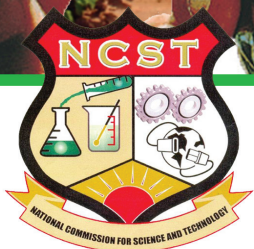
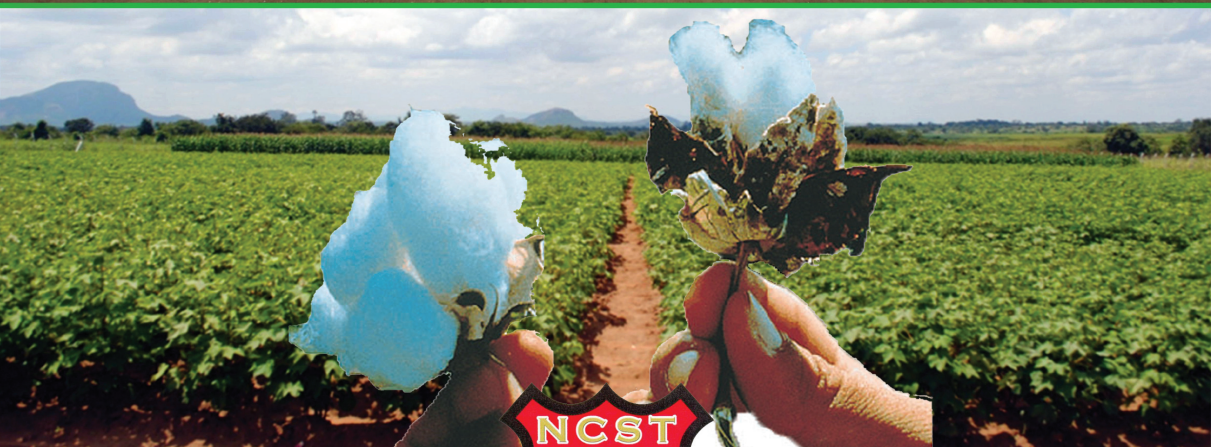


# Annual Report 2012- 2013



National Commission for Science and Technology

## Cover Page

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## Acronyms

AATF	Africa Agricultural Technology Foundation
ABNE	African BioSafety Network of Experts
AU TWAS	African Union Academy for Sciences for the Developing World
BieROC	Biotechnology Ecology Research and Outreach Consortium
CDM	Clean Development Mechanism
CDT	Cotton Development Trust
CFT	Confined Field Trial
CAASTNet	A Network for the Coordination and Advancement of Sub-Saharan Africa EU Science and Technology Cooperation
COHRED	Council on Health Research for Development
COMESA	Common Market for Eastern and Southern Africa
CREAMS	Clinical Research, Education and Management Services
DFID	Department for International Development
DNA	Designated National Authority
EAD	Environmental Affairs Department
EDIE	Engineering, Design, Industry and Energy
ETHCO	Ethanol Company Limited
EU	European Union
FP	Framework Programmes
GO-SPIN	Global Observatory on Science and Technology Policy Instruments
HRCSI	Health Research Capacity Strengthening Initiative
ICS	Improved Cook Stove
ICT	Information and Communication Technology
IST	Information Society Technologies
JICA	Japanese International Cooperation Agency
LUANAR	Lilongwe University of Agriculture and Natural Resources
MALICO	Malawi Libraries Consortium
MAREN	Malawi Research and Education Network
MIRTDC	Malawi Industrial Research and Technology Development Centre
MMCT	Mulanje Mountain Conservation Trust
MoH	Ministry of Health
MoU	Memorandum of Understanding
M-REAP	Malawi Renewable Energy Acceleration Programme
MTL	Malawi Telecommunications Limited
MZUNI	Mzuzu University
NAC	National AIDS Commission
NACOB	National Committee on Bioethics
NCANS	National Committee for Agriculture and Natural Sciences
NCDIS	National Committee on Documentation and Information Services
NCIC	National Construction Industry Council
NCST	National Commission for Science and Technology
NCTTSSC	National Committee for Technology Transfer and Secondary School Competitions
NEPAD	New Partnership for African Development
NHRA	National Health Research Agenda
NHSRC	National Health Sciences Research Committee

OPC	Office of the President and Cabinet
PBS	Programme for BioSafety Systems
PMB	Programme Management Board
PwC	Price Water House Coopers
R&D	Research and Development
RDI	Research Development and Innovation
RFA	Request for Applications
RU	Research Unit
S&T	Science and Technology
SAC	Scientific and Awards Committee
SADC	Southern African Development Community
SC/PCB	Science Policy and Capacity Building
SDNP	Sustainable Development Network Programme
SETI	Science, Engineering, Technology and Innovation
SPRO	Swedish Patent and Registration Office
SSA	Sub-Saharan Africa
STI	Science, Technology and Innovation
STIGAP	Science, Technology and Innovation Global Assessment Programme
TIS	Technology Intelligence Studies
TraMed	Traditional Medicine
UNESCO	United Nations Education, Scientific and Cultural Organisation
UNDP	United Nations Development Programme
UNIMA	University of Malawi
WIPO	World Intellectual Property Organisation
ZAMFOHR	Zambian Health Sector Knowledge Translation Platform

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## STATEMENT BY THE DIRECTOR GENERAL



Mr Anthony Muyepa - Phiri

Welcome to the Annual Report (2012/13). This report outlines major achievements between July 2012 and June 2013. It also highlights the plans set out for 2013/14 by all sections of the National Commission for Science and Technology (NCST). The National Commission for Science and Technology (NCST) has been in existence for three years now. This is the third Annual Report. Let me state that in 2012/13 Financial Year, the Commission made significant contribution through the implementation of programmes in Health, Agriculture, Engineering, and through the Biotechnology Application, Use of ethanol as an alternative energy source to petrol in motor vehicles, Adaptation to climate change and mitigation of negative climate change effects, Incultation of science culture at grass-roots level, promotion of technologies at various fora.

In particular, some of the milestones include:

- 1) The Ethanol Driven Vehicle Project Report that was approved and adopted by the Government of Malawi in October 2012. This paved way for the development of the Malawi Ethanol Programme to be implemented under the leadership of the Ministry of Energy;
- 2) Confined Field Trials for Bt cotton were undertaken at Lilongwe University of Agriculture and Natural Resources, Bunda Campus as one of the biotechnology programmes. This is a technological breakthrough since only a few countries in Africa have fully adopted biotech crops;
- 3) The Commission continued to attract funding from development partners to implement new projects. The EU approved a new project - CAASTNET Plus with TEC of 108,306 Euros whose secretariat will be NCST. This project is aimed at contributing to the quality and scope of the Africa-Europe STI relationship for bi-regional mutual benefit by fostering bi-regional dialogue among stakeholders for gathering informed opinion and experience about the bi-regional cooperation process in Science, Technology and Innovation (STI). The Commission also continued to work with EU partners on the IST Africa project;
- 4) The Commission continued to provide all forms of grants under Health Research Capacity Strengthening Initiative (HRCSI) and using local resources the Engineering, Design, Industry and Energy section was able to support Bunda College of Agriculture with a small grant to the Faculty of Engineering;
- 5) The Commission supported its staff in a number of capacity building initiatives such as participation in Clinical Trials Course in Nairobi, Training and Advisory Programme on IP in Sweden. UNESCO Go-SPIN survey workshop in Harare, UNESCO's Bioethics Training of NACOB members within Malawi and others;

6) The Commission also held its second Science and Technology Fair at COMESA Hall in Blantyre;

However, it could be naïve not to mention some of the challenges faced by the Commission.

- 1) During the 2012/13 fiscal year, the Commission had an inconducive operating environment and resignations of some staff members as some of the critical challenges faced;
- 2) The Commission had inadequate financial resources for key operations. Under normal circumstances one would expect an increase in nominal financial resource allocation considering the increase in prices of goods and services and increased demand from stakeholders who have become aware of the existence of the NCST. Unfortunately, in 2012/13, the allocated resources were reduced;
- 3) In spite of the strides made by the commission to sensitize policy makers on the role of science and technology in development, there is still lack of appreciation and understanding of the role of science and technology even at policy making and administrative levels. The support the Commission has received in the past three years has not been as expected especially from those responsible for budgetary allocations;
- 4) The pluralistic approach in the implementation of science and technology policy has continued in spite of the commission being in existence for three years.

As a new and learning organization, the Commission continued to put more emphasis on development of systems to guide operations. In the reporting period, the Commission developed Finance and Grants Manual, National Health Research Agenda, Board and Internal Audit Charter among others.

The commissioning of new projects such as CAASTNET plus entails that the Commission is being entrusted with more responsibilities in the coordination of Science and Technology in the Country to ensure that the Science and Technology Policy of 2002 is fully implemented.

It is pleasing to note that the future of science, technology and innovation (STI) appears to be very promising in Malawi considering that the Malawi Growth and Development Strategy II has clearly spelt out STI strategies that need to be implemented for the country to achieve sustainable socio-economic development. The Commission and its stakeholders (research and business communities) are employing various strategies in order to attain a science and technology - led development as espoused in the Vision 2020.



## Board of Commissioners



Professor Sosten Chiotha is the first Chairperson of the National Commission for Science and Technology.

When he first met NCST management and staff he said he was excited not because he was a Chairman but because he will be part of a vibrant and pioneering team of the Commission. He therefore takes it as an honour to chair the Commission at a time when the Government is giving particular and greater attention to Science and Technology and the fact that Government decided to set up the Commission speaks volumes of the progress that the Country is making in the advancement of Science and Technology. He believes there is a lot of Science and Technology knowledge that has not been tapped and he knows that it is the responsibility of the Commission to ensure this is done.

Professor Chiotha is a holder of Bachelor of Education Sciences Degree from the University of Malawi, Master of Science in Medical Parasitology from the London School of Hygiene and Tropical Medicine and Doctorate Degree in Environmental Science from the University of Maryland at College Park in the USA. Currently, he is the Regional Program Director for LEAD Southern Africa since 1996 after having served as Research Coordinator for the University of Malawi for five years. Prior to this he has lectured at Chancellor College for many years.

