



Science and You

VOLUME 1, ISSUE 2

FEBRUARY 2016

Message from the Director General

INSIDE THIS ISSUE:

The road to unveiling fuel ethanol on the Malawi market page 2

NCST becomes a national designated entity (NDE) for climate change technology development and transfer 3

NCST proposes construction of a multi-purpose science, technology and innovation infrastructure 4

ASTII In-country training workshop in data collection for the production of STI 5

NCST for strict adherence to preservation and sustainable utilization of Malawi's plant and animal genetic resources 6

NCST signs a memorandum of understanding with Technobrain Foundation 7

CAAST-NET PLUS 8

Challenges and opportunities of solid waste management: The case of Malawian cities 9

Towards the Malawi Biotechnology and Biosafety Consortium 10

Malawi to conduct Confined Field Trials on Banana 11

Building capacity in science communication 12

NCST provides support towards the 2016 National Schools Science Fair 13

NCST presents results of an evaluation of the school science fair to stakeholders 14

Inside NCST 15



New Year greetings to you all our valued readers. The year, 2016 promises to be yet another eventful year for the Science and Technology (S&T) community in Malawi and the National Commission for Science and Technology (NCST) in particular. Since our last issue of '*Science and You*' a lot has happened in the S&T field. Global trends indicate that Technology probably remains the main driver of change. Technology advancements are offering new solutions to numerous global challenges we are facing today.

Realizing the potential that these technology advancements offer to improve our lives, transform our businesses and protect our environment, NCST remains committed to its mission of promoting, supporting, coordinating and regulating the development and application of science, technology and innovation in Malawi.

To this end, the Commission continued to initiate programmes and schemes as espoused in the Science and Technology Act of 2003. One such scheme is the Small Grants Scheme established in January 2016. The Small Grants Scheme is meant to provide financial support to researchers and research institutions towards capacity building and information sharing endeavors.

I am also pleased to mention that the Commission entered into partnerships with local and international organizations in order to build capacity for its stakeholders. One such venture is the establishment of a training programme in collaboration with TechnoBrain Foundation, aimed at developing ICT skills and employment opportunities for our youths. I would like to thank the Country Director of TechnoBrain Foundation, Mr. Jose Araujo, for the initiative.

The Commission also took an active role in building capacity in stakeholder institutions on data collection and management for the development of core R&D/Innovation indicators through training workshops held under the auspices of NEPAD. This is in response to our reporting obligations on STI indicators to Government to inform policy and to NEPAD.

The Commission was furthermore involved in sensitizing stakeholders on the existence of procedures and guidelines for the conduct of research in Agriculture and Natural Sciences in Malawi as well as procedures and guidelines for access and collection of plant and animal genetic materials in Malawi. We realize that not all researchers are aware of the existence of these instruments and consequently they are conducting their studies without the required research permits.

The Commission also continued to implement the activities within the Programme for Biosafety Systems (PBS) in Malawi. It provided support for the processes that led to the conduct of Confined Field Trials for Bt Cow Pea at Lilongwe University of Agriculture and Natural Resources (LUANAR) in January 2016. The trials are being conducted to test the effectiveness of the Bt gene to control the *Maruca* pest which drastically reduces the yield of cow peas. NCST is also in the process of establishing the Malawi Biotechnology and Biosafety Consortium (MBBC) in its quest to promote the adoption, production, use and access of genetically modified (GM) crops in the country.

Lastly, I would like to invite your contributions for the next issues of the newsletter. Its success depends on you.

I wish you all an enjoyable reading.

Anthony Muyepa– Phiri

Anthony Muyepa

The road to unveiling fuel ethanol on the Malawi market

The fuel ethanol story started way back in the 80s and at that time Malawi was probably second after Brazil in experimenting use of ethanol in motor vehicles as a fuel. Time has passed, policies have changed, gains were anticipated but not realised, and others may argue that the motor industry was not ready then for the technology to be diffused into the market. The reality is that the story is different now as Malawi seems to be on a high tide in terms of technology diffusion.

“However, PressCane is at a very advanced stage in ensuring that the pilot programme kicks-off”

On 2nd December 2015 the Malawi Energy Regulatory Authority (MERA), in collaboration with Press Cane, Ethanol Company of Malawi (ETHCO) and National Commission for Science and Technology (NCST) organised a stakeholders meeting on the Ethanol Programme for Malawi at Wamkulu Palace in Lilongwe. The purpose of the meeting was to sensitize and acquire buy-in from the stakeholders, particularly motor vehicle franchise dealers on the prospects of increasing use of ethanol as a motor vehicle fuel based on the approved recommendations by Cabinet in 2012. There were presentations from Presscane, ETHCO and Malawi Energy Regulatory Authority (MERA). National Commission for Science and Technology (NCST) and Lilongwe Technical College (LTC). LTC complemented the Presscane presentation which was on the research conducted. In summary, the CEO of Presscane, Mr Chande said he seized the opportunity to dispel fears among people who are pessimistic about the technology.

He recalled driving one of the first ethanol propelled vehicles bought by Press Corporation in the 1980's and even then there were no problems associated with the technology.

