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**FINAL PROGRESS REPORT**

OF

THE SEA—UNISWA COLLABORATION

TO

IMPLEMENT PHASE 1 OF THE PROJECT

TITLED

***INTERGRATION OF MODERN BIOTECHNOLOGY AND BIOSAFETY IN INSTITUTIONS OF HIGER EDUCATION AND TRAINING IN SWAZILAND***

(July 2013—July 2014)

UNIVERSITY OF SWAZILAND

MESA IMPLEMENTATION COMMITTEE

 **July 07, 2014** 

JULY 08, 2014

1. **INTRODUCTION**

This is a final progress report of the collaborative project between the University of Swaziland (UNISWA) and the Swaziland Environment Authority (SEA). The report marks the conclusion of the implementation of phase 1 of the main project titled “Integration of modern biotechnology and biosafety in programmes and processes of higher education and training institutions in Swaziland”. Implementation of the phase 1 component of the project started in the latter part of August 2013 and was supposed to end in December 2013. However, due to unforeseen factors and circumstances the project implementation went beyond the stipulated period. Activities that were scheduled to be undertaken during implementation of the project are contained in Table 1 below. The table also includes the various outputs and timelines for undertaking the activities. A memorandum of agreement (MoA) formalizing the SEA-UNISWA Collaboration and facilitating the implementation of the project was signed in June 2013 and was officially launched on July 08, 2013 at Esibayeni Lodge. This necessitated the commencement of implementation of the project in August 2013.

The project was implemented by the MESA Implementation Committee (MIC) on behalf of UNISWA. The MIC was established by UNISWA management in January 2011 and was housed in the Academic Development Centre (ADC) of the University. The MIC is mandated to implement all activities related to environment and sustainability at UNISWA and affiliated colleges. Modern biotechnology and biosafety were identified as having immediate relevance or relationship to environment and sustainable development. Indiscriminate application and use of modern biotechnology techniques and products is viewed as posing risks to biodiversity (environment) as well as human life. The Cartagena Protocol on Biodiversity (CPB) was promulgated to assist countries apply appropriate measures to manage the use and Trans boundary movement of Genetically Engineered (GE) products which are outcomes of application of modern biotechnology techniques. The MIC has recently completed the implementation of Phase 1 of the SEA-UNISWA project on integration of modern biotechnology and biosafety in the local tertiary institutions. As stipulated in the SEA-UNISWA MoA, the MIC is obligated to periodically submit update reports of project implementation and financial statements as well as a final report of the same on completion of project implementation. Therefore, this final report is in fulfilment of the MoA obligation mentioned above.

**Table 1 Phase 1 activities, outputs and timelines**

|  |  |  |
| --- | --- | --- |
| **ACTIVITIES** | **OUTPUTS** | **TIMELINES** |
| 1. Plan formulation and relevant consultations | Draft implementation plan  Signed MoA between UNISWA and SEA | July - August 2013 |
| 1. Development of modern biotechnology and biosafety training material | Training materials on modern biotechnology and biosafety | August 20 2013 to September 30 2013 |
| 1. Audit of existing programmes | Report on level of integration of modern biotechnology and biosafety biotechnology and Biosafety in programmes | September 02 2013 to October 11 2013 |
| 1. Seminar on modern biotechnology and biosafety for leadership of institutions of higher education and training | Institutional administrators and leadership aware and conversant with modern biotechnology and biosafety issues. | November 21 or 22, 2013 |
| 1. Training workshop for MIC members on modern biotechnology and biosafety | MIC members conversant with modern biotechnology and biosafety issues | November 11 to 15, 2013 |

1. **FINAL REPORT ON IMPLEMENTATION OF ALL PHASE 1 ACTIVITIES**

The final update report presents the status of implementation of all project activities at the end of the project implementation period. The report is presented according to the five activities listed in Table 1 above. It must be stated at the onset that all the project activities have been successfully implemented with all the project outcomes achieved.

**2.1 Activity 1 Plan formulation and relevant consultations**

*2.1.1 Implementation status*

This activity was accomplished before the commencement of project implementation in August 2013. The plan actually was the basis of the collaboration and signing of the MoA in June 2013. The implementation plan is attached as Appendix 1.

*2.1.2 Outstanding work on activity*

None

**2.2 Activity 2 Development of modern biotechnology and biosafety training materials**

*2.2.1 Implementation status*

This activity was successfully completed and a training material has been developed. Appendix 2 is a table of contents of the material. The training material is an edited and published volume with 70 pages and coloured graphics. The volume has paperback green coloured covers with gloss and is a hybrid between A4 and A5 paper sizes.

* + 1. *Outstanding work on activity*

None

**2.3 Activity 3 Audit of existing programmes**

*2.3.1 Implementation status*

Implementation of the activity was completed and soft and 10 bound copies of the audit report have been submitted to the project proponent. There were nine (9) local institutions of higher education and training that were involved in the study (Appendix 3). This activity overran its planned timeline due to the elaborate nature of the study which was unforeseen in the planning stages of the project.

*2.3.2 Outstanding work on activity*

Agreement on the distributions of the audit reports to institutions that participated in the study for reporting back purposes.