He believes the Commission will also concentrate much on research as this is a pivotal area in science and technology as he believes this field depends on having evidence based data. He therefore believes data collection will be on a continuous basis so as to determine indications of development. He also envisions the Commission bringing science to all levels of society and making science and technology provide solutions to the local man on day to day issues.



George Yobe Kanyama Phiri is an agronomist, an agro-forester and a full Professor of Crop Science. He holds BSc, MSc and PhD in agronomy from Florida A&M University, University of California, Davis and Texas A & M University at College Station, Texas, respectively, in the United States of America. He has published 25 articles in refereed journals, 20 articles in conference proceedings, 10 articles in research bulletins, 15 technical papers, 4 book chapters and 3 monographs. He was awarded a Freshman Academic Scholarship Award and Alpha kappa MU Academic Honour in 1978. In the same year, he was included in the 44<sup>th</sup> Edition of who is who

among Students in American Universities and Colleges for outstanding undergraduate performance. In the year 2000 the International Biographical Centre, Cambridge, England, included him among 2000 outstanding intellectuals of the 21<sup>st</sup> Century Order of Excellence for his outstanding contributions in the Field of Agronomy and Agro-forestry. In the following year he was recognized by the American Biographical Institute as being among the great minds of the 21<sup>st</sup> Century. His current research interests involve the evaluation of groundnuts, soya beans and pigeon peas in a monoculture and in doubled up combinations for soil fertility and maize yields. Professor Kanyama-Phiri has served as Principal of Bunda College of Agriculture-University of Malawi, Chairman of Human Rights Commission and Chairman for Agricultural

Development and Marketing Corporation. He was also Coordinator for the Green Belt Initiative from June 1, 2010 to November 30, 2012. Currently Professor Kanyama-Phiri is Vice Chancellor for Lilongwe University of Agriculture and Natural Resources (LUANAR) and Vice Chairman of the Board for the National Commission for Science and Technology (NCST).



Daniel Matthews Jamu is an Ecosystem Ecologist and an Aquaculture Systems Expert specializing in application of computer and mathematical models in design and analysis of aquaculture systems and ecosystems. He holds B. Sc. (Agric) and M. Sc. Degrees from the University of Malawi's Bunda College of Agriculture and Chancellor College. In 1993 he was awarded a Rockefeller Global Doctoral Fellowship to study in the Department of Biological and Agriculture Engineering and Graduate Group in Ecology at the University of California, Davis, USA where he was subsequently awarded a PhD (Ecology) degree in 1998. In 1999 he was awarded a Rockefeller Post-Doctoral Research Grant to undertake a study on identification of processes regulating nitrogen retention in integrated aquaculture systems. His research has focused on use of computer simulation models and quantitative techniques to analyze and design productive aquatic systems and application of ecology to contemporary rural and end economic development challenges related to aquatic ecosystems and aquaculture facing African countries notably Malawi, Zambia, South Africa, Tanzania, Uganda, Kenya, Ethiopia and Mozambique.

His work has also focused on assessment of impacts of socio-economic development on ecosystem goods and services within lake basins and of large-scale commercial aquaculture projects. Daniel Jamu has also worked as Research Scientist, Regional Director (Eastern and Southern Africa) for the World Fish Center where he was instrumental in developing the center's regional research and development programme and served on the Steering Committee of the NEPAD Fish for All Summit. From his research work he has published over 35 refereed journal articles and technical reports and 5 book chapters. His current research involves the development and implementation of ecosystem monitoring mechanisms for a long term climate change adaptation programme in the Lake Chilwa Basin and coordinating a water governance and climate change programme in Malawi, Mozambique and Zambia. Daniel Jamu is currently working for the Foods Company Limited. In his own right, he is also Chairman of the Zomba Commercial Properties Limited, member of the editorial team of the African Journal of Ecology and also has taught and supervised Master of Science students at the University of Malawi. He is also Chairman of the Scientific and Awards Committee of the National Commission for Science and Technology.



Dr Chrissie Nancy Mwiyeriwa, Nee Bota, went to Mary Mount Girls Secondary in Mzuzu, before she was selected to Chancellor College in 1971. In 1972 she proceeded to the University of Nairobi to pursue a Bachelor of Veterinary Medicine (BVM) Degree, graduating in 1977 as the first female Malawian Veterinary Surgeon. She earned her Masters Degree in Public Health (MPH) specializing in Veterinary Public Health (Epidemiology) at the University of Minnesota in the United States of

America (USA) in 1985. Dr Mwiyeriwa is a Pearson Fellow (1989) and has been on the Hubert Humphrey Programme (1994).

Dr Mwiyeriwa has worked in the Department of Animal Health and Industry (DAHI) in various positions and laboratory stations throughout Malawi. In 1989 she rose to the post of Programme Manager for Liwonde (now Machinga) Agricultural Development Division (ADD). Later, in 1997, she was appointed as a Principal Secretary (PS) and posted to the Ministry of Health and Population where she was responsible for Population and Reproductive Health. In 1998 she was posted to the National Research Council of Malawi (NRCM) in the Office of the President and Cabinet. As Secretary to the NRCM, she was responsible for strategizing Malawi's vision for national development through the application of Research, Science and Technology. While there she spearheaded the development of the country's National Science and Technology Policy and after that, The National Science and Technology Act of 2003. Today, science and technology is ably taking its rightful place in Malawi's development agenda under the leadership of the National Commission for Science and Technology (NCST). Dr Mwiyeriwa was retired from the Civil Service in January 2005.

Dr Mwiyeriwa then worked as Country Coordinator for the Safe Schools Programme (SSP) – Malawi. A research/pilot intervention project meant to unravel school related gender based violence (SRGBV) and pilot some interventions so as to make schools safe for both girls and boys. The project was therefore aimed at creating gender safe environments that promote gender equitable relationships resulting in improved educational outcomes and reduced negative health effects. The research proved beyond reasonable doubt that SRGBV is one very important factor that contributes to school drop out.

Dr Mwiyeriwa is active in various professional activities. She is a member of the Malawi Veterinary Association (MVA), and The Forum of African Women Educationalists – Malawi - Chapter (FAWEMA) (having been its Chairperson for six years). Dr Mwiyeriwa has served on various Boards in her personal capacity including being a Council Member for the recently established Catholic University of Malawi. In July, 2013 Dr Mwiyeriwa has been appointed Malawi High Commissioner to Mozambique.

In Society she enjoys serving the under – privileged. She is a devout and active Roman Catholic, holding several positions in the Church at local and national levels. She is a proud mother of four girls.



Ms Liwewe has a Master's Degree in Women's Law and specialised in Eco-Feminism. She also has a Bachelor of Education degree from the University of Malawi- Chancellor College. She is an accomplished women's rights, gender equality and women empowerment and social development expert with over 20 years of international professional experience in multilateral and bilateral organisations at senior management level. She currently works for the Millennium Challenge Account Malawi as a Social and Gender Assessment Director.

She has worked for UNDP-Sierra Leone and UNDP-Malawi, Canadian International Development Agency (CIDA), Germany Technical Cooperation (GTZ), UNICEF, the Norwegian Embassy, National AID's Control Program, University of Malawi and government. Her work experience



with the international community within and outside Malawi has enabled her to attain essential skills in policy development and analysis including project and program management.

### **Other Commissioners**

#### **6) Dr Meria Nowa Phiri**

Dr. Meria D Nowa Phiri joined the Ministry of Education as a trained secondary School teacher. She has served as an Arts Tutor at the Malawi College of Distance Education where she rose to the rank of Principal. Later, she successfully served as Principal of Lilongwe Teachers Training College, Domasi College of Education. At the policy making level, she has served as Principal Secretary in the Ministries of Education, Gender and Community Services, Health and Department of Poverty and Disasters Affairs under the Office of the President and Cabinet. In addition, Dr. Meria Nowa Phiri was also appointed as the Executive Director of the Malawi National Examinations Board (MANEB). She has further served as Council Member of University of Malawi (UNIMA), Catholic University of Malawi (CUNIMA) and as Board Member of Malawi Posts and Corporations Board. Currently, she is Board Member of the NCST and Council Member of the Malawi University of Science and Technology. Dr Meria Nowa Phiri has a Diploma in Education (with Credit) from Soche Hill College, B.Ed. from UNIMA, M.Ed & Ed.D from UMass, USA.

#### **7) Mr Wapona Kita**

### **Ex-Officio Members**

#### **8) Secretary for Education, Science and Technology**

#### **9) Secretary for Environment and Climate Change**

#### **10) Secretary for Agriculture and Food Security**

#### **11) Secretary for Health**

#### **12) Secretary for Energy**

## Introduction

The National Commission for Science and Technology (NCST) was established by the Science and Technology Act of 2003 and was operationalised in 2009 following a Government Gazette. The Commission has recently inaugurated seven functional committees as follows: The National Health Sciences Research Committee, National Committee on Documentation and Information Services, National Committee on Bioethics, National Committee on Engineering, Industry and Energy, National Committee on Social Sciences and Humanities, National Committee on Technology Transfer and Secondary School Competitions, and National Committee on Agriculture and Natural Sciences to spearhead the implementation of its programmes as outlined in the strategic plan.

In the Annual Report 2012/13, the Commission made strides in the development and application of science and technology in Malawi through various notable outputs as outlined in the document.

## Promotion of Research and Development in Malawi

### Rolling out the Malawi Ethanol Programme

The final draft of the Malawi Ethanol (Roll out) Programme document was prepared and circulated to Ministry of Energy, NCST staff members and stakeholders for comments. A Stakeholders' Workshop to discuss the draft Ethanol Development (Roll out) Programme was held at Shire Highlands Hotel on 12<sup>th</sup> April 2013. Unfortunately, Ethanol Company limited (ETHCO), PRESSCANE, some oil marketing companies and motor dealers did not attend the meeting. As a follow-up to the workshop recommendations, consultations with Ethanol producers (ETHCO and PRESSCANE), oil marketing companies (PUMA Energy, TOTAL, ENGEN, Petroda, and Injena), and car dealers (Toyota Malawi, CFAO, Stansfield Motors, Mike Appel and Gatto, and HTD) were undertaken from 20<sup>th</sup>-23<sup>rd</sup> May 2013.



