



**TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY**

# **ANNUAL REPORT 2012/13**



**NURTURING ICT SPIRIT IN THE INNOVATION SPACE**



# **TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY**



## **ANNUAL REPORT OF ACTIVITIES AND AUDITED ACCOUNTS FOR THE YEAR 2012/13**

**DAR ES SALAAM**

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# **COSTECH**

## **Its establishment**

Established by the Act of Parliament No. 7 of 1986 as the successor to the Tanzania National Scientific Research Council (UTAFITI), the Tanzania Commission for Science and Technology (COSTECH) is a government parastatal organization under the Ministry of Communication, Science and Technology (MCST). It is entrusted with the responsibility of coordinating and promoting science and technology development activities in the country. Since 1988, COSTECH has been the principal advisory organ to the government on all matters relating to scientific research, innovation, technology development and transfer, and recommends its implementation.

## **COSTECH vision**

To be a prime driver of science, technology and innovation for sustainable development in Tanzania

In order to achieve the vision, the commission's **mission** is to;

Foster knowledge based economy through promotion, coordination of research and technology development for economic growth, social wellbeing and competitiveness.

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## ACRONYMS

|          |   |
|----------|---|
| COSTECH  | Tanzania Commission for Science and Technology              |
| CAMARTEC | Centre for Agricultural Mechanisation and Rural Technology  |
| CEPDEC   | Capacity Enhancement Programme for Developing Countries     |
| CRweb    | COSTECH Research Website                                    |
| DC       | District Commissioner                                       |
| DFID     | Department of International Development                     |
| DNA      | Deoxyribonucleic acid                                       |
| DTBi     | Dar Teknohama Business Incubator                            |
| EMIS     | Education and Management Information System                 |
| EPZ      | Export Processing Zone                                      |
| FYDP     | Five Year Development Plan                                  |
| HERI     | Higher Education and Research Institutions in Tanzania      |
| ICT      | Information, Communication and Technology                   |
| MAFC     | Ministry of Agriculture and Food Security                   |
| MCST     | Ministry of Communication, Science and Technology           |
| MKUKUTA  | National Strategy for Growth and Reduction of Poverty       |
| MKUZA    | Mkakati wa Kukuza Uchumi Zanzibar                           |
| MUHAS    | Muhumbili University College of Health Allied Sciences      |
| NEPAD    | New Partnership for Africa's Development                    |
| NFAST    | National Fund for the Advancement of Science and Technology |
| NIMR     | National Institute for Medical Research                     |
| NOTAP    | National Office for Technology Acquisition and Promotion    |
| NRA      | National Research Agenda                                    |
| PhD      | Doctor of Philosophy  |
| PS       | Permanent Secretary   |
| R&D      | Research and Development                                    |
| RC       | Regional commissioner                                       |
| SACIDS   | Southern Africa Centre for Infectious Diseases Surveillance |
| SIDA     | Sweden International Development Agency                     |
| SoP      | Standard Operating Procedure                                |
| SPD      | Smart Partnership Dialogue                                  |
| TAAS     | Tanzania Academy of Sciences                                |
| TAFIRI   | Tanzania Fisheries Research Institute                       |
| TanBIF   | Tanzania Biodiversity Information Facility                  |
| TASENE   | Tanzania Sweden and Netherland                              |
| TATC     | Tanzania Automotive Technology Centre                       |
| TEMDO    | Tanzania Engineering Manufacturing and Design Organization  |
| TNBC     | Tanzania National Business Council                          |
| TPRI     | Tropical Pesticides Research Institute                      |
| TRCA     | Tanzania Communication Regulatory Agency                    |
| TRL      | Tanzania Railway Limited                                    |
| Tshs     | Tanzania Shillings  |
| UNDP     | United Nations Development Programme                        |
| VPO      | Vice President Office                                       |
| ZSGRP    | Zanzibar Strategy for Growth and Poverty Reduction          |

## FOREWORD BY DIRECTOR GENERAL



I would like to share with you some of the achievements for activities undertaken by the Tanzania Commission for Science and Technology (COSTECH) in year 2012/13.

Towards the end of the year, COSTECH participated in the Global 2013 Smart Partnership Dialogue that was held at the Julius Nyerere Convention Centre, in Dar es Salaam. Our role was to coordinate Dialogue Resource Group which prepared themes and topics for discussion and identify local experts to share experience with their foreign counterparts. Parallel to the dialogue, the COSTECH was charged with organizing the exhibition aimed at facilitating the use of technology for socio-economic transformation. The dialogue has helped to increase awareness on science, technology and innovation to many Tanzanians and led to some changes in the government including: the presidential appointment of a Science Advisor at the Vice President's Office, the development of the STI policy and review of the STI Act.

Likewise, we are happy that at least 15

Tanzanian researchers and scientists are now going to collaborate with their South African counterparts in areas of Nanomaterials, ICT, Health, Agriculture and Paleontology. We hope that our scientists will use this opportunity to exchange scientific and technological information that will bring about fast advancement of sustainable development in the country.

Moreover, I would like to thank the Department for International Development (DFID) for agreeing to invest 30 million Sterling Pounds in a new Human Development Innovation Fund (HDIF) for Tanzania; to provide a mechanism to encourage innovation and support the scaling up of promising approaches in health, education, water and sanitation sectors, to achieve improvements in the quality and value for money of basic services. In addition, part of the fund will be used to strengthen the capacity of Zanzibar government in evidence-based policy.

In the efforts of the Commission to ensure science, technology and innovation contribute to the country's sustainable development, we have come up with CRweb, an online research management system that will help with research registration, proposal submission, proposal review, and research management in general.

This will be used as a tool to provide a venue for R&D institutions to upload research project and provide the updated status on infrastructure, human resources, and publications in their respective institutions; manage application for research permits and clearance for local

and foreign researchers and manage applications for grants provided under the National Fund for Advancement of Science and Technology (NFAST) and any other joint funds monitored by COSTECH.

COSTECH's recognition of scientific and innovation excellence was demonstrated as we were the proud to sponsor for a number of awards and initiatives such as Excellent Journalism Awards in Tanzania (EJAT 2012) awards, cluster development initiatives, Tanzania Women of Achievement Awards, Tanzania Community Police research and Renewable Energy technologies.

Internally, this year in history, the COSTECH has unanimously decided to adopt a new way of measuring employees' performance system. With this new system, the Commission hopes to arrive at a situation whereby employees will not be judged by their appearance but rather by the content of their performance.

In order to facilitate technology adoption for improved agricultural productivity COSTECH has initiated the conversation with the government through the Prime Minister's Office to revise clauses which are limiting research in the Biosafety Regulations 2009 that govern the safe use of Biotechnology in genetic engineering especially in maize and BT Cotton. We hope this process will contribute into the organization's mandate of advising the government on all matters pertaining to science and technology.

The COSTECH also managed to facilitate the research and development institutions in the process of releasing seed varieties of wheat, rice, maize and beans some of which have been certified by TOSCI. We hope that these varieties will increase

production and improve farmers' income.

Investing in research has also enabled our Tanzania researchers to reveal to the world that if given chances, they can prove their talents beyond measures. We are grateful for a one and only thermostable trivalent vaccine for controlling major respiratory poultry diseases. The vaccines will soon be produced massively by a Moroccan company that is entering into a contract with the Sokoine University of Agriculture (SUA).

As an organization responsible for managing research fund in the country, we will continue to ensure that researchers are being developed; research projects are being supervised; research infrastructure facilities are being constructed or repaired and also, emerging technologies are being transferred and commercialization of proven technologies from research and development institutions are being supported.

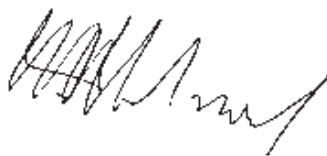
We will continue to support Commissioned research based on priorities and topical issues pertinent at a time, as we did for "Kikombe cha Babu," "Polisi Jamii" and "Wasifu wa Mwalimu Nyerere." We are also thankful for the partnerships we have forged such as Joint Research Projects with South Africa and between Tanzanian, Swedish and the Netherlands (TASENE). We are happy that through TASENE, Tanzania researchers will have funding opportunities for post – doctoral studies, a culture that did not exist for so long in the country.

We will also continue to nurture innovation spirits through the Innovation space and through the Dar es Salaam Teknohama Business Incubator (DTBi). We want to instill the culture to the public to use science and technology, especially

ICT in solving most problems facing the society.

March 2013 was the end of a three-year term for the Commission's Board. I am thankful to them for serving the COSTECH tirelessly. When it was established in 2010, the Commission was given the mandate to transform the organization and fulfill its aspirations by recruiting competent staffs to fill the positions as Directors, Heads of unit, Research Officers and support staffs. The first thing the Commission started with was to establish a new COSTECH organization structure. I am happy to see that through the new organization structure, two more departments have been added; instead of having four, now we have six departments namely Life Sciences, Physical Sciences, Social Sciences, Knowledge Management, Innovation and Entrepreneurship for Competitiveness and Administration and Finance.

I am also happy that the outgoing Commission has managed to fulfill its aspirations by recruiting competent staffs to fill the positions as Department Heads, Research Officers and support staffs. These new departments are going to allow the organization to make huge changes by serving all the sectors ranging from Health, Natural Resource, Agriculture, Environment, Livestock, Energy, Education, Infrastructure, Industry, Economics, Policy, Demography, Sociology, to Earth and Geosciences.



**Dr. Hassan Mshinda, PhD**  
**DIRECTOR GENERAL**



Tanzania Commission for Science and Technology (COSTECH) is a public institution established by an Act of Parliament No. 7 of 1986 as successor of National Scientific Research Council that was established in 1972.

The Commission is under the Ministry of Communication, Science and Technology and is the principal advisory organ to the government on all matters relating to scientific research, innovation, technology development and transfer and recommends its implementation.

Based on the strategic plan, COSTECH has five strategic objectives as follows;

- 1) To enhance capacity for evidence-informed decision among policy makers and other stakeholders.
- 2) To increase the generation of knowledge and technologies that address problems of national priorities
- 3) To increase access of information and use of knowledge and technologies
- 4) To enhance public engagements on issues related to science, technology and innovation
- 5) To meet the expectations of internal and external stakeholders on corporate services

This Annual report highlights the progress and achievements of the major activities realized during the financial year 2012/13 (July 2012 to June 30th 2013), as indicated in the annual work plan.

### Performance Highlights

#### 1.0 Enhancing capacity for evidence-informed decision among policy makers and other stakeholders

##### 1.1 Interaction of scientists with policy makers

The Tanzania Commission for Science and Technology (COSTECH) participated in both national and Global 2013 Smart Partnership Dialogues. Smart Partnership Dialogue is a brainchild of the Commonwealth Partnership for Technology Management. The dialogue seek to promote creative cooperation between the government and other sectors contributing to socio-economic activities and build upon the positive ethos of 'prospering thy neighbor' for 'a win-win' situation. The theme for the national and Global 2013 Smart Partnership Dialogues was, "Leveraging Technology for Africa's Socio-Economic Transformation: The Smart Partnership Way," seeks to engage international stakeholders in achieving its Big Results Now (BRN) initiative through science and technology.

The Commission was the leading organizer on technical issues pertaining to science and technology and the Director General participated in the Dialogue Resource Group to prepare themes and topics and local experts to share experience with their foreign counterparts.

Parallel to the dialogue, the COSTECH was charged with organizing the exhibition aimed at facilitating the use of technology for socio-economic transformation. In accomplishing this task, the secretariat comprising of staff from the COSTECH in collaboration with Ministry of Communication, Science and Technology (MCST) was formed to coordinate the

preparations where various ministries, institutions, organizations and companies were invited to participate in showcasing their products and services based on the theme of the dialogue.

The exhibition focused on technology areas that included innovation in ICT, technology in Agriculture, technology in fiscal (financial inclusion), Education, Products, the Geographical Information Systems (GIS), and Nanotechnology. These areas were showcased by local companies, and therefore an opportunity to share experiences and networking with the outside world.