* 1. **Activity 4 Seminar for leaders of institutions of higher education and training**

*2.4.1 Implementation status*

The seminar was successfully undertaken on December 05, 2013 at Esibayeni Lodge in Matsapha. Almost all the invited local institutions of higher education and training participated in the seminar except the Swaziland College of Technology (SCOT) (Appendix 4). Institutional representatives who participated in the seminar were mainly from the highest ranking levels of authority among the institutions (Appendix 4). The main objectives of the seminar were:

* To raise awareness among institutional leaders about Biotechnology and Biosafety issues and concerns.
* To equip institutional leaders with general knowledge and understanding of basic Biotechnology and Biosafety concepts and issues.
* To acquire the buy-in of institutional leaders for them to facilitate and support activities aimed at the mainstreaming of Biotechnology and Biosafety into programmes and processes in their respective institutions.
* To make leaders of institutions aware of the current levels of integration of Biotechnology and Biosafety issues in institutional programmes and processes.
* To introduce leaders of institutions to the mainstreaming concepts and its relevance in the attempts to integrate Biotechnology and Biosafety to institutional programmes and processes.

Appendix 5 is an article that was submitted to the UNISWA Newsletter, a quarterly publication for dissemination of events taking place at UNISWA, which reports on proceedings of the seminar. The article was written by Mr David Nhlabatsi, a member of the MESA Implementation Committee (MIC) from the Faculty of Humanities. Appendix 6 is the programme of the seminar. Soft copies of the proceedings of the seminar were sent to all participants of the seminar.

*2.4.2 Outstanding work on activity*

None.

**2.5 Activity 5 Training workshop for MIC members**

*2.4.1 Implementation status*

This activity was implemented successfully on January 17, 2014 after it was postponed a couple of times due to difficulties of having all teaching members of the MIC available for the workshop around the examination period of November and December 2013. The training workshop was also attended by two MESA members from the Pedagogical University and Eduardo Mondlane University in Mozambique as well as the Biosafety Coordinator at SEA. The Executive Director of SEA graced the workshop with his presence as well as making the closing remarks and having lunch with all the participants. The workshop also presented the MIC with an opportunity to pilot the modern biotechnology and biosafety training material that was in the development stage during the workshop. Appendix 7 is an article that was written by Dr. Thabile Ndlovu, MIC member from the Faculty of Science and Engineering that was intended to disseminate proceedings of the workshop through the quarterly published UNISWA Newsletter.

*2.4.2 Outstanding work on activity*

None.

1. **FINANCIAL REPORT**

Expenditure on the project as shown in Table 2 below continued into the 2014 calendar year beyond the planned December 2013 which was the duration of project implementation. However, all 2014 expenditures were combined in one column titled January – June for reporting purposes (Table 2). The Table shows an opening balance of E102, 705.00 and a balance of E12, 461.65 at the end of June 2014. The balance coded in red in table 2 below is funds already committed to produce copies of the audit report.

**Table 2 Financial Expenditure Report**



**APPENDIX 1**

**PROJECT IMPLEMENTATION PLAN**

**INTEGRATION OF BIOTECHNOLOGY AND BIOSAFETY IN PROGRAMMES AND PROCESSES OF HIGHER EDUCATION AND TRAINING INSTITUTIONS IN SWAZILAND**

**Summary**

The plan to mainstream Biotechnology and Biosafety issues was developed by the University of Swaziland’s MESA Implementation Committee (MIC) in the Academic Development Centre (ADC). By developing the plan UNISWA, as the largest national institution of higher education, was taking initiative and leadership in the implementation of Biotechnology and Biosafety in programmes and processes in national higher education and training sector. The background sector of the plan document presents a basic understanding of modern Biotechnology and emergence of genetically engineered (GE) products and techniques to contextualize Biosafety issues. The background also introduces the Cartagena Protocol on Biodiversity (CPB) and the importance to implement the protocol to mitigate adverse impacts of GE products and techniques to the environment as well as human and animal life.

Thereafter, the document outlines the Biotechnology and Biosafety status in Swaziland in the context of the global and regional context. This section notes that Swaziland acceded to the CPB in 2006 and highlights milestones achieved by the country as attempts to implement the protocol. Noted milestones include the adoption of the Biosafety Policy, the National Biosafety Framework (NBF), the Biosafety Act of 2012 and others. The next section of the document gives a rationale for mainstreaming of Biotechnology and Biosafety issues in programmes and processes of institutions of higher education and training in Swaziland. Moreover, the use of the mainstreaming approach is also justified. The purposes and objectives of the plan to mainstream Biotechnology and Biosafety in higher education are explained in the context of addressing some of the factors identified as constraints to the implementation of the NBF and the CPB. In the latter section the document describes the implementation structure of the plan and identifies the basic targets of the implementation process.

**Background**

The Kingdom of Swaziland holds a vision of developing its economy and society to the level of the top 10% of developed countries in the world, a feat that involves mainly sustainable utilization of environmental resources, improvement of standards of living as well as attainment of food security. Enhancement of the country’s Biotechnology capacity and capabilities is viewed as an option towards attainment of the national development vision outlined above. Biotechnology is not an entirely new concept in Swaziland and in the rest of the world. The traditional category of Biotechnology has been in use for centuries in food preparation, growing of crops and rearing of livestock. Locally, the brewing of *umcombotsi* (traditional beer) and fermentation of *emasi* (sour milk) as well as crossbreeding and/or inbreeding of livestock types is considered as application of Biotechnology. Elsewhere use of tissue culture especially in producing hybrid varieties of seed is common application of traditional Biotechnology. Traditional or conventional Biotechnology is generally acceptable with very limited or no complaints or concerns.

