



The Nelson Mandela African Institution of Science and  
Technology (NMAIST)  
African Centre for Research, Agricultural advancement,  
Teaching Excellence and Sustainability (CREATES)

## Centre for **RE**search **A**dvancement **T**eaching **E**xcellence and **S**ustainability (CREATES)



### PROGRESS REPORT

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## 1. EXECUTIVE SUMMARY

CREATES-FNS appreciate the respect and support accorded by the Government of Tanzania through the Ministry of Education, Science and Technology (MoEST), our host the Nelson Mandela African Institution of Science and Technology (NM-AIST) and our development partner the World Bank including the Regional Facilitation Unit (RFU) under IUCEA. Effectively, CREATES-FNS (Centre for Research advancement, Teaching Excellence and Sustainability in Food and Nutrition Security) established in November, 2016 although implementation started in January, 2017.

During this report period the CREATES-FNS has accomplished some major activities including; establishment of center office and the team, provision of student scholarships, conducting short courses, curriculum development and review, students and staff exchanges, establish a number of research projects, resources mobilization, networking and forging partnerships as well as participating in regional and national forums. These have led to achievement of various Disbursed Link Results (DLRs) as defined in Project Appraisal Document (PAD) including;

- i. CREATES -FNS has supported a total of 83 students (45) MSc and (38) PhD admitted in CREATES support Programmes. Among the students 43 were male and 40 female, and 11 are regional students. 23 Masters and 9 PhD students successfully graduated and Some of the students through their research works managed to develop innovations and prototypes that have been tasted and showing promising results in addressing challenges facing farmers. These innovations are; Fungal based bio-pesticide (FBB) for management of Tomato Leafminer (*Tuta absoluta*) developed by a PhD student called Never Zekaya and postharvest pest control in which, cowpea (*Vigna unguiculata*) using the bio pesticides by also a PhD students called Angela Mkindi. These two innovations have won different national and international awards, and farmers are evident their contributions. These products are now undergoing commercialization through the newly established Incubation Center.
- ii. Another remarkable achievement including support development of 12 demand driven academic programmes which are 7 Master and 5 PhD programmes. 10 of these programs have been accredited by Tanzania Commission for Universities (TCU) while other two programmes are under the review by TCU.
- iii. The Centre has conducted fourteen (14) International short courses on areas of sustainable development, health, biomedical sciences and biodiversity for

developing critical Mass of qualifies scientists for the Sub Saharan Region. The mentioned trainings have also involved local and International students from other academic institutions from Africa and Europe. The mentioned trainings has been contacted in collaboration with different local and international academic institutions and research as a way of creating collaborative measures and networks for scientists from the region and from other parts of the world. A total of 310 students and faculty staff participated in these trainings this is more the cumulative project target which is 120 participants.

- iv. CREATES-FNS has gone further in supporting existence of authenticated data from all farmers in Tanzania and across the region on the identified plants, animals, and on soil and water by establishment of a model on *Farming as a Business (FAAB)* by configuring the High Performance Computers (HPC) at NM-AIST for massive agricultural value chain data storage. This will be a regional Data Hub on agricultural data whereby students, researchers, value chain actors and policy makers in the region will have access to precious data for their researches and intervention to address different pressing challenges facing farming in the region. This has been possible through the Public-Private Partnership with CREATES key development partners SAGCOT Catalytic Trust Funds and Litenga Holding Ltd.
- v. On the similar initiative the Centre under the support of IUCEA established Incubation Center for Data Driven Innovation (DDI) for food and nutrition security. CREATES won a grant worth US\$ 250,000 from IUCEA to support establishment of this Incubation Center. The Incubation Center focus on Agriculture, Health, Food and Nutrition security, and Environment with a specific focus to data driven innovation/incubation. Researchers especially Masters, PhD and Postdoc trainees will create models which will be used for simulations. Some of these models will result in innovation prototypes/devices for data collection and analytics. The products will include but not limited to smart phone applications, wearable (such as armbands, belts, shoes, clothes etc.) and gadgets to insert in the soil, attach on farm implements etc. to enable continuous data collection. The Center will also support the commercialization of the products which will be developed through the incubation.
- vi. CREATES has supported research activities by ensuring availability of research facilities through provision of equipment and materials including purchasing of a standby power generator, laboratory reagents and field cost. In collaboration with partner's institutions, the Centre facilitated the

students to access modern research facilities especially the laboratory facilities by sending students to its partner institutions.

- vii. A total of 12 students have been sent abroad for research attachments (5 China, 3 German, 1 Belgium, 1 Italy, South Africa, and 2 Kenya). Furthermore, CREATES hosted 12 students who came for short term training at NM-AIST. Through collaboration, CREATES, expects to send out 10 more students (4 UNISA; 5 University of Western Cape and 1 in German). The researches has resulted into publication of 59 journal articles of which (18) with international co-authors, (16) regional co-authors and (15) national co-authors.
- viii. In addition to the research activities CREATES has also organized and conducted outreach activities to different groups including, farmers, industries, students, and food vendors. In this initiative it managed to reach more than 320 individuals through outreach activities including, TCU, Nanenane exhibitions and Mandela SETI week. The Centre has also initiated a special program for sensitization of young girls to participate in science and engineering studies. This special program is called “Soapbox Sciece” and has been a very successful initiative as it is organized and conducted by women who a scientists and engineers, mostly NM-AIST students, and faculty staff to sensitize young girls and parents. The event is normally run parallel with Nanenane exhibition held in August each year. The NM-AIST Soapbox Science events have reached more than 500 stakeholders during the NaneNane exhibitions. Moreover, the students, while conducting their field research work also interact with community and they use this opportunity to create awareness on different challenges facing them.
- ix. In order for the NM-AIST to pursue excellence in academic that will generate greater impacts CREATES has laydown a foundation for partnerships with other academic institutions (national, regional and international) industry and the private sector. The work involved identification of partners which fits the Centre objectives, negotiations, signing of MoUs and partnership agreements. However, CREATES managed to sign a total of 19 MoUs of which 15 with academic/research institutions and 4 with private institutions. The partnerships focus on ensuring effective teaching and learning through, co-supervisor, teaching, joint research, resources mobilization, staff and students exchange, sharing of research and learning facilities and outreach.

In terms of financial sustainability and revenue generation, the Centre has invested in different fundraising strategies that will help to mobilize resources for Centre sustainability. The efforts included; funding proposals development, creating



partnership with private, public and development Partners (DPs).The Centre managed to generate a total of US\$ 250,000 through competitive call for proposal for establishment of Regional Incubation Centers by IUCEA. The Centre also received a total of US\$ 31,000 from ICTP that was used for a joint short course. In terms of fund Disbursement it managed to trigger a total of US\$ 3,362,196 from the results verified by the Independent Verifier as outline in the table below. The overall performance in terms of DLRs achievement is 56%.