A total of 39 Tanzanian institutions, including public (31) and private (8) companies participated in the exhibitions. Demonstrated areas included Agricultural research and livestock (4), Information and Communication Technology (ICT) (7), Education (4) Energy (4) Service (18) and Value addition of the products (2). In addition, 28 international companies participated in the exhibition, including Agriculture (9), Energy (2) ICT (4), Services (4) and Value addition of products (7). As a result of the exhibition most organizations that participated have reported to have formed a network with foreign companies and governments. A booklet contains profiles of each company that was involved in the exhibition has been prepared and will be disseminated to stakeholders.

At national level, Tanzania National Business Council (TNBC) and COSTECH were the main coordinators at District, Zonal and National level. As a part of

National Smart Partnership movement, COSTECH prepared and presented two key papers namely 'Leveraging Technology for Africa's Social Economic Transformation: Smart Partnership Way' and 'Innovation for competitiveness' in the workshop that was organized by COSTECH to Regional Commissioners, District Commissioners as well as Regional Commissioners and District Administrative Secretaries which was chaired by the Prime Minister, Hon. Mizengo Pinda. These papers built a foundation for sensitizing RCs and DCs on the key issues as the starting point for the intended dialogue. The National Smart

Partnership Dialogue has led to following are some of the achievements:

- a) Developed the reference materials on technology, innovation and competitiveness,
- b) Disseminated the information and knowledge on technology, innovation and competitiveness to Regional Commissioners, Regional Administrative Secretaries, District Commissioners and the Tanzania Business Council Executive Board,
- c) Linked the international dialogue with national dialogue theme and designed effective and efficient communication system among the different committees for Smart Partnership

At international level, the dialogue was concluded in Dar es Salaam at Mwalimu Nyerere International Conference Centre as from June 28th to July 1st, 2013. Commonwealth Partnership for Technology Management (CPTM) secretariat and Ministry of Foreign Affairs were the main coordinators with assistance of TNBC and COSTECH. Therefore these dialogues created a positive attitude across the country on leveraging technology for social economic transformation.

Over 800 participants from all over the world, including 9 heads of state from Africa and Asia attended the event. The Smart Partnership Dialogue was a special event for Tanzania government and private sector to forge network that bind to the core values of Smart partnership based on positive ethos of prosper thy neighbor for win-win situation among participating nations. Based on International Smart Partnership Dialogue's theme, the Commission has been offered the opportunity to make a fulfilling contribution to the bigger efforts of strengthening science and technology partnerships between Tanzania and the rest of the world. In recognition of the importance of emerging technologies such as graphene, nanotechnology, mechatronics, virtual manufacturing and others, the government through COSTECH has successfully developed areas of cooperation with at least eight institutions. This is one big achievement from the dialogue.

The dialogue has helped to increase awareness on science, technology and innovation to many Tanzanians and led to a number of changes in the government including: the presidential appointment of a Science Advisor at the Vice President's Office, the development of the STI policy and review of the STI Act. Furthermore the dialogue has enabled the process of propagating new model of development in the education sector whereby universities have been encouraged to work closely with the industry and government.

Tanzania government through COSTECH will establish sustainable technology links both domestic and foreign, develop and support youth technological innovation talents, share experiences from different stakeholders and jointly work out the solutions in a particular manner and create an inclusive society and promoting

partnership based on the principle of win-win situation, to inspire development of a road map for technological development targeting sector enhancement in the country in tandem with the National Vision 2025.

## **1.2 Use of Research outputs**

The Commission continued dissemination of research results to policy makers for decision making in various sector of the economy. For example, the Commission recommended the review of Regulations of the Environment Acts based on the current research evidence on the use of genetic modified organisms. The research experience from countries such as Burkina Faso, Egypt, Sudan and Malawi where cotton production has significantly increased through bioengineering has scientifically proven to be safe to both human health and the environment. Similarly this technology is being used in trial farms in nearby countries such as Uganda, Kenya and Malawi.

As one of the objectives is to encourage the use evidence-based policy, the Commission forwarded recommendations to the government to review biotechnology genetic engineering policies and regulations based on experience observed in using this kind of technology. To date the matter is being processed in the government and the Commission continues to create awareness as lack of information is what seem to be the worst enemy of Tanzanians in terms of biotechnology, and thus an opportunity to amplify the dialogue with the policy makers.

COSTECH organized the visit of Tanzanian delegation that was sponsored by NEPAD/ABNE and led by the Minister of Communication, Science and Technology, Prof. Makame Mbarawa to Burkina Faso to familiarise themselves with activities

related to the use Bt Cotton technology to improve the livelihood of smallholder cotton growers. The delegation included Deputy Minister of Environment, Eng. Charles Kitwanga, Deputy Minister of Agriculture, Marketing and Cooperative, Dr Adam Malima, Eng. Mbogo Futakamba Deputy PS MAFC and other government officials.

Following the travel reports, the Prime Minister, Hon Mizengo Pinda has directed Hon. Prof. Mbarawa, Minister MCST on the following (i) to revise the regulations to enable cotton growers in the country to benefit from the Bt technology, (ii) Raise public awareness on the technology, and (iii) Develop a strategy for the transfer of the technology to benefit cotton growers and other areas that need similar interventions.

Moreover, based on the results from research done by University of Dar es Salaam regarding factors that contributes to the reduction of snow in Mt Kilimanjaro, the research results were disseminated to the Kilimanjaro regional authorities (including district authorities and development partners in the districts) and eventually the resolution was passed whereby, every district was required to develop plan for environmental conservation program. In addition the Commission recommended the government to change the environment regulations. At National level, the issue was discussed at the Cabinet secretariat and referred to the VPOs (Environment).

Other outcomes related to the this objective include the inclusion of science, technology and innovation in the MKUKUTA 2 and Five years Development Plan and Long term Perspective Plan.

The establishment of the Directorate of Policy, Planning and Research in Zanzibar provided good advantage for research



**Fig. 1: His Excellency Hon. Dr. Mohamed Gharib Bilal, Vice President of Tanzania officiates the launching of the book titled ‘Checklist of Tanzanian Species’**

outputs being mainstreamed and applied towards sustainable socio-economic development in Zanzibar perspectives. COSTECH has been working with this directorate to ensure that research outputs are used in Zanzibar.

In the period under review, the Commission continued producing a number of knowledge products. Among others, a book for Tanzania Biodiversity Information Facility (Tanbif) was produced and launched by the Vice President, Dr. Mohammed Gharib Bilal in May 2012. This book is unique in that it establishes a comprehensive taxonomic register of all species originated from Tanzania and contain scientific names and taxonomic classification of 14,336 species including Animalia, Bacterial, chromista, Fungi, Plantae and protozoa Kingdoms. Dissemination to stakeholders has been done through Television broadcasts and exhibitions.

Likewise, the Activity Report for Biodiversity Information for a sustainable Future (CEPDEC Pilot project) has also been produced. The report shows CEPDEC project has been very successful

as majority of the expected outcomes were realized, these include establishment of functional Tanzania Biodiversity Information Facility (TanBIF), with network of expert formulated, expanded and strengthened. Biodiversity stakeholders are looking forward to take advantage of the tools and infrastructure developed for TanBIF in making sound decision on biodiversity management and its related issues.

Moreover, the Commission prepared a Policy brief that described the current Research status in Zanzibar. The policy brief revealed that research activities have been carried out for the past two centuries, in fact as from late 1800s to date, with most of the research being dominated by environment (38.03%), biological science (23.94%), natural resource management (23.94%) and socio-economic research (2.82%). The study recommended establishment of research platform based on national research agenda where results can be shared and discussed widely, effectively utilization of directorate of planning and research as well as endorsing a national capacity building plan on research staff and R&D institutions.



Furthermore, COSTECH organized a forum during the National Renewable Energy day that took place in Dar es Salaam on 6th June 2012. A proceeding has been finalized and now underway to be dissemination to stakeholders. The main recommendation of the forum is that the government should formulate renewable energy policy and implementation strategies.

On 27th March 2013, COSTECH was delighted to have a visitor from the high level authority, the Vice President, Dr. Mohammed Gharib Bilal, who apart being a politician, is known to be one of the eminent scientists the country as ever had. The objective of the visit was to familiarize himself with the roles and responsibilities of the Commission. The Vice President urged the COSTECH to engage local experts to conduct research that will have socio-economic impact to the country especially in the fields of industry, medicine and agriculture. Dr. Bilal promised that the government will continue to increase efforts to produce the most qualified experts in the fields of science and technology and commended the COSTECH for taking the lead.

In addition, the Commission hosted Tanzania's Prime Minister, Hon. Mizengo Pinda on 2nd August 2012. The Prime Minister spent some time at the COSTECH and was briefed about the Commission's activities and its role in particular and later on visited the Dar Teknohama Business Incubator program (DTBi). The event was also attended by the Hon. Professor Makame M. Mbarawa, the Minister for Communication, Science and Technology and other dignitaries. COSTECH in collaboration with DTBI have been requested by the President's Office to participate in the Open Government Initiative and prepare a platform for the data portal. The initiative is part of increase accountability where all

data in the government will be in public domain. As a preliminary stage towards Open Data, the team that works on 'Data Readiness Assessment' has been established.

Overall, 60 percent of knowledge products were used by decision maker in various sectors, which is above the annual target of 50 percent for the reporting period.

## **1.2 Scientific meetings, exhibitions and international collaboration**

In the year 2012/2013 the Commission was able to organize a number of scientific seminars, workshop and conferences. The following are some of them:

1.2.1 A sensitization workshop was conducted to Permanent Secretaries and the Deputy Permanent Secretaries of the Revolutionary Government of Zanzibar (RGoZ), particularly on the roles and responsibilities of the Commission in Zanzibar, and Chief Secretary of RGoZ chaired the session.

1.2.2 From April 16th to 19th, 2013, Tanzania Commission for Science and Technology sponsored and participated in the 27th Annual Joint Scientific Conference and 2nd One Health Conference in Africa organized by the National Institute for Medical Research (NIMR) together with the Southern Africa Centre for Infectious Diseases Surveillance (SACIDS). The conference was graced by the Vice President of the United Republic of Tanzania Hon. Dr. Mohamed Gharib Bilal and took place in Arusha, whereby donors, academicians, policy makers, researchers, students, politicians and the media from all over the world met and discussed issues under the main theme, Changing Landscape for health research in Africa.

1.2.5 In disseminating research outputs to policy makers and the general public, the

Commission participates in annual event and exhibitions such as May Day, Nane Nane, Saba Saba, Young Scientist Tanzania, TCU exhibition, Bunge exhibition, and many others. Also the Commission sponsors various events including Excellence in Journalism Award of Tanzania (EJAT) organized by Tanzania Media Council and Fursa Campaign organized by Clouds Media

Group. The COSTECH's participation at various events and exhibitions provides an opportunity for farmers, researchers, scientists, policy makers, innovators and the general public to share views and ideas on various science, technology and innovation issues such as research registration, innovation, technology transfer, cluster initiative formation, and science awards.

