi, Professor Samson Sajidu officially opened the workshop, which drew stakeholder from the academia, industry, government departments, NGOs and farmers. Among other activities, the workshop was aimed at orienting the stakeholders on CRAFS' objectives and its project scope under the ACE II AF World Bank project and also to identify tangible research areas with potential to support CRAFS' activities.

During the official opening address, UNIMA's Vice Chancellor Prof Samson Sajidu commended the School of Natural and Applied Sciences for the tireless efforts to come up with a winning proposal to host CRAFS at the University of Malawi. He also encouraged both the CRAFS technical team and the entire University faculty to join hands in raising the UNIMA flag further including support of CRAFS' activities.

In his remarks, the Director of Extension in the Ministry of Agriculture (MoA) Mr. Pearson Soko, on behalf of the Principal Secretary of MoA, congratulated UNIMA for working extra hard to host such an important centre of excellence that is not only promoting research excellence in resilient agri-food systems, but has also opened doors for international postgraduate students through scholarships to pursue further studies at UNIMA. Mr. Soko further challenged researchers to innovatively come up with solutions that address food insecurity in Malawi



Ms Kabanga during the research visit

## Ms Kabanga's Journey of Exploration and Growth at the University of Trieste

From September 4, 2023, to December 4, 2023, Ms Kabanga visited the Department of Pharmaceutical Sciences at the University of Trieste, as an awardee of the TWAS-SISSA-Lincei Research Visits program. During the visit, Ms Kabanga worked on her research project 'Phytochemical and biological studies of a Malawian medicinal plant, ***Clinopodium vernayanum***. Under the direction of her host supervisor, Prof Cristina Forzato; they explored the antioxidant potential of different plant extracts, in addition to identification and quantification of phytoconstituents.

According to Ms Kabanga, the research visit improved her skills and knowledge in advanced techniques such as High-Performance Liquid Chromatography, Mass spectroscopy and Nuclear Magnetic Resonance. Apart from the hands-on experiences, Ms Kabanga had the opportunity to attend research seminars and appreciate the different research directions in Natural Products Chemistry. Visits to different scientific institutions in Trieste, Italy including the International School of Advanced Studies (SISSA) were a great opportunity to meet new people from various research backgrounds and countries.



Dr. Steven Wandale pose during the Conference

## **Dr Steven Wandale attends the Radar 2023 Conference in Sydney, Australia**

Dr. Steven Wandale, Lecturer of Electronics in the Department of Physics and Electronics attended the Radar 2023 Conference from November 6 to 10 in Sydney, Australia. During the conference, He presented a paper titled “Enhanced Maximum Inter-element Constrained Array Design via Simple Hole-Filling Strategy” at a special session called “Advances in Sparse Array Design using Deep Learning.” The conference, themed 'Dreaming the Radar Future,' brought together leading international researchers in radar science, technology, and education. His paper focused on optimizing radar sensor placement given a limited mounting platform to enhance source estimation accuracy while minimizing computation and energy costs.

He was joined by his Mentor, Professor Kotone Sato of Yokohama National University in Japan, who delivered a stimulating talk (of which he's a co-author) on "Low-cost Vehicle In-Cabin Occupancy Detection Using an Approximate Model of XGBoost." The talk addresses child safety in vehicles using a novel explainable ML/AI algorithm. Although not directly applicable in the Malawian industrial context, the technology is a promising alternative for bio-sensing/vital sensing applications in newborns and patients with infectious diseases (repurposing experiments are underway). Dr. Wandale is thankful to Prof. Koichi Ichige from Yokohama National University (YNU), the Japanese Telecommunication Advancement Foundation (TAF Grant #2023K10001), and the University of Malawi (UNIMA) for their invaluable support.



Dr. Moses watches on as students practice using a compass in structural mapping

## Geology Students Undertakes Academic Field Visit to Kangamkunde Ree Project In Balaka

On 16th November 2023, second year students pursuing Bachelor of Science in Geology travelled to Balaka on an academic field visit to Kangamkunde Hill, which is a prospect for Rare Earth Elements (REE). The REEs, described as “The Vitamins of Modern Industry”, are a group of seventeen chemical elements including Cerium (Ce), Lanthanum (La), Neodymium (Nd) and Praseodymium (Pr). Over the last few decades, these REE have been at the center of explosive industrial demand due as their alloys are key in the production of high end technological devices such as computer memory, rechargeable batteries, autocalytic converters, super magnets, mobile phones, superconductors, LED lighting, fluoresce materials, sole production panels and magnetic resonance imaging (MRI) agents. Thus, as part of the UNIMA Geology curriculum, the trip was aimed at fortifying class work with real field experience in understanding the formation of REEs and their exploration activities,

At the site, the students led by their Tutor Dr Dyson Moses had hands on exercises that included; geological core logging, structural logging, core recovery and rock quality designation calculations, and sampling procedure which constitute key aspects of drilling exploration.

The Kangamkunde project is operated by Lindian Resources Limited. Currently, the company's Mineral Resource Estimate indicates that the prospect is totalling 400 million tonnes of REE at an average of 2.0% Total Rare Earth Oxides (TREO). The company has drilled two 1 km long holes, which would see the resource being upgraded to 800 million tonnes at 2.7% TREO. As it is anticipated to build a processing plant, the company is undertaking air core drilling for geotechnical tests. There is a high expectation that the company shall commence mining towards the end of 2024, since they already have a mining licence issued.