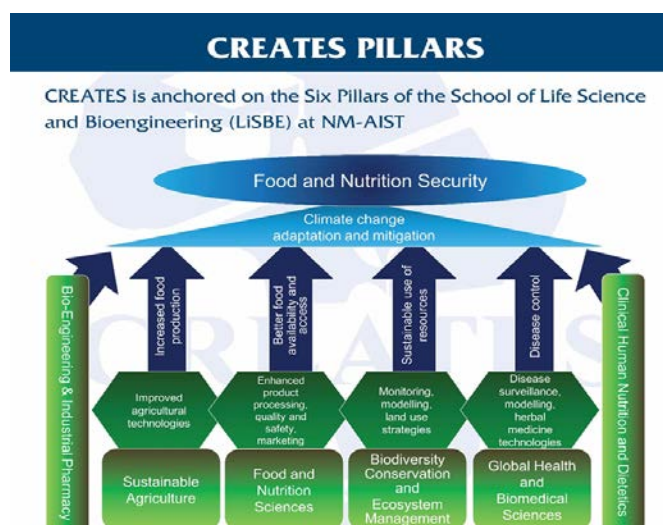
Generally, the Centre performance is satisfactory, most of the activities are on track and some of the targets already attained. The CREATES has provided excellent teaching and learning environment for its PhD and MSc beneficiaries in areas of Food and Nutritional Sciences, Sustainable Agriculture, Biodiversity Conservation, and Ecosystem management which contributed immensely to its development objectives. The trained scientists and researchers will transform the society both in modern and traditional methods as far as the formal and modern sector of economy is concerned. These approaches will eventually support the skills-for-poverty reduction approaches.

## 2. BACKGROUND INFORMATION

CREATES it is among the 24 Eastern and Southern Africa Centres of Excellence established through ACE II project funded by loan from the World Bank through the government of Tanzania. The World Bank support will last for five years from 2016 to 2022 with total budget of US\$ 6 million. The Centre is hosted at NM-AIST under the School of Life Science and Bio-engineering (LiSBE). It focus on providing innovative researches, trainings, and outreach programmes in the region, taking advantage of the strong existing international and regional collaboration activities at the Nelson Mandela African Institute of Science and Technology (NM-AIST). CREATES serves as a regional excellence hub to achieve and promote specific Sustainable Development Goals and the Tanzania Development Vision 2025.

CREATES interventions are centered on the following six pillars;

- i. Sustainable Agriculture
- ii. Biodiversity Conservation & Ecosystem Management
- iii. Global Heath & Biomedical Sciences
- iv. Food and Nutrition Sciences
- v. Clinical Human Nutrition and Dietetics
- vi. Bio-Engineering &Industrial Pharmacy



### **Overall Objective of the Centre:**

The overall CREATES objective is to strengthen the capacity of NM-AIST to serve as an African Centre of Excellence for provision of post graduate training (Master and PhD), applied research and outreach programs for Food and Nutrition Security in the Eastern and Southern Africa region.

### **Specific objectives**

- Build NM-AIST institutional capacity to provide quality post-graduate education with relevance to the labor market;
- Build NM-AIST institutional capacity to conduct high quality applied research, relevant to addressing a key challenge Food and Nutrition Security;
- Develop and enhance partnerships with other academic institutions (national, regional and international) to pursue academic excellence;
- Develop and enhance partnerships with industry and the private sector to generate greater impact;
- Improve governance and management of the institution and set up a role model for other higher education institutions; and
- Deliver outreach, and create an impact, to society by delivering excellent teaching and producing high quality applied research.

## **3. ACHIEVEMENTS AND PROGRESSES**

The following achievements were attained;

### **3.1. Support Curricula Development**

CREATES supported development and review of the School of Life Science and Bio-Engineering (LiSBE) MSc and PhD programmes. Initially the school had only two programme of 1 MSc and 1 PhD in Life Science. Through CREATES support, the school organized and conducted systematic and rigorous review process which involved series of meetings and consultation workshops with national and international partners and stakeholders to identify the gaps and needs from the current programs offered by the school. The Centre facilitated inception workshops, needs assessment, courses development workshops, and stakeholder consultation and validation workshops.

The process involved different stakeholders and experts from international academic experts, regional partners, research and industrial partners, public and private institutions to Non-Governmental Organizations. As a result, the School managed to develop 12 new curricula (7 MSc and 5 PhD), Ten of these programs have been accredited by Tanzania Commission for Universities (TCU).

In addition, the Centre in collaboration with its Partner Institutions developed two Master programmes that are expected to be offered jointly. These two programmes are; *Industrial Pharmacy and Regulatory Science*, which will be jointly offered by NM-

AIST and Purdue University and; *Biomedical Engineering*, which will be jointly offered with Hunan University of Technology (HUT). The curricula for those programmes already developed and submitted to TCU for national accreditation. The programmes are also expected to be internationally accredited.

### MSc and PhD programmes under Development

Level	MSc Programmes	PhD Programmes
Accredited Programs	<ol style="list-style-type: none"> <li>1. MSc in Sustainable Agriculture</li> <li>2. MSc in Food and Nutritional Science</li> <li>3. MSc in Clinical Nutrition and Dietetics</li> <li>4. MSc in Biodiversity and Ecosystem Management</li> <li>5. MSc in Global Health &amp; Biomedical Sciences</li> </ol>	<ol style="list-style-type: none"> <li>1. PhD in Sustainable Agriculture</li> <li>2. PhD in Food and Nutritional Science</li> <li>3. PhD in Clinical Nutrition and Dietetics</li> <li>4. PhD in Biodiversity and Ecosystem Management</li> <li>5. PhD in Global Health &amp; Biomedical Sciences</li> </ol>
International	<ol style="list-style-type: none"> <li>1. MSc Industrial Pharmacy and Regulatory Science - with Purdue University USA</li> <li>2. MSc Biomedical Engineering -with Hunan University of Technology China</li> </ol>	



**Photo 1:** Team of participants participated during inception workshop for curricular development at NM-AIST



**Photo2:** Stakeholders consultation meeting for curricular development at SUA-Morogoro

### 3.2. Students Enrolments/Scholarships

CREATES has supported a total of 83 MSc (45) and PhD (38) students with scholarships to support their studies and researches. Among of these students 23 Masters and 9 PhD students successfully graduated. This also is one of remarkable contribution of the Centre to enrollment of students at NM-AIST as before CREATES, the school of LiSBE had as low number of students enrollment as 4 students per year.

However, through CREATES support the number raised from 4 students per year to 83 (Male 43: Female 40) students whereby 72 are Tanzanians while 11 are regional students from Nigeria, Cameroon, Zambia, Mozambique, Rwanda, Kenya, Uganda and Ethiopia. The project target is to support 162 MSc students and 58 PhD students; hence for MSc students the performance is 27.7% of the project target. However for PhD students it is 65.5% of the target for five years. The number of students enrolled into CREATES supported programmes is expected to increase as the new MSc and PhD programmes developed will attract more students across the regional.