## 2.0 Increasing the generation of knowledge and technologies that address problems of national priorities

### 2.1 Research coordination

COSTECH is mandated with registering all researchers that are doing research in the country. In year 2012/13, the Commission under its Advisory Committee of National Research Registration Committee (NRRC) has cleared 400 research projects of different disciplines from several countries as seen in Table 1 below. All approved research applications addressed National Research Agenda. Most of research applications were either approved fully or subject to positive comments from local reviewers.

| FIELD        |                       |              |             |            |               |                   |           |         |                           |             |                  |          |                   |           |           |                        |                                |        |       |
|--------------|-----------------------|--------------|-------------|------------|---------------|-------------------|-----------|---------|---------------------------|-------------|------------------|----------|-------------------|-----------|-----------|------------------------|--------------------------------|--------|-------|
| COUNTRY      | Agricultural Sciences | Anthropology | Archaeology | Demography | Earth Science | Economic Sciences | Geography | History | Judiciary Sciences & Laws | Linguistics | Medical Sciences | Pedagogy | Political Science | Education | Sociology | Technological Sciences | Wildlife & Other Life Sciences | Others | TOTAL |
| Canada       |                       |              |             |            |               |                   | 1         | 1       |                           |             | 3                |          | 1                 | 3         |           |                        | 6                              |        | 15    |
| Denmark      |                       |              |             |            |               | 3                 |           | 1       | 1                         |             | 1                |          |                   |           |           |                        | 2                              | 1      | 9     |
| France       |                       |              |             |            | 10            |                   |           |         |                           |             | 2                |          |                   |           |           |                        | 2                              |        | 14    |
| Germany      | 2                     | 2            | 1           |            | 1             |                   |           | 4       | 1                         |             | 3                |          | 2                 |           |           |                        | 10                             |        | 26    |
| Italy        |                       | 1            |             |            |               |                   |           | 1       |                           |             |                  |          |                   |           |           |                        | 1                              |        | 3     |
| Japan        | 5                     |              |             |            |               | 9                 | 2         |         |                           |             |                  |          |                   | 1         |           |                        | 8                              |        | 25    |
| Netherlands  | 2                     | 2            |             |            |               | 1                 |           | 1       |                           |             | 1                |          |                   |           |           |                        | 3                              |        | 10    |
| Norway       |                       |              |             |            |               |                   |           |         |                           |             | 3                |          |                   |           |           |                        | 3                              |        | 6     |
| South Africa |                       | 1            |             |            |               |                   | 1         |         |                           |             | 5                |          |                   | 1         |           |                        | 1                              |        | 9     |
| Sweden       | 4                     | 2            |             |            |               |                   |           | 2       |                           |             |                  |          |                   |           |           |                        | 2                              | 1      | 11    |
| Switzerland  |                       | 1            |             |            |               |                   | 1         |         |                           |             | 5                |          |                   |           |           |                        | 2                              |        | 9     |
| Tanzania     |                       | 1            | 1           |            |               | 3                 | 1         | 2       | 1                         |             | 3                |          | 1                 | 7         |           |                        | 2                              | 2      | 24    |
| UK           | 1                     | 3            | 1           |            |               |                   | 5         | 1       | 1                         |             | 15               |          | 1                 | 1         |           |                        | 23                             |        | 52    |
| USA          | 1                     | 4            | 31          |            | 8             | 4                 | 4         | 1       | 2                         |             | 16               |          | 3                 | 5         |           |                        | 42                             | 1      | 122   |
| Others       | 2                     | 4            | 23          |            |               |                   | 3         | 1       |                           |             | 10               |          | 1                 | 3         |           |                        | 15                             | 3      | 65    |
| TOTAL        | 17                    | 21           | 57          |            | 19            | 20                | 18        | 15      | 6                         |             | 67               |          | 9                 | 21        |           |                        | 122                            | 8      | 400   |

**Table 1: Number of research projects registered in year 2012/13 in terms of country of origin and discipline**

### 2.2 Finalization of the National Research Agenda (NRA)

In order to fulfill the objective of Increasing the generation of knowledge and technologies that address problems of national priorities, the Commission facilitated the development and production of draft reports for National Research Agenda in Zanzibar and Mainland through in-depth consultations and participation of key stakeholders such as academia, government and private sector in both parts.

With regards to Zanzibar, 17 government officials from various ministries and private sector representatives were trained on priority setting methodology, MKUZA development priorities were identified, presented and discussed by all stakeholders, and 165 prioritized and ranked researchable areas were identified from the three major sectors



including productive sector (49), social services sector (84) and economy and governance sector (32). This document will then be discussed and deliberated and aligned with Zanzibar Strategy for Growth and Reduction of Poverty & as MKUZA II (ZSGRP II) 2010 – 2015 in a national workshop to be held the end of the year, 2013.

The current national science and technology research and development agenda map out the Tanzanian scientific research within the next five years. It outlines broad research priority areas to enable scientists both natural and social sciences to engage and contribute to the generation of knowledge and applications for improving access and quality of human life and wellbeing of the society. Two stakeholders' meetings will be conducted in November, 2013 for validation. These documents will be used as guides for the next call for proposals. Preparations have been made to engage officials from the Tanzanian Planning Commission to align the NRA to National Five years Plan, MKUKUTA and Vision 2025 goals.

### 2.3 Management of the NFAST

The National Fund for Advancement of Science and Technology (NFAST) is hosted at the Tanzania Commission for Science and Technology (COSTECH) with the role to facilitate the realization of socio-economic development through science, technology and innovation (STI) in the country. For a long time the advancement of science was being done among others through conducting research basically by the local R&D institutions scattered in various places in the country.

These R&D institutions have produced a considerable number of research outputs some of which have had substantial socio-economic impact at both the household and country level. However, most of the R&D institutions' infrastructure and working facilities are old



***Fig 2: Mr. Ephraim Njau (right), a researcher from TaCRI studying at SUA explaining to an unidentified Member of Parliament about the coffee research he is undertaking during Science and Technology exhibition at the Bunge grounds in Dodoma.***

and dilapidated requiring major rehabilitation and/ or new construction. As such many of them are denied the opportunity to perform to their full potential due to outdated or inadequate research facilities, equipment and qualified competent researchers. NFAST has since 2010 through commitment from the government of the United Republic of Tanzania facilitated mainly the following areas:

- Capacity building in form of training both at MSc and PhD level
- Construction and refurbishment of research facilities
- Funding research projects

### 2.3.1 Support to human resource development

COSTECH continued to build capacity of Tanzanian via extending sponsorship to 380 researchers from various R&D institutions studying at MSc and PhD level in eight public universities namely University of Dar es Salaam, Sokoine University of Agriculture, Muhimbili University of Health and Allied Sciences, Ardhi University, Open University of Tanzania, ESAMI, Mzumbe University, and Nelson Mandela Institute of Science and Technology. The support to these students amounts to Tsh 11.24 billions.



**Fig 3: Mr. Deusdedit Kilambo (left), a PhD student from Nelson Mandela Institute of Science and Technology explaining Hon. Prof Makame Mbarawa about the coffee research he is undertaking during Science and Technology exhibition at the Bunge grounds in Dodoma.**

Among the beneficiaries are eight (8) students from Zanzibar. Most of Masters students (about 195 students) were expected to complete their studies within June and August 2013. The outcome expected from this sponsorship among others, is the increased number of competent research scientists who will contribute to sustainable social economic development.

Currently, the Commission is working with the Ministry of Energy and Minerals, in collaboration with the Tanzania Petroleum Development Corporation (TPDC), to identify human resource need on oil and gas renewable energy. Once the draft report for experts in oil and gas is available, and the skills gap has been established, the Commission will see into it to build their capacity for short and long term basis.

| SUMMARY OF COSTECH SPONSORSHIP FOR POSTGRADUATE STUDIES AT MSc AND PhD AT VARIOUS UNIVERSITIES – AS OF OCTOBER, 2013 |            |           |            |
|--|------------|-----------|------------|
| MSc Programmes   | Male       | Female    | Total      |
| SUA  | 51         | 26        | 77         |
| MUHAS  | 16         | 11        | 27         |
| UDSM   | 14         | 11        | 25         |
| ARU  | 03         | 0         | 03         |
| NM - AIST  | 46         | 7         | 53         |
| MZUMBE UNIVERSITY  | 1          | 1         | 2          |
| ESAMI  | 1          | 0         | 1          |
| <b>SUB TOTAL - MSc</b>   | <b>132</b> | <b>56</b> | <b>188</b> |
|  |            |           |            |
| PhD Programme  | Male       | Female    | Total      |
| SUA  | 22         | 9         | 31         |
| MUHAS  | 0          | 1         | 01         |
| UDSM   | 13         | 5         | 18         |
| ARU  | 2          | 2         | 4          |
| NM - AIST  | 26         | 5         | 31         |
| OUT  | 1          | 0         | 1          |
| <b>SUB TOTAL - PhD</b>   | <b>64</b>  | <b>22</b> | <b>86</b>  |
| <b>GRAND TOTAL</b>   | <b>196</b> | <b>78</b> | <b>274</b> |
| <b>Batch II NM-AIST</b>  |            |           | 106        |
| <b>GRAND TOTAL</b>   |            |           | <b>380</b> |

*Table 2: Breakdown of number sponsored MSc and PhD student's 2012/13*

### 2.3.2 Research infrastructure support

Similarly, 20 research institutions received fund for infrastructure improvement in the period under review, and currently they are at various stages of implementation (Annex 1). A total of 9.95 billion will be used upon completion of all projects. The recent monitoring and evaluation visit to several supported infrastructures showed good progress has been attained as follows:

#### 2.3.2.1 National Institute of Medical Research- Tabora

The Commission supported construction of medical laboratory for Research Center on Human African Trypanosomiasis, which is under the National Institute of Medical Research (NIMR)-Tabora. A total of 56.25 million was spent on this activity and recently monitoring and evaluation visit shows 90 percent of the project is completed as can be seen in figure 4 below:





**Fig 4: NIMR Laboratory–Tabora Research Center for Human African Trypanosomiasis**

#### **2.3.2.2 Kizimbani Research Institute, Zanzibar**

A rehabilitation project as well as equipping the research centre. The total project amounts to Tshs. 641 million. Currently the project is completed by almost 90% and looking forward to be launched in 2013/14 year.



**Fig 5: Kizimbani Research Institute located in Zanzibar**

#### **2.3.2.3 Naliendele Agricultural Research Laboratory**

Naliendele Agricultural Research Laboratory construction work is in good progress and is completed by 80%. The construction is expected to be completed by December 2013.



**Fig 6: Naliendele Agricultural Research building, Mtwara**

#### **2.3.2.4 Tanzania Fisheries Research Institute (TAFIRI)**

AFIRI has training ship that was in a bad condition and not working. The project intended to rehabilitate the ship and be used for research as well as for enhancing students’ practical training. To date the projects is completed by 100% and the ship is being used for intended purpose (Fig. 7 A&B).



**Fig 7A: Before rehabilitation of the ship Fig 7B: After rehabilitation of the ship**

#### **2.3.2.5 Agricultural Research Laboratory Construction Makutupora, Dodoma**

The project is in good progress and has attained almost 90% of its completion. Now the project (Fig. 7) awaits final disbursement to be released following correction of few errors made by contractor.



**Fig 8: Makutupora Agricultural Research building, Dodoma**

### 2.3.3 Research projects funded

In the implementation of the promises made by H.E President of the United Republic of Tanzania Dr. Jakaya Mrisho Kikwete in 2009 to invest up to one percent (1%) of the Gross Domestic Product (GDP) to promote research in the country, in 2012/13 the government disbursed the sum of Tshs 12.8 billion to the Commission, out of which Tshs 5.2 billion has been allocated to fund research projects mainly in Agriculture, Livestock and Fisheries sectors.

#### 2.3.3.1 Open and competitive research

COSTECH continued to provide support to research projects that were selected from September 2011 to date. All research projects receive funds based on their implementation plan. A total of 77 research projects are currently being funded and they are in various stages of implementation. Out of this, 56 research projects are being conducted by local researchers from various research and development institutions and higher learning institutions, 15 are joint research projects funded by both Tanzania and South Africa governments, 4 are funded by Tanzania, and Sweden and the Netherlands (TASENE), and 2 are Commissioned research.