He regretted that more than twenty years later, Malawians are still discussing the technology, yet Brazil has gone many steps ahead and even assemble flex vehicles. In the region, he said, Zimbabwe started long after Malawi, but now has a good story to tell regarding use of flex vehicles in the country. He then wondered, what Malawi was waiting for.

However, PressCane is at a very advanced stage in ensuring that the pilot programme kicks-off. The company has bought all the required equipment such as special pumps for the four identified pilot filling stations (2 service stations in Blantyre and 2 stations in Lilongwe). PressCane now awaits Government decision on the pricing of the product which is expected to be available at the pump in 2016.



Participants (franchise dealers) being shown where to fit the conversion kit on the engine



Christopher Mithi from Ethanol Company Limited (ETHCO) and Victor Gondwe from NCST demonstrates the filling of ethanol into the tank

Speaking at the meeting from the policy perspective, NCST advised Malawians that at this stage, the market is now changing and the government expects the manufacturers and motor vehicle dealers to respond accordingly.

It is therefore expected that some manufacturers will be able to bring flex vehicles (vehicles that can use ethanol and/or petrol in any mixture) to Malawi. It has been learnt that HTD limited franchise holder in South Korea already introduced a flex vehicle and that it may be made available to Malawi 2016/17 for the launch of the pilot programme upon request.

The Wamkulu Palace meeting therefore observed that there is a future for fuel ethanol in Malawi. The Directorate of Economic Regulation in MERA is now working on pricing arrangements with Ministry of Finance, Economic Planning and Development. The expectation is that MERA will ensure that work on production cost of ethanol is finalised first before modelling the price based on the levies imposed by Government.

The message from Ethanol producing Companies to Government is “Give us the price of ethanol and we will provide ethanol at the pump for consumers”

Most people say that it is the intellect which makes a great scientist. They are wrong: it is character – Albert Einstein

NCST becomes a National Designated Entity (NDE) for climate change technology development and transfer



The National Commission for Science and Technology (NCST) is the National Designated Entity (NDE) for climate change technology development and transfer in Malawi under the United Nations Framework Convention on Climate Change (UNFCCC). This follows a competitive bidding process that was conducted by the Environmental Affairs Department in Malawi.

Establishment of NDE is a necessary condition before member countries (parties) to the UNFCCC can participate in the Climate Technology Centre and Network (CTCN) technical activities on climate change. The NDEs serve as focal points for all stakeholders in their countries and are the main link with the CTCN. Currently, there are 142 NDE's in the world.

As part of the initial activities in the development of the National Incubator Programme with support from Council for Scientific and Industrial Research (CSIR) through CTCN, NCST visited a number of public research and development institutions in December 2015. The purpose of the visit was to:

- sensitize the researchers and technologists in the country on the functions of the NDE;
- inform researchers and technologists on the possible opportunities for programmes and projects under the MIP to promote and enhance research, development,

deployment and diffusion of environmentally sound technologies in support of action on mitigation and adaptation of climate change;

- to raise awareness of CTCN issues with different stakeholders from within and outside Government;
- achieve sufficient commitment from stakeholders for successful implementation of CTCN activities at national level

The NDE provided guidance to all stakeholders in form of advice and guiding materials such as concept note format to them to express their interest to participate in the climate change incubator programme.

This would later help institutions develop projects in the targeted area as stipulated in the climate change national priorities. The concept notes will then be submitted to the National Commission for Science and Technology for consolidation and prioritization at a stakeholders' conference to be held in April, 2016.

The institutions that were visited are those that have a stake and that would really benefit from such an arrangement. The following institutions were involved:

Lilongwe University of Agriculture and Natural Resources (LUANAR);
Department of Agriculture

Research Services (DARS);
The Malawi Polytechnic;
Chancellor College;
Forest Institute of Malawi;
Malawi University of Science and Technology (MUST);
Malawi Environmental Endowment Trust (MEET);
Electricity Supply Corporation of Malawi (ESCOM);

The stakeholders were optimistic about the impending programme and expressed interest to participate and requested for guidelines on the project concepts.

They also requested the NDE to provide thematic areas but the team emphasized on the open nature of the programme, and the need to develop a programme that internalizes several components.

Stakeholders were also assured of transparency in the prioritization of projects and funding from CTCN through NDE.

"In the UNFCCC-CTCN discourse climate technologies to be developed and transferred are expected to address negative effects of climate change, drought, floods, excessive heat and drying up of streams, rivers, lakes etc"

CONSTRUCTION OF A MULTI PURPOSE SCIENCE, TECHNOLOGY AND INNOVATION INFRASTRUCTURE

The National Commission for Science and Technology (NCST) presented a project proposal to construct a multipurpose Science, Technology and Innovation infrastructure to the Ministry of Finance and Economic Development. The purpose of this project is to provide a conducive environment for the advancement of science, technology and innovation (STI) in the country in order to contribute towards realising Malawi Government's Vision of attaining a science and technology led development by the year 2020 and transforming the Malawi economy from a consuming and importing into a producing and exporting one.