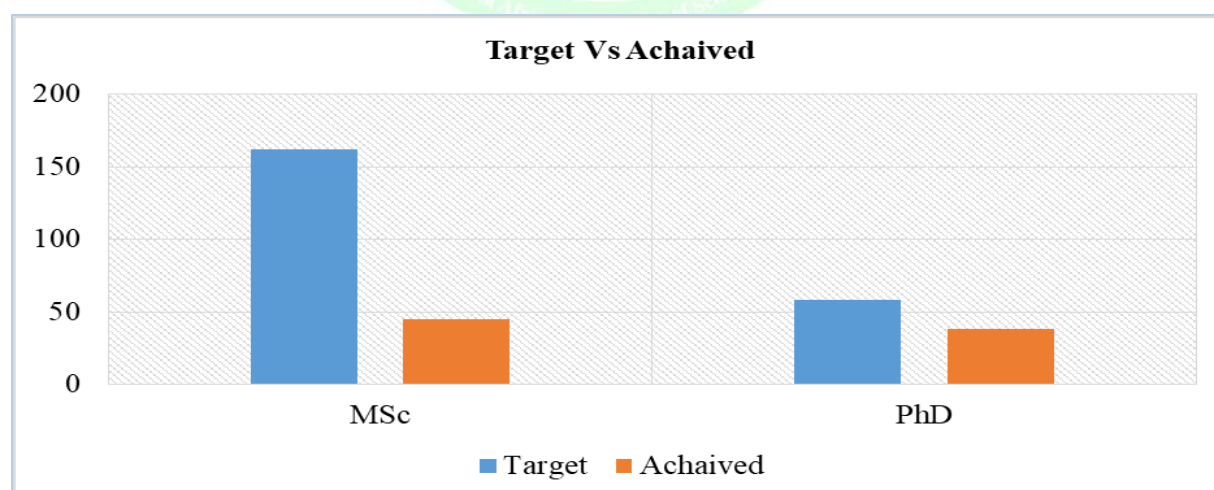
#### Students by Gender:

Level	Female	Male	% of Female	Total
MSc	23	22	51.1	45
PhD	17	21	44.7	38
Total	40	43	48.2	83

#### Students by Nationality:

Level	Tanzanian	Non Tanzanians	% of Non-Tanzanian	Total
MSc	39	6	13.3	45
PhD	33	5	13.2	38
Total	72	11	13.3	83

#### Students Enrollment target Vs. Achieved







**Photo 3:** Group photo of some of CREATES Sponsored students



**Photo 4:** Ms. Agnes Kandonga one of CREATES-sponsored students

### 3.3. Short course trainings

The Centre has conducted fourteen (14) International short courses on areas of sustainable development, health, biomedical sciences and biodiversity for developing critical Mass of qualifies scientists for the Sub Saharan Region. The mentioned trainings have also involved local and International students from other academic institutions from Africa and Europe. The mentioned trainings has been contacted in collaboration with different local and international academic institutions and research as a way of creating collaborative measures and networks for scientists from the region and from other parts of the world. A total of 310 students and faculty staff participated in these trainings this is more the cumulative project target which is 120 participants. In additional to short courses the Centre also organized five public Lectures delivered by different experts from different institutions. Table below shows short courses offered by CREATES and Number of participants.

S/N	Course Name	Organizers/Instructor's Institution	# Participants
1	1st Interdisciplinary and international short course on Ecological Modeling	CREATES,NM-AIST Rhodes University, South Africa, Hamburg University of Applied Sciences and Hamburg University of Applied Sciences, Germany	17
2	2nd Interdisciplinary and international short course on Ecological Modeling	CREATES,NM-AIST Rhodes University, South Africa, Hamburg University of Applied Sciences and Hamburg University of Applied Sciences, Germany	21
3	Plant Metabolism for Improved Nutrition and	CREATES,NM-AIST, ILRI, BBSR, Bioscience Africa	18

	Health		
4	Nuclear Technology for Water and Food Security	CREATES, NM-AIST, WISE-Futures and University of Saskatchewan	14
6	Computational Fluid Dynamics (CFD) Modeling and Simulations	CREATES & NM-AIST	29
7	The First School on Atomistic Simulation of Biomolecules and Material Science in Tanzania	CREATES, NM-AIST & ICTP	26
8	School on Biophysical Approaches to Macromolecules and Cells; Integrated Tools for Life Sciences and Medicine	CREATES, NM-AIST & ICTP	31
9	Biotechnology Innovation and Regulatory Sciences	CREATES, NM-AIST and Purdue University	30
10	Practical knowledge on the atomistic or molecular level of bi-molecules such as protein, DNA, polymers for drug delivery	CREATES, NM-AIST & International Center for Theoretical Physics	9
11	Botanic Garden Management	CREATES/MN-AIST	17
12	The R Statistics	CREATES, NM-AIST & University of Hohenheim, Germany	17
13	GIS in R workshop	CREATES, NM-AIST & Wake Forest University, USA	41
14	Leadership/mentorship skills	CREATES/WISE-Future and AWARD	40
<b>Total Participants</b>			<b>310</b>



**Photo 5:** Practical training during “Nuclear Technology for Water and Food Security” course



**Photo 6:** Participants of the “Plant Metabolism for Improved Nutrition and Health” course



**Photo 7:** Mentorship & leadership training facilitated by AWARD at NM-AIST



**Photo 8:** Prof. Anna Grobler from North-West Cape University, South Africa delivering a public lecture at NM-AIST

### 3.4. Students and Staff Exchange

In collaboration with partner's institutions, the Centre facilitated the students to access modern research facilities especially the laboratory facilities by attaching students to its partner institutions for research works. A total of 12 students have been attached to other institutions for research attachments (5 China, 3 German, 1 Belgium, 1 Italy, South Africa, and 2 Kenya). Furthermore, CREATES hosted 12 students who came for short term training at NM-AIST. Through collaboration, CREATES, expects to send out 10 more students (4 UNISA; 5 University of Western Cape and 1 in German). The planned target was to support exchange of 35 students, hence this performance is 68.6% towards reaching planned target. Moreover, the students and faculty staff researches has resulted into publication of 59 journal articles of which (18) with international co-authors, (16) regional co-authors and (15) national co-authors.





**Photo 9:** Daniel M Shadrack, a CREATES PhD student in the Marie Curie Library at ICTP Italy



**Photo 10:** Vice chancellor, Prof. E. Luoga and Prof. Hulda Swai (CREATES Director) with students attached at Hunan University of Technology (HUT) China

### 3.5. Publications in Peer-reviewed journal papers

A total of 59 publications in Peer-reviewed journal papers were prepared collaboratively with national, regional or international co-authors. These publications were from both students and faculty members as indicated below.

S/N	Type of Co-Author	Number Peer-reviewed journal papers
1	International author (s)	18
2	national author (s)	25
3	regional author (s)	16
	<b>Total</b>	<b>59</b>

### 3.6. Students Research Outputs/Innovations

Through support from CREATES some of the students has managed to come-up with innovation which has been tasted and showed positive results. The students have won different awards in different competitions.

- **Ms. Angela Mkindi** is a CREATES PhD sponsored students who through her research developed a plant-based pesticide for insect pest control. The pesticides has been tested in some of the crops and showed positive results especially in preservation of bean as other legume crops. The Centre through it Incubation Center is planning to facilitated the commercialization of this product.  
Ms. Angela has been selected as fellow of the African Women in Agricultural Research and Development (PAN-AFRICA AWARD) for two years term from 2019 – 2020. This has given opportunity to participate in different International trainings and Seminars where she will meet different international experts and researchers from around the world in areas Sustainable Agriculture. This program



will open up many opportunities in her area of research through networking, trainings and visibility.