Furthermore, the Monitoring and Evaluation exercise conducted in July 2013 for ongoing research projects conducted by local researchers from various research and development institutions and higher learning institutions funded by COSTECH under 'Kilimo Kwanza' initiative (see Annex 2), revealed the following achievements:

- Development of thermostable trivalent vaccine for control of major respiratory poultry diseases. The vaccines will soon in massive production by a Moroccan company that is entering into a contract with Sokoine University of Agriculture (SUA),
- Locally developed Newcastle Disease (ND) vaccines (MG 1003) will soon be validated,
- Identification of 12 botanicals including jatropha, lantana and chilli as repellants for rodents under field conditions,
- Reduction of amount of rice seeds from 30 to only 3 kg/ha and decreased water utilization in rice fields by 50% resulting to increased rice yield from 2 to 7.5 tons/ha,
- Improved farmer's income through improved forage availability during the dry season and sales of improved crossbreds resulting from Artificial insemination using "Beef Master" semen to the traditional cattle herd,
- identification of five indigenous chicken ecotypes namely Kuchi, Horasi, Sasamala, Yangeyange and Kishingo from 20 districts in 10 regions of four agro - ecological zones as potential candidate for indigenous chicken improvement,
- screening of 262 wheat accessions and two varieties will be released in two year from now,
- Production and certified by TOSCI of 2570 kg of five Quality Declared Seeds (QDS) bean varieties namely, Lyamungo 85, Lyamungo 90, Pesa, Jesca and Mshindi,
- Four QDS of maize namely, Staha, TMV1, Kilima and Stuka were produced by 14 engaged contact farmers in Kongwa district,
- Cassava varieties tolerant to cassava brown streak disease (CBSD) and cassava mosaic disease (CMD) have been developed resulting to increased productivity and food security in the study areas,



- Dried cassava peels technology has been developed and in use now as animal feed. This Animal Feed supplement has improve productivity of goats in Newala in terms of weight gain per goat/per day, and
- Fruit flies have been controlled by using biological methods (*Oecophylla longinoda*) and chemical method (pheromone). Fruits destruction by flies has decreased by 90% resulting to increase farmer's income.



**Fig 9A: Researchers on a drought-affected maize farm**



**Fig 9B: Cassava roots affected by a virus know as CBSD**



**Fig 10: Coffee (right) and banana (left) seedlings produced through tissue culture**

### 2.3.3.2 Commissioned research

Apart from COSTECH holding annual open and competitive call for research based on national research priorities and topical issues pertinent at the time, it also calls for Commissioned research since competitive grants do not always attract submissions from expert researchers with established grants. A portion of the NFAST is committed to sourcing expertise to address specific areas of concern that are of immediate need and relevance to national goals.

In the year 2012/2013 COSTECH supported two researches namely, “Assessment of the effectiveness of the root extract from *Carissa spinarum* for the treatment of diabetes mellitus type II and HIV/AIDS patients as claimed by Retired Pastor Ambilikile Mwaisapile from Samunge village, Ngorongoro district, Arusha,” and “The impact of community policing “Polisi Jamii, by the Tanzania Police Force (TPF).”

The Retired Pastor Ambilikile Mwaisapile's study results reveal that for both case and control groups assessed, there was no statistical significant advantages and neither did it show any obvious adverse effects on the patients either taking ART or anti-diabetic drugs

attending clinics in the selected health facilities. These findings do not support the ethno medicinal claim of the use of the plant in the management of diabetes mellitus type II and HIV/ AIDS as declared by Pastor Mwaisapile. For this reason, COSTECH has a mandate to encourage further pre- clinical and clinical studies to be done on *Carissa spinarum* to establish the dosage, safety and effectiveness on cure of HIV/AIDS and diabetes mellitus type II.

Although the TPF is not a customary research institution, COSTECH was amazed to see TPF for being the first government institution to endeavor to use scientifically rigorous methodology to test the impact of their interventions, and therefore saw the need to go beyond the standard research and development institutions to partner with institutions that are accustomed to using the evidence and products generated by research as third parties. The outputs of the research will produce evidence that will be easily adapted into policy and improve management of the “Polisi jamii” initiative in addition to engraining the philosophy and benefit of research even on interventions.

Also, COSTECH commissioned a study on, “Utafiti kuhusu maandiko mbali mbali ya Mwl JK Nyerere ndani na nje ya Tanzania.” Although there is considerable literature on Mwalimu Julius Nyerere, there is no comprehensive study and biography of him written by Tanzanians who have lived through his reign and after, and who have witnessed that reign flourish and decline alongside the country’s socio-economic development and the colonial and post-colonial struggles of the continent. The aim of the study is to undertake research on the life and time of Mwalimu J.K. Nyerere and write a comprehensive biography; and to use the material collected to establish the Mwalimu J.K. Nyerere Resource Centre.

Given its mandate the COSTECH also gave support of Tshs. 32 million to the Ministry of Health and Social Welfare in collaboration with the National Institute for Medical Research (NIMR) to do research and come up with innovative ideas which could bring out a specialized technique to control the dengue vectors (*Aedes*), during the dengue outbreak in June 2013.

Furthermore, COSTECH participated in the discussion about the safety of the baobab seeds oil “Mafuta ya Ubuyu,” that took place at the TFDA headquarters. During the discussion several recommendations were reached including research to be done by local researchers in order to verify the safety of the existing oil in the market, and if possible, the government to facilitate local researchers to visit other countries such as Malaysia to see how it prepares the oil and learn about the technology. The meeting also recommended to the government to assist by buying the oil processing machine that will help to process oil which is safe to human.

## **2.4 Other sources of funding for Research and Innovation**

### **2.4.1 Joint Research Project Proposals with South Africa**

In April 2012 the governments of South Africa and Tanzania signed agreement on collaboration in Science and Technology (by respectively Ministers-Naled Pandor and Professor Makame Mbarawa). Following this MoU, a call for Joint Research Project Proposals was announced in November 2012. The Joint research project proposals were

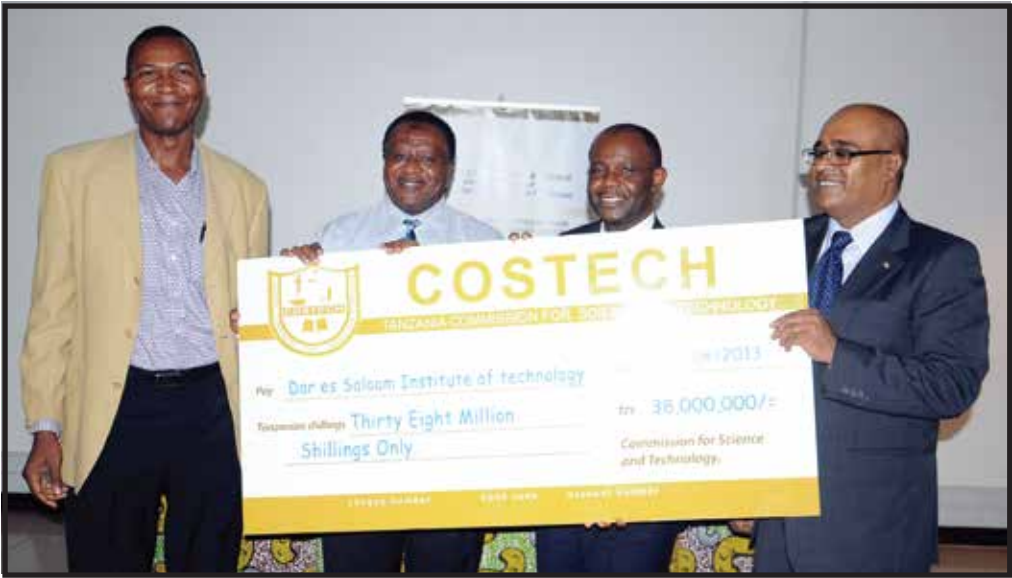


submitted to the Commission for Science and Technology in Tanzania and the National Research Foundation in South Africa for evaluation.

In June 2013, the Government of Tanzania through COSTECH had a Joint Technical meeting between Tanzania and South Africa whereby reviews of joint research projects were done in Tanzania and then South Africa in July 2013. Eventually 15 candidate proposals from Tanzanian emerged winners. South Africa and Tanzania governments have agreed to fund successful projects up to a maximum total amount of R 400,000 (Tsh. 74,000,000), where each country will provide half of the maximum amount per project. These proposals fall in the areas/disciplines such as Health, ICT, Paleontology, Nano material (manufacturing), Agricultural value addition (processing and packaging) and Animal embryo transfer. The first installment for the 15 joint research projects of Tshs 278,034,474 has been disbursed to respective researchers.

**2.4.2 Joint Funding scheme of TASENE**

COSTECH, SIDA of Sweden, and NWO/WOTRO of Netherlands agreed to establish a joint funding scheme, called TASENE, for excellent fundamental research projects open to all scientific disciplines and with relevance for the research system of Tanzania. TASENE is a unique collaborative programme between Tanzanian, Swedish and Dutch research funding institutions, aimed at enhancing scientific excellence and strengthening research collaboration between the collaborating countries, on the basis of equality in research support and research management.



*Fig 11: The Minister for Communication Science and Technology Hon. Prof Makame Mbarawa (2nd right) hands over a dummy cheque to a representative from theDar es Salaam Institute of Technology (1st left). Looking on is the COSTECH Director General Dr. Hassan Mshinda (2nd left) and the representative of South Africa High Commission to Tanzania Counselor Terry Govender (1st right).*

In the agreement each research will have two researchers, one from Tanzania and another from the other country - either Sweden or The Netherlands. The main objective of the collaboration is to learn from each other's funding approaches and management and encourage more harmonization and alignment in research findings in the long run, in order to make possible more funding opportunities for recently graduated PhD holders, a culture that did not exist for so long in the country.

As at June 30th 2013, the program has entered into the third year of implementation and respective students are implementing their respectful research projects. Each of the three participating agencies provides at least € 600.000 for the research programme, i.e. € 200.000 annually for three years (2011, 2012, and 2013). As such, a virtual common funding pot is available for the programme with a total maximum amount of € 1.8 M.

The awarded research projects from TASENE include:

- (a) Ngoni - Language, Culture and Sociolinguistic Situation , Dr. Gastor Mapunda, UDSM,
- (b) Novel therapies to reduce scarring and quality of life assessment in orofacial clefting, Dr. Matilda M. Mlangwa, MUHAS,
- (c) Targeting breeding site preferences of disease spreading mosquitoes: a multidisciplinary effort to develop novel "green" mosquito control tools, Dr. Eliningaya John Kweka, TPRI, and
- (d) Identifying and monitoring trade in Tanzanian wild-harvested medicinal plants by means of innovative genomics-based DNA barcoding, Dr. Joseph Otieno, MUHAS.

#### 2.3.4.2 Booklet for research funding opportunities

In the reporting period, COSTECH continued to seek for other opportunities that may be used by Tanzanians to write the Project Proposals and attract more funding from international donors under competitive research funding modality. In achieving this, the "Funding Opportunity Booklets" prepared and disseminated to various stakeholders as from June 2012 up to May 2013. This booklet assists Tanzanian researchers in various fields to benefit from these opportunities.

### 3.0 Increasing access of information and use of knowledge and technologies

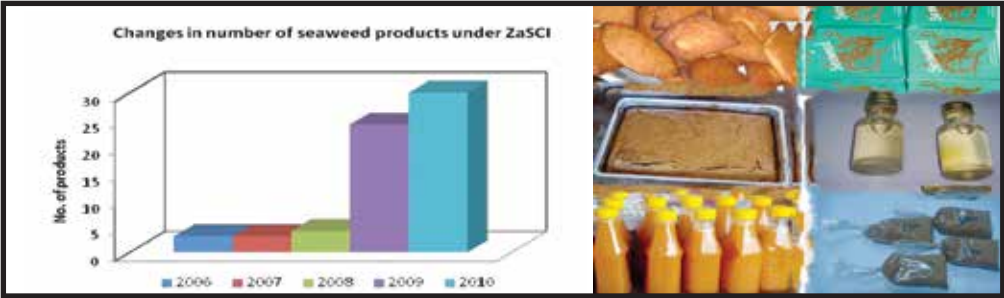
#### 3.1 New cluster development initiatives

Tanzania has a number of research results and technologies that may be commercialized. There are a few pilot initiatives for commercialization such as the national level business incubator programme and cluster initiatives that can be replicated countrywide. The main objective of new cluster initiatives is to stimulate, catalyze and promote the development of capacity for innovation through innovation systems and innovative clusters in the country, and thereby facilitate speedy socio-economic development and poverty reduction. The cluster initiatives programme assists the universities, SME and government to fulfill their mandate of reaching out and generating solutions to solve problems that confront their respective societies through applied research and innovations instead of remaining ‘ivory towers’.