The NCST holds this project highly with the understanding that for NCST to effectively play its leading role of promoting the advancement of STI in the country there is need for conducive infrastructure which can help nurture innovations, promote technology transfer and commercialisation, industrialisation and promote collaborative research. Favourable infrastructure can also help attract Malawians in Diaspora and internationally renowned scientists to come and conduct research in Malawi. Currently, the NCST hosts a number research and development programmes including the USAID-funded Programme for Bio-safety Systems (PBS), the EU-funded Information Society and

Technology (IST) Africa, and the NAC-funded Traditional Medicine Research Project. These can be a springboard for attracting bigger projects given better infrastructure

The main focus of the Multi-purpose Science, Technology and Innovation Infrastructure Project is to develop national infrastructure for promoting research, innovation, technology transfer and commercialisation, and building a science and innovation culture among the youth and the general public.

Goal 9 of the recently approved Sustainable Development Goals

million people and public and private research and development spending". This target calls for support to domestic technology development, research and innovation in developing countries by ensuring a conducive policy environment for industrial diversification and value addition to commodities. The Multi-purpose Science, Technology and Innovation Infrastructure Project should therefore, be viewed as a national response to the implementation of SDGs.



Lingadzi House, a rented and shared building where NCST is currently operating from

(SDGs) is, "Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation". Target 9.5 of Goal 9 reads, "Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1

The science of today is the technology of tomorrow - Edward Teller

A nation with scientifically and technologically led sustainable growth and development

ASTH in-country training workshop on data collection for the production of R&D/Innovation core indicators

The Ministry of Education, Science and Technology (MoEST) in collaboration with the National Commission for Science and Technology (NCST), National Statistical Office (NSO) and New Partnership for Africa's Development (NEPAD) organized a training workshop for desk officers of Research and Development (R&D) and innovation indicators at Silver Sands Holiday Resort in Salima from 1st to 3rd September 2015. The workshop was attended by 21 participants drawn from various R&D institution in Malawi. The main objective of the training workshop was to build capacity of desk Officers in R&D institutions in managing R&D surveys. It was officially opened by The Director of Higher Education in MoEST, Dr MacJessie Mbewe who re-iterated the importance of STI for national development policy.



The Director of Higher Education in MoEST, Dr MacJessie Mbewe, delivering the opening speech

It was facilitated by Prof. Luke Mumba and Lukovi Seke from NEPAD, and Dr. Moses Sithole from Centre for Science Technology Innovation Statistics (CeSTI).



Prof Luke Mumba making a presentation

The training workshop comprised presentation and practical sessions. Presentations focused on the following: Status of Science, Technology and Innovation (STI) in Africa: NEPAD African Innovation Outlook-II Report 2014; Measuring Science, Technology and Innovation (STI): Definitions from a statistical perspective; Overview of

Experiences in Measuring Science, Technology & Innovation 2007 to date; Measuring R&D Personnel Part 1: Headcount; and Measurement of R&D Personnel Part 2: Full Time Equivalence. Overview of STI indicators and International standards for STI data collection, measurement of R&D expenditures, Introduction to the Frascati and Oslo manuals Innovation data collection: methodological procedures.

The practical sessions provided more insight into how research and development (R&D) data is computed. It was observed that previous survey methodologies did not incorporate training for the data collectors before they went out to collect data.

The training workshop also gave participants an opportunity to agree on the terms of reference for the desk officers which included:

- To facilitate the collection of R&D and innovation data from their institutions and others
- To ensure that R&D and innovation questionnaires are dully filled and timely submitted to Department of Science and Technology,
- To validate R&D and innovation data
- To create and maintain institutional R&D and innovation database
- To train and sensitize members of their institutions about R&D and innovation surveys
- To provide feedback to their respective institutions and act as link to the focal point
- To contribute to the preparation of survey report which feeds into the State of Science and Technology Report for Malawi
- To train and sensitize other institutions on R&D and Innovation data collection

In order to advance the ASTIII programme in Malawi, participants at the training workshop agreed on the following:

- Sampling of institutions that will participate in the next survey be done and that the institutions be classified by sector.
- The current questionnaire for data collection be revised based on the one presented by NEPAD during the training workshop. The task to be led by MoEST.
- The organisers of the training workshop should circulate contact details of all workshop participants for further networking and collaboration.
- Further training for desk officers on the same technical areas presented during the training workshop be organised relating to data collection from business and non-governmental sectors
- Follow ups be made on key science and technology institutions that have not yet appointed desk officers for the R&D indicators.
- Establish an advisory committee for R&D indicators
- Develop a comprehensive work plan for future surveys

At the end of the training workshop participants were equipped with skills to enable them manage R&D surveys and also train other relevant officers in their institutions.

It was anticipated that R&D and Innovation surveys would now proceed as planned in order to meet international deadlines and obligations set by NEPAD.