Figure 1: One of the Ethanol Plants at ETHCO Limited in Dwangwa where ethanol is locally produced in Malawi.

On a positive note, Ethanol producers have continued to pledge support to the programme which will solve a myriad of problems in the energy sector. In addition, PUMA Energy indicated that they would support establishment of pilot filling stations in Blantyre, Lilongwe and Mzuzu. Another positive development from the Oil marketers is that ENGEN also expressed willingness to support sale of ethanol in pilot filling stations which they will designate. Many of the car dealers indicated they were not ready to import flex vehicles at the moment because most manufacturers provide left hand drive flexi vehicles which are not meant for the Malawian market. Special orders will therefore be needed for production of vehicles suitable for the Malawi market in the long term and if demand is too low, it would result in higher cost than petro-driven vehicles. However, some of the companies' representatives expressed support to the idea of importing and fitting conversion kits in the medium term but that would also depend on the recommendations from their manufacturers in terms of what type of conversion kits



would suit their vehicles. Most of the companies also provided various input into the Malawi Ethanol programme. The programme also benefited from the comments of chair of the Automotive Association of Malawi who was consulted with instructions from the Chief Executive Officer of Stansfield Motors.

Comments from various participants were incorporated into the programme document as agreed at the stakeholders' workshop. The revised document was sent to stakeholders for final comments. The final document was circulated to policy makers including Minister of Energy in preparation for the launch of the programme.

Currently, the National Commission for Science and Technology is working with various stakeholders to ensure that the roll out of Malawi Ethanol Programme is fully implemented and that benefits trickle down to the consumers.

## Facilitation of Research Agendas through Functional Committees (October 2012- June 2013)

During the year 2012/13, only 3 Functional Committees held meetings while 4 committees namely, National Committee on Technology Transfer and Secondary School science Competitions (NCTTSSC), National Committee on Documentation and Information Services (NCDIS), National Committee on Bioethics (NACOB) and National Committee on Social Sciences and Humanities (NCSSH) were inactive due to inadequate resources. However, the 2013/2014 proposed budget has made provisions for committee meetings at-least once or twice a year in order to continue the implementation of science and technology policies.

The National Committee on Agriculture and Natural Sciences (NCANS) met once during the reporting period. The meeting reviewed and cleared the following research projects that involved access and collection of genetic resources in Malawi:

- i. Collaborative research on improving the root system of maize by Dr. Eric A. Nord of Pennsylvania State University and Dr. V. Kabambe of Lilongwe University of Agriculture and Natural Resources.
- ii. Collaborative research on Bats genetic variation in phenotypes of two African Horseshoe Bat species (*Rhinolophus darling* and *Rhinophus fumigates*) by Tinyika Maluleke of University of Cape Town and Museums of Malawi.
- iii. Share research project on sanitation and waste management by the Secretary for Water Development and Irrigation.

The Commission also embarked on a programme to develop Research Agendas for different sectors of the economy. In the Agriculture and the Natural Sciences Sector, the overall goal of the National Research Agenda is to guide researchers, policy makers, program implementers, academic institutions, development partners and other stakeholders on Agriculture and natural sciences research priorities for Malawi. To develop the draft agenda, the following milestones were accomplished:

- i. Research priority areas from different research institutions in Malawi were called for;
- ii. Different research priority areas were reviewed and consolidated;
- iii. Consultations were held with different stakeholders on research priority areas;
- iv. A draft report was developed and circulated to members of the NCANS;
- v. Comments received from members were incorporated into the draft agenda; and

- vi. The draft agenda was finalized. The agenda is now ready for presentation to the National Committee on Agriculture and Natural Sciences (NCANS).

The National Committee on Energy, Industrial and Engineering Sciences also made notable progress. The committee finalised the Guidelines and Procedures for Conducting Research in Energy, Industry and Engineering in Malawi, and the Research Agenda in Energy, Industry and Engineering. Both documents are currently being finalized prior to submission to SAC and the Board for approval.

It is worth noting that the National Health Sciences Research Committee (NHSRC) whose Secretariat is at Ministry of Health is very active. The Committee meets once every 2 months mainly to review health-related research proposals for technical and ethical approval.

Apart from supporting Functional Committees of the Commission, there has been untiring effort to support establishment of research committees in different research institutions with the aim of clearing research proposals at institutional level before the proposals are forwarded to NCST for research permit approval. Some of the institutions that have successfully established their own research committees with support from Agriculture and Natural Sciences include Mulanje Mountain Conservation Trust (MMCT) and the Majete Wildlife Reserve. These two institutions were given support due to the nature of research activities that takes place in the sector. Many times these institutions conduct research involving access to and collection of genetic materials.

## Facilitating Technology Transfer and Commercialization

### Second National Science and Technology Fair



Figure 2: The Minister of Education, Science and Technology, Honourable, Late Mrs Eunice Kazembe, MP during the Fair, flanked by NCST Board Chairperson, Professor Sosten Chiotha and other Senior Government Officials

The Fair was held at COMESA Hall from 25<sup>th</sup> October to 27<sup>th</sup> October 2012 under the theme, *Science and Technology for Industrialisation*. The Guest of Honour was the Honourable Minister of Education, Science and Technology, Mrs Eunice Kazembe, MP.

The Fair drew participants from Mundizo Products; Ndatani Premier Feeds; Mzuzu University; Chancellor College Cassava Project; Malawi Telecommunications Limited (MTL); Malawi Industrial Research and Technology Development Centre (MIRTDC); Technobrain; Baobab Health Trust; Kamuzu Academy, St.

John's Secondary School; St. Patricks Secondary School; Lilongwe Academy, Anglia Book Distributors Limited; and Lab Enterprises Limited.

## Award Presentation Ceremony for the 2012 AU-TWAS Young Scientist Award and the 2011 Secondary School Competition

The presentation ceremony was held on 21<sup>st</sup> November 2012. The Guest of Honour was the former Principal Secretary responsible for Higher Education, Mrs Lonley Magaleti. The African Union Academy of Sciences for Developing World (AU-TWAS) was won by Dr. Fanuel Chilemba Lampiao, a Physiology Lecturer at College of Medicine for his outstanding track record of publishing in refereed journals on life sciences. During the ceremony, Dr. Lampiao presented his landmark research work on physiology of human spermatozoa which helps in diagnosing male infertility. The main findings were that stress contributes to poor sperm characteristics and that *Gondolosi (M. whytei)* enhances sperm motility.



Figure 3: Dr Fanuel Lampiao (middle) received the AU TWAS Award in 2012

In the Secondary school science competition, Likuni Boys Secondary School emerged the overall Science School; Zomba Catholic Secondary School was the best Mathematics and Physical Science Teaching School whereas Marist Secondary School was the best Biology Teaching School. Madalitso F. Nkhutabasa formerly of Chichiri Secondary School was the overall best Science Student.



Figure 4: Former Principal Secretary in the Ministry of Education, Science and Technology responsible for Higher Education, Mrs Magaleta and Dr Henderson Chimoyo, former Director General of NCST

## Enhancing Information and Knowledge Management

### Implementation strategies for the National Policy on Library, Documentation and Information Services

In July 2012, the Secretariat reviewed the old National Policy on Library, Documentation and Information Services and developed a new Draft National Policy on Library, Documentation and information services. However, the Malawi Government's current practice for developing policies dictates that every policy developed, should have accompanying implementation strategies. Work is therefore underway to develop the Implementation Strategies for the National Policy on Library, Documentation and Information Services. Both the Draft Policy and Implementation Strategy will be submitted to the Scientific and Awards Committee of the Commission for consideration.

### Technical Support to NCST and HRCSI on Information and Communication Technology

With financial and technical assistance from Health Research Capacity Strengthening Initiative (HRCSI), the Secretariat undertook the following activities:

- i. Installed the new NCST Local Area Network (LAN)
- ii. Acquired and installed Server, laptops, desktop and other ancillary equipment
- iii. Installed the server-based Symantec Anti-Virus
- iv. Provided domain-based corporate email services
- v. Provided Internet services
- vi. Developed Finance and Grants Management System

## Capacity Building Programmes

### Training and Advisory Program on Intellectual Property Rights in the Global Economy for Least Developed Countries

World Intellectual Property Organization (WIPO) in collaboration with the Swedish Patent and Registration Office (SPRO), Government of Sweden organized a Training and Advisory Program on Intellectual Property Rights in the Global Economy for Least Developed Countries from November 18 to December 7, 2012, in Stockholm, Sweden.



Figure 5: Mrs Gift Kadzamira with fellow participants

The Acting Director General, Mrs Gift Kadzamira attended the training. The objectives of the Program were to provide a forum for the exchange of ideas, learn the contribution of intellectual property system to economic growth and development, and promote familiarity with the legislation, enforcement and management aspects of intellectual property, both from a national and an international perspective. The second

phase of the training program took place in Nepal from 17<sup>th</sup> to 26<sup>th</sup> May 2013 whose objective was to make a follow up on individual projects and review the developmental plans of these projects.

The knowledge and skills gained from the workshop will strengthen the Commission's capacity in implementing Intellectual Property Rights issues that are crucial for reaping the benefits from protected works that are being exploited at the moment.