**Photo 11:** Ms. Angela Mkindi showing her product during Mandela Innovation week at NM-AIST



**Photo 12:** Ms. Angela Mkindi (2<sup>nd</sup> from left) with her certificate as among the best four NM-AIST students for the "Africa Grand Challenge Competition 2019"

- **Ms. Never Zekeya** graduate PhD students of the School of Life Sciences and Bio-engineering of the Nelson Mandela African Institution of Science and Technology (NM-AIST) who's research is funded by the Africa Centre for Research, Agricultural Advancement, Teaching Excellence and Sustainability (CREATES) has developed a formulation of Fungal based bio-pesticide (FBB) for management of Tomato Leafminer (*Tuta absoluta*). Ms. Never Zekeya developed a special formula to curb the deadly tomato pest "Tuta absoluta" common name in Swahili "Kanitangaze" which has been resistance to many chemicals.

The formula was tested against Tuta absoluta under the field conditions in three major tomatoes growing regions of Tanzania; Arusha, Iringa, Kilimanjaro, Morogoro and Simiyu and showed positive results. The new formula coming in both liquid and powder forms, not only can kill the Tuta absoluta but also effective in annihilating the equally deadly pesticide-resistance army worms that are also wreaking havoc in farms.



*Photo 13: Ms. Never Zakaya receiving the certificate of the first winner from the Deputy Permanent Secretary of Ministry of Education, Science and Technology Prof. James Mdoe during Science, technology and Innovations competition Mashindano ya Sayansi, Teknolojia na Ubuni (MAKISATU) held in Dodoma*

**Omega-3 DHA :** Three CREATES sponsored students Ms. Felister Magesa, Ms. Frida yamete and Mr. Joseph Runyogote as a team won an *African Grand Challenge award* worth 500USD as the overall winner. Their innovation idea was on active omega-3 ingredients, ready-to-use natural food product rich in preformed *omega-3 DHA* and other essential nutrients that promote brain health and cognitive function of young children, women and all other members of the family spectrum.

### 3.7. Outreach and Community engagement activities

In order to disseminate research and innovation findings to the community and industries CREATES has been supporting students and researchers to participate in research exhibitions and also outreach programmes. Some of these events including;

- **Mandela Week and Exhibitions and Innovation:** CREATES attended and supported the Mandela week exhibition at NM-AIST in collaboration with partners. In this event, CREATES students showcase their research finding and awareness to public.



- **Nane Nane exhibition:** CREATES initiated and supported NM-AIST staff and students who attended the popular National farmer's week exhibition (Nane Nane) at Njiro, Arusha in 2019. CREATES students also presented their work in the exhibition tent to show case their research products and innovations.
- **African Soapbox Science event:** In addition, the first ever African Soapbox Science event was arranged by CREATES in 2018 and is now running continuously every year. In this event, women in science presented their work to the public as role models of female researchers. For this NM-AIST received first price among the research institutions for their outstanding outreach activities.
- **Fixing Trees Sign Boards** One of CREATES students Ms. Philipina Shayo studying PhD in Biodiversity and Ecosystem Management she named all the tree species found at NM-AIST campus. CREATES supported her with materials for putting sign boards with both common and scientific names as part of identifying origin of different species found at NM-AIST.



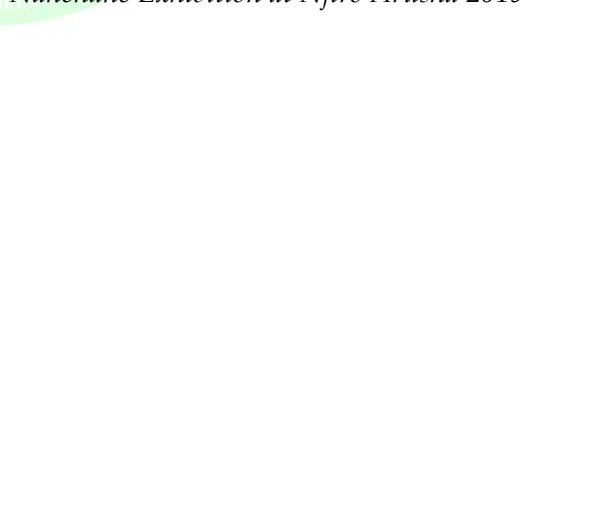
**Photo 14:** CREATES student Mr. Kafula Chisanga providing field training to farmers in Zambia as one of outreach program



**Photo 15:** Ms. Angela Mkindi showing her Innovation on " Plant species as prospects for the future sustainable pest control" during Nanenane Exhibition at Njiro Arusha 2019



**Photo 16:** Soapbox event held at Njiro Nanenane grounds, Arusha 2019



**Photo 17:** NM-AIST VC receiving a trophy for the first winner of NaneNane Exhibition 2019 held at Njiro Nanenane grounds, Arusha

- **Outreach activities in Mvomero, Machame and Simiyu:** CREATES through its DDI Innovation Centre organized and conducted Outreach activities to farmers in Mvomero (Morogoro), Machame (Kilimanjaro) and Bariadi (Simiyu). The outreach was specifically aimed at sensitizing farmers on the application of the novel biopesticides which are nontoxic to human and other organisms. These pesticides were developed by the two students sponsored by CREATES through their research studies. The students are Never Zekeya and Angela Mkindi. They were also involved in the activities. The Outreach involved practical demonstration of the application of the biopesticides. Farmers were also trained on the benefits of using biopesticides over the chemical pesticides including; health benefits, environmental and also crop health and productivity. These were conducted in selected demo plots owned by Farmers in all the three areas; Beans plot at Machame (Kilimanjaro), Maize plot at Mvomero (Morogoro) and cotton plot at Bariadi (Simiyu). District Agricultural Extension Officers also participated in these trainings. In all the three sites a total of 63 farmers participated during the training; (29) Mvomero, (24) Machame and (10) Bariadi. The Centre also developed a demo plot at Nyakabindi Nanenane grounds in Simiyu that used to showcase the benefit of using the bio pesticide as a pest control to maize, tomatoes and cottons during the Nane Nane exhibition 2020 conducted in Simiyu.

*Field demonstration on application of Vuruga biopesticide in cotton (Bariadi) and Maize (Mvomero)*



**Photo 18:** Demonstration of vuruga application in cotton in Bariadi Simiyu



**Photo 19:** Spraying of vuruga in cotton farm in Bariadi Simiyu



**Photo 20:** Inspecting maize farm affected by armyworms at Dakawa Mvomero



**Photo 21:** Demonstration of application of vuruga in maize farm at Dakawa Mvomero



### 3.8. Partnerships and Collaborations

In order for the NM-AIST to pursue academic excellence that will generate greater impacts CREATES established partnerships with other academic institutions (national, regional and international) industry and the private sector. The Centre managed to sign a total of 19 MoUs of which 15 with academic/research institutions and 4 with private institutions.

Through the partnerships the Centre has already started realizing the benefits of partnerships as 12 students from NM-AIST were attached to the partner laboratories for their research work. Joint MSc and PhD programs developed with some of partner institutions which are MSc in Industrial Pharmacy and Regulatory Science with Purdue University USA, and MSc in Biomedical Engineering with Hunan University of Technology China. Also CREATES in collaboration with CESAAM of Egerton University developed 8 short course modules for agriculture and agribusiness value chains that will be offered jointly.