Participants at the training workshop pose for a group photograph

NCST FOR STRICT ADHERENCE TO PRESERVATION AND SUSTAINABLE UTILIZATION OF MALAWI'S PLANT AND ANIMAL GENETIC RESOURCES

Malawi has unique and diverse ecosystems, flora and fauna that support the country's economic growth and human well-being. The major ecosystems in Malawi include terrestrial (forests, mountains etc.) and aquatic (wetlands, lakes and rivers) ecosystems.

However, these biological resources are ever increasingly threatened due to, among others, the wanton exploitation by foreign researchers aided by local scientists without following the stipulated procedures and guidelines.

There is need, therefore, for immediate action to enhance management, conservation and utilization of the country's biological diversity for the preservation of national heritage, economic growth and wellbeing of the present and future generations as prescribed in the Constitution of Malawi, National Environment Policy (NEP) of 2004, Environment Management Act (EMA) of 1996 and other national and sectoral policies, plans and strategies.

In line with its mandate and terms of reference, NCST developed Procedures and Guidelines for the Conduct of Research in Malawi as well as Procedures and Guidelines for Access and Collection of Plant and Animal Genetic Resources in Malawi that researchers and other stakeholders are required to abide by in preparing and conducting research activities

involving access and collection of plant and animal genetic resources in Malawi.

The procedure to conduct research that involves access and collection of plant and animal genetic resources involves a number of institutions including affiliating institutions, and the National Commission for Science and Technology. Affiliating institutions are required to have requisite resources (equipment, facilities and staffing) to undertake the proposed work. Researchers are also required to comply with relevant local access and collection requirements of the institutions with the jurisdiction for the particular resources. In addition, applicants wishing to export plant and animal genetic resource need to seek export license from the Minister responsible for Natural Resources and Environmental Affairs as stipulated by the Environment Management Act, 1996.

The two documents, Procedures and Guidelines for conduct of research in Malawi and Procedures and Guidelines for Access and Collection of Genetic Resources in Malawi are available at the NCST secretariat as well as at the NCST website (www.ncst.mw). The national policy requirements and guidelines that govern the conduct of

research in the agriculture and natural sciences in Malawi were lawfully made and promulgated in terms of sections 18 and 48 of the Science and Technology Act No.16 of 2003.

It is, therefore, an offence in terms of section 48 of this Act to implement any proposed research without having received an approval by National Committee on Agriculture and Natural Science (NCANS) or by any NCST recognized and accredited research committee. A person guilty of an offence shall be liable to the penalty as stipulated in section 49 of this Act (i.e. shall be liable to imprisonment for three years and to a fine of K100, 000 or to an amount equivalent to the financial gain generated by the offence, if such amount be greater). Researchers and all stakeholders are, therefore, called upon to familiarize themselves with the Framework of Guidelines and Requirements for the Conduct of Research in the agriculture and natural sciences in Malawi so as to ensure that their proposed research is duly approved before implementation.

"Genetic Resources" are defined in the convention on biological diversity, 1992 (CBD) as genetic material of plant, animal, microbial or other origin containing functional units of heredity that has actual or potential value e.g. medicinal plants, agricultural plants and animal breeds



Wildlife at Lengwe National park

NCST Signs a Memorandum of Understanding with TechnoBrain Foundation

“ Signing the MOU were the Director General of NCST, Mr. Anthony Muyepa and the Country Director of TBF, Mr. Jose Araujo.”

The National Commission for Science and Technology (NCST) on 21st January 2016 entered into an agreement with Techno Brain Foundation (TBF), Mauritius. This was marked by a formal signing of a Memorandum of Understanding (MOU) at a ceremony held at NCST. Signing the MOU were the Director General of NCST, Mr. Anthony Muyepa and the Country Director of TBF, Mr. Jose Araujo. They both expressed hope that the implementation of this MOU will help to promote capacity development in ICTs among the youth in Malawi.



The Director General of NCST, Mr. Anthony Muyepa- Phiri (left) and the Country Director Of Technobrain, Mr. Jose Araujo (Right) signing the MOU

The two institutions agreed to Jointly develop ICT skills and create employment opportunities for the youth who have graduated from various universities through ICT training and mentoring .

Techno Brain pledged to avail its facilities comprising a computer classroom and laboratory for the initiative. It will also be responsible for developing the curriculum that is responsive to the needs of the

market, selection of the candidates, funding the entire training, delivery and mentoring.

On the other hand, NCST will work as a knowledge partner and will be required to liaise with key stakeholders from public and private sector in order to create employment opportunities.



The two Chief Executives displaying the signed MOU

The formal launch of the programme will be conducted soon, at a date to be announced.



AUTHORS: Katharina Kuss: Spanish Foundation for International Cooperation, Health and Social Affairs, Spain; Gatama Gichini: Ministry of Education Science and Technology, Kenya

“ But the challenges of international collaborations are numerous, said panellist Mike Kachedwa, who is Chief Research Officer at the National Commission for Science & Technology in Malawi. ”

At the Global Forum on Research and Innovation for Health, held in August 2015 in Manila, an expert panel from South East Asia, Europe and Africa considered two key challenges to international research and innovation collaboration.