### IST-Africa 2013 Annual Conference

The Chief Systems Analyst, Mr Ebony Msikawanthu attended the IST-Africa 2013 Annual Conference held in May 2013 in Nairobi, Kenya. The event among things discussed and shared IST-Africa Partner results to date. At the end of the meeting, Republic of South Africa expressed interest to partner with and assist NCST in developing Information and Communication Technology (ICT) Research Agenda for Malawi. The aim is to develop a competitive and coordinated ICT Research Development and Innovation (ICT RDI) for Malawi. A side-meeting with NCST representative and New Partnership for African Development (NEPAD) also revealed that NEPAD is ready to fund such an initiative as long as such an initiative is demand driven. The meeting also yielded NEPAD interest in helping NCST with other capacity building projects.



Such projects would include establishment of Multi-Purpose STI Infrastructure and operationalization of the S&T fund.

## Empowering women in Developing Countries through the use of ICT

The Chief Information, Education and Communication Officer, Mrs Catherine Chaweza attended the International Conference on Empowering Women in Developing countries through the use of ICT. The Conference that took place in Wagnaghat, India from 1<sup>st</sup> to 3<sup>rd</sup> June, 2013 was organized by the Centre for Science and Technology of the Non-Aligned and other developing countries in collaboration with the JUIT Centre of Women Studies and the Jaypee University of Information Technology. The Conference drew participants from 23 developing countries including Malawi.



Figure 6: Women empowerment workshop in India which was attended by NCST Chief Information, Education and Communication Officer

Lessons learnt from the Conference include the following:

- i. Understanding critical gender equality issues related to ICT in developing countries
- ii. The importance of ICT in empowering women in developing countries and to explore potential opportunities for women's economic, social, health and political empowerment
- iii. Understanding reasons for the under-representation of women in the ICT sector in the context of social and institutional barriers
- iv. Roles and responsibilities of corporate and academic institutions to encourage women participation in ICT related disciplines
- v. Government policies on ICT integration in women's education and employment

- vi. Role of Non Governmental Organisations in addressing issues related to women empowerment through ICT with a special focus on rural women
- vii. Research, strategies and tools to address the gender digital divide in national and international contexts
- viii. Sharing and analyzing best practices on gender equality and ICTs

The Chief Information Education and Communication Services Officer presented a paper on *“Empowering rural women for Socio- Economic Development through Information and Communication Technology: Challenges and Opportunities for Malawi”*

The paper discussed how Malawi can change lives of rural women through the use of rural tele-centers which can empower women with information that can give them skills to change their lives.

## Capacity Building of Members of National Committee on Bioethics (NACOB)

Through the established co-operation with NCST on matters of the ethics of science and technology, UNESCO facilitated a training of the members of one of its technical committees, the National Committee on Bioethics (NACOB) in November 2012. The workshop was held at Riverside Hotel in Lilongwe from 22 to 23 November, 2012.



Figure 7: Professor Leonardo De Castro and Miss Dafna Feinholz from UNESCO Paris facilitated the training program



Figure 8: A Cross-section of members of the National Committee on Bioethics (NACOB) during the training workshop

### Key Achievements and Outcomes of the Training Programme

The training was a success as members of NACOB acquired knowledge and specific skills in the following key areas to enable the committee discharge its roles and responsibilities:

- i. **Working methods of NACOB** covering the following aspects: how is the committee going to deliberate (rules of procedure examples, decisions by consensus or voting, policy for agenda setting (i.e. what kind of issues will be discussed, who is authorized to bring such issues? how are they prepared?); open meetings (criteria for presence of non-members, criteria for participation of non-members); publication of decisions; provide written justifications of decisions
- ii. **Operational Methods of the Committee** covering such aspects as Where and How to Get Information for the Committee; Records of meetings (custody of records and documentation, who has access to the records, under what circumstances, how is

confidentiality and privacy of members guaranteed, how long are records retained in the files)

- iii. **Effective Membership and Education for Members covering aspects related to role of members? Procedures for recruitment of committee members,** Who has selected and appointed committee members, criteria for membership, are members representing various constituencies (what does representation mean? how are we going to do that?), what is the range of specialties and expertise in the committee, can members be removed.
- iv. **Outreach of the Committee** covering such aspects as Relationship to the media (how will the public and the media be informed, public events, how to structure public awareness programmes in bioethics); Relationship with other bodies (for instance, other ethics committees in the country, bioethics committees in other countries, academic institutions, governmental bodies)
- v. **Independence of NACOB** in accordance with the Malawi Science and Technology (S&T) Act and the Universal Declaration on Bioethics and Human Rights. What are the appropriate legal provisions?

## Workshop on Surveys on Science, Technology and Innovation (STI) Policy Instruments, STI Governing Bodies, Policies and Indicators

The workshop was organized by United Nations Education, Scientific and Cultural Organisation (UNESCO) division of Science Policy and Capacity Building, Natural Sciences Sector. The workshop focused on Global Observatory on STI policies, policy instruments (GO-SPIN) and Science, Technology and Innovation Global Assessment Programme (STIGAP) initiatives which are meant to manage the complexity of maintaining a dynamic development of relevant STI policies. The Malawian delegation was led by the Ministry of Education, Science and Technology; and National Commission for Science and Technology, National Statistical Office, University of Malawi and Office of the President and Cabinet were part of the delegation. The Chief Planning Services Officer represented NCST at the UNESCO Workshop on Surveys on Science, Technology and Innovation (STI) Policy Instruments, STI Governing Bodies, Policies and Indicators in Harare (Zimbabwe) from 7 to 8 November 2012. The workshop was organized for the purpose of building capacity of high level profile experts from Government, Research Institutions, National Statistical Office and Parliamentary Service Commission.



Figure 9 : Professor G. Lemarchand emphasizing a point on the Go-Spin tool for Assessing SETI Policies



Figure 10 : Malawian delegates in Group Discussions with Professor G. Lemarchand

Figure 10, shows Professor G. Lermarchand, Mr Chikosa Banda (Chancellor College), Mr Kondwani Gondwe (NCST), Dr Henri Njoloma (GreenBelt Initiative), Mr Twika Mwalwanda (NSO), Gladys Kalanda (DST) among the delegates from Malawi.

GO-SPIN provides new and revolutionary tools for knowledge brokers, decision makers and STI policy experts. It is a revolutionary cluster of databases equipped with powerful graphic and analytical tools. The pilot platform which is already in operation has been devised for decision-makers and specialists in science, technology and innovation (STI) policies. GO- SPIN has the potentiality to be the first global observatory on STI policies that might provide end-users information on the structures of the national systems of science, technology and innovation; descriptions of STI national priorities and goals; STI legal frameworks; STI policy instruments; international cooperation strategies; long-term temporal series of indicators on STI activities, innovation surveys, gender, economy, energy, environment, governance, social issues, among others. The pilot-platform also includes: a database module with descriptions about the topics and requirements needed to apply to more than 170 STI international cooperation agencies and organizations; a digital library module with UNESCO documents and books specialized on STI; a country profiler analytical tool that combines -at national and regional levels- all the information available at the platform with other external sources and a search machine that allows the exploration of the whole platform using keywords.

The increasing demand for information about STI policies worldwide, STI policy instruments, Technology Intelligence Studies (TIS), STI indicators and foresight studies to develop medium and long term STI strategies led to the need to develop a new standard-setting instrument to recommend to Member States a methodology for normalizing and standardizing the information on STI policies and policy instruments.

With the use of a Global Observatory on Science, Technology and Innovation Policy Instruments the visibility and presence of UNESCO within STI decision-making units and experts on STI policies all over the world might increase. Its potential visibility might transform this platform into a flagship project for the Division of Science Policy and Capacity Building (SC/PCB).

The STIGAP envisages the setting up of regional networks all over the world. These networks will bring together researchers and research institutions of the member countries in an effort to assess the development of SETI in their respective countries in a way that is locally relevant. It foresees the channeling of funds to these national researchers and research institutions for capacity building and for data collection and the organization of regional workshops for the presentation of SETI assessments, analyses and policy briefs. The Go-SPIN and STIGAP initiatives will eventually complement each other.

### **Success Story**

UNESCO pledged a contribution of \$30,000 towards an international workshop and indicated that the Malawi should prepare a proposal for capacity building. UNESCO argued that the workshop should be prepared targeting an international audience and that UNESCO would endeavour to include a Key Note Speaker of Nobel Laureate status. Following this proposal on capacity building, the Department of Science and Technology (DST) have agreed with UNESCO to review the Science and Technology Policy of 2002.



## Enhance Networking, Partnerships and Collaboration

### International Collaboration

#### Open Access and Research Integrity

The Documentation Officer of NCST, Mrs Judith Elisa participated in a workshop on Open Access and Research Integrity in Addis Ababa, Ethiopia, 26<sup>th</sup> – 27<sup>th</sup> March 2013. The goals of the workshop were to:

- agree on an action plan for implementing open access as a main paradigm of scholarly communication.
- discuss issues pertaining to research integrity in Africa. Principles were therefore established based on core values and standards to ensure research integrity in Africa.

At the workshop, a paper was developed describing measures and suggesting steps by which research councils will stimulate opening access to results of publicly funded research. This will assist the Directorate of Documentation in improving sharing of information through open access systems.

#### Regional workshop on setting up a Bio-based industry

The Chief Research Officer (Engineering, Design, Industry and Energy), Mr Fredrick Munthali participated in a regional workshop aimed at setting up a bio-based industry in Mauritius. The workshop started on 8th and ended on 10th May 2013. Malawi like Mauritius is an agro-based economy as such it has plenty of bio-resources which can form the basis for a bio-based industry. This industry has the potential to be exploited to significantly contribute to the socio-economic development of Malawi. During the workshop, it was observed that a lot of agricultural wastes can be transformed into useful products. For example, ethanol is being produced from wastes from sugar production. This process can be improved by producing lactic acid from wastes from ethanol production. As a way of capacity building, the issues of establishing a bio-based industry could be incorporated into the various degree curricula of the tertiary education institutions such as University of Malawi (UNIMA) and Mzuzu University (MZUNI) whose representatives also attended the function.