**Photo 22:** Prof. Hulda Swai (CREATES Director) and Prof. George Owuor (CESAAM Director) shaking hands during short course development at Nakuru Kenya



**Photo 23:** Certificate of Approval of short courses developed between CREATES (NM-AIST) and CESAAM (Egerton University)

CREATES in collaboration with some of partners organized and offered different short courses to students and faculty staff. Among the short courses offered were; 1<sup>st</sup> and 2<sup>nd</sup> Interdisciplinary and international short course on Ecological Modeling offered at the NM-AIST in collaboration with Hamburg University of Applied Science of Germany and Rhodes University from University from South Africa; The school on Atomistic Simulation of Bimolecules and Material Science in Tanzania offered in partnership with the International Centre for theoretical Physics (ICTP), and; Introduction to Computational and Mixed Models in Wildlife and Resource Conservation facilitated by Facilities from University of Witwatersrand's and Hohenheim University of Stuttgart in Germany.

In order to ensure effective teaching and learning environment across the region as well as to bridge the wide gaps on participatory teaching in the region, CREATES had to advocate for participatory teaching; education; instructional methods i.e. Pedagogical teaching. In collaboration with the Zhejiang Normal University in China (ZJNU) CREATES under the support and collaboration of Tanzania Commission of Universities (TCU) will organize and conduct the pedagogy trainings to faculty staff from different universities and higher education's institutions from Tanzania and across the region. TCU will also facilitate the accreditation of programme and advertise the Pedagogical Training to the Institutions of Higher Learning of the United Republic of Tanzania.

This programme it is expected that it will build the capacity of the participants who then act as trainers to other staff. It was agreed that trainings will be held in both China and Tanzania.



**Photo 24:** Prof. Weijian Li (Vice President), from ZJNU at NM-AIST during need Assessment



**Photo 25:** Partnership meeting between CREATES, TCU and ZJNU at TCU office Dar es Salaam

In addition to the joint MSc program in Biomedical Engineering Hunan University of Technology (HUT) through the *Sino Africa Centre of Excellence* (SACE) of Government of China has committed to build a regional Biomedical engineering Laboratory at NM-AIST to enhance research and innovation in biomedical sciences. The negotiations between the two parties are still in progress.





**Photo 26:** Signing Partnership agreement between NM-AIST and HUT at NM-AIST Arusha



**Photo 27:** Signing Partnership agreement between HUT and NM-AIST at HUT China

Moreover, CREATES with SAGCOT Catalytic Trust Fund, Applied Engineering and Bytech Works (T) Limited (AEBW), Animal Breed East Africa (ABEA) and LITENGA Holding Ltd initiated a joint project called Farming -As -A-Business (FAAB). The objective of this project is to act as a think tank for Agriculture and Rural Development (ARD) Solution in agriculture sector by providing authentic agriculture data. The project prototype has already developed and configuration of the High Performance Computers (HPC) at NM-AIST where massive agricultural value chain data will be stored already done. This will act as a regional Data Hub whereby students, researchers, value chain actors and policy makers in the region will have access to precious data for their researches and intervention to address different pressing challenges facing farming in the region. The next step is to venture into actual implementation of the FAAB project starting with data collection from farmers.



**Photo 28:** Former MN-AIST VC Prof. K. Njau and SAGCOT Secretary Dr. John Kyaruzi signing MoU between SAGCOT-CTF and NM-AIST for FAAB Project



**Photo 29:** Mr. Huseni from LITENGA Holding Ltd demonstrating how the HPC will be used for FAAB Project to the NM-AIST Chancellor Dr. Gharibu Bilali at NM-AIST

CREATES under the support of IUCEA established Incubation Center for Data Driven Innovation (DDI) for food and nutrition security. The Center will focus on

Agriculture, Health, Food and Nutrition security, and Environment with a specific focus to data driven innovation/incubation. Implementation of Incubation Center will also involve different partners who will support of the activities including, commercialization of the products, mentoring incubates, funding some of the activities and provision of technical backstopping.

### 3.9. Stakeholders Conferences and Workshops

CREATEs has conducted conferences and workshops that are aiming to engage different stakeholders in supporting its activities. The engagement was mainly targeting sensitizing the private sector companies to collaborate with academic and research institutions. Among of those meetings are;

- **Industrial and development partner workshop in Dar es Salaam:** In collaboration with the World Bank Tanzania Country office, CREATEs conducted a stakeholder meeting in Dar es Salaam for industrial and development partners and other professional cadres who all together shared critical examples of how the industry suffers limited middle and higher level skilled labor. The meeting was attended by 46 individuals from various private and public institutions.
- **Regional Workshop on Combating Aflatoxin in the Maize Value Chain of Africa, 4-5 December, 2017 Dar es Salaam, Tanzania:** The CREATEs was among the organizer of the workshop on Combating Aflatoxin in the Maize Value Chains organized in collaboration with Partnership for Aflatoxin Control in Africa (PACA) together with other key Stakeholders and appropriate Regional Communities for the purpose of addressing the pertinent impacts of Aflatoxin in the maize value chains. The workshop aims to galvanize multi-sectoral response towards the Aflatoxin challenge in the maize value chain in Africa in order to address its health, food security and trade challenges. The meeting was officially opened by the former Minister for Agriculture, Dr Charles Tizeba.



*Photo 30: A group photo of the participants of industrial stakeholders in Dar es Salaam*



*Photo 31: A group photo of the participants of Maize value chain Workshop at Serena Hotel in Dar es Salaam*



- **The 10th African Materials Research Society Conference – 2019:** The African Materials Research Society (AMRS) and the Nelson Mandela African Institution of Science and Technology (NM-AIST) hosted the 10th International Conference of the African Materials Research Society from 10th – 13th December 2019 in Arusha, Tanzania. The AMRS holds conferences every two years and it involves members of the materials community, including, world leading experts, academicians, industrialists, governments, and other sectors working and having interests in materials sciences research. Invited participants, are expected to represent local and international expertise in the area of material sciences from their diverse sectors. This conference brought 336 material scientists from around the world and over 100 students. With the theme: *“African Materials for African Development”*, the conference focused on advancements in materials with a close bearing for Africa’s growth and well-being. The conference addressed challenges and opportunities for material science and technology in the following specializations: Health; Sustainable Building and Construction; Water and Environmental Mitigation Technologies; Nano-science and Nanotechnology; Mining and Mineral Processing; Agriculture and Environment; Education and Networking in Science and Engineering; Energy; Computational Material Science; and Manufacturing and Structural Materials. The conference was preceded by a Pre-Conference Workshop from 8th – 9th December 2019. The conference organizing committee raised US\$ 172,000, which was administered under NM-AIST for the conference.

### **3.10. Institutional Capacity Building of Centre and Faculty Staff**

To strengthen teaching and research capacity of the NM-AIST as well as to ensure sustainability; CREATES support students, staff, faculty and senior leadership in attending various meetings, conferences and short courses in international fora. 12 NM-AIST staffs were facilitated to participate in short courses and international conferences to present their research papers. In ensuring good working environment for its staff CREATES in collaboration with WISE -Futures renovated the former student building into ACE Offices. CREATES has also bought a land cruiser Hard Top vehicle for research and other center activities. Other facilities and equipment included electric power generator and purchase of equipment for the laboratory improved the quality of internet connection by purchasing of internet servers.

In additional, CREATES, supported recruitment of 48 Adjunct Professors, that have specialties which allow them to cover currently existing teaching gaps at school of LISBE, including global health and biomedical sciences, human nutrition and dietetics, food science and biotechnology, sustainable agriculture and ecology and ecosystems management.