Global challenges are linked

Donors, policy makers, researchers and community workers in the health domain have for decades focused primarily on infectious diseases. This is because these illnesses tend to show immediate impediment to human development, in turn affecting a country's socio-economic development. However, there is a rising international consensus that non-communicable diseases (NCDs), such as cancer, diabetes or poor mental health, require as much attention as infectious diseases. Although the prevalence of NCDs in Europe remains higher than in Asia or Africa, the social and economic burden of these pathologies is heavy in many low- and middle-income countries (LMICs).

International research collaboration works, but it must be fair

The drivers of international research collaboration are many, the panel found. By working together researchers from the North and the South can better influence national and international research policies, according to Jean-Michel Sers, European Affairs Coordinator at the French

Agricultural Research Centre for International Development (CIRAD). Deputy Director for science and technology collaboration from the Kenyan Ministry of Education, Science and Technology, Eric Mwangi, highlighted that reliance on Northern partner support is not only determined by an agenda but also by the lack of high-tech advanced labs and inadequate national funding prevailing in LMICs.

But the challenges of international collaborations are numerous, said panellist Mike Kachedwa, who is Chief Research Officer at the National Commission for Science & Technology in Malawi. “Benefit sharing becomes quite problematic in research collaboration that includes partners from North and South. It may provide far too little benefit when risks are too high or sometimes benefits to sponsors are great.” He added: “Nevertheless, international research partnerships enhance conducive framework conditions and strengthen institutional research and innovation capacities in LMICs.”

Conclusion

The Global Forum on Research and Innovation for Health held in Manila, was a successor of the Global Forum for Health Research, held in 2012 in South Africa. While in the past the

focus was on health research, nowadays it is the utilization of results for innovation and evidence based policies. By linking global challenges and enhancing international cooperation governments and research institutions may enhance research conditions to be conducive for academia and private sector, which the long term would also contribute to economic growth in LMIC.

**The panel was sponsored by the CAAST-Net Plus and SEA-EU NET projects. Both are funded by the European Union's Seventh Framework Programme for Research, Technological Development and Demonstration*

Equipped with his five senses, man explores the universe around him and calls the adventure science – Edwin Powell Hubble

Challenges and Opportunities of Solid Waste Management: The Case of Malawian Cities

With funding from Sanitation and Hygiene Applied Research for Equity (SHARE) through the Government of Malawi (GoM) in the Ministry of Agriculture, Irrigation and Water Development, the National Commission for Science and Technology (NCST) implemented the “Challenges and Opportunities in Solid Waste Management: The Case of Malawian Cities” Research Project. The research conducted from July to December, 2014 in all the four cities of Lilongwe, Blantyre, Mzuzu and Zomba. The overall objective of the research was to analyze the challenges and opportunities in solid waste management in the Malawian cities. In addition, the study made recommendations to improve the Solid Waste Management (SWM) in the cities.

The study findings showed that waste densities were ranging from 69.8Kgs/m³ for day schools to 933.8Kgs/m³ for kitchen waste from industry. In all the cities more than 68% of the waste generated was organic. The average moisture content for the selected waste categories varied from 21.4% for leather, wood, textile and rubber to 72.4% for organic. The overall waste generation rate was highest for Lilongwe at 0.493Kgs/ day/ capita, seconded by Mzuzu at 0.479Kgs/ day/ capita, 0.479Kgs/ day/ capita for Blantyre and the lowest at 0.433Kgs/ day/ capita, for Zomba.

It was established that there are low levels of solid waste sorting, at all levels, ranging from 30% at households to 35% at industry level. Waste sorting at health, education institutions and markets was almost non-existent. Waste re-use and recycling are carried out mainly for glass, plastic, cardboard, metal and paper. Plastic is the most reused waste at 76% at household level. Composting levels are low at all levels with a proportion as low as 10%.



Glass sorted for re-use at one of the industries

Waste collection services are normally provided to the high income areas in all the cities. Waste collection rates are low with Blantyre at 18.6%, Lilongwe at 14%, and Mzuzu at 16.2% and Zomba at 14.2%.



Compactor collecting waste

Waste disposal methods at all levels range from burning (being the highest at 63%) for household level, dumping in open spaces, burying and disposal at the cities dump sites where reusable materials are scavenged.



Waste disposed at a solid waste dump site and burnt

The study revealed that the performance of SWM in Malawian cities based on technical, institutional, social and economic factors was low. Factors contributing to the low performance include;

- residents do not take responsibility
- city councils lack adequate resources;
- limited participation of stakeholders in SWM;
- low levels of waste reduction, separation, recycling, composting and resource recovery;
- ineffective regulation and lack of compliance by stakeholders due to lack of relevant by-laws to support SWM;
- weak representation of city councils at central government;
- lack of access to some neighborhoods by waste collection

vehicles due to poor roads; and

- limited Public Private Partnership (PPPS) in SWM.