#### CAAST NET-Plus first annual meeting

The Chief Research Services Officer (Health, Social Sciences and Humanities), Mr Mike Kachedwa attended a CAAST NET-Plus first annual meeting in Addis Ababa, Ethiopia from 24-27<sup>th</sup> June, 2013 to explore ways of enhancing Africa-EU cooperation in areas related to climate change and research infrastructures. Two workshops saw CAASTNet plus partners from more than 20 nationally mandated European and African STI authorities come together to discuss bi-regional cooperation around joint priorities and policies. The first workshop explored areas for future EU-Africa STI cooperation with regards to climate change, food and water security. The second workshop focused on research infrastructures and their centrality to cooperation and served as a follow up on the Accra and Brussels meetings intended to pave the way to the next stage in the discussion on bi-regional STI cooperation.

During the meeting NCST was appointed to organize an international workshop on research in climate change adaptation in December, 2013.

## Local Collaboration

### **Brief to the Parliamentary Committee on Education, Science and Human Resource**

The Chairperson of the Board in conjunction with the Management team was invited to a presentation on NCST activities, linkages and challenges to the Parliamentary Committee on Education, Science and Human Resource at the National Assembly on April 30, 2013. The members appreciated the role being played by the Commission in advancing Science and Technology in the country. The presentation also raised awareness and interest on Projects that the Commission is coordinating, especially, the Ethanol Driven Vehicle Project and the Bt Cotton Project at Bunda College under Lilongwe University of Agriculture and Natural Resources (LUANAR).

### **Social Sciences Research Dissemination Conference**

The Secretariat in conjunction with the Faculty of Social Sciences, Chancellor College organized a Social Science Research Dissemination Conference whose theme was "Towards Malawi at 50: Socio-economic Achievements and Challenges". The conference took place from the 25<sup>th</sup> - 26<sup>th</sup> April, 2013 at Chancellor College in Zomba. Figure 11, shows delegates from various Research and Development (R&D) institutions, Academic organizations and Government Ministries at the Great Hall, Chancellor College.



Figure 11: Participants at the Social Sciences Research Dissemination Conference held at Chancellor College in Zomba

The main objective of the Conference was to disseminate social science research results that are obtained from research projects conducted by social scientists in various institutions (Academic and Non-academic) in order to improve the visibility of Social Science as a field as well as being a faculty. On the other hand the Secretariat was involved to play its role of supporting researchers and R&D institutions to popularize their research results. Besides being part of the organizing Committee, the Secretariat made a financial contribution to meet the costs of the Conference.



## Ubuntu Alliance – MAREN E- Science Workshop

National Commission for Science and Technology in conjunction with Ubuntu – Net Alliance and Malawi Research and Education Network (MAREN) co-organized a one day workshop under the theme “On to e-Science” at Lilongwe Hotel on 2 May 2013. The workshop was graced by the Minister of Information and Civic Education, Honourable Moses Kunkuyu, MP.

The workshop was organized to enhance North – South, South – South collaboration among African and European scientists and raise awareness on the regional research and education networks and their transformative potential.



The workshop also aimed at proposing alternative means of conducting research and delivering services. It also demonstrated the relevance of e-Infrastructures and advanced networks and provided a forum for discussions and debates on recent development and perspectives in the field of e-science.

Figure 12: Minister of Information, Hon. Moses Kunkuyu, MP with Grey Mang'anda, Secretary for Information, Civic Education; Gift Kadzamira, Acting Director General of NCST and Karine Valin, Managing Director, Sigma Orioins, France

## Field assessment of five sites for potential wind farm development

As a technical member of Malawi Renewable Energy Acceleration Programme (M-REAP), NCST Secretariat participated in field assessment of five sites for potential wind farm development from 29th October to 2nd November, 2012. From the five sites evaluated, two sites (Mzimba and another in Rumphi West) were selected as preferred sites for detailed feasibility studies. It was agreed that wind monitoring equipment should be installed on these sites in September 2013. M-REAP is a recent Malawi Government Programme which is supported and funded by the Scottish Government with the aim of boosting the growth of renewable energy in communities in Malawi. University of Strathclyde coordinates the Programme Steering Group meetings and activities.

## Progress on Clean Development Mechanism (CDM) Projects in Malawi

National Commission for Science and Technology, through Engineering, Design, Industry and Energy (EDIE) section participated in a review meeting on Clean Development Mechanisms (CDM) held in Lilongwe on 11<sup>th</sup> January, 2013. The meeting was organised by the Designated National Authority (DNA) of CDM, the Department of Environmental Affairs (EAD) in Malawi. A Project Design Document submitted by C-Quest Capital Malaysia Global Stoves Limited in collaboration with Total Land Care (Malawi) was reviewed. The project is aimed at reducing emissions of Greenhouse Gases and other pollutants from non-renewable fuel from cooking at household level in rural and urban areas by the installation and promotion of an Improved Cookstove (ICS). The Improved Cookstoves Project was recommended for “grant of letter of approval” with amendments.

Through Engineering, Design, Industry and Energy (EDIE), NCST also participated in a review meeting of the Malawi Market Assessment draft report held on 7th March 2013 in Lilongwe. The

market assessment was conducted on behalf of the Malawi National Cookstove Task Force to investigate the adoption of 2 million improved cookstoves in Malawi by 2020 and create a vibrant market of clean and efficient cookstoves in Malawi. The meeting was held to inform stakeholders of initial findings and solicit their comments for incorporation into the report.

The Engineering, Design, Industry and Energy (EDIE) also participated in a Low Carbon Sustainable Rural Electrification workshop in Salima from 3rd to 5<sup>th</sup> June 2013. The workshop discussed business models and technologies that could support private sector led off-grid rural electrification.

### **Research Proposal Writing**

In collaboration with R&D institutions, NCST finalized a research proposal which was submitted to Mzuzu Coffee Planters Cooperative Union in March 2013, for funding consideration. The objectives of the project are to

- i. improve process system efficiency and performance of Mzuzu Coffee operations;
- ii. improve environmental performance by reducing coffee wastes towards a zero waste production process of Mzuzu Coffee operations; and
- iii. reduce the business risk of relying on coffee as a beverage drink

A visit to Mzuzu Coffee later revealed that the company was still considering the proposal.

### **Data for the development of the National Open Access Digital Repository and Information Literacy workshop at Crossroads**

The Secretariat, in conjunction with the Malawi National Library Services and Malawi Libraries Consortium (MALICO) continued to collect data for the development of the National Open Access Digital Repository. The project is funded by the Institute of Development Studies, UK and is being implemented by Malawi National Library Services.

NCST attended the Information Literacy workshop at Crossroads hotel from 26<sup>th</sup> to 27<sup>th</sup> February 2013 on the promotion of open access resources and ways of encouraging institutions in Malawi to set up open resource repositories. Stakeholders appreciated the role of Open Access Repositories as a tool for access to information.

### **Meeting to sensitize stakeholders on the installation, use and data entry into the NAC database**

The National AIDS commission (NAC) developed a national web based database on HIV and AIDS; health related research projects and approved proposals. Hence, NAC organized a meeting to sensitize its stake holders on the installation, use and data entry into the database.

The National Commission for Science and Technology will host the NAC database and a desktop computer and a server will be purchased to facilitate data entry and access to information by researchers in the Country.

### **Launch of National Public Service Day 2013**

National Commission for Science and Technology participated in the Africa Public Service Day celebrations at CIVO Stadium, 23<sup>rd</sup> -26<sup>th</sup> June 2013 organised by the Office of the President and Cabinet (OPC). The Commission mounted a stand where it exhibited two (2) Ethanol-driven vehicles, and showed a video clip demonstrating the process of fitting of conversion kits, and displayed various leaflets and documents including the National Health Research Agenda. The ethanol driven vehicles and the video clip attracted lots of viewers.



Figure 13: NCST Staff at the stand and below the Ethanol Vehicle during exhibition on the Public Service day at Civo Stadium, Lilongwe

### **Other Activities**

The National Commission for Science and Technology (NCST) attended the 2012 Civil Services Forum for Library and Information Personnel seminar and general meeting, 13 to 14 December, 2012. In addition, NCST participated in the review of Malawi Institute of Management's 2012-2016 Strategic Plan at MIM campus on 14<sup>th</sup> June 2013 and attended the launch of LUANAR Strategic Plan on 17<sup>th</sup> June 2013.

## Monitoring and Evaluation in Science and Technology

### State of Science and Technology Report 2010-2011

The Secretariat undertook data collection exercise for the preparation of the State of Science and Technology Report for 2010-2011 using the National Science, Technology and Innovation framework. The framework is available from National Commission for Science and Technology upon request.



Figure 14: Drafting team of the State of Science and Technology (2010-11)

A drafting session for the Report, involving key stakeholders and NCST staff members was held at Kims Koreana Lodge in Lilongwe and the first draft Report was produced. Follow-ups were done with those stakeholders who had promised to update reports.

Currently, the second draft is being worked on before it is subjected to technical review by a team of local experts.

## Donor Funded Research Projects and Programmes

### Health Research Capacity Strengthening Initiative (HRCSI)

#### Success Stories

During the year 2012/13, the HRCSI made a number of achievements: The first HRCSI Alumni meeting took place at Kalikuti Hotel in April 2013. The Programme established an HRCSI Alumni Association on 30<sup>th</sup> April 2013. Office bearers were voted in, and terms of reference were developed.

The National Health Research Agenda was disseminated to district health management teams in all the three regions of Malawi. The dissemination meeting for the Central Region was held at Cross Roads Hotel on 3<sup>rd</sup> May 2013; while the meeting for the North was held at Mzuzu Hotel on 7<sup>th</sup> June 2013; and that for the Southern Region was held at Victoria Hotel in Blantyre on 21<sup>st</sup> June 2013.



Figure 15: Participants at the National Health Research Agenda Dissemination Meeting at Victoria Hotel in Blantyre

As a result of networking, HRCSI received a small grant from Council on Health Research for Development (COHRED) to facilitate the establishment of information management systems in Malawi. This will support the Research Unit (RU) of Ministry of Health to introduce an online ethics review information management system for Malawi.