*Photo 32: Centre Building/offices*

### 3.11. Disbursement Linked Indicators (DLIs) Performance

In terms of fund Disbursement it managed to trigger a total of **3,362,196 US\$** from the results verified by the Independent Verifier as outline in the table below. The overall performance in terms of DLRs achievement is 56%.

#### Disbursement Linked Indicators (DLIs) Performance

To Aug, 2020 (in \$US)			
Disbursement Linked Indicators	Amount Allocated	Amount Disbursed	Amount not Disbursed
<b>DLI # 1 INSTITUTIONAL READINESS</b>			
DLI 1.1 To meet conditions for Effectiveness	600,000	600,000	0
DLI 1.2 Development Of Detailed Implementation Plans	500,000	500,000	0
<b>DLI #2: EXCELLENCE IN EDUCATION AND RESEARCH CAPACITY AND DEVELOPMENT IMPACT</b>			
DLR# 2.1: Timely annual implementation of the plans	N/A	N/A	N/A
DLR #2.2: Newly enrolled students in the ACE of which at least 20% must be regional (African) students	1,300,000	982,196	317,804
DLR#2.3: Accreditation of quality of education programs	600,000	300,000	300,000
DLR#2.4: Partnerships for collaboration in applied research and training collaboration	200,000	200,000	-
DLR#2.5: Peer-reviewed journal papers or peer-reviewed conference papers prepared collaboratively with national, regional or international co-authors	500,000	500,000	-
DLR#2.6: Faculty and PhD student exchanges to promote regional research and teaching collaborations	700,000	180,000	520,000
DLR#2.7: External revenue generation	900,000		900,000
DLR#2.8: Institution participating in benchmarking exercise	100,000	100,000	0
<b>DLI#3: TIMELY, TRANSPARENT AND INSTITUTIONALLY REVIEWED FINANCIAL</b>			

MANAGEMENT			
DLR#3.1: Timely Withdrawal applications supported by interim unaudited financial reports for each ACE	75,000		75,000
DLR#3.2 : Functioning audit committee under each Eastern and Southern African Higher Education Institutions	75,000		75,000
DLR#3.3: Functioning internal audit unit for each Eastern and Southern African Higher Education Institution	75,000		75,000
DLR#3.4: Transparency of financial management (audit reports, interim unaudited financial reports, budgets and Annual Work Programs are all web accessible)	75000		75000
<b>DLI#4: TIMELY AND AUDITED PROCUREMENT</b>			
DLR# 4.1 Timely procurement audit report for each ACE	150,000		150,000
DLR#4.2: Timely and satisfactory procurement progress report for each ACE	150,000		150,000
<b>GRAND TOTAL</b>	<b>6,000,000</b>	<b>3,362,196</b>	<b>2,637,804</b>

### 3.12. Sustainability strategies

CREATES has embarked into various strategies that will ensure both financial and technical sustainability after the phasing out of World Bank funding. In these two years of implementation has managed to establish various joint projects with partner Institutions that will attract funding. Also the Centre in collaboration partner's institutions is developing joint international training programs which are unique and new in the region regional to attract more participants where the Centre will collect participation fees. The following are some of the sustainability strategies for CREATES;

i. **Earnings through demand-driven courses and programmes for the society in the region.**

CREATES has signed MoU with Collage of Teacher Education of Zhejiang Normal University (ZJNU) of China for conducting training to University staffs on interactive teaching and learning methodologies. Although at the initial stages the cost for programs will be covered by CREATES and ZJNU in future the participants will pay the training fee. To ensure technical sustainability some of the participants from Tanzania will be capacitated to become Training of Trainers (ToTs) and CREATES will use the ToTs to train other faculty from the region through training fee.

CREATES in collaboration with CESAAM which is the Centre of Excellence at NM-AIST has already developed short courses modules for different agriculture and agribusiness value chains. Participants in these trainings will be paying fees in order to be enrolled into the trainings. CREATES also is supporting development of the new international programmes namely; MSc in Industrial Pharmacy and regulatory Science which will be jointly offered by Perdue University of USA and MSC in Biomedical Engineering will be offered in collaboration with Hunan University of Technology (HUT). These two

programmes will attract more local and International students which will pay school fees which will increase revenue.

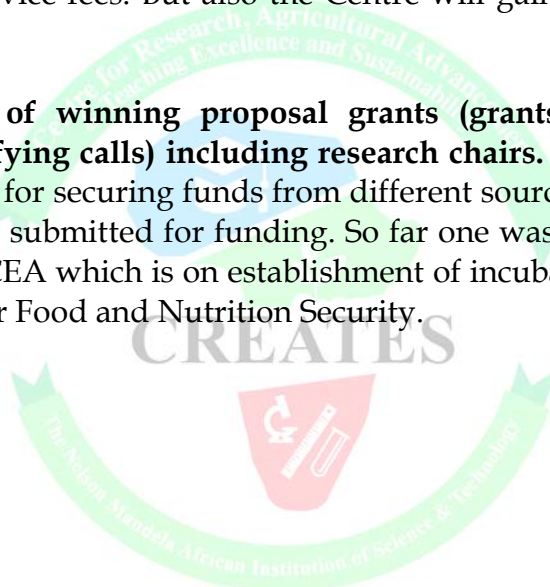
ii. **Industrial involvement based on activities such as product development research, technology transfer and internship.**

CREATES in collaboration with its partners implanting Farming as a Business Project where by the massive agriculture value chain data stored at NM-AIST HPC will be used by various students and researchers under user fees. Also in this project will provide scholarship to students who will be doing research in different value chains.

iii. **Earnings through technology transfer, IP sharing, and spin-offs.**

CREATES has started an incubation center (Data Driven Innovation-DDI) for the innovative research in Food and Nutritional Science results thereby generating income from product commercialization and patenting. The Incubation Center will offer service to both academic and local innovators who will charge service fees. But also the Centre will gain revenues from products sales.

iv. **Development of winning proposal grants (grants writing support, seed money, identifying calls) including research chairs.** CREATES has developed five proposals for securing funds from different sources and some of proposals developed and submitted for funding. So far one was successfully funded US\$ 250,000 by IUCEA which is on establishment of incubation center “Data Driven Innovation” for Food and Nutrition Security.





### 3.13. Results framework, key project indicators and intermediate indicators

Indicator	Cumulative target for 5 yrs.	Progress	Remark
<b>Project Development Objective (PDO):</b> <i>To strengthen selected Eastern and Southern African higher education institutions to deliver quality post-graduate education and build collaborative research capacity in the regional priority areas.</i>			
Regional students enrolled in ACEs: (i) Masters and (ii) PhD programs	MSc <b>34</b> (25 Male & 9 Female)	MSc <b>6</b> (2 Male & 4 Female)	The number of female regional students is still low and hence it affect even the disbursement
	PhD <b>19</b> (12 Male & 7 Female)	PhD <b>5</b> (2 Male & 3 Female)	The number of the regional female students is less than 20% which also affected the disbursement amount
Students (national and regional) enrolled in ACEs: (i) Master's and (ii) PhD programs	MSc <b>128</b> (92 Male & 37 Female)	MSc <b>39</b> (19 Male & 20 Female)	The performance is 30% of the target, more students will be enrolled in the new programs accredited
	PhD <b>39</b> (27 Male & 12 Female)	PhD <b>33</b> (17 Male & 16 Female)	The performance is 84.6% of the target. More students will be enrolled in the new programs
New short term (min 40 hrs)	Participants <b>120</b> (63 Male & 57 Female)	Participants <b>310</b> (167 Male & 143 Female)	The number of enrolled short course students is more than the target cumulative
MOUs on partnerships for collaboration in applied research and training entered into by the ACEs	<ul style="list-style-type: none"> <li><b>20</b> Partnership MoUs with Public and Private Institutions</li> </ul>	<ul style="list-style-type: none"> <li>A total of <b>19</b> Collaborations MoUs were signed between CREATES/MN-AIST and national and international Institutions.</li> <li><b>15</b> MoUs Public</li> </ul>	<ul style="list-style-type: none"> <li>This is <b>95%</b> achievement of the cumulative performance target for five years.</li> <li>Some of the outputs are; <ul style="list-style-type: none"> <li>Establishment of Farming as A Business Project with SAGCOT-CTF, LITENGA Holding.</li> <li>Pedagogy training to faculty staff-</li> </ul> </li> </ul>