## **Mr Martin Likongwe presents progress of Community Behaviour Tracking Tool (CBTT) at annual review meeting for Social Behaviour Change (SBC) Partners**

Mr Martin Likongwe presented progress of the Community Behaviour Tracking Tool (CBTT) at an annual review meeting for Social Behaviour Change (SBC) Partners. The annual review meeting was organised by UNICEF at Malawi Sun Hotel in Blantyre from the 19th to 21st December, 2023. The meeting brought together UNICEF partners who work in the area of Social Behaviour Change and it drew participants from UNICEF, Academia, Non-Governmental Organisations (NGOs) and Government departments. The University of Malawi has been using the community behaviour tracking tool (CBTT) during the implementation of the Afikepo Project. Due to the gains made through the use of CBTT in the Afikepo project, UNIMA was asked to share the lessons learnt to participants in order to influence the adoption of the use of CBTT in the implementation of various community-based projects to influence behaviour change among communities. The presentation demonstrated how the use of CBTT has influenced behaviour change among community members in the area of nutrition and food choices and food utilisation. The use of CBTT incorporated engagement of community members through dialogue sessions where they engaged in deliberations to improve in various aspects of nutrition using results of data collected using the tool. The community dialogue sessions resulted in community action planning to improve and change behaviours that in the long run helped to change the behaviours among community members in the area of nutrition.



Malawi's Director of Higher Education Dr. Levis Eneya (left), Dr. Elias Mwakilama (Centre) and Prof Cosmo Ngongondo (Right) pose for a photo

## **CRAFS' Technical Team members attend the 16th Technical and Advisory Meeting under the ACE II Project in Maputo-Mozambique**

The 2023 second Bi-Annual Technical Advisory Meeting (TAM) of the Africa Centres of Excellences II (ACE II) programme was held in Maputo, Mozambique from 27 and 29 November 2023. UNIMA's Centre for Resilient Agri-Food Systems (CRAFS) was represented by Prof. Cosmo Ngongondo, Dr. Elias Mwakilama, Dr. Tiwonge Manda, and Dr. Maurice Monjerezi at the TAM. Highlights include presentation of the the bi-annual annual progress report to the ACE II Regional Steering Committee (RSC) and experiences sharing and learning from the main ACE programme, whose project activities closed in the month of December 2023.

Other participants came from various ACE II-AF regional ACEs at LUANAR, MZUNI, Mozambique, and Kenya, Uganda, Ethiopia, Zambia, and Zimbabwe. The Regional Centre For Resilient Agri-Food Systems (CRAFS) is held in the School of Natural & Applied Sciences (SNAS) at the University of Malawi to implement the African Centers of Excellence project, Phase II, Additional financing (ACE II AF) for the East and Southern Africa funded by the World Bank. The aim of the project is to contribute to Agri-food systems transformation in Africa through training highly qualified human resources and delivering high-quality research outputs in Agri-food systems related areas.

# ANNOUNCEMENTS



## New Staff

The School of Natural and Applied Sciences warmly welcomes the following new academic staff members.



**Tadala Dingase Saka** joined UNIMA as a Staff Associate in Petrology and Geophysics in the Department of Geography, Earth Sciences and Environment.



**Prince Chipao** joined UNIMA as a Staff Associate in Petrology and Geophysics in the Department of Geography, Earth Sciences and Environment.

## Further studies



**Mr Martin Likongwe** of Human Ecology and Agricultural Sciences has enrolled with the Università Cattolica Del Sacro Cuore in Italy as an Executive PhD student in Agro-Food System with support from Centre for Resilient Agri-Food Systems (CRAFS). The 3-year split mode PhD programme is being run in collaboration with various African Universities including the University of Malawi. Mr Likongwe started his courses with online classes on 5th December, 2023. The School of Natural and Applied Sciences wishes Mr Likongwe a productive PhD study period.

## Publications



The School of Natural and Applied Sciences staff members continue to publish their research work in high level international peer review journals and books. All the publications demonstrate considerable multi-disciplinarity and international collaborations. We are proud to congratulate the following staff members and encourage all members to continue representing the School through publications:

Banda, D., Kasapila, W., **Ndolo, V.**, Banda, J., **Likongwe, M.**, & Kamtambe, K. (2023). Proximate composition, mineral content, peroxides and rancidity in open sun and solar-tent dried small sardine

- fish in Malawi. *International Journal of Fisheries and Aquaculture*, 15(2), 52-59. <https://doi.org/10.5897/IJFA2023.0850>
- Fatimah Omolola Badmos, Hadiza Lami Muhammad, Achi Dabara, Funmilola Adefolalu, Susan Salubuyi, Abdullahi Abdulkadir, Victor Tope Oyetunji, Daniel Ojochenemi Apeh, Hadiza Kudu Muhammad, Mulunda Mwanza, **Maurice Monjerezi**, Limbikani Matumba & Hussaini Anthony Makun (2023). Assessment of dietary exposure and levels of mycotoxins in sorghum from Niger State of Nigeria. *Food Additives and Contaminants*, Taylor and Francis. <https://doi.org/10.1080/19440049.2023.2293998>
- Ntaila, Y. W., Mbeya, R. A.** (2023). Allelopathic effects of Lantana Camara Extract on weeds and cultivated crops: A systematic review. *Journal of Agriculture, Food, Environment and Animal Sciences*, 4(2), 243-258. <https://www.jafeas.com/index.php/j1/article/view/127>
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**Sheila Kavwenje**, Lin Zhao, Liang Chen,  
**Cosmo Ngongondo**, Evance Chaima,  
Moses Akintayo Aborisade, Belay Tafa  
Oba & Patsani Kumambala (2023).  
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seasonal rainfall in the Shire River Basin,  
Malawi. Theoretical and Applied  
Climatology.

<https://doi.org/10.1007/s00704-023-04743-3>

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