#### Small grant recipients

Six applications were received from the following organizations:

- i. Special Olympics Families and Young Athletes Community Building Grant Project
- ii. Chancellor College – Social Science Department
- iii. MoH –Research Department: Research Coordination structures
- iv. Kamuzu Central Hospital (KCH)- Ethics training
- v. Dignitas: Knowledge Translation platform
- vi. Malawi Liverpool Wellcome Trust/ Center for Social Research and Reach Trust



Fundable applications were deemed to be those that scored more than 70%, that had no operational and technical challenges and that would be implemented and concluded by September 2013. The final decision was to fund the top 2 applications, that is, applications from Dignitas, which is in the process of establishing a Knowledge Translation platform and a joint application by Malawi Liverpool Wellcome Trust/ Centre for Social Research and Reach Trust, which is intending to set up a network of social science for health researchers.

### **Institutional grants**

NCST-HRCSI awarded 6 institutional grants in 2013. Guidelines were sent to grantees on how to manage procurement of capital items. Grantees are expected to seek a “No Objection” from HRCSI and PwC before issuing out an LPO. This is to ensure that HRCSI has oversight over the procurement process ahead of disbursement of funds.

### **HRCSI Internships**

NCST-HRCSI awarded 10 internship grants. All the Interns are working. Placements of interns are as follows: 3 at College of Medicine, 2 at Centre for Social Research, 2 at Community Health Sciences Unit (CHSU) and 1 each at Malawi-Liverpool-Wellcome Trust Programme, Chancellor College and Parent and Child Health Initiative.

### **Programme Management**

A re-profiled budget for the HRCSI is being reviewed by funders. HRCSI would require a provisional amount of £250 Thousand to carry out its activities up to October 2013.

### **Networking and Collaborations**

HRCSI made a presentation at the Donor Health Group meeting held on 3<sup>rd</sup> April 2013 at CHAM Secretariat.

HRCSI attended a Chancellor College/Japanese International Cooperation Agency (JICA) workshop in Zomba on 18<sup>th</sup> April 2013. The theme of the workshop was “Strengthening Capacity for Health Research in Malawi and Implementing the National Health Research Agenda.”

The Programme attended a knowledge translation platform meeting jointly organised by Dignitas International and MoH Research Unit. ZamFohr from Zambia made a presentation at the meeting to share lessons learnt. ZAMFOHR is the Zambian health sector knowledge translation platform. It has so far developed policy briefs, policy dialogues and evaluated the process.

HRCSI made a presentation to the Parliamentary Health Committee in May 2013 to profile the work of HRCSI and the role of health research findings in policy making.

HRCSI obtained documents regarding Clinical Research, Education and Management (CREAMS) Memorandum of Understanding as requested by the NCST Board.



### **Work in progress**

- i. HRCSI started preparations for the Health Research Dissemination Forum planned to take place from 24-26th July 2013. Funders will attend this function.
- ii. Planning for the external Audit for the year ending 30th June 2013 is underway.
- iii. Printing and Archiving of HRCSI documents is underway
- iv. The consolidation phase is currently being finalized having received input and budget guidelines from the funders. This will be presented to the Funders.

### **Programme Evaluation**

- i. HRCSI Funders visited NCST in May 2013 to review the Programme. Formal feedback following the review has just been communicated to the Acting Director General.
- ii. Preparations for the Independent evaluation of HRCSI are underway. The call for expression of interest for HRCSI external evaluation was put out in the Daily Times Newspaper and was also advertised on the NCST Website and through e-mail distribution lists.

### **Risks**

- i. Potential loss of Programme staff since the programme is coming to an end in October 2013. Mitigations to this risk include review of the work-plan and scaling down on activities as well as coming up with a smooth exit strategy for programme staff.
- ii. Some grantees may not wrap up their projects by October 2013. The programme is in constant touch with grantees, and providing support to all grant holders.
- iii. Lack of appropriate internalisation and embedding of the program may compromise the interest and legacy of the programme.

## Biotechnology and Biosafety Systems Development in Malawi - Program for Biosafety Systems (PBS)

The Program supports biotechnology and biosafety activities in Malawi with funding from the US-based Program for Biosafety Systems through the International Food Policy Research Institute (IFPRI).

To enhance Malawi's future development and economic growth, the National Commission for Science and Technology (NCST) is keen to promote biotechnology as one of the tools to address poverty, hunger and disease. During the reporting period, the following activities were undertaken:

### **Support to the implementation of Bt cotton Confined Field Trial (CFT) at Bunda College**

NCST through the Malawi PBS office has been working closely with Bunda College to implement the first CFT on Bt cotton. The trial was planted on 4<sup>th</sup> January 2013. Bunda College imported the seed from Monsanto, USA. Upon entry into Malawi, the Biosafety Registrar used GM seed import procedures manual developed by Environmental Affairs Department (EAD) with technical back up from PBS to handle the seed. Representatives from Biosafety Registrar's office, Plant Protection Service, Seed Service Unit, Bunda College and Monsanto supervised and monitored the entire process from receipt of the seed at the airport, transportation to EAD, storage by EAD, transportation to Bunda College and planting at the site. Planting of the cotton followed guidelines outlined in Trial Manager's manual developed by Bunda College with technical backup from PBS. The cotton is growing well and the cotton bolls have started splitting. The NCST Agriculture and Natural Sciences section has worked closely with Bunda College to ensure that construction works and research activities proceed according to agreed plans. The CFT site has so far attracted a lot of visitors including the US Ambassador, Parliamentary Committee for Agriculture and Natural Resources, Principal Secretaries from a number of Ministries and Directors from Ministry of Agriculture, senior officials from NCST, Cotton Development Trust (CDT), Ginners, and farmers. Figure 16 shows part of the Trial Fields separated by a farrow at Bunda College.

A number of stakeholders have been to the Trial Site to appreciate the trials. The different stakeholders who visited the trials were happy with the results and urged researchers to conclude the studies so that Malawi can begin to benefit from the technology. This observation is based on the differences that the stakeholders noted as they were able to see that the Bt-Cotton did much better compared to the conventional cotton.

The Secretariat is also organizing a field day for the NCST Board of Commissioners for them to appreciate the advantages of genetically modified cotton.



Figure 16: Bt Cotton under trial some months after germination.

From the pictorial view, the transgenic (left) and the conventional cotton appear not to be very different in appearance, height and colour.

Figure 17 shows the difference in lint size between the transgenic and conventional cotton after harvesting.



Figure 17: Differences in the physical appearance of Bt cotton and conventional cotton lints

### **Training in Inspection of CFTs**

To facilitate adherence to procedures and requirements for the confined field trials for Bt cotton, the Environmental Affairs Department recruited inspectors who went through a one day workshop. The workshop conducted on 7<sup>th</sup> November 2012 on principles and practical aspects of carrying out inspections was facilitated by Karen Hokanson and Adelaida Harries from PBS

head Office in Washington. As the first inspectors training was carried out before the Bt Cotton was planted, a second training for the inspectors was conducted in April 2013 in collaboration with African BioSafety Network of Experts (ABNE) to reinforce the materials covered in the first inspectors training and to provide practical experience in actual inspection. The two training workshops have provided a good foundation to ensure that trials are conducted in line with regulatory requirements and conditions laid out in the CFT permit.

### **Training of CFT personnel**

Most members of staff employed at the trial site did not have a good understanding of the regulations and procedures necessary for compliance and proper handling of CFT experiments. To enhance their understanding of the regulations and procedures for compliance and proper handling of CFT experiments, PBS with the assistance of experts from Biosafety Registrar's Office and Bunda College Institutional Biosafety Committee conducted a one day training workshop for 16 members of staff comprising research assistants, laboratory technicians, security guards and ground laborers employed at the site. The training workshop was conducted in April 2013. The skills and knowledge acquired through the training helped to ensure that the CFTs complied with national regulatory requirements.

### **Update on confined field trials at Bunda College and biotech in general**

To maintain an active media participation in the dissemination of biotechnology activities, a one day workshop was organized with the journalists and staff from different media houses at Lilongwe hotel on 17 May 2013 with the aim of briefing them on the biotechnology initiatives that are taking place in Malawi. The workshop provided an opportunity for stakeholders to share experiences and give an update of biotech activities in Malawi with particular reference to Bt Cotton Confined Field Trials at Bunda College and the next steps.

The workshop was well attended by different stakeholders who included members of Forum for Agriculture Reporters in Malawi, journalists, scientists, academicians, researchers, representatives of government and non-governmental organization, Monsanto representatives in Malawi, representatives from Farmers Union of Malawi, representatives from Seed Traders Association and policy makers. On the next stage, the trial team informed the meeting that it intends to go for multi-location trials and Confined Field Trial in the next growing season thus conducting the trials in the cotton growing areas. After two years of the multi-location trials, based on the results, the trials team will bring the results to the attention of the Agriculture Technology Clearing Committee for consideration and approval of the technology for commercialization.

Other accomplishments included implementation of different capacity building programmes among stakeholders which Bunda is conducting together with the NCST, Programme for Biosafety Systems (PBS), Industry, Regulators, ABNE, BioEROC, Africa Bio, and Farmers union

### **Preparation of outreach materials**

A two day working session for four members from NCST and two journalists was held from 28<sup>th</sup> to 29<sup>th</sup> April 2013 in Dedza. The session assisted in the preparation of outreach materials for

publication and circulation. Various brochures that were prepared during this session include the following: Biotechnology Basic Facts; Biotechnology Policy and Regulatory Framework; Confined Field Trials and Guidelines.



Figure 18: Selected Biotechnology Brochures

Various articles for publication that were written included: Biotechnology: A Science Evolving with Generations; Biotechnology and Confined Field Trials; An Account of Biotechnology in Malawi; and What is a confined field trial.