		<p>Institutions (Universities and research Institutions)</p> <ul style="list-style-type: none"> <li>• 4 MoUs Industries/Private companies</li> </ul>	<p>Zhejiang Normal University in China (ZJNU)</p> <ul style="list-style-type: none"> <li>◆ Agreement between NM-AIST and Hunan University of Technology (HUT) through the <i>Sino Africa Centre of Excellence (SACE)</i> to build the Biomedical engineering laboratory at NM-AIST.</li> <li>◆ Two International Short courses organized and conducted by ICPT and CREATES at NM-AIST The 1<sup>st</sup> &amp; 2<sup>nd</sup> School on Atomistic Simulation of Biomolecules and Material Science in Tanzania)</li> <li>◆ International short course on Biotechnology Innovation and Regulatory Sciences organized by CREATES and Purdue University at NM-AIST</li> <li>◆ 1<sup>st</sup> &amp; 2<sup>nd</sup> Interdisciplinary and international short course on Ecological Modeling organized by CREATES, in collaboration with Rhodes University, South Africa, Hamburg University of Applied Sciences Germany</li> <li>◆ 13 Students attached to partner institutions</li> </ul>
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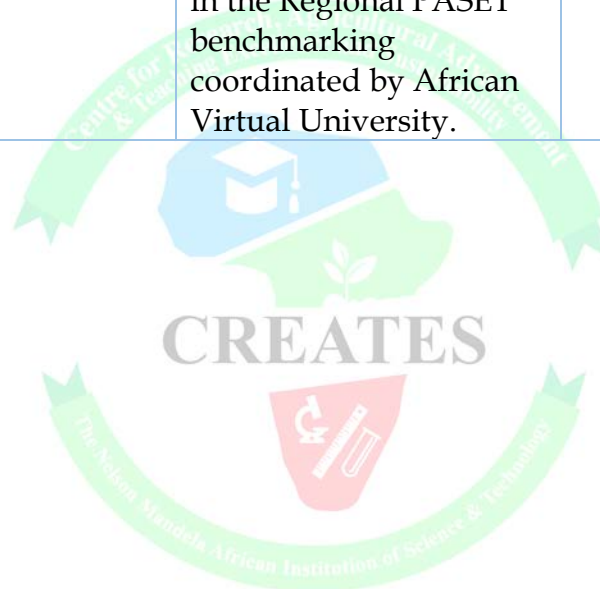


Accredited education programs offered by the ACEs	6 Programmes	<ul style="list-style-type: none"> <li>• A total of <b>10</b> (5MSc &amp; 5PhD) Programmes Accredited by TCU</li> <li>• <b>2</b> International MSc Programmes are under developed in collaboration with international Partner Universities. The MSc in Industrial Pharmacy and Regulatory Science with Purdue University USA, the MSc in Biomedical Engineering with Hunan University of Technology China.</li> </ul>	<ul style="list-style-type: none"> <li>♦ The Achievement id More than <b>100%</b> of the Target. However this is for National Accreditation only.</li> <li>♦ No program has regional or International Accreditation. The Centre is working on the two International Programmes to acquire International accreditation.</li> <li>♦ For the Regional accreditation, there is not a Regional Body for programmes accreditation. This indicator needs to be reviewed by the Bank.</li> </ul>
Direct Project Beneficiaries (of which female)	320 Direct Beneficiaries	<p>A total of <b>678</b> individuals benefited from the project interventions include;</p> <ul style="list-style-type: none"> <li>♦ Students (346)</li> <li>♦ Faculty &amp; staff (12)</li> <li>♦ Communities (320)</li> </ul>	<ul style="list-style-type: none"> <li>♦ The performance is more than <b>100%</b> of the cumulative target. However, the Centre is planning to extend more of its work to outreach activities to benefit more community (farmers, fishers, food processors, industries and agri-entrepreneurs)</li> </ul>
<b>Intermediate Result (Component One)</b>			



Faculty and PhD students exchanges to promote research and teaching (no. of which are females)	35	<ul style="list-style-type: none"> <li>♦ A total of <b>24</b> students (18 Male &amp; 6 Female) participated in exchange program</li> <li>♦ 12 students were hosted at NM-AIST and 12 were sent to other Institutions</li> </ul>	<ul style="list-style-type: none"> <li>♦ This performance is <b>68.6%</b> of the target set for five years.</li> <li>♦ More students are expected to be sent to partner institutions for lab attachment and research work</li> </ul>
Amount of externally generated revenue by the ACEs	1, 708, 100 US\$	281,000 US\$	<ul style="list-style-type: none"> <li>♦ CRETES was Granted 250,000 US\$ by IUCEA to facilitate establishment of Incubation Center.</li> <li>♦ The Abdus Salam International Centre for Theoretical Physics (ICTP), granted 31,000\$ Euro to CRETES for organizing and conducting two short courses, the 1<sup>st</sup> &amp; 2<sup>nd</sup> School on Atomistic Simulation of Biomolecules and Material Science in Tanzania</li> <li>♦ The performance achieved under this indicator is <b>16.9%</b></li> </ul>
Internationally recognized research publications in disciplines supported by the ACE Program and with regional coauthors (No co-authored with regional	105 Publications	<p>A total of <b>59</b> peer reviewed papers published with international, regional and national co-authors.</p> <ul style="list-style-type: none"> <li>♦ International co-</li> </ul>	<ul style="list-style-type: none"> <li>♦ <b>56.2 %</b> of the target achieved.</li> </ul>

collaborators)		authors <b>(18)</b> ♦ National co-authors <b>(25)</b> ♦ Regional co-authors <b>(16)</b>	
No. of institutions hosting ACEs participating in the PASET benchmarking exercise	1	CREATES facilitated NM-AIST to Participate in the Regional PASET benchmarking coordinated by African Virtual University.	-



#### 4. RELEVANCE OF DESIGN

ACE II project design has been created in order to making sure that the project achieves the desired project goals. Although there are some challenges in implementing some of the project activities indeed large percentage of the project goals has been implemented and realized as per the project deliverables.

For the CREATES the overall objective of the proposed project is to strengthen the capacity of NM-AIST to serve as an African Centre of Excellence for provision of post graduate training (Master and PhD ), applied research and outreach programs for Food and Nutrition Security in the Eastern and Southern Africa region.