A cluster can be defined as a shared set of ideas in a specialized field passed among a set of relationships in a place. COSTECH under support of SIDA developed new clusters through provision of seed funds for cluster initiatives that are allocated in the some regions. So far 26 new clusters have received seed funds from COSTECH (Annex 3), and they are engaged in oil seed value addition, fish, ICT, livestock keeping, etc. The disbursement of the seed fund for new cluster initiatives has been done recently in Zanzibar, Dar es Salaam, and Morogoro. Moreover, one meat cluster from Nkasi, in Rukwa region and 6 more clusters from Morogoro region have been qualified to receive seed fund and disbursement will be done early in November 2013.



*Fig. 12: A group picture featuring the Zanzibar Government officials, researchers, the COSTECH team, together with the Fish Farming and Processing Cluster and the Pemba Horticulture, Food Processing and Spice cluster members during the disbursement of seed funds to cluster initiatives in Pemba.*



*Fig.13A: Change in number of seaweed products. Fig.13B: Some of seaweed products*

### 3.2 DTBi Innovation Program Promotion

COSTECH has established Dar es Salaam Teknohama Business Incubator (DTBi) in 2011, an innovation corridor that nurtures the innovation spirits of young entrepreneurs, including start up ICT companies. DTBi has now (7) residential companies namely Digital Drain, GreyFade Company Ltd, Gongga MX, First Access, Kagem Tibaijuka & Co., Progress Education and Blackmark Corporation. Moreover there are three (3) Virtual Companies namely Aim Firm, Maxcom and Dayone Softcom Technologies; (3) residential start up and(4) virtual startup. In total there are 17 incubatee entities. DTBi has conducted several training day sessions on the; improving exhibition skills, accounting management, development of mobile application for phones and presentation and ‘elevator pitches’

During the reporting period, the following dignitaries visited DTBi: Vice President of Tanzania, 1st Vice Presidents of Zanzibar, Prime Minister of Tanzania, few diplomats including Ambassadors from Finland and Belgium as well as officials from US State Department, SIDA and World Bank entrepreneurship team. Moreover, with the support from the TCRA, DBTi sent 2 of her incubates to ITU Exhibition in Dubai.



*Fig. 14: H.E President Jakaya Kikwete salutes one of the virtual companies from DTBi, namely Maxmalipo during the Smart Partnership Dialogue exhibition.*

One of the successful virtual companies nurtured from DTBi is Maxcom Africa Ltd. This company has developed a technology that brings basic utility services closer to the community in Tanzania as well neighboring countries such as Uganda, Rwanda etc. The company aspires to become the leading provider of payment systems and financial solutions in Africa. Among the utility services that are offered by this company include Banking services (Agency Banking, M-Pesa and Pension Funds), Government Taxes (innovative



technology in electronic payment for collection of government taxes, levies) and Transportation (Electronic Ticketing and Access Control).

In addition, Hon. January Makamba, the Deputy Minister for Communication, Science and Technology officiated awarding ceremony for Arnold Minde from Safari Yetu Company, an overall winner of the ICT innovations competition organized by COSTECH. Moreover pre-incubation activities were carried out at Tumaini University including Living lab and promotion of innovation initiatives. The goal of pre-incubation activities is to help university graduates and other individuals or teams with innovative ICT-enabled business ideas to develop the idea into a sustainable business over a six month period. Pre-incubation is an intensive program and the expected effort is at least 25 hours a week per participating person. Participants can select to take part on-site or virtually. On-site program is based at COSTECH and virtual pre-incubatees are supported by web conferencing tools and some face-to-face meetings and intensive sessions.

In year 2012, one of the DTBi incubatees Arnold Minde from Safari Yetu Company emerged the winner among nine entries in the ICT innovations with start-up World from the United States. Being the country winner means that Mr. Minde will represent Tanzania in Silicon Valley event, the hub of the US creativity and business start up in the field of information technology. In 2014, the candidate will join other winners from different countries around the world to showcase his innovation ICT solutions that people can use to buy bus tickets on the phone and online.



*Fig. 15: Hon. J. Makamba sharing a light moment with Mr. Minde, a winner who will represent Tanzania in Silicon Valley event, in the USA*

### **3.3 Commercialization of projects for sustainable socio-economic development**

COSTECH continued to support proven technologies that have impacts to the economic development in Tanzania. The Commission disbursed funds to four government R&D institutions that had products with proven market demands in the form of soft loan as detailed below. Overall repayment of the loan by these institutions is satisfactory.

### 3.3.1 Mzinga Corporation Limited

Mzinga Corporation Limited received funds amounting to Tshs. 181 millions for the dissemination and commercialization of various proven technologies project. Progress of the project implementation is very good with two work packages out of three being completed and delivered to clients according to the work plan. Some of the products sold (and repayment made) are animal feed processing machines (Malawi) worth Tshs. 49.9 mil and waste management processor sold to Morogoro Municipal council worth Tshs. 48.2 mil.

### 3.3.2 Tanzania Engineering Manufacturing and Design Organization

Tanzania Engineering and Design Organization (TEMDO) received Tshs. 200 million to be used in hospital solid waste management. Good progress has been attained, whereby 8 out of 10 Incinerators have been manufactured and delivered to respectively District hospitals. Initially the design of the incinerator was based on water for cooling the chimney, however TEMDO as able to improve its technology to produce smokeless incinerators. The incinerators proved to be efficient by eliminating use of water and air pollution and solve the high cost of water consumption for the hospitals.



*Fig. 16: An Incinerators manufactured by TEMDO*

### 3.3.3 Tanzania Automotive Technology Centre (TATC)

The Tanzania Automotive Centre (TATC) produces low cost housing technologies and manufactures spare parts for the Tanzania Railway Limited (TRL). This institution received a total of Tsh. 193.4 million for dissemination and commercialization of their products. TATC has already completed all the order which it had under this project; however challenge lies in the payments from the clients (mainly TRL) who were supplied with locomotive spare part products. Two installment of the loan has been paid, and the last payments are yet to be paid.

### 3.3.4 Centre for Agricultural Mechanisation and Rural Technology

The Centre for Agricultural Mechanisation and Rural Technology (CAMARTEC) had a project to design and produce fast moving tractor for commercialization in the market. The tractor was researched and designed and finally conducted field trials, and later being showcased at Nanenane exhibition in Katavi region. To date trials continue before

releasing it in the market. Up to now only one tractor has been sold during inauguration of new Katavi region and 10 tractors have been ordered by different clients in Katavi region. These tractors have been made using the earlier version of the tractor with 4 gears and the order was in the completion phase during the visit. However, an order for a set of the 6 lever gear boxes has been confirmed.

### **3.5 Establishment of the TANZICT**

TANZICT stands for The Information Society and ICT Sector Development Project. It is a bilateral collaboration project between the Ministry of Communications, Science and Technology of Tanzania (MCST) and Ministry for Foreign Affairs of Finland. The project's overall objective is to strengthen Tanzanian information society with enhanced capacities to contribute to the achievement of the government's socio-economic development goals. The project is organized in three components:

- i. Create Tanzanian innovation program
- ii. Strengthen the institutional capacity of MCST, and
- iii. Support the revision of the national ICT policy and start of the implementation.

#### **3.5.1 Creation of Tanzanian innovation program through TANZICT Innovation Fund**

To encourage innovation spirit among Tanzanians the TANZICT through COSTECH established innovation fund with the objective to fund implementation of innovative ideas, which when realized, will support emerging tech entrepreneurs and startups to grow and address specific social and economic needs that exist. The fund focuses on getting new products and services to demo, prototype or pilot phase.

The following are the companies which successfully went into the final stage of negotiation and have been awarded their fund. These are:

- Taha Jiwaji BongoLive
- Victor Augustine Omnigrid
- Xcommodity Mustafa Suleiman
- Godfrey Magila Mobile Parliament
- Dickson Ng'ang'a Zalego
- Guido Msita Blackmark

In the efforts to look for more funding, the Department for International Development (DFID) has agreed to invest 30 million British Pounds in a new Human Development Innovation Fund (HDIF) for Tanzania; to provide a mechanism to encourage innovation and support the scaling up of promising approaches in health, education, water and sanitation sectors, to achieve improvements in the quality and value for money of basic services. A call for the Funding Manager position has been announced. The Manager will work closely with COSTECH in building its capacity; strengthen the culture of innovation and use of science and technology in development. In addition, part of the fund will be used to strengthen the capacity of Zanzibar government in evidence-based policy.

### 3.5.2 Strengthen the institutional capacity of MCST through TANZICT Living labs

Strengthening the institutional capacity of MCST is through the establishment of TANZICT Living labs and Innovation Spaces. A living lab is a user-centred, open-innovation ecosystem, often operating in a territorial context (e.g. city, agglomeration, and region), integrating concurrent research and innovation processes within a public-private-people partnership. One part of the TANZICT project is the Tanzania Innovation Program, which covers activities around the innovation space, pre-incubation, university collaboration and the TaFinn-exchange program. In the Tanzania Innovation Program TANZICT has a mandate to explore how living labs could support communities in solving social and economic problems. TANZICT has been meeting with different communities and universities in the past few months, and has identified some potential or emerging living labs that it is planning to work with for example in Kigamboni, Iringa, Arusha, Mbeya, Morogoro and Zanzibar. During the reporting period, two living labs have been established, one at Kigamboni and the other in Iringa.

TANZICT through COSTECH provides an Innovation Space, a meeting place for local ICT & developer community whereby registered Dar es Salaam residents utilize it free of charge to work on their ICT projects ideas, develop applications and business ideas. TANZICT/COSTECH also use the space to support routinely training, workshops, network and competition, whereby more than 20 events were organized during the reporting period. The event details of events can be available at <http://tanzict.or.tz/events>.



*Fig. 18: TANZICT innovation space*

### 3.5.3 Support the revision and implementation of the national ICT policy

TANZICT, in collaboration with the Ministry of Communication, Science and Technology, is involved in the process of revising the national ICT policy which aims at making science, technology and innovation cut across all the sectors of the economy. The draft is expected to be completed and presented in December this year.



### 4.0 Enhancing public engagements in science, technology and innovation

#### 4.1 Level of satisfaction of TV and Radio programs

One of the functions of the COSTECH is to acquire, store and disseminate scientific information to the public. Apart from participating in various exhibitions, COSTECH educates the general public about the importance of science, technology and innovation for socio-economic development radio and television programs either by appointing researchers and scientists to talk about various topics or by sponsoring documentaries that relate to science and technology projects funded by the Commission.

During the period under review, the Commission was able to sponsor 22 television and 23 radio programs aired in conjunction with TBC, and TBC Taifa. Some of the programs are as follows:

- In July 4th, 2013 COSTECH also participated in the famous weekly program produced by Tanzania Broadcasting Corporation (TBC), THIS WEEK IN PERSPECTIVE. The topic of discussion was, the Changing Role of Universities as Centres of Excellencies. COSTECH Director General, Dr Hassan Mshinda, the Don at the Harvard University Professor Calestous Juma, Professor Evelyn Mbede from the Ministry of Communication, Science and Technology and the former Tanzania Commission for Universities Executive Secretary Professor Sifuni Mchome were the panelists.
- COSTECH also has participated in the “JE TUTAFIKA” whereby the Director General discussed various science and technology issues with Mr. Makwaia wa Kuhenga.
- In the role of encouraging Tanzanian students to pursue science subjects, COSTECH participated in two Television Programs namely Hot Mix of the East African Television and a special program at Mlimani TV and Radio. On 27th August 2013 on East African Television, in the LIVE program of HOT MIX, COSTECH Public Relations Officer together with the only student at the United States Massachusetts Institute of Technology (MIT), Ms Sante Nyambo discussed how it is possible for Tanzanians female students to do better in their studies. Ms Nyambo, who is a sophomore taking Civil Engineering at MIT studied at Mzizima and Agha Kan Secondary schools and has been working with her professors to develop programs that will benefit Tanzanian infrastructural systems in the future. She used that opportunity to educate fellow Tanzanians on how to apply science and technology scholarships from the best universities in the United States of America.
- In 12th March 2013 the COSTECH Public Relations Officer was interviewed by Mr Baruhani Muhuza, a BBC Swahili reporter in the Amka na BBC radio program. He discussed COSTECH roles during the week of Science and Technology covered by BBC Swahili for East African Countries.
- COSTECH also uses Social Media to Communicate. It mostly uses the Michuzi Blog, Jamii forums, COSTECH Website, COSTECH Blog, Twitter and Facebook. All COSTECH events were able to be reported by these social media.