### **Crops beyond cotton**

The Bt cotton confined field trial at Bunda College has opened the door for trials of other transgenic crops. Researchers from Bunda College are seriously considering bringing in a food crop for evaluation. Dr Prince Addae from African Agriculture Technology Foundation (AATF) was invited to Malawi (29<sup>th</sup> April to 2<sup>nd</sup> May 2013) to advise Bunda College and stakeholders on how to proceed. After the consultations, it was agreed to take up Bt cowpea as a first food crop for trial.

Despite registering some successes, the CFT at Bunda is faced with challenges, some of which include financial resources, unpredictable climate and weather, construction delays at CFT site.

### **What lies next for Bt – Cotton in Malawi?**

A road map on the plans for Bt-Cotton beyond 2013 has been developed and it includes more optimistic targets as follows:

- i. Bt-Cotton CFT to run for the next two years aimed at expanding into traditionally cotton growing districts and testing stack genes technology (Bt-Cotton + herbicide resistant); Targeted sites are Lilongwe (Bunda), Salima (Chitala Research Station), Balaka (Toleza and Demeter Farms), Chikhwawa (Illovo

Estates, Kasinthula Research Station and Tomali EPA) and Karonga ADD (Meru, Ngerenge and Mpata)

It was agreed that members of the stakeholder institutions who were present at the Consultative Meeting to chart the way forward for Bt-Cotton CFT will be required to conduct some field trips to the proposed sites to verify their suitability for the Bt-Cotton CFT in the 3<sup>rd</sup> - 4<sup>th</sup> week of July 2013. During the field trip, the members will be required to verify the suitability of the sites, determine the level of modifications that will be required to be undertaken to make the different sites suitable for the proposed CFT.

- ii. After two years of testing Bt-Cotton in the traditionally cotton growing districts, then the trials will move to on-farm testing where selected farmers will have an opportunity to grow Bt-Cotton for at least 1 year. The farmers will be identified in due course; and
- iii. After on-farm testing, a move will be made to commercialize the Bt-Cotton technology and this is targeted to be 2017/2018 growing season.



## Malawi SDNP

The Secretariat held a meeting with the Coordinator of Malawi Sustainable Development Network programme (SDNP) on 29<sup>th</sup> May 2013 to discuss the following issues:

- i. Lawsuit, salary arrears and taxes
- ii. Reconciliation of NRCM and S&T holding account
- iii. MOU on SDNP transitional arrangements
- iv. Disposal of old equipment at SDNP
- v. Way Forward

The Memorandum of Understanding for the transitional phase of SDNP signed between United Nations Development Programme (UNDP) Coordinator and Minister of Finance came to an end in May 2013 without tangible progress on various issues, e.g. no agreed institutional framework for transitional phase; no staff contracts from 2010 to-date; no financial statement by UNDP on donations; no records of income deposited and expended by SDNP covering the period from commencement of the UNDP phase to closure in 2009; no audit from 2010 to-date; no regular reports from SDNP to NCST and no transfer of assets by UNDP.

Considering that the transitional phase of SDNP expired, the Secretariat recommends that Scientific and Awards Committee (SAC) should consider and recommend to the Board to commence processes for registering SDNP as a legal entity. The legal document already done by Messrs William Faulkner on this matter way back in 2008 may be considered as a starting point.

The Secretariat is also involved in an IST-Africa Project which is a strategic collaboration between 1 European partner and 18 African ministries and councils responsible for ICT and STI adoption, policy and research. IST –Africa is focused on reducing the digital divide in Africa through supporting activities and implementation of 8th Africa-European Union (EU) Strategic Partnership; skills transfer to support research capacity building & STI development in Africa; and community building to support EU-African research cooperation. EU research activities are structured around consecutive multi-annual programmes called Framework Programmes (FP). FP7 priorities for the period 2007 to 2013 include ICT which is fully open to international co-operation.

Activities of the Project include workshops that have been undertaken in order to raise awareness on how to participate to calls for proposals open under FP7, to provide training on the Living Labs concept, examples of operational and emerging Living Labs and how these have evolved in other African States as well as in Europe. Linking African research organizations to potential European partners, mapping research activities and expertise with research areas funded under FP-ICT.

### Activities carried out to date

- i. Organised a demonstration stand and public awareness-raising workshop of research capacity and ICT Initiatives being undertaken in the 18 participating African countries (Malawi inclusive) during eChallenges e2012 in Portugal in October 2012.
- ii. Participated in IST-Africa Conferences which bring together participants from across the globe to disseminate research results in ICT issues and network researchers. NCST has supported three researchers to these international conferences that have so far taken place in Finland, Tanzania, and Kenya.
- iii. Strengthened international cooperation by promoting research cooperation between European and African organizations in areas such as Digital Libraries and Content and ICT for Mobility, Environmental Sustainability and Energy Efficiency research projects.
- iv. Conducted a survey of current National ICT initiatives, capacity and priorities for cooperation
- v. Conducted a survey of bilateral cooperation and support to ICT issues in the country to create awareness of initiatives currently funded and to encourage a more coordinated approach to ICT-related Support.

### Way Forward

As the FP7 EU funding is coming to an end in 2013, NCST through its partnership with IST-Africa would like to participate and respond to a call under the Horizon 2020 EU Funding scheme which commences in January 2014 as the new Framework Programme to implement the Innovation union. Horizon 2020 will address all research and innovation funding that was previously provided through the Framework Programmes for Research and Technical Development (i.e. FP7). Horizon 2020 intends to support the following project areas: strengthening research in Science, strengthening Industrial leadership in Innovation as well as addressing major concerns such as climate change, sustainable transport and mobility, affordable renewable energy, food security, ageing population.

## Traditional Medicine Research in Malawi

This project is funded by National AIDS Commission (NAC) and aims at scientific validation of traditional medicines claimed to treat HIV and AIDS and opportunistic infections. The project started in 2008 but has stalled because of a very protracted procurement process of lab equipment and machines by NAC.

Key lab machines and equipment were procured and delivered at Chemistry Department, Chancellor College; while some pieces of equipment were delivered at the College of Medicine.

Some equipment that was not anticipated in the original proposal but very crucial for the functioning of the above mentioned machines i.e. Millipore Water Purifier, Gases and tubing have also been procured using funds realized through virement within the same project.

Currently Secretariat is working with Chancellor College on the possibility of refurbishment of a lab before installation of the equipment.

### Key Challenges

Important scientific activities could not be conducted by the researchers because purchase of the lab equipment and machines was a prerequisite hence the project has stalled for quite a long period.

Depreciation in terms of the monetary value due to devaluation as the project is pegged in local currency. The implication is that most scientific activities will not be conducted. NCST and NAC have already opened up negotiation channels for additional funding of which if successful may come in as second phase of the Traditional Medicine (TraMed) Project.

### Way Forward

Since the processes of procurement of lab machines and equipment has been finalized, the two immediate activities shall be to call for a technical meeting and the commissioning function to be held at Chancellor College in conjunction with NAC.

## CAAST NET PLUS

CAAST NET PLUS is an EU-funded project. The project has the following main objectives:

1. To foster bi-regional dialogue among stakeholders for gathering informed opinion and experience about the bi-regional cooperation process in Science, Technology and Innovation (STI).
2. To contribute to the quality and scope of the Africa-Europe STI relationship for bi-regional mutual benefit through:
  - i. bi-regional policy dialogue for mutual learning and awareness,
  - ii. support for coordinated and innovative approaches to bilateral funding of bi-regional cooperation around global challenges,
  - iii. brokering the public-private relationship to foster improved uptake and translation of bi-regional research partnership outputs into innovative technologies, goods and services, and
  - iv. dedicated mechanisms to encourage bi-regional research partnerships.

### **Achievements during the reporting period:**

- i. Examination of the impact of the EU-AU health research co-operation on joint priorities and health outcomes. This exercise involved collecting information and analysing such information on the impact of health research collaborative projects under the Sub-Saharan Africa (SSA)-EU bi-regional co-operation to identify gaps and niches that could be addressed by the CAAST-NET Plus. The NCST was requested to identify health research projects existent within the Southern Africa Development Community (SADC) region and analyse for gaps and niches using a common tool that had been developed in advance and agreed by all work package partners.
- ii. Contribution to the development of a common data collection tool for identifying the impact of EU-AU collaborative climate change research projects.
- iii. Development of Terms of Reference for and Appointment of Advisory Panel: The NCST actively participated in the development of TORs for the CAAST-NET Plus Advisory Panel as well as in the voting and decision making for the appointment of the Panel while bringing to the process a special niche and expertise of a bioethical lens for the management and avoidance of conflict of interest.
- iv. Orientation on reporting tools for financial reporting and consortium wide-communication: The NCST was oriented and inducted on project financial reporting and communication with all partners in the consortium using specific tools developed for the project as communicated by the international co-ordinator. Consortium wide communication is electronically through basecamp, a web-based tool.

# NCST Unaudited Financial Report for Period Ending 30<sup>th</sup> June 2013

## Graphical Outlook of Income during 2011/12 and 2012/13

The graph below shows the levels of funding and the type of funds which were recorded as part of income to NCST during the year 2012/13. The 2011/12 income is included for sake of comparison. However, income to HRCSI was not included in figure 19.