The study made the following recommendations in order to improve solid waste management:

- city residents should take an active role in SWM by reducing, sorting, recycling and ensuring proper solid waste disposal;
- The city councils should take the lead in solid SWM, develop SWM strategies, actively engage stakeholders, and promote workable PPPs;
- The Government of Malawi should also strengthen city council representation at central government level and prioritize funding for SWM activities;
- NGOs and CBOs should conduct civic education, awareness campaigns and trainings in SWM;
- Commercial entities and industries should actively engage employees and stakeholders to promote good SWM practices, and provide support to city councils in SWM as part of their corporate social responsibility;
 - research institutions should collaborate closely with stakeholders in development and implementation of research programmes and projects in SWM; and
 - Development and financial institutions should support SWM programmes, projects and enterprises.

Science is a way of life,

Science is a perspective

Science is the process that

takes us from confusion

to understanding in a

manner that's precise,

predictive and reliable - a

transformation, for

those lucky enough to

experience it, that is

empowering and

emotional – Brian

Greene

“the level of understanding of modern biotechnology still remains low”.

Towards the Malawi Biotechnology and Biosafety Consortium (MBBC)

Malawi is advancing in its quest to adopt the production, use and access of genetically modified (GM) crops. The journey started way back in 2002 when the first piece of legislation, the Biosafety Act was adopted and later in 2007 the Biosafety (Genetically Modified Organisms) Regulations were put in place. In 2008 Malawi adopted the Biosafety Policy. Malawi also developed a Trial Manager’s handbook, Inspectors’ handbook and Guidelines for Confined Field Trials.

Malawi has thus far successfully conducted Confined Field Trials for *Bt* Cotton and this year, on 14th January 2016 another huge step was taken when Malawi planted its first genetically modified food crop, the *Bt* Cowpea at Lilongwe University of Agriculture and Natural Resources (LUANAR). This was after LUANAR fulfilled all the necessary requirements, and being granted a permit by the National Biosafety Regulatory Committee (NBRC).

Though Malawi has made strides in setting the policy framework and in conducting Confined Field Trials for Biotechnology Crops, the level of understanding of modern biotechnology still remains low. In addition there is an increasing wave of anti-GM activities in Malawi which has potential to negatively impact the adoption of GM crops in the country. In an effort to address these challenges, Malawi plans to come up with an outreach Consortium to be

known as the Malawi Biotechnology and Biosafety Consortium (MBBC). It will be responsible for a harmonized and multi-stakeholder approach to public engagement, understanding and strategic policy advocacy for biotechnology in Malawi.

Similar consortia exist in Africa. Some of the most successful ones are in Uganda and Kenya where they have been very effective in bringing together stakeholders around the common cause of advancing biotechnology in their countries.

A team of two officers from the National Commission for Science and Technology (PBS coordinator, Mr. Boniface Mkoko and PBS Communications Coordinator, Catherine Chaweza) undertook a trip to Uganda and Kenya between 22nd and 29th November 2015.



In the picture, Boniface Mkoko and Catherine Chaweza at the National Agricultural Research Organization (NARO) Uganda laboratories.

The trip was organized with the primary purpose of

learning from the Uganda Biotechnology and Biosafety Consortium (UBBC) and OFAB in Kenya in relation to organization, financing, operations and sustainability of the two consortia.

The Malawi Biotechnology and Biosafety Consortium will be modeled along the Ugandan Consortium.

Its overall goal shall be to act as a unified body of stakeholders to support the safe and sustainable utilization and economic development of biotechnology for national development and socio-economic transformation.

It will further advance implementation of a communication and outreach strategy with in-country stakeholder groups.

The MBBC will comprise a board and a Management Unit in order to execute its own activities.

It will conveniently be housed within the NCST, which is a national body that coordinates and promotes science in Malawi.

Funds for the establishment of the consortium have already been provided by CropLife International and progress is already underway in establishing the consortium.

Malawi to conduct Confined Field Trials on Banana

Malawi is making steady progress towards the adoption and use of genetically modified crops. This has been evidenced by its ability to conduct research on genetically modified non-food crops to address issues that threaten the livelihood of millions of Malawians who depend on Agriculture. The first Confined Field Trial (CFT) was conducted on cotton to test the efficacy of the *Bt* gene in conferring resistance from a bollworm. The trials that have been carried out over a period of four years, have been deemed successful.

Recently, Malawi achieved yet another milestone when the National Biosafety Regulatory Committee (NBRC) approved the conduct of Confined Field Trials on Banana. Banana is a very important food crop for Malawi and is among the easily accessible fruits. However, in recent times entire banana plantations in Malawi have been wiped out due to Banana bunchy top virus. Malawi is, at the moment, importing bananas from Mozambique and

Tanzania. To address this problem of Banana bunchy top virus, Bvumbwe Research Station in the Ministry of Agriculture is shortly commencing trials using Ribonucleic Acid (RNA) technology to test resistance against banana bunchy top



Banana plant affected by Banana bunchy top virus

virus.

The trials will be conducted for a period of three years from 2016 to 2018. The planting material has been imported from Australia and are yet to arrive in the country. The trials will therefore start as soon as the plant material are in. This brings the number

of food crops under Confined Field Trials to two.