However, the current focus is on modern Biotechnology which has raised massive debate, complaints and concerns in some sectors of the Swazi society. Modern Biotechnology involves manipulation of organisms at cellular level to acquire a product (CBD, 2000). These are technics of Biotechnology application which include cloning, stem cell and genetic engineering (DNA). With the latter, application has yielded the so called Genetically Modified Organisms (GMOs) or transgenic products. The development, use and Trans boundary transmission of modern Biotechnology products and process has triggered global concerns and complaints over potential risks these may pose to the environment, biodiversity as well as human and animal health. Hence world countries adopted the Cartagena Protocol on Biodiversity (CPB) in January 2006 which deals with issues of Biosafety. Biosafety refers to the prevention of large-scale loss of biological integrity, focusing both on ecology and human health (UNEP, undated). This informs the Swaziland Biosafety Act of 2012 which defines Biosafety as mechanisms for ensuring the safe handling, transfer and use of products of Biotechnology. Since it’s coming into effect in 2008 the CPB has been adhered to in addressing safe (trans-boundary) transfer, handling and use of modern Biotechnology particularly GMOs that may have adverse impacts on environment, biodiversity as well as human and animal life. Modern Biotechnology and Biosafety measures appear to be more inclined towards agriculture than other sectors in the African context. The reasons have to do with the importation of seed and animal feed as well as influx of donor food from foreign sources (Dlamini and Dlamini, 2010).

**Biotechnology and Biosafety status in Swaziland**

The use of Biotechnology for various purposes is not new globally and in Swaziland. However, the use of modern Biotechnology entered the mainstream global economy in the mid-1990s especially in the development and production genetically engineered (GE) products for commercial purposes (Dlamini and Dlamini, 2012). Global trends indicate accelerated adoption and use of modern Biotechnology especially in agriculture where hectares of land on transgenic crops increased 87 fold since 1996 while countries producing transgenic crops increased from 6 in 1996 to 29 in 2010 (Dlamini and Dlamini, 2010). Only a few countries in Africa, Burkina Faso, Egypt and South Africa, produce GE products for commercial purposes (Makinde *et. al.,* 2009). With reference to Biosafety and implementation of the CPB, 47 African countries are at various stages of development of National Biosafety Frameworks (NFBs) with 11 countries with functioning NFBs ((Makinde *et. al.,* 2009). NBFs ensure safe development and application of modern Biotechnology and they consist of Biosafety policy, legislation, regulatory regimes, and systems for handling requests, monitoring, compliance and public participation. Only South Africa has a functioning NBF and produces GE products for commercial purpose in the SADC region. A majority of SADC countries are yet to prepare and implement systems for safe application of modern Biotechnology and NBF to address risks associated with use of GE products and technics.

Swaziland acceded to the CBP in 2006 and therefore is obligated to domesticate the Protocol by developing and implementing national instruments in line with the Protocol. Swaziland is primarily practicing traditional Biotechnology with little in-roads into modern Biotechnology (second generation Biotechnology). However, this does not prevent the country from being affected by potential risks associated with modern technology as the country relies on imports of seed and food from external sources with GE capabilities. Moreover, persistent low productivity in the agricultural sector due to effects of climate change, loss of soil fertility, exorbitant farm inputs and others create a scenario where modern Biotechnology may be viewed as a panacea to increase agricultural productivity. The country developed a NBF in 2005 and resources for its implementation are provided by the 4-year GEF funded Project. The project focuses on promulgation of the Biosafety Act, mainstreaming of Biosafety into national policies and strategies, built capacity on risk assessment, risk management and LMO detection as well as train designated institutions in handling and management of LMOs. Progress has been made in some key components of the NBF. The National Biosafety Policy titled *“Creating an Enabling Environment for the safe Use of Biotechnology and its Products in Swaziland”* was adopted by relevant authorities. Moreover, the Biosafety Bill received Royal assent in 2012 to be a national legislation referred to as the Biosafety Act, 2012. Implementation of other components of the NBF is still underway.

**Rationale for the mainstreaming of Biotechnology and Biosafety**

Several key constraints and bottlenecks to the implementation of the Cartagena Protocol and NBF were identified by Dlamini & Dlamini (2012) and in the GEF-funded capacity building project. One of the identified constraints was limited specialised capacity and trained personnel on Biotechnology and Biosafety as well as lack of institutional knowledge and public awareness of the Cartagena Protocol and the NBF. These constraints were found to limit the mainstreaming of Biotechnology and Biosafety in national development policies, legislation and programmes. Dlamini & Mabuza-Dlamini (2003) noted the lack of training courses in Biotechnology and Biosafety as responsible for the lack of capacity to implement relevant local Biosafety frameworks and policies. Hence action was recommended to create courses integrating national and international Biotechnology and Biosafety scenarios. Moreover, the country has recently promulgated the Biosafety Act 2012 which seeks, among other things, to mainstream the advantages of modern Biotechnology in national sectors such as agriculture, environment and health. The Act also deals with modern Biotechnology and Biosafety issues especially handling, transport and use of Biotechnology products and processes. The technicality and potential risks associated with modern Biotechnology make the Biosafety Act 2012 a legislation of significant proportions to the citizens of the country. It is therefore imperative that the legislation be exposed and disseminated to the nation through various means available including awareness creation, education and training. The 4th component of the GEF-funded project on capacity building intends to accomplish that through its focus on the establishment of effective Public Education, Awareness and Awareness systems. The current plan, therefore, implements some activities in Component IV of the GEF project especially as it seeks to assist local institutions of higher education and training integrate Biotechnology and Biosafety in their curricula and other institutional practices through the mainstreaming approach.