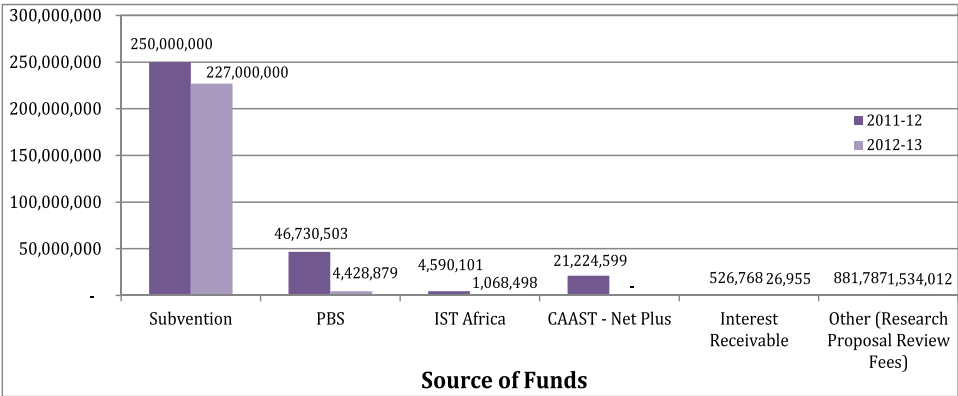


Figure 19: Levels of Funding through Subventions and Projects excluding HRCSI

## Statement of Comprehensive Income for the Year Ended 30 June 2013

	<b>12 Months to 30-Jun-13 MK</b>	<b>12 Months to 30-Jun-12 MK</b>
<b>Income</b>		
Subvention	227,000,000	250,000,000
PBS	46,730,503	4,428,879
NAC Traditional Medicine B/F	-	-
Other (Research Proposal Reviews)	881,787	1,534,012
IST Africa	4,590,101	1,068,498
CAAST -Net Plus	21,224,599	-
Interest receivable	526,768	26,955
<b>Total income</b>	<b>300,953,760</b>	<b>257,058,344</b>
<b>Expenditure</b>		
Staff expenses	150,236,166	140,717,353
Operational expenses	65,287,834	93,836,002
Board Expenses	9,069,171	8,051,161
Depreciation	16,522,148	16,414,321
Bank and finance charges	635,422	650,122
Project Expenses	39,424,049	6,507,741
<b>Total expenditure</b>	<b>281,174,789</b>	<b>(266,176,700)</b>
<b>Surplus/(deficit) for the year</b>	<b>19,778,971</b>	<b>(9,118,356)</b>



## Statement of Financial Position as at 30 June 2013

		2013 MK	2012 MK
<b>ASSETS</b>			
<b>Non Current Assets</b>			
Property, plant and equipment		28,718,506	45,361,622
<b>Current assets</b>			
Inventory	2,517,798		1,594,264
Trade and other receivables	2,365,928		542,817
Cash and cash equivalents	69,971,372		39,760,839
			41,897,920
<b>Total current assets</b>		74,855,098	
<b>Total assets</b>		103,573,604	87,259,542
<b>FUNDS AND LIABILITIES</b>			
<b>Funds</b>			
Accumulated Funds	76,122,027		76,122,027.00
General Funds	5,770,223		5,770,223.00
Profit/Deficit for the year	19,778,971		-9,118,356.00
Accumulated Funds	1,445,217		10,563,573
<b>Total funds</b>		103,116,438	83,337,467
<b>Current liabilities</b>			
Accruals	456,667		3,922,075
NCST SWA	500		
<b>Total current Liabilities</b>		457,167	3,922,075
<b>Total funds and liabilities</b>		103,573,604	87,259,542

## NCST Approved Activity Plan 2013/14 Financial Year

Section	Activity/ Task	IMPLEMENTATION PERIOD			
		QTR 1	QTR 2	QTR 3	QTR 4
<b>1. Administration</b>					
	<b>1.1 Provide Office Support Services</b>				
	1.1.1 Ensure Utility Bills and service charges are paid	✓	✓	✓	✓
	1.1.2 Ensure environmental surroundings are clean and tidy	✓	✓	✓	✓
	1.1.3 Ensure Security services are provided	✓	✓	✓	✓
	1.1.4 Provide Office consumables	✓	✓	✓	✓
	1.1.5 Provide for Stationery supplies	✓	✓	✓	✓
	1.1.6 Provide for DSTV Subscription	✓	✓	✓	✓
	1.1.7 Provide for Newspaper Subscription	✓	✓	✓	✓
	1.1.8 Ensure Postage and courier services is provided	✓	✓	✓	✓
	1.1.9 Provide transportation services for administration	✓	✓	✓	✓
	1.1.10 Provide transportation services for Heads of Directorates	✓	✓	✓	✓
	1.1.11 Ensure office equipment, plant and machinery are in good working condition	✓	✓	✓	✓
	1.1.12 Insurance of NCST Assets	✓	✓	✓	✓
	<b>1.2 Provide for license fees and subscriptions</b>				
	1.2.1 Provide subscriptions for Accounting and HR Software	✓	✓	✓	✓
	1.2.2 Provide subscriptions to professional bodies	✓	✓	✓	✓
<b>2. Office of the Director General</b>					
	<b>2.1 Promote National Linkages and cooperation</b>	✓	✓	✓	✓
<b>3. Board of Commissioners</b>					
	<b>3.1 Service Board, SAC and FAC meetings</b>	✓	✓	✓	✓
<b>4. Human Resource</b>					
	<b>4.1 Provide HIV &amp; AIDS Services</b>	✓	✓	✓	✓
	<b>4.2 Provide short term training</b>	✓	✓	✓	✓
	<b>4.3 Implement a Revolving fund scheme</b>	✓	✓	✓	✓

5. Agriculture and Natural Sciences	5.1 Service the National Committee on Agriculture and Natural Sciences			
	5.1.1 Conduct meetings of the National Committee for Agriculture and Natural Sciences to plan for the activities of the section	✓	✓	✓
	5.2 Support research dissemination conferences in Agriculture and Natural Sciences			
	5.2.1 Support local researchers to participate in national and international research conferences	✓	✓	✓
	5.3 Review and clear proposed research studies in Agriculture and Natural Sciences			
	5.3.1 Review and clear proposed research studies in Agriculture and Natural Sciences	✓	✓	✓
	5.4 Participate in R&D programs aimed at formulating research programs and activities for other institutions			
		✓	✓	✓
	6. Health, Social Sciences and Humanities			
	6.1 Conduct training in proposal writing, research methods and writing for publishing			✓
	6.2 Support Research Dissemination Conference in Social Sciences and Humanities		✓	✓
	6.3 Promote the ethics of research, science and technology		✓	✓
	6.3.1 Drafting Requirements, Procedures and Guidelines for the Conduct of Human Stem Cell Research under the National Health Sciences Research Committee		✓	✓
	6.3.2 Facilitating the establishment and induction of at least one research and ethics committee in the social sciences and humanities at a given research related institution		✓	✓
	6.3.3 Public Awareness and sensitization of the National Committee on Research in the Social Sciences and Humanities		✓	✓
				✓

	6.3.4 Review and clear proposed research studies at COMREC	✓
<b>7. Engineering, Design, Industry and Energy</b>		
	<b>7.1 Service the National Committee on Energy, Industrial and Engineering Sciences (NCEIES)</b>	✓ ✓ ✓ ✓
	<b>7.2 Promote and Support R&amp;D Programmes and Activities in EDIE</b>	✓
	<b>7.3 Promote and Support Partnerships, Collaboration and Networks in EDIE</b>	✓
<b>8. Technology Transfer</b>		
	<b>8.1 Promote technology transfer and commercialisation</b>	✓ ✓ ✓ ✓
	8.1.1 Support technology and innovation projects	✓
	8.1.2 Support Ethanol Roll Out Programme	✓ ✓ ✓ ✓
	8.1.3 Organise NCTTSC meetings	✓
	8.1.4 Facilitate the development of National Technology Clearing/Release guidelines	✓
	<b>8.2 Promote innovative schemes and culture</b>	✓ ✓ ✓ ✓
	8.2.1 Organise the AU-TWAS awards competition	
<b>9. Planning</b>	8.2.2 Revive the MASTA Award	✓
	8.2.3 Support Wistnet activities	
	<b>8.3 Promote the importance of intellectual property</b>	✓ ✓ ✓ ✓
	8.3.1 Organise training sessions on intellectual property	
	8.3.2 Facilitate development of sector specific IP guidelines	✓
	8.3.3 Attend national and international science & technology meetings (participate in the review of STI and Draft IP	✓
	<b>9.1 Prepare biennial State of Science and Technology Report, Quarterly and Annual Reports</b>	✓ ✓ ✓ ✓ ✓ ✓
	<b>9.2 Undertake a Mid-Term Review of NCST Strategic Plan 2011-15</b>	✓
<b>10. Monitoring and</b>		

<b>Evaluation</b>			
<b>11. Documentation</b>			
<b>10.1 Undertake Monitoring and Evaluation Exercises</b>			
	✓	✓	✓
<b>11.1 Provide Library and Documentation Services</b>			
11.1.1 Attend local meetings in Documentation and Information Management	✓	✓	✓
11.1.2 Conduct surveys for the development of Specialised S&T databases	✓	✓	✓
11.1.3 Produce research proceedings, directories and other reports	✓	✓	✓
11.1.4 Digitising NRCM publications and manuscripts (Publications will be scanned at high resolution and saved on CDS to provide electronic access to the documents	✓	✓	✓
<b>11.2 Organize stakeholder workshop on Library, Documentation and Information Policy</b>	✓	✓	✓
<b>12. Information and Communication Technology</b>			
<b>12.1 Promote and Support ICT Initiatives</b>			
12.1.1 Initiate and support ICT research Proposals	✓	✓	✓
12.1.2 Promote and support National ICT research initiatives/programmes		✓	✓
12.1.3 Support/attend national and International ICT forum		✓	✓
12.1.4 Design and administer ICT Security Services	✓	✓	✓
12.1.5 Provide/facilitate ICT Training	✓		
12.1.6 Develop/review ICT guidelines/policies			✓
12.1.7 Provide Internet services	✓	✓	✓



<b>13. Information Education and Communication</b>	
<b>13.1 Create awareness and Public Understanding of Science, Technology and Innovation</b>	✓
13.1.1 Media Advocacy: Organise media training and establish media committee on science reporting	✓
13.1.2 Organise media coverage for NCST activities	✓
13.1.3 Attending Adhoc meetings	✓
13.1.4 Organise NCST seminars	✓
13.1.5 Produce NCST tailor made Television and Radio programmes	✓
13.1.6 Production of newsletter	✓
13.1.7 Conduct technical committee meetings of the National Documentation and Information	✓
<b>Grand Total</b>	