The first food crop to go under CFTs was genetically modified cow pea. On 14th January 2016 Lilongwe University of Agriculture and Natural Resources (LUANAR) initiated the CFTs to test resistance against a serious cowpea insect pest in Africa called *Maruca vitrata* also known as *Maruca Pod Borer*. This is a field pest of cowpea that is responsible, together with other insect pests, for great yield losses of up to 90%.

The most exciting phrase to hear in science, the one that heralds new discoveries is not 'Eureka', but 'that's funny'. Isaac Asimov

"This brings the number of food crops under Confined Field Trials to two".

“strengthen the capacity of stakeholders in effective Biosafety communication”.

BUILDING CAPACITY IN SCIENCE COMMUNICATION

Developments in biotechnology in the country, require that a critical mass of effective spokespersons be built, capable of articulating messages and proactively reaching out to the public on modern biotechnology and Biosafety. This is one way of countering the anticipated activism against the acceptance of the technology.

The International Service for the Acquisition of Agri-biotech Applications (ISAAA) AfriCenter, therefore conducted a communication training workshop that took place at the Golden Peacock Hotel in Lilongwe from 30th November to 4th December 2015.

The main objective of the training workshop was to strengthen the capacity of stakeholders in effective Biosafety communication.

Specifically, the training workshop was aimed at;

1. Building a critical mass of spokespersons with the ability to communicate effectively to different stakeholders on the safety and benefits of

transgenic foods.

2. Enhancing Biosafety officers' skills for communicating information about the regulatory process and Biosafety decisions.

3. Equipping participants with media relation skills to ensure factual reporting of balanced and accurate messages about the regulatory system and biotechnology in general, in the country.

4. Providing a platform for the participants that visited India Bt cotton fields to share their experience with a wider group of stakeholders.

The training workshop was facilitated by Dr Faith Nguthi and Bibiana Iraki of ISAAA; Dr Abel Sefasi of LUANAR; and Jacob Jimu of the University of Malawi.

Participants at the training workshop

included members of the National Biosafety Regulatory Committee (NBRC), Cotton farmers, Government officials, Media practitioners and the stakeholders from the private sector.

Participants were trained on principles of effective communication, risk communication, stakeholder identification and messaging and effective media relations that included practical media interviews. The training workshop also included a session where participants shared experiences particularly those that went to India to see how GM cotton is being grown. Discussions focused on Bt Cotton research, communication and management in India. Some of the lessons learnt from the discussions were that the Government of India gives out loans to Bt Cotton farmers with very negligible interest and also that the Government compensates Bt cotton farmers in case of loss due to natural factors. The workshop was seen as a success in creating an increased number of spokespersons with skills and confidence to articulate factual biotechnology and Biosafety messages which will encourage acceptance and eventual adoption of the GM products being tested in the country.



A cross-section of participants during one of the workshop sessions

NCST provides support towards the 2016 National Schools Science Fair

As part of its functions The National Commission for Science and Technology (NCST) in February 2016 presented a cheque worth MK1,600,000.00 to Kamuzu Academy as a contribution towards the organization of the national schools science fair which is held annually at Kamuzu Academy. The fair is aimed at showcasing science projects done in secondary schools in Malawi, using locally found products.

As he presented the cheque, the Director General of NCST, Mr. Anthony Muyepa-Phiri said that NCST is very pleased to once more be part of this noble cause which showcases scientific talent and innovation from students in Malawi. He said that the holding of fairs is in line with one of the functions of the NCST. He intimated that the improvement of the quality of life starts with such small steps as exhibited at these fairs, where students apply science in real life situations which would later translate into great business ventures.

Speaking at the Ceremony, the acting headmaster of Kamuzu Academy, Mr. Andrew Wilde thanked NCST for the timely contribution as preparatory work for the 2016 School science fair was about to start. He said the donation will go a long way in improving the teaching and learning of science in schools. In addition, students will have yet another opportunity to share experiences.

The fair is open to all secondary schools in the country including private, public and Community Day Secondary Schools

(CDSS) that teach science.

Kamuzu Academy has organized this fair since 2009 in collaboration with NCST and other organizations like Press Trust, Anglia Books, Lab Enterprises, Arkay Plastics, Airtel, MALSWITCH, and Malawi Institute of Engineers.

Since its inception, 130 schools have participated at the fair and students have showcased great science projects.



The Director General of NCST, Mr. Anthony Muyepa- Phiri presenting the cheque, to the Acting Headmaster of Kamuzu Academy, Mr. Andrew Wilde

Some of the outstanding projects include the use of tomato to make a battery which was presented by Euthini Secondary School, use of water to recharge a battery a project presented by Majiga CDSS and use of local materials to make a refrigerator done by Mwatibu CDSS .

This year's national schools science fair takes place at the usual venue, Kamuzu Academy from 3rd to 6th July 2016 and is open to all secondary schools that teach science.