Integration of Biotechnology and Biosafety through mainstreaming is used for several reasons. *Firstly*, HE curricula are congested to the saturation point with discipline related courses and non-discipline courses. For instance, the curriculum at UNISWA has a full complement of discipline related courses while also accommodating non-discipline courses such as Computer Foundation, Academic Communication Skills, HIV/AIDS and Entrepreneurship. The situation may be similar in the affiliated colleges and other institutions of higher education and training. Therefore, introduction of new and additional courses may exacerbate the situation and compromise effective teaching/learning in the core disciplines. Moreover, addition of new courses may cause unprecedented course and timetable congestions to the detriment of smooth running and operation of institutions of higher education and training. *Secondly*, Mainstreaming of Biotechnology and Biosafety may save institutions from employing additional staff with expertise in Biotechnology and Biosafety. *Thirdly,* mainstreaming allows course instructor or subject specialist prerogative to decide where, when and how to integrate Biotechnology and Biosafety in the disciplines and courses without losing the course or discipline content. Course instructors and subject specialists may implement relevant reforms in their courses after awareness raising and capacity building (knowledge acquisition) on fundamental issues on Biotechnology and Biosafety. *Fourthly*, integration of Biotechnology and Biosafety issues in higher education through mainstreaming will not appear as an offshoot which may be resented by staff lacking awareness and knowledge of Biotechnology and Biosafety issues. Mainstreaming allows for a seamless integration of Biotechnology and Biosafety issues into courses, disciplines, materials and instruction. The fact that the integration is driven by the course instructors themselves promotes the feeling of ownership of the process to course instructors.

**Purpose of the plan**

The GEF-funded project intended for capacity building for the implementation of the NBF has five components which have been implemented at different stages of completion. This plan focuses on the implementation of some activities identified in Component IV on *Establishment of an Effective Public Education, Awareness and Participation in Decision-making system*. The specific activity to be pursued directly is the *Review of educational framework and introduction of Biotechnology and Biosafety into curriculum*. Indirectly, the plan will implement aspects of awareness creation and training of trainers (ToT) which are other activities within Component IV. The plan therefore seeks to mainstream Biotechnology and Biosafety into programmes and practices of institutions of higher education and training in the country. This will yield reforms in curricula especially by the integration of biotechnology and biosafety in disciplines, courses and training processes.

**Objectives of mainstreaming Biotechnology and Biosafety**

Creation of awareness and building of capacity on Biotechnology and Biosafety issues is imperative to the country after its accession to the Cartagena Protocol on Biodiversity which it is obligated to implement. In addition the country has achieved some milestones towards implementation of the CPB including the national Biosafety policy, the NBF, the recent Biosafety Act 2012 and others. These developments must be mainstreamed into the fabric of the economy and social entities and process of the Swazi society. Education is an ideal vehicle for enlightening and capacitating the Swazi nation about fundamental issues on Biotechnology and Biosafety. The Government of Swaziland, through its 2011 Education and Training Sector Policy, seeks to develop the intellectual, moral, aesthetic, emotional, physical and practical capacities among Swazi learners that are needed to shape and adapt to a fast-changing complex and uncertain socio-economic environment. Needless to say, that the said environment includes introduction and development of modern Biotechnology processes and GE products. Implementation of the plan intends to achieve three fundamental objectives:

* Assist local institutions of higher education and training produce graduates/citizens conversant with fundamental modern Biotechnology and Biosafety ethos and issues. It must be noted that among the graduates there are teacher educators and other trainers thus contributing to the implementation of the Training of Trainers aspect of the GEF funded project on capacity building.
* Creation of awareness and capacity building among staff in institutions of higher education and training on basic Biotechnology and Biosafety issues.
* Reorientation of higher education curricula and programmes to reflect Biotechnology and Biosafety issues as well as enhance knowledge of the CPB and the Convention Conservation of Biodiversity in institutions of higher education and training.

The benefits of mainstreaming of Biotechnology and Biosafety issues in higher education and training institutions extends to people and communities outside the institutions. Graduate teachers will integrate such issues into school curricula to benefit school going children and their families. Moreover, institutions of higher education have a huge potential to transfer and integrate Biotechnology and Biosafety into their community outreach programmes and research projects. Hence the objectives of the plan to mainstream biotechnology and biosafety issues may contribute directly and indirectly to the implementation of several activities containing some components of the GEF funded project on capacity building and in particular Component IV.

**Plan Implementation Structure**

The plan is collaboration between UNISWA and the Swaziland Environment Authority (SEA) which is the designated competent authority and focal point of Biotechnology and Biosafety matters in the country as per the Biosafety Act, 2012. Implementation of the plan will be undertaken by UNISWA through the Academic Development Centre (ADC). The ADC is mandated to build capacity among staff and facilitate introduction and integration of innovation into UNISWA’s programmes and process. The ADC boasts of a number of years of staff capacity building activities as well as facilitating innovation integration at UNISWA through mainstreaming and other approaches. Through the MESA Implementation Committee (MIC), the ADC successfully facilitated the mainstreaming of environment and sustainability in programmes and processes at UNISWA and affiliated institutions. Through the MIC UNISWA will implement the plan to mainstream of Biotechnology and Biosafety issues in institutions of higher education and training. Biotechnology and Biosafety, with their inherent impacts on the environment as well as contribution to socio-economic development, are important environment and sustainability issues. Hence the MIC, with its experience in handling environment and sustainable development issues, has the capacity to implement the plan to mainstream Biotechnology and Biosafety issues in programmes and processes in institutions of higher education in the country.

**Target institutions**

The plan to mainstreaming Biotechnology and Biosafety issues will target all institutions of higher education and training in the country. These institutions may be described as those offering post school (tertiary) education and training. The institutions include all faculties in the University of Swaziland and affiliated colleges (Ngwane Teacher Training College, Swaziland College of Technology and William Pitcher Teacher Training College. Other institutions of higher education and training will be targeted including but not limited to Gwamile VOCTIM, Southern African Nazarene University (SANU), Limkokwing University of Creative Technology and others. The activities will focus on creation of awareness and enhancement of basic knowledge of Biotechnology and Biosafety issues among staff particularly in the academic sectors of the institutions. The mainstreaming of Biotechnology and Biosafety issues will be undertaken by staff hence the focus on them.

**Plan implementation: Activities, Outputs and Timelines**

Table 1 below indicates the set of activities to be undertaken during the implementation of the plan. The table also indicates the various actors or people, referred to as participants, who will be involved in undertaking the activities as indicated in the table. The expected outputs are also stated in relation to the corresponding activities. Overall, the various outputs mentioned contribute to a major output of curricula reforms in institutions of higher education and training in the country to integrate Biotechnology and Biosafety issues. The timelines indicated remain tentative until conclusion of the plan formulation and adoption process between UNISWA and SEA. This process is anticipated to be concluded in the middle of June 2013. The notes below Table 3 give further details pertaining to the timelines of some of the activities. Table 2 is the implementation budget of the plan. The budget presents cost estimates of the activities to be undertaken according to the various envisaged budget items.

**Table 1 Activities, outputs and timelines**

|  |  |  |  |
| --- | --- | --- | --- |
| **Activities** | **Participants** | **Outputs** | **Timelines** |
| **PHASE 1: PRELIMINARYACTIVITIES** | | | |
| 1. Plan formulation and relevant consultations | MIC, ADC Director, SEA | * Draft implementation plan * Signed MoA between UNISWA and SEA | December 2012 to June 2013 |
| 1. Development of biotechnology and biosafety Biotechnology and Biosafety training materials | Experts on biotechnology and biosafety and MIC members | Training materials on biotechnology and biosafety | August 20 2013 to September 30 2013 |
| 1. Audit of existing programmes | Consultant | Report on level of integration of biotechnology and biosafety in programmes | September 02 2013 to October 11 2013 |
| 1. Training workshop for MIC members on biotechnology and biosafety | Experts on biotechnology and biosafety and MIC members | MIC members conversant with biotechnology and biosafety issues | November 11 to 15, 2013 |
| 1. Seminar on biotechnology and biosafety for administrators/leaders of institutions of higher education and training | Experts on biotechnology and biosafety and administrators/leaders of institutions of higher education and training | Institutional administrators and leadership aware and conversant with biotechnology and biosafety issues. | November 21 or 22, 2013 |
| **1PHASE 2: TRAINING WORKSHOPS FOR STAFF IN INSTITUTIONS OF HIGHER EDUCATIONAND TRAINING** | | | |
| 1. University of Swaziland, Kwaluseni Campus | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
| 1. University of Swaziland, Luyengo Campus | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
| 1. University of Swaziland, Mbabane Campus | Experts on biotechnology and biosafety Biotechnology and Biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
| 1. William Pitcher Teacher Training College | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of the importance of biotechnology and biosafety issues |  |
| 1. Ngwane Teacher Training College | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
| 1. Swaziland College of Technology | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
| 1. Gwamile – VOCTIM | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
| 1. Southern African Nazarene University | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety Biotechnology and Biosafety issues |  |
| 1. Limkokwing University | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
|  | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
| 1. 3Name of institution | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
| 1. Name of institution | Experts on biotechnology and biosafety, MIC members and staff | Institutional staff trained on and aware of importance of biotechnology and biosafety issues |  |
| 1. Monitoring | MIC members | Periodical monitoring reports | Annually |
| 1. Evaluation / audit | Consultant and MIC members | Audit report on level of integration of biotechnology and biosafety in HE programmes and practices | April to July, 2015 |

***Notes***

1Timelines for phase 2 (undertaking of institutional training workshops) are not indicated because they are subject to institutional consultations and sanction. Therefore they will be inserted into the plan after the necessary consultations and advice from the respective institutions. Moreover, phase 2 activities are not part of the recently signed MoA between UNISWA and SEA.