Apart from using electronic and social media, COSTECH also uses printed media to disseminate information. During the period under review, COSTECH managed to obtain 70 articles published in newspapers on issues of research, technology and innovation.

#### **4.2 Science journalism training workshop**

COSTECH organized a two-day workshop on Science Communication to participants from the media and various research institutions. The workshop took place in COSTECH headquarters in Dar es Salaam as from 19th to 20th June 2013, and was attended by a mixed group of around 40 scientists, researchers and journalists. The trainers were Research Africa. The overall objective of the workshop was to build mutual understanding between scientists and science journalists for better, more accurate science reporting in Tanzania. The feedback from the participants was overwhelmingly positive, with the majority saying that the workshop had met their expectations and that they will be able to apply the knowledge they learned. However they also agreed that it was now up to them to build on the momentum created by the workshop and further cement the relationships forged between the scientific and media communities.

#### **4.3 Monthly Electronic Newsletter**

The Commission has established an electronic newsletter commonly known as "Monthly e-Newsletter", which is used to disseminate information about events featured at COSTECH and other STI related articles to various stakeholders. In the period under review, the commission prepared and produced 12 editions of "Monthly e-Newsletter" (one edition each month), that were disseminated to various stakeholders including Higher learning institutions, R&D institutions as well as the general public.

#### **4.4 Education Management Information system and e-Library**

The implementation of Education and Management Information System (EMIS) and E-library systems for Higher Education and Research Institutions in Tanzania (HERIs) is in good progress, whereby the Commission enhanced stakeholders' meeting aiming at reviewing inception report that took place in August 2012 in Dar es Salaam. Lead by the ESRE, the study intends to collect and register all theses and dissertations from 128 sampled higher learning and research institutions so that they could be published and shared. Although the COSTECH is mandated to coordinate all research activities in the country, having the EMIS will help reduce the risk of duplicating researches among the HERIs. The evaluation to award individual consultants for EMIS and e-library is in process.

#### **4.5 Skills for new economy**

Realizing that today's industrial sector needs a well-rounded mix of foundational cross-cutting skills, advanced technical skills, and skills needed to convert ideas into successful start-ups, the Commission has identified a three tiered approach for building skills for new economy (IT-BPO) namely the CHART skills (communication, heuristic, analytical, relational, and technology) focused on the BPO sector; SMART skills (software, mobile applications, research and technology) focused on the IT industry, and the START skills (start-up training through association with remote teams) focused on fostering entrepreneurship.

With the presence of the Seacom National ICT Broadband Backbone (NICTBB), COSTECH has outlined several strategies, including facilitating the provision of training services in finance, education, health, agriculture, commerce, innovation, critical thinking, research, entrepreneurship, computer science, information technology and communications, mobile application software, and tourism through the internet.

The Commission is collaborating with more than 50 world's renowned universities such as, Columbia University, Duke University, Hebrew University of Jerusalem, Johns Hopkins University, Mount Sinai School of Medicine, Ohio State University, Princeton University, Stanford University, University of California, San Francisco, University of Edinburgh, University of Melbourne, University of Toronto, University of Virginia, University of Washington, Vanderbilt University, etc, to provide a platform of knowledge-network through Coursera. 140 students for the SMART skills course have been selected from the Dar es Salaam Institute of Technology (DIT), and Institute of Finance Management (IFM); curriculum tracks have already been prepared and sent to WB for approval by the curriculum expert, and soft skills courses have already been developed. The training courses which are going to be offered by the Stanford University, University of Washington, University of Maryland, University of Toronto, and Princeton University begins on the 4th November, 2013.

This e-learning platform is expected to facilitate availability of such training in empowering Tanzanian students so that they get equal opportunities like those students who study in famous universities in the world.

#### **4.6 Improvement of COSTECH Website and digital library**

The COSTECH Website has been modified and improved to make it more interactive and dynamic. Currently improvement on the content, uploading as well as populating with more data information is ongoing.

On the other hand, the COSTECH digital library, alias 'COS eLib' is a digital library consisting of electronic documents, many of which are found within COSTECH. COS eLib is maintained and updated at COSTECH. It consists of collections of abstracts of various types of research publications, Tanzania journals, journal extracts and others. It seeks to play the role of a conservatory and information support utility that strives to serve users, which include scientists, students, researches and others, within COSTECH and the larger research community in the country. Being a registered institution for online resources through INASP (International Network for the Availability of Scientific Publications), COS eLib presents a new way of disseminating research information to its stakeholders in a manner that can be accessed nationally and globally. Links to other useful e-resources are also available on the digital library and more than 3012 science and technology stakeholders have accessed the digital library. This number is reached by counting the hits and downloads that have been made during the period under review.

### 5.0 Meeting the expectations of internal and external stakeholders on corporate services

#### 5.1 Internal Administration

This year, COSTECH marked the end of a three- year Commission's Board tenure which was full of successes. Some of the significant Board decisions were the transformation of the organization structure in 2010, the approval of the new schemes of service and financial regulations, establishment of the COSTECH Zanzibar Office, rehabilitation of the office building, and increase donor projects such as World Bank and SIDA.

In the period under review, a new COSTECH organization structure was established whereby, two more directorates have been added. Instead of having four, now there six directorates namely Life Sciences; Physical Sciences; Social Sciences; Knowledge Management; Innovation, Entrepreneurship and Competitiveness, and Administration and Finance.

Under the same period COSTECH managed to recruit competent staffs to fill the vacant positions which include Directors, Heads of Unit, Research Officers and support staffs. The new structure is going to allow COSTECH to make huge changes by serving all the sectors ranging from Health, Natural Resource, Agriculture, Environment, Livestock, Energy, Education, Infrastructure, Industry, Economics, Policy, Demography, Sociology, to Earth and Geosciences.

Similarly a new Board for the Dar es Salaam Teknohama Business Incubator (DTBi) was established, that comprises of both nationally and internationally experienced and renowned persons in the ICT sector and the Commission hopes this will make a huge impact in the running of the organization.

#### 5.2 Financial statement

The Commission has worked hard to clear a backlog of unaudited accounts since 2006 by preparing new financial statements for five years ended 30th June 2008, 2009, 2010, 2011 and 2012. The external auditor of COSTECH's financial statements for financial year 2007/08, 2008/09, 2009/10, 2010/11 and 2011/12 issued clean reports.

Internal Audit Charter and Audit Committee Charter have been developed and the Internal Audit Unit is well staffed.

#### 5.3 Staff matters

As of June 30th, 2013 COSTECH has permanent and contractual employees. The permanent employees are eighty one (81) in number and contractual employees are eleven (11) giving a total of 92 employees. Out of 92 employees: researchers (scientists) are thirty two (32) and remaining sixty (60) are supporting staff. The Commission expects to recruit 15 new staff within this quarter.

Meanwhile COSTECH has adopted Performance Management System using a Balanced Score Card Method, which was finalized in June 2013 and being implemented in July 2013.

Rehabilitation of COSTECH office building along with landscaping of the area has been completed, enabling a good working environment. Furnishing of the conference hall is being finalized. In addition a new Scheme of Service, Job description and Salary structure was prepared and approved by treasury registrar. Implementation of Salary structure has begun in July 2012.

### **5.3.1 Staff development**

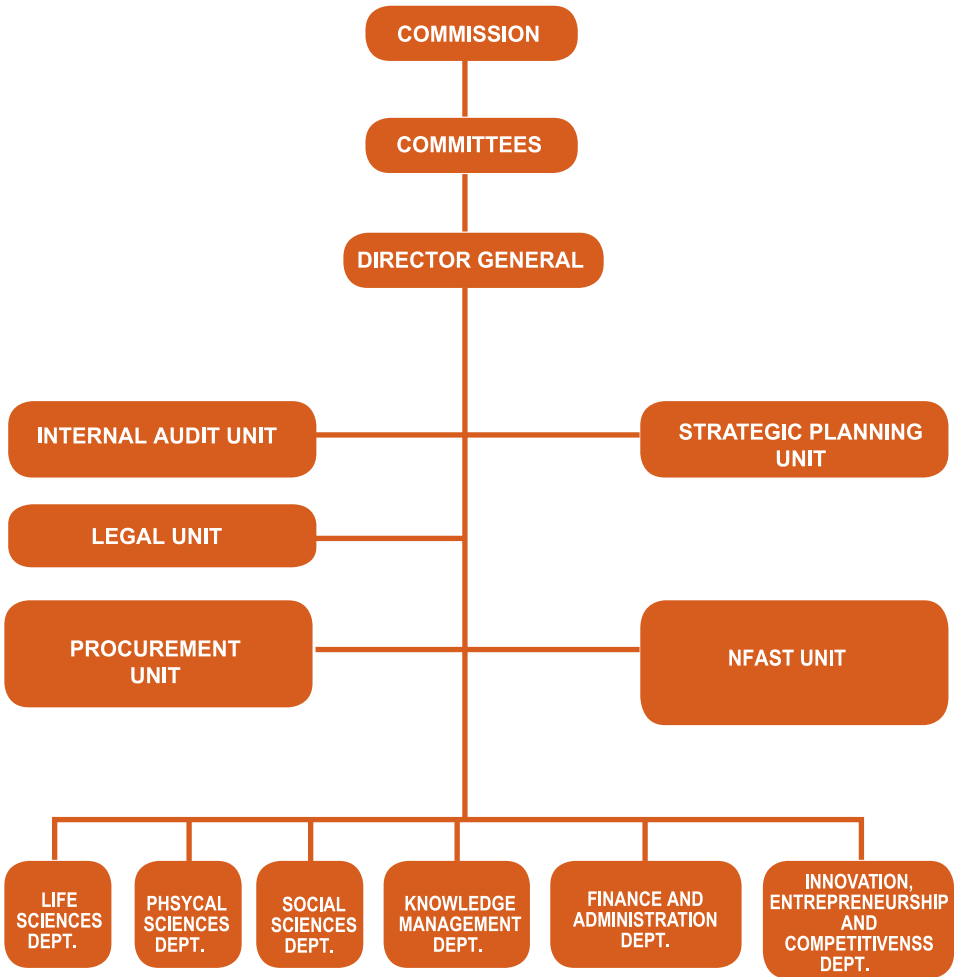
During this period one staff attended a study tour in India to their National Innovation Foundation (NIF-India), where he learned their system on how they are dealing with grassroots innovators and traditional knowledge holders. The staff made a number of recommendations and approaches which COSTECH could follow, in order to make effective coordination and promotion of the grassroots innovators and traditional knowledge holders. Currently COSTECH is working on the implementation of the NIF model.