If a man's wit be wandering, let him study the mathematics – Francis Bacon

“He said that the holding of fairs is in line with one of the functions of the NCST”

NCST PRESENTS FINDINGS OF AN EVALUATION OF THE SCHOOL SCIENCE FAIR TO STAKEHOLDERS

NCST and Kamuzu Academy earlier in 2015, conducted an assessment of the National Schools Science Fair to determine whether it has achieved the rationale for its establishment. Since its inception in 2009, the fair has been organized and hosted annually by Kamuzu Academy with support from a number of stakeholders including the National Commission for Science and Technology, Press Trust, Anglia book distributors, Arkay Plastics, Lab



Participants at the presentation of the findings of the evaluation

The evaluation targeted teachers, students, organizers, and all stakeholders who have been involved in the fair over the years.

The findings of the survey were shared with stakeholders at Kamuzu Academy in Kasungu on 19th January 2016. Present at the presentation of the findings were staff from Kamuzu Academy, NCST and Press Trust.

The findings of the assessment revealed the following:

- The objectives of the Fair remained relevant despite being perceived 6 years ago.
- Not much attention has been given to the protection of the exhibitions in terms of Intellectual property rights although the simple rule is that innovations which are already in the public domain cannot be protected.
- No data segregated by gender existed on the participation of students and teachers, which is considered one of the critical indicators of performance in science subjects.
- From the time it started, 130 schools have participated in the Fair. The majority of schools participated only once and only 2 schools

(Lilongwe Private and Marymount) have participated in all the Fairs. In addition, private schools have participated in more Fairs, than government schools.

• Students developed an inspiration to achieve more after participating in the fair. An indication that the fairs improved the students' zeal to know more and explore more in sciences and also to innovate.

• The fair be an annual event and should be extensively popularized through all communication channels so that more schools participate.

• Most projects were not attended to or abandoned completely after the fairs.

• Most of the organization apart from Press Trust, Anglia Book Distributors and NCST have not continued with their sponsorship. A situation that may affect efforts to contribute towards enhancing science and technology in Malawi.

Stakeholders therefore agreed on the following:

• To create objectively verifiable indicators and measurable objectives to make monitoring & evaluation exercise easier.

• To open up the fair to other stakeholders like entrepreneurs who may assist with sponsorship and in return they could benefit by selling their products/projects.

• To widely publicize the event through e-media. Press Trust suggested the use of their existing programs beamed on MBC-TV and those aired on Zodiac Broadcasting Service.

• To document and archive all future NSSF projects using different media including videos.

• To spread out tasks when organizing the fair in order to ease pressure on Kamuzu Academy teachers.

• To continue holding the fair on a yearly basis at Kamuzu Academy.

In his closing remarks, The NCST Director General of NCST, Mr. Anthony Muyepa- Phiri indicated that it was indeed the main role of NCST to promote, support, coordinate and regulate all research, science and technology activities in Malawi. As such, he said the Commission was not necessarily the implementer of such activities but that it is supposed to work with other institutions. He therefore said NCST will continue to collaborate with Kamuzu Academy to get sponsors who can support the fair. He also emphasized that he will make sure that NCST provides support every year towards the implementation of the programme.

The Acting Headmaster of Kamuzu Academy, Mr. J Wild thanked all the stakeholders for their continued support and looked forward to their usual support.

“The objectives of the Fair remained relevant despite being perceived 6 years ago.”

INSIDE NCST

NCST is one big happy family. In every issue of *Science and You* we will be giving you a sneak peek into what is happening to the people that make NCST

Mrs. Mndala retires

The Assistant Administrative Officer, Mrs Seria Mndala has retired. She has worked with the NCST since its inception in 2010 as Assistant Administrative Officer and tirelessly ensured that transport logistics, office stores and supplies and everything that is needed at the office, was timely provided. Her motherly guidance and smiles will be missed around NCST. *Science and You* wishes her an enjoyable retirement.



Picture showing Mrs. Mndala receiving a gift from the Director of Planning Services Mr. A. Manda during a farewell ceremony held in the NCST Library.

New Procurement Officer hired

NCST is pleased to welcome the new Procurement Officer Mr. Madalitso Kalumbi replacing Yamikani Chinjala who left towards the end of 2015. Madalitso brings with him 15

years of experience in procurement after having

worked in several government and private organizations. *Science and You* welcomes him to the fold

Education Advancement

The Documentation Assistant in the Directorate of Documentation and Information Services, Mr. Thomas Kaluvi, completed his Bachelor's Degree in Library and Information Sciences at Mzuzu University. Congratulations are in order

The Research Officer in the Health, Social Sciences and Humanities Section, Martina Chimzimu proceeded for her Master of Arts in Development Studies at Chancellor College. We wish her the very best in her studies.

The Assistant Human Resource Officer, Annie Chipaka, is about to complete her Master of Arts Degree in Industrial Relations and Human Resource at Chancellor College. We wish her the best as she does the final touches

The Research Officer in the Natural Sciences Section, Mr. Yohane Chimbanga returned from his studies in the United States of America where he completed his Masters Degree in Agriculture Economics from Mississippi State University in the USA. *Science and You* congratulates him on this notable achievement.

Research Officer in the Natural Resources Section, Mr Mshawa Tembo recently obtained his Master of Science in Environmental Health from the University of Eldoret in Kenya. We congratulate him.

NCST is one big happy family