**Table 2 Implementation budget**

|  |  |  |  |
| --- | --- | --- | --- |
| **Activities** | **Budget items** | **Cost estimates (E)** | **Total activity costs (E)** |
| **PHASE 1: PRELIMINARYACTIVITIES** | | | |
| 1MIC members meetings | Venue | 0.00 | **10,000.00** |
| Refreshments (Tea) | 10,000.00 |
| Plan formulation and relevant consultations | Consultations | 1,500.00 | **5,630.00** |
| Expertise (plan development) | 3,600.00 |
| Communication | 530.00 |
| 1Training workshop for MIC members on biotechnology and biosafety (15) | 2Training venue | 1,500.00 | **16,900.00** |
| Training materials | 3,750.00 |
| Refreshments | 2,400.00 |
| 3Facilitation | 6,750.00 |
| 4Travel | E2,500.00 |
| Audit of existing programmes | Consultant | 20,000.00 | **20,000.00** |
| Seminar on biotechnology and biosafety for administrators/leaders of institutions of higher education and training (35) | Training venue | 1,500.00 | **17,875.00** |
| 5Training materials | 4,375.00 |
| Refreshments | 5,250.00 |
| Facilitation | 6,750.00 |
| Development of biotechnology and biosafety training materials | 6Expertise | 8,000.00 | **32,000.00** |
| Stationary | 300.00 |
| Photocopying | 24,000.00 (40.00/copy for 600) |
| ***TOTAL BUDGET FOR PHASE 1*** | | | **102, 705.00** |
| **\*PHASE 2: TRAINING WORKSHOPS FOR STAFF IN INSTITUTIONS OF HIGHER EDUCATION AND TRAINING** | | | |
| University of Swaziland, Kwaluseni Campus (150) | Venue | 0.00 | **34, 150.00** |
| Facilitation | 6,750.00 |
| Stationary | 900.00 |
| Refreshments | 24,000.00 |
| Travel | E2,500.00 |
| University of Swaziland, Luyengo Campus (60) | Venue | 0.00 | **19,210.00** |
| Facilitation | 6,750.00 |
| Stationary | 360.00 |
| Refreshments | 9,600.00 |
| Travel | E2,500.00 |
| University of Swaziland, Mbabane Campus (50) | Venue | 0.00 | **17,550.00** |
| Facilitation | 6,750.00 |
| Stationary | 300.00 |
| Refreshments | 8,000.00 |
| Travel | E2,500.00 |
| William Pitcher Teacher Training College (50) | Venue | 0.00 | **17,550.00** |
| Facilitation | 6,750.00 |
| Stationary | 300.00 |
| Refreshments | 8,000.00 |
| Travel | E2,500.00 |
| Ngwane Teacher Training College (45) | Venue | 0.00 | **16,720.00** |
| Facilitation | 6,750.00 |
| Stationary | 270.00 |
| Refreshments | 7,200.00 |
| Travel | E2,500.00 |
| Swaziland College of Technology (40) | Venue | 0.00 | **15,890.00** |
| Facilitation | 6,750.00 |
| Stationary | 240.00 |
| Refreshments | 6,400.00 |
| Travel | E2,500.00 |
| Gwamile – VOCTIM (35) | Venue | 0.00 | **15,060.00** |
| Facilitation | 6,750.00 |
| Stationary | 210.00 |
| Refreshments | 5,600.00 |
| Travel | E2,500.00 |
| Southern African Nazarene University (50) | Venue | 0.00 | **17,550.00** |
| Facilitation | 6,750.00 |
| Stationary | 300.00 |
| Refreshments | 8,000.00 |
| Travel | E2,500.00 |
| Limkokwing University (30) | Venue | 0.00 | **14,230.00** |
| Facilitation | 6,750.00 |
| Stationary | 180.00 |
| Refreshments | 4,800.00 |
| Travel | E2,500.00 |
| Name of institution (30) | Venue | 0.00 | **14,230.00** |
| Facilitation | 6,750.00 |
| Stationary | 180.00 |
| Refreshments | 4,800.00 |
| Travel | E2,500.00 |
| Name of institution (30) | Venue | 0.00 | **14,230.00** |
| Facilitation | 6,750.00 |
| Stationary | 180.00 |
| Refreshments | 4,800.00 |
| Travel | E2,500.00 |
| Name of institution (30) | Venue | 0.00 | **14,230.00** |
| Facilitation | 6,750.00 |
| Stationary | 180.00 |
| Refreshments | 4,800.00 |
| Travel | E2,500.00 |
| Monitoring | Expertise | 7,000.00 (2 years) | **8,500.00** |
| Transport/communication | 1,500.00 |
| Evaluation / audit | Expertise (consultant) | 30,000.00 | **34,000.00** |
| Transport/communication | 2,500.00 |
| ***TOTAL BUDGET FOR PHASE 2*** | | | **253, 100.00** |
| **TOTAL BUDGET FOR THE PROJECT** | | | **355,805.00** |

\*Phase 2 is not covered or part of the recently signed MoA between UNISWA and SEA**.**

**Budget notes**

**1 MIC is an official University of Swaziland committee appointed in January 2011 to mainstream Environment and sustainability in programmes and process at UNISWA and affiliated colleges. It is important to capacitate members of the MIC as they will be driving the process of integration of biotechnology and biosafety in issues in programmes and process in higher education and training institutions in Swaziland.**

**2 The project proponent reserves the right to opt for a low cost or cost alternative venue.**

**3 Facilitation entails payment of professional expertise engaged in the project. The expertise will be acquired mainly from UNISWA and their payment is guided by the attached official UNISWA’s September, 2010 schedule of payment. An associate professor (E570.00/hr.) and 2 senior lecturers (E489.00/hr.) will be engaged in the various activities of plan implementation. The purposes of payment of experts a 3 hour day would be assumed. Support staff *inter alia* members of the MIC are paid a much lower scale.**

**4 Travel claims would be based on the march 2009 UNISWA’s mileage rates which were designed to encourage movement and use of staff’s own cars for UNISWA’s business. This facility is for covering travel expenses of the experts, MIC members and hire of institutional vehicle for movement of equipment in the case of conducting workshops in institutions outside of UNISWA’s Kwaluseni campus.**

**5 This is maximum estimate of professional materials befitting status of participants. The materials cost may be reviewed downwards after browsing lower cost alternatives. The materials include training resource material (document) and other workshop materials.**

**6 Experts in the field of biotechnology will be engaged to produce training materials to support the institutional training workshops on biotechnology and biosafety. These figures are also guided by UNISWA’s payment schedule of 2010. An associate professor and a senior lecturer would be engaged to develop the reading materials. To conserve on resources the experts may be given a shorter but reasonable time to accomplish the activity.**

**Monitoring and Evaluation**

Ideally, monitoring of implementation must commence after conducting the faculty and institutional training workshops.Thereafter, the monitoring activity needs to be conducted annually by competent people within the various faculties, in the case of UNISWA, and institutions. A uniform monitoring framework has to be designed to facilitate the monitoring and reporting processes. Evaluation needs to be conducted at an appropriate length of time (after conclusion of the training workshops) adequate to have allowed for integration of Biotechnology and Biosafety in programmes, disciplines and courses. It is recommended that evaluation be conducted before the end of the GEF-funded project on capacity building. The MIC will conduct the evaluation using the USAT as an integral tool of assessment. Comparison of the evaluation results with the initial audit findings must reflect the level of integration of Biotechnology and Biosafety after several of mainstreaming.

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**APPENDIX 3**

**LIST OF INSTITUTIONS THAT WERE AUDITED**

The audit or study included universities and training colleges that are resident in Swaziland which are either supported by the Swaziland Government or private. The respondent institutions include the following:

***Government supported universities and colleges***

* University of Swaziland (UNISWA) and affiliated colleges
* William Pitcher Teacher Training College
* Ngwane Teacher Training College
* Christian Medical University (CMU)
* Swaziland College of Technology (SCOT)
* Southern African University (SANU)
* Gwamile – VOCTIM

***Private universities and Colleges***

* Limkokwing University
* MITC/NATTIC

The audit did not include institutions operating in Swaziland but acting as agents of institutions whose administration is in other countries.

**APPENDIX 4**

**PARTICIPANTS OF THE MODERN BIOTECHNOLOGY AND BOISAFEFTY SEMINAR FOR LEADERS OF INSTITUTIONS OF HIGHER EDUCATION AND TRAINING IN SWAZILAND**

**NOVEMBER 05, 2013**

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**APPENDIX 5**

**UNISWA NEWSLETTER ARTICLE ON PROCEEDINGS OF THE SEMINAR FOR LEADERS OF LOCAL INSTITUTIONS OF HIGHER EDUCATION**

**Modern biotechnology and biosafety seminar for leaders of institutions of higher education and training in Swaziland**

By David D. Nhlabatsi

On the 5th December 2013 the UNISWA Academic Development Centre, through the MESA Implementation Committee (MIC) in collaboration with the Swaziland Environmental Authority (SEA) hosted a seminar on modern biotechnology and biosafety for leaders of institutions of higher education and training in Swaziland. The seminar was held at the Esibayeni Lodge in Matsapha. The seminar was one of the activities to be accomplished contained in the Memorandum of Agreement (MoA) signed between UNISWA and SEA in July 2013. The MoA provides for collaboration between UNISWA and the SEA in implementing a plan for integrating biotechnology and biosafety into programmes and processes of institutions of higher education and training in Swaziland, also known as the mainstreaming plan. The objectives of the seminar included: building capacity and basic understanding of modern biotechnology and biosafety among leaders of institutions of Higher Education; raising awareness of the Biosafety Act of 2012 among the leaders; acquire a buy-in and develop sense of ownership by leaders of institutions modern biotechnology and biosafety issues for integration in their institutions and to share, among the participants, preliminary findings of the study to ascertain the level of integration of modern biotechnology and biosafety in programmes and processes institutions of higher education and training in the country.

Leaders of institutions of Higher education and training who participated in the seminar included the Pro-Vice Chancellor of UNISWA, Pro-Vice Chancellor Academic of the Southern African Nazarene University (SANU); Principal of William Pitcher Teacher Training College; Principal and Vice Principal of Ngwane Teacher Training College; The Executive Director of Limkokwing University of Creative Technology; The Director of University Planning at UNISWA; Vice principal of Gwamile-VOCTIM; senior representatives of Managa Centre for Development; Director of UNISWA’s Academic Development Centre; Swazi Skills Centres; His Majesty’s Correctional Services (HMCS) and the Royal Swaziland Police Service (RSPS). In attendance were the Acting Executive Director of the Swaziland Environment Authority (SEA); officers from SEA; facilitators and members of the MESA Implementation Committee.



Photo 1 Some of the participants from L to R: Prof. V.S.B. Mtetwa, Dr. B.S. Nkosi, Dr. S.S. Simelane, Dr. T.D. Mkatswa, Dr. A. Mahlalela, Mrs J. Malinga and Ms C. Mhlanga

The SEA Acting Executive Director, Ms Shirley Kenny, conducted the official opening of the seminar. In her remarks she acknowledged the presence of participants from diverse institutions in the country. She further emphasized the importance of the seminar and expressed her confidence that it will provide an appropriate forum for creating awareness and greater understanding of modern biotechnology and biosafety among the participants. She urged the leaders of the tertiary institutions to ensure that issues of modern biotechnology and biosafety are not only understood but also integrated into the programmes and curricula of their institutions. She concluded her remarks by acknowledging the collaborative efforts of the SEA and UNISWA in carrying out the activities provided for under the MoA and expressed her hope that the association and collaboration between the two institutions will last for a very long time. Ms Kenny again thanked the participants for attending the seminar and wished them a fruitful and rewarding experience as they engaged each other on the different modern biotechnology and biosafety issues.

Chairing the sessions were Mr Mandla Mlipha, the UNISWA Chair Coordinator and Mr. Bongani Nkhabindze the coordinator of modern biotechnology and biosafety at SEA. The presenters were Ms Thandi F. Khumalo who presented the objectives of the seminar. Professor Abednigo M. Dlamini from the Faculty of Agriculture presented what he referred to as a *zero lecture* on modern biotechnology and biosafety which touched upon understanding of modern biotechnology and biosafety as well as associated considerations, techniques and issues. The engaging presentation by Professor Dlamini included concise definitions of these terms, biotechnology, modern biotechnology and biosafety and the way that they may impact on environment and people in Swaziland. Another presenter was Ms Constance Z. Dlamini. Her presentation focussed on unpacking the salient elements of the national Biosafety Act of 2012. The highlight of Ms Dlamini’s presentation was the precaution that has to be taken, in accordance with the Act, in “the transfer, handling and use of Living Modified Organisms (LMO) resulting from modern biotechnology that may have adverse effects on conservation and sustainable development.”

The last presentation was made by Mr Mandla Mlipha and it gave the preliminary findings of a study of the level of integration of modern biotechnology and biosafety in programmes and processes in tertiary institutions in Swaziland. Generally, the findings revealed that the level of integrating of modern biotechnology and biosafety in programmes and processes in the local institutions of higher and training was still very low. This means that a lot is still to be done if these institutions are to be, as Mlipha says, “more socially, environmentally and economically relevant to national development”.

The discussions that ensued centred on use of GMOs and illegal application of modern biotechnology techniques. There was also concern about the perceived stringent conditions of use of GMOs noticed by the participant in the Biosafety Act. It was however clarified that the Act assumed a precautionary approach hence it may be viewed as stringent. Commenting on behalf of the leaders of tertiary institutions UNISWA’s Pro-Vice Chancellor (Photo 2) appreciated the attendance in the seminar with participants from a diverse collection of institutions of Higher Education in the country. He expressed his hope that each one of the leaders attending would take back with them very useful information that would contribute towards the improvement of programmes offered in their institutions. He further urged the leaders of the institutions to make sure that the issues of Biodiversity and Biosafety are included in their institutional strategic plans and to consolidate the deliberations of the seminar into actionable programmes with visible and useful outcomes.



Photo 2 Prof. V.S.B. Mtetwa making remarks on behalf of leaders of tertiary institutions

The official closing was done by the Director of UNISWA’s Academic Development Centre, Dr T.D. Mkatshwa who mentioned that the seminar was not a UNISWA initiative but collaboration between SEA and UNISWA intended for all institutions of higher education and training in the country. The Director appreciated the level of participation demonstrated the level attendance and diversity of institutions represented. She challenged the leaders to ensure that they create an ideal environment for mainstreaming of modern biotechnology and biosafety in programmes and processes in their respective institutions.

**APPENDIX 6**

**SEMINAR PROGRAMME**

  

**BIOTECHNOLOGY AND BIOSAFETY SEMINAR FOR LEADERS OF INSTITUTIONS OF HIGHER EDUCATION AND TRAINING**

**ESIBAYENI LODGE, MASAPHA**

**THURSDAY NOVEMBER 05, 2013**

**PROGRAMME**

08h30 – 09h00 Arrival and registration, ***Ms Khetsiwe Malaza***

***SESSION 1***

**CHAIR: M. Mlipha**

09h00 – 09h15 Opening Remarks, ***Mr S. M. Zuke, Executive Director, SEA***

09h15 – 09h30 Seminar objectives, ***Ms T.F. Khumalo, UNISWA***

09h30 – 10h15 Biotechnology and Biosafety: basic concepts, techniques and issues, ***Prof A.M. Dlamini, UNISWA***

10h15 – 10h30 Discussion

**1030 – 1100 MORNING TEA**

***SESSION 2***

**CHAIR: B. Nkhabindze**

11h00 – 11h30 Unpacking the National Biosafety Act, 2012, ***MS C.Z. Dlamini, Legal Counsel, SEA***

11h30 – 11h45 Discussion

11h45 – 12h15 Status of Biotechnology and Biosafety integration in local tertiary institutions; preliminary findings, ***Mandla Mlipha, MESA Chair, UNISWA***

12h15 – 12h30 Discussion

12h30 – 12h45 Closing remarks

**12h45 LUNCH**

**APPENDIX 7**

**UNISWA NEWSLETTER ARTICLE ON REPORTING ON THE MIC TRAINING WORKSHOP ON MODERN BIOTECHNOLOGY AND BIOSAFETY**

****

**Biotechnology and Biosafety training for Members of the MESA Implementation Committee**

**By: Dr Thabile Ndlovu**

The University of Swaziland (UNISWA) signed an MoA with Swaziland Environmental Authority (SEA) in a breakfast function held on the 08 July 2014, at Esibayeni Lodge for the implementation of the plan to integrate biotechnology and biosafety in programmes and practices in institutions of higher education and training in Swaziland referred to as the mainstreaming plan. As part of Phase 1 of this MoA, which consists of preliminary activities, members of the MESA Implementation committee (MIC) were expected to be trained on this subject as they assumed the role of being implementers of the initiative to mainstream issues of modern biotechnology and biosafety in institutions of higher education and training in the country.

OnFriday, 17th January, 2014, a training workshop for the MIC members was conducted at the IDE Computer Laboratory - Kwaluseni Campus