Also, as an effort to make sure that science and technology contribute to the national economy, two staff were sent to the National Office for Technology Acquisition and Promotion (NOTAP) in Abuja, Nigeria to learn the best practices from other countries/institutions of our like from 03rd – 10th June, 2012. Following the report on the experience learnt from NOTAP Nigeria, it was endorsed that Management should commission a study that will look into technical, legal and economic implication of Technology Transfer Agreement (TTA) in Tanzania. Thereafter the Management visited key stakeholders such as BoT, TIC and TRA for them to buy in the idea as will be the same people who will be involved in one way or other to provide some of the required information. The visit shows that they were very supportive of the idea of such a study. The visit was followed by the presentation of the NOTAP report to the R&D Advisory Committee on Technology Transfer who also supported the idea and further directed the Management to go on with the preparation for commissioning such a study. The ToR for the study has already been developed and a Nigerian consultant is expected to visit Tanzania and train COSTECH staff in November 2013.

In addition, 15 staff attended capacity building courses ranging from 1 day to 3 weeks in Tanzania and abroad in the areas of STI, Human Resource Management, Finance, Procurement and Auditing, and 4 staffs are attending long term training at the PhD level.



NEW COSTECH ORGANOGRAM



### 6.0 Conclusion

Based on the planned activities for year 2012/13 as well as government decision to invest more in Science, Technology and Innovation, the Commission has managed to achieve most of its targets. However, there were several challenges that caused the Commission not to meet some of its targets. Among others challenges include, government budgetary constraints, inconsistent cash flow in the financial year 2012/13 and inadequate number of competent scientists in the R&D institutions and Universities. In addition, lack of modern research facilities and conducive research environment has failed to attract and retain eminent scientists because others competitors are paying them better and offering them conducive working environment. However the Commission is determined to put more efforts to meet these challenges for the betterment of the science, innovation and technological development. Moreover the Commission is looking forward to develop a new Strategic Plan 2014 to 2017, which will have strategies to meet the aforementioned challenges and align with STI policy and National Development vision 2025.

Besides the above stated challenges, COSTECH's efforts have been recognised by other foreign institutions that work along the science and technology line. The recent survey conducted by the International Relations Program (IRP), in 2012, under the Think Tanks and Civil Societies Program of the University of Pennsylvania, in the United States of America ranked the COSTECH as one of the top 50 Global Think Tanks under the category of science and technology. Globally, there are a lot of science and technology think tanks, let alone in the continent of Africa. For the COSTECH to be among the 50 best in the world is the greatest achievement of all time.

Annex 1: Constructed and or refurbished research facilities in the period 2010 – 2013

| S/NO | INSTITUTION              | INFRASTRUCTURE  |
|------|--------------------------|---|
| 1    | ARI UYOLE                | Renovation of water and Power systems & laboratory                                |
| 2    | TAFIRI                   | Rehabilitation of MV Kiboko   |
| 3    | TALIRI MPWAPWA           | Biotechnology lab   |
| 4    | ARI MIKOCHENI            | Rehabilitation of the genetic engineering lab                                     |
| 5    | TALIRI NALIENDELE        | Irrigation system & oil analyzer  |
| 6    | ARI MAKUTOPORA           | Construction of lab, Irrigation system, Screen house & a cold room                |
| 7    | ARI Ukiriguru            | Rehabilitation of water system and cold room                                      |
| 8    | ARI SELIAN               | Lab, cold room, green house, screen house & water pump                            |
| 9    | ARI ILONGA               | Office building, cold room, green house, screen house<br>& oil pressing equipment |
| 10   | ARI TUMBI                | Construction of water pipe system & screen house                                  |
| 11   | CVL TEMEKE               | Construction of Biosafety laboratory  |
| 12   | NALIENDELE LIVESTOCK     | Construction of office block  |
| 13   | TALIRI, TANGA            | Renovation of dairy unit building   |
| 14   | TALIRI West KNJARO       | Renovation of lab. & procurement of lab. equipments                               |
| 15   | TALIRI , UYOLE           | Cold room & incubator installation, procurement of lab. equipments                |
| 16   | TALIRI, MABUKI           | Construction of office building, staff houses & laboratory.                       |
| 17   | TANGA TSETSE R.INSTITUTE | Lab renovation  |
| 18   | ARI KIZIMBANI            | Renovation/construction of laboratory   |
| 19   | NIMR TABORA              | Lab. benches and cupboards  |
| 20   | VRTC, MAKUTUPORA         | Construction of lab & procure drip irrigation equipments                          |

Annex 2: Detailed achievements from the research grants in R and D institutions supported by NFAST

Annex 3: New cluster initiative supported by the SIDA program established in 2012

| SNO: | NAME OF THE CLUSTER                   | LOCATION |
|------|---------------------------------------|----------|
| 1    | Fruit, vegetable and Spice processing | Unguja   |
| 2    | Cultural Heritage Tourism             | Unguja   |
| 3    | Poultry                               | Unguja   |
| 4    | Fish farming and processing           | Pemba    |
| 5    | Fruit, Vegetable and Spice Processing | Pemba    |
| 6    | Shell polishing                       | Mtwara   |
| 7    | Fish farming                          | Mtwara   |

|    |                          |                       |
|----|--------------------------|-----------------------|
| 8  | Handloom                 | Dar es Salaam         |
| 9  | Furniture                | Dar es Salaam         |
| 10 | Wood Curving             | Dar es Salaam         |
| 11 | ICT                      | Dar es Salaam         |
| 12 | Magugu Rice              | Babati, Manyara       |
| 13 | Bee keeping              | Hanang, Manyara       |
| 14 | Bee keeping              | Babati Rural, Manyara |
| 15 | Oil seed                 | Babati, Manyara       |
| 16 | Bee keeping              | Manyoni, Singida      |
| 1  | Oil seed                 | Singida               |
| 18 | Oil processing           | Morogoro              |
| 19 | Horticulture             | Iringa                |
| 20 | Sisal                    | Shinyanga             |
| 21 | Engineering              | Shinyanga             |
| 22 | Sustainable fish farming | Kilimanjaro           |
| 23 | Mushroom                 | Lushoto               |
| 24 | Mushroom                 | Ruvuma                |
| 25 | Oil seed                 | Manyara               |
| 26 | Sorgham                  | Dodoma                |

## Annex 2: Detailed achievements from the research grants in R and D institutions supported by NFAST

| No | Project title   | Achievement so far   |
|----|---|--|
| 1  | Increasing poultry productivity through Enhancing thermostability of vaccines for controlling respiratory diseases by, Prof. Wambura, Philemon Nyangi,  | <ul style="list-style-type: none"> <li>Development of thermostable trivalent vaccine for control of major respiratory poultry diseases namely Newcastle disease virus (NDV), Fowl pox virus (FPV) and Avibacterium paragallinarum (AP), collectively referred to as "NDAF"</li> <li>the vaccines will soon be ready for use following finalization of agreement of multiplication and massive production work to be done by a Moroccan company that intend to enter into a contract with SUA.</li> </ul> |
| 2  | Validation of Locally Developed Newcastle Disease Vaccine and Development of Tanzania Model of Village Local Chicken Production for Poverty Alleviation by Prof. Mlambo, Mkumbukwa Madundo Angelo | <ul style="list-style-type: none"> <li>Locally developed Newcastle Disease (ND) vaccines (MG 1003) will soon be validated</li> </ul>   |
| 3  | Title of the Project: Evaluation of Selected Botannicals as Rodent Repellents in Maize Fields and Stored Maize Grain in Rural Areas, Tanzania by Dr. Mashaka Mdangi                               | <ul style="list-style-type: none"> <li>Preliminary results show that 12 botanicals including jatropa, lantana and chilli are promising extracts as repellants for rodents under field conditions</li> </ul>  |
| 4  | Participatory validation and up scaling of system of rice intensification in Morogoro by TUSEKELEGE HEZRON K.   | <ul style="list-style-type: none"> <li>Early transplanting of rice seedlings reduced amount of rice seeds from 30 to only 3 kg/ha</li> <li>Techniques has decreased water utilization by 50% while increased rice yield from 2 to 7.5 tons/ha.</li> </ul>  |

|   |  |  |
|---|--|--|
| 5 | Testing a stratified model for commercialized traditional beef cattle production in Tanzania by Daniel Komwihangilo  | <ul style="list-style-type: none"> <li>The intervention has improved farmers income through improved forage availability during the dry season and sales of improved crossbred resulting from Artificial insemination using "Beef Master" semen to the traditional cattle herd.</li> </ul>   |
| 6 | Enhancing availability of quality indigenous day old chicks for commercial poultry producers through establishment of grand-parent and parent stocks by David Sendalo (TALIRI Mpwapwa) | <ul style="list-style-type: none"> <li>The project has already identified and evaluated five indigenous chicken ecotypes namely Kuchi, Horasi, Sasamala, Yangetyange and Kishingo from 20 districts in 10 regions of four agro - ecological zones as potential candidate for improvement</li> </ul>  |
| 7 | Development and Dissemination of High Yielding Disease Resistant Wheat Varieties in Tanzania by Kuwite Catherine   | <ul style="list-style-type: none"> <li>The reported achievements so far include screening of 262 germplasm accessions and two varieties will be released in two year from now</li> <li>Six varieties have been given to the Agriculture Seed Agency (ASA) for multiplication and availed to breweries companies and farmers</li> </ul>           |
| 8 | Scaling up and Commercialization of Quality Declared Seed Production of Common Bean in Northern and Eastern Zones of Tanzania by NCHIMBI-MSOLLA SUSAN                                  | <ul style="list-style-type: none"> <li>A total of 2570 kg of five Quality Declared Seeds (QDS) bean varieties namely, Lyamungo 85, Lyamungo 90, Pesa, Jesca and Mshindi were produced and certified by TOSCI.</li> <li>Four QDS of maize namely, Staha, TMV1, Kilima and Stuka were produced by 14 contact farmers in Kongwa district</li> </ul> |



# **FINANCIAL STATEMENTS**

## AUDIT REPORT AND FINANCIAL STATEMENTS

To: The Chairperson,  
Tanzania Commission for Science and Technology,  
P.O. Box 4302,  
DAR ES SALAAM.

RE: REPORT OF THE CONTROLLER AND AUDITOR GENERAL ON THE FINANCIAL STATEMENTS OF THE TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY FOR THE YEAR ENDED 30<sup>TH</sup> JUNE, 2013

### Introduction

I have audited the accompanying financial statements of the Tanzania Commission for Science and Technology which comprises the statement of financial position as of 30<sup>th</sup> June, 2013, and the statement of comprehensive income, statement of changes in equity and statement of cash flows for the year then ended, and the notes to the financial statements which includes a summary of significant accounting policies and other explanatory notes set out on pages 9 to 29 of this report.

### Commission Members' Responsibility for the Financial Statements

The Commission Members of Tanzania Commission for Science and Technology is responsible for the preparation and fair presentation of these financial statements in accordance with International Financial Reporting Standards. This responsibility includes designing, implementing and maintaining internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatements, whether due to fraud or error, selecting and applying appropriate accounting policies and making accounting estimates that are reasonable in the circumstances.

### Responsibilities of the Controller and Auditor General

My responsibility is to express an independent opinion on the financial statements based on the audit. The audit was conducted in accordance with International Standards on Auditing (ISA) and such other audit procedures I considered necessary in the circumstances. These standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considered internal control relevant to the Tanzania Commission for Science and Technology's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Tanzania Commission for Science and Technology's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

In addition, Sect. 10(2) of the PAA No.11 of 2008 requires me to satisfy myself that the accounts have been prepared in accordance with appropriate accounting standards and that; reasonable precautions have been taken to safeguard the collection of revenue, receipt, custody, disposal, issue and proper use of public property, and that the law, directions and instructions applicable thereto have been duly observed and expenditures of public monies have been properly authorized.

Further, Section 44(2) of the Public procurement Act No. 21 of 2004 and Reg. No. 31 of the Public Procurement (Goods, Works, Non-consultancy services and Disposal of Public Assets by Tender) Regulations of 2005; requires me to state in my annual audit report whether or not the auditee has complied with the provisions of the Law and its Regulations.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

#### **Unqualified Opinion**

In my opinion, the financial statements present fairly, in all material respects the financial position of Tanzania Commission for Science and Technology as at 30<sup>th</sup> June, 2013 its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards.

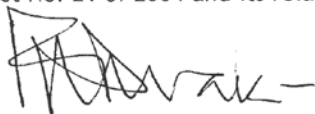
#### **Emphasis of Matter**

Without qualifying my opinion I draw your attention that the Commission's ownership of land plots at Boko in Dar es Salaam with a total value of TZS 305,745,000 was in dispute between the Commission and four trespassers who have built houses in some of the plots. The High Court (Land Division) ruling of 1<sup>st</sup> October, 2009 was in favour of the trespassers. Thus I could not ascertain the legal right of ownership of all Boko plots whose value is included in the financial statements. I understand that the Commission has appealed against the High Court ruling of 1<sup>st</sup> October, 2009. However, the outcome of the case is uncertain.

#### **Report on Other Legal and Regulatory Requirements**

##### **Compliance with Public Procurement Act**

In view of my responsibility on the procurement legislation, and taking into consideration the procurement transactions and processes I reviewed as part of this audit, I state that Tanzania Commission for Science and Technology procurement processes have generally complied with the requirements of the Public Procurement Act No. 21 of 2004 and its related Regulations of 2005.



Francis Mwakapalila  
Ag.CONTROLLER AND AUDITOR GENERAL

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The National Audit Office,  
DAR ES SALAAM.

Date: 20<sup>th</sup> May, 2014



# TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY

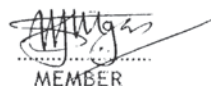
## STATEMENT OF FINANCIAL POSITION AS AT 30<sup>TH</sup> JUNE, 2013

| ASSETS                                   | NOTE | 30.06.2013<br>TZS     | 30.06.2012<br>TZS     |
|--|------|-----------------------|-----------------------|
| <b>Non Current Assets</b>                |      |                       |                       |
| Property, Plant and Equipment            | 2    | 8,564,251,803         | 8,730,914,633         |
| Intangible Assets                        | 3    | <u>20,946,438</u>     | <u>24,297,868</u>     |
| <b>Total Non Current Assets</b>          |      | <u>8,585,198,241</u>  | <u>8,755,212,501</u>  |
| <b>Current Assets</b>                    |      |                       |                       |
| Inventories                              | 4    | 9,488,670             | 12,343,730            |
| Receivables                              | 5    | 1,941,556,865         | 1,709,975,353         |
| Prepayments                              |      | 0                     | 3,351,200             |
| Cash and Cash Equivalents                | 6    | 22,790,881,820        | 15,546,668,437        |
| <b>Total Current Assets</b>              |      | <u>24,741,927,355</u> | <u>17,272,338,720</u> |
| <b>Total Assets</b>                      |      | <u>33,327,125,596</u> | <u>26,027,551,221</u> |
| <b>EQUITY</b>                            |      |                       |                       |
| Capital Contributed by Government        | 7    | 1,724,456,311         | 1,724,456,311         |
| Accumulated Surplus/(Deficit)            |      | 215,999,541           | 16,845,203            |
| Revaluation Reserve                      | 8    | <u>7,331,606,074</u>  | <u>7,331,606,074</u>  |
| <b>Total Equity</b>                      |      | <u>9,272,061,926</u>  | <u>9,072,907,588</u>  |
| <b>Non Current Liabilities</b>           |      |                       |                       |
| Deferred Revenue                         | 9    | 771,001,355           | 805,444,372           |
| <b>Current Liabilities</b>               |      |                       |                       |
| Payables under exchange transactions     | 10   | 49,439,848            | 48,859,529            |
| Payables under non-exchange transactions | 11   | 22,840,560,343        | 15,968,229,291        |
| Accrued Charges                          |      | <u>394,062,124</u>    | <u>132,110,441</u>    |
| <b>Total Current Liabilities</b>         |      | <u>23,284,062,315</u> | <u>16,149,199,261</u> |
| <b>Total Liabilities</b>                 |      | <u>24,055,063,670</u> | <u>16,954,643,633</u> |
| <b>TOTAL EQUITY AND LIABILITIES</b>      |      | <u>33,327,125,596</u> | <u>26,027,551,221</u> |

NOTES 1 TO 23 FORM PART OF THESE FINANCIAL STATEMENTS.  
AUDITORS REPORT ON PAGES 7 AND 8.

  
CHAIRPERSON

DATE: 08.04.2014

  
MEMBER

# TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY

## STATEMENT OF FINANCIAL PERFORMANCE FOR THE YEAR ENDED 30<sup>TH</sup> JUNE, 2013

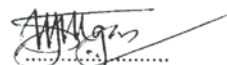
|   | NOTE | 2012/2013<br>TZS      | 2011/2012<br>TZS      |
|---|------|-----------------------|-----------------------|
| <b>OPERATING REVENUE</b>                              |      |                       |                       |
| Government Subvention                                 |      | 1,708,224,600         | 1,296,302,085         |
| Revenue From Exchange Transactions<br>(Research Fees) |      | 198,835,506           | 269,611,915           |
| NFAST and Research Revenue                            | 12   | 6,590,865,598         | 12,729,699,664        |
| Other Operating Revenue                               | 13   | 202,894,204           | 189,541,567           |
| Revenue Grant Income                                  | 14   | <u>832,972,767</u>    | <u>4,219,741,398</u>  |
|   |      | <u>9,533,792,675</u>  | <u>18,704,896,629</u> |
| <b>LESS: OPERATING EXPENSES</b>                       |      |                       |                       |
| General and Administrative Expenses                   | 15   | 2,928,788,856         | 2,537,575,917         |
| Research Coordination and Promotion                   | 16   | 6,733,021,041         | 12,585,930,549        |
| Technology Development and Transfer                   | 17   | 56,532,454            | 60,495,967            |
| Information and Documentation                         | 18   | 157,646,328           | 90,710,472            |
| Science and Technology Expenses                       | 19   | 832,972,767           | 4,219,741,398         |
| Depreciation  |      | <u>304,179,132</u>    | <u>314,810,567</u>    |
| Total Operating Expenses                              |      | <u>11,013,140,578</u> | <u>19,809,264,870</u> |
| Operating Surplus/(Deficit)                           |      | (1,479,347,903)       | (1,104,368,241)       |
| Interest Income                                       |      | 1,512,947,922         | 363,409,519           |
| Gain/(Loss) on Exchange Fluctuations                  |      | <u>165,554,319</u>    | <u>141,508,840</u>    |
| <b>SURPLUS/(DEFICIT) FOR THE YEAR</b>                 |      | <u>199,154,338</u>    | <u>(882,467,562)</u>  |
| ACCUMULATED SURPLUS/(DEFICIT)                         |      |                       |                       |
| BROUGHT FORWARD                                       |      | <u>16,845,203</u>     | <u>899,312,765</u>    |
| ACCUMULATED SURPLUS/(DEFICIT)                         |      |                       |                       |
| CARRIED FORWARD                                       |      | <u>215,999,541</u>    | <u>16,845,203</u>     |

NOTES 1 TO 23 FORM PART OF THESE FINANCIAL STATEMENTS.

AUDITORS REPORT ON PAGES 7 AND 8.

  
CHAIRPERSON

DATE: 08.04.2014

  
MEMBER



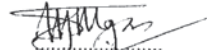
TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY

STATEMENT OF CHANGE IN EQUITY FOR THE YEAR ENDED 30<sup>TH</sup> JUNE, 2013

|  | Capital<br>Fund | Accumulated<br>Fund | Revaluation<br>Reserve | Total         |
|--|-----------------|---------------------|------------------------|---------------|
|  | TZS             | TZS                 | TZS                    | TZS           |
| Balance As At 1 <sup>st</sup> July, 2011                     | 549,861,088     | 899,312,765         | 7,331,606,074          | 8,780,779,927 |
| Surplus/(Deficit) for the<br>Year                            | 0               | (882,467,562)       | 0                      | (882,467,562) |
| Balance As At 30 <sup>th</sup> June,<br>2012                 | 549,861,088     | 16,845,203          | 7,331,606,074          | 8,703,756,737 |
| Adjustment (Development<br>Fund merged with Capital<br>Fund) | 1,174,595,223   | 0                   | 0                      | 1,174,595,223 |
| Restated Balance as at<br>30 <sup>th</sup> June, 2012        | 1,724,456,311   | 16,845,203          | 7,331,606,074          | 9,072,907,588 |
| Surplus or Deficit for the<br>Period                         | 0               | 199,154,338         | 0                      | 199,154,338   |
| Closing Balance 30th<br>June, 2013                           | 1,724,456,311   | 215,999,541         | 7,331,606,074          | 9,272,061,926 |

NOTES 1 TO 23 FORM PART OF THESE FINANCIAL STATEMENTS.  
AUDITORS REPORT ON PAGES 7 AND 8.

  
CHAIRPERSON

  
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DATE: 08.04.2014

TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY

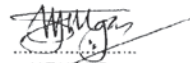
STATEMENT OF CASH FLOWS FOR THE YEAR ENDED 30<sup>TH</sup> JUNE, 2013

|  | 2012/2013<br>TZS             | 2011/2012<br>TZS             |
|--|------------------------------|------------------------------|
| <b>Cash Flows From Operating Activities</b>                              |                              |                              |
| Surplus/(Deficit) for the Year   | 199,154,338                  | (882,467,562)                |
| <b>Adjustments for Items not Involving Movement of Cash:</b>             |                              |                              |
| Amortization of Intangibles  | 3,351,430                    | 2,513,573                    |
| Depreciation   | 304,179,132                  | 314,810,567                  |
| Loss on disposal   | -                            | 277,602,531                  |
| Amortization of Deferred Revenue   | <u>(100,290,017)</u>         | <u>(122,829,967)</u>         |
| <b>Operating Surplus/(Deficit) Before Working Capital Items</b>          | 406,394,883                  | (410,370,858)                |
| (Increase)/Decrease in Inventory   | 2,855,060                    | (4,989,645)                  |
| (Increase)/Decrease in Receivables, Deposits and Prepayments             | (228,230,312)                | (1,238,301,420)              |
| Increase/(Decrease) in Payables Under Exchange Transactions              | 2,782,538                    | 577,720                      |
| Increase/(Decrease) in Payables Under Non-Exchange Transactions          | 6,872,331,052                | (3,120,857,876)              |
| Increase/(Decrease) in Other Current Liabilities                         | -                            | 100,462,169                  |
| Increase/(Decrease) in Accrual Charges                                   | <u>261,951,683</u>           | -                            |
| <b>Net Cash Flows Generated From /(Used in) Operating Activities (A)</b> | 7,318,084,904                | (4,673,479,910)              |
| <b>Cash Flows From/(Used in) Investing Activities</b>                    |                              |                              |
| Purchase of Property, Plant and Equipment                                | (139,718,521)                | (672,865,172)                |
| Proceeds from Sale of Property, Plant and Equipment                      | -                            | 18,241,000                   |
| <b>Cash Flows From /(Used in) Investing Activities (B)</b>               | (139,718,521)                | (654,624,172)                |
| <b>Cash Flows From/(Used in) Financing Activities</b>                    |                              |                              |
| Deferred Revenue Received (C)  | <u>65,847,000</u>            | <u>567,447,468</u>           |
| <b>Net Increase/(Decrease) in Cash and Cash Equivalents (A+B+C+D)</b>    | 7,244,213,383                | (4,760,656,614)              |
| Cash and Cash Equivalents as at 1 <sup>st</sup> July, 2012               | <u>15,546,668,437</u>        | <u>20,307,325,051</u>        |
| <b>Cash and Cash Equivalents as at 30<sup>th</sup> June, 2013</b>        | <u><b>22,790,881,820</b></u> | <u><b>15,546,668,437</b></u> |

NOTES 1 TO 23 FORM PART OF THESE FINANCIAL STATEMENTS.  
AUDITORS REPORT ON PAGES 7 AND 8.

  
CHAIRPERSON

DATE: 08.04.2014

  
MEMBER

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