Specifically the project seeks to strengthen Nelson Mandela African Institution of Science and Technology (NM-AIST) to become a magnet environment that provides innovative opportunities and state-of the-art learning environments for graduate students (PhD and MSc ) as well as for faculty and other relevant stakeholders in the area of Food and Nutrition Security. This will enable NM-AIST produce high quality evidence-based research products, technologies and services with respect to agriculture, health and nutrition

The student's research and innovations outcomes had already been getting positive results and are being recognized by the government of the United Republic of Tanzania and from local communities. Some of the products and Innovations of our PhD student are currently undergoing patenting measures for them to be approved as Bio pesticide in Agriculture sector as well as nutritional products for children's in SSA . It is our hope that the CREATES will continue to be the innovation hub by responding to challenges facing the SSA and the world in general.

Some of the challenges for this project design include obtaining low number of female students who are passionate about science subjects despite of having readily available funding for them. The Centre is trying her best to making sure that this criterion is achieved despite of low interest of African female students in science subjects. The ongoing initiative of Promoting STEM for female students from Primary and secondary school is continuing but the fruits may be seen in later years.

Another critical observation is that the Centre monitoring and evaluation guidelines have been receiving major challenges since project disbursement is happening contrary to the project implementation plan. The disbursement from the funder is always delayed hence implementation of students and project activities is delayed hence difficulties achieving timely results.



## 5. FIDUCIARY MATTERS

### 5.1. Procurement

#### Summary of the Procurement

	Description	Amount in US\$
1	Procurement of Goods	186,440
2	Procurement of Non-Consultancy	239,628
3	Procurement of Consultancy Services	-
	<b>Total</b>	<b>426,068</b>

Procurement activities dominated in the previous period was generally on laboratory equipment and consumables for student's researches as well as flight tickets for various official trips of the Centre. Other minor activities were supply of stationery and office consumables, supply of office equipment, provision of catering services, provision of printing services and so forth.

#### Challenges in Procurement

##### Delay in Disbursement of Funds

The delay in disbursement of funds cause some of the procurement activities not to be effected as planned. However, when funds will be disbursed timely, all planned activities shall be implemented without delays. The Center has borrowed some amount of funds from other NM AIST sources to cater for very urgent issued including burning issues from students as well as staff salaries .

##### Proposed solution

The Centre Management to liaise with the relevant authorities concerned with the disbursement of funds with the purpose of having a definite dates for the release of disbursement for proper planning and implementation of the planned activities.

##### Disaggregation of Requirements

Procurement of laboratory equipment, consumables and reagents for student's researches is bit challenging. Research requirements are not aggregated hence the purchase is as per individual received request(s). This is due to the fact that students conduct diversified researches at different times and with dissimilar requirements and objectives. This means projecting their requirements is not easy as there is a time their

outcomes do change and hence forced to change the objective(s). At this point, you will find a request for other different requirements from the previous ones.

### **Proposed solution**

An emphasize to the institution management is a must. The Management including student research supervisors should agree on aggregating likely requirements that can be ordered at once and stored in advance before students start their researches. This will eventually led to reducing time and cost of ordering for every individual requests. However, few of these reagents might continue being ordered individually once expected research outcomes changes.

### **Over budgeting of Activities**

Some of the Procurement categories are assigned large sums of funds which are not consumed throughout the year causing the procurement plan to be seen with a large sum while the actual spend is considerably less form the plan.

### **Proposed solution**

The management should use actual send of the previous year to make a budget for the following year. This will enable the development of a plan that is close to the actual spend and allow funds to be used for other activities.

Emphasize must be on a team work during planning and budgeting. Budgeting should not left to an individual person rather a team to plan and agree what to do and when for the centre

## **5.2. Financial Management and Disbursement**

CREATES uses the Financial Management system and all the internal controls as stipulated in the institution Financial manuals, regulation and Government Financial Act. The NM-AIST recently has changed its Accounting Information System from EPICOR Version 9.05 to Vote Book to increase efficiency.

The internal Auditing is being conducted by the Internal audit Unit on quarterly basis. The internal Audit report is table to the NM-AIST Audit committee which also meet in each quarter. The external Audit has been conducted by the Chief Auditor General (CAG) this involve the general project performance and eligible expenditures.

CREATES received a total of US\$ 2,813,051 (US\$ 2,563,061 CREATES and US\$ 249,990 DDI) and the total expenditure to August, 2020 is US\$ 2,336,170 and the balance to June 2020, US\$ 476,880, as shown in the below table.

## ACEII-CREATES RECEIPTS AND EXPENSES SUMMARY FROM 2017 TO JUNE 2020.

S/N	DETAILS	AMOUNT (US\$)
A	<b>RECEIVED</b>	
1	January to Dec 2017	1,096,278.00
2	30th March 2019	659,409.69
3	5th Sept 2019(seed Fund)	249,990.00
4	8th January 2020	484,670.57
5	19th June 2020	328,981.11
	<b>Total Received</b>	<b>2,819,329.37</b>
B	<b>EXPENSES</b>	
	Total expenses for 2017-June 2020	<b>2,342,449.36</b>
C	Balance as at 30 June 2020	<b>476,880.01</b>

### 6. SAFEGUARDS

The Centre has taken serious issues related to social inclusion through its implementation. The needs for marginalized groups including women and special needs groups have been given priority. The Centre office has put in place structures that allow disabled to access the office easily as indicated in the photo below. It fixed a toilet which also the disabled can easily use it.

The Centre has also initiated a special program "Soapbox" that aims at sensitizing girls and the community to encourage girls to join Sciences Technology Engineering and Mathematics subjects. This event is organized by female students and researchers and it is conducted in public areas. It has been run for two years now and received a positive feedback from community and emerged the first winner in 2019, Nanenane exhibition held in Njiro Arusha. On the similar initiative the Centre established collaboration with African Women in Agricultural Research and Development (AWARD) which works toward inclusive, agriculture-driven prosperity for the African continent by strengthening the production and dissemination of more gender-responsive agricultural research and innovation. The two have agreed to build the capacity of women students and researcher in motoring and leadership skills. The Centre leader and deputy center leader (Prof Hulda Swai and Prof. Anna Treydte) are among the participants who attended short course organized by AWARD. Prof. Anna Treydte, CREATES Deputy Centre Leader, also was selected to become an AWARD mentor while Ms. Angela Mkindi a CREATES PhD student selected to a fellow for two years term from 2019 - 2020.

The Centre has also developed a website where it has a portal where it can capture the grievances from beneficiaries. However the Centre planned to establish an effective system that will enable easy capturing and analysis of grievances.





*Photo 33: Disability access to CREATES offices and toilet*

## 7. IMPLEMENTATION CHALLENGES

- Slow pace of accreditation of new MSc and PhD programs submitted to the National Accreditation Authority i.e. Tanzania Commission of Universities (TCU).
- Delaying in DLRs verification process and sharing of the results/feedback after verification. The Verification of DLIs # 3 and 4 not done since the commencement of the project.
- Achieving the 20% regional students as one of the requirement for Centre to trigger maximum disbursement for student enrollment (i.e. DLI # 2.2).
- The Results Verification method by the Independent Verifier; using phone calls and e-mails bring some challenges as students or beneficiaries fail to respond or not reached due to poor network connectivity when students are in fields doing their researches.
- Delaying in fund disbursement to Centre's Account even after Results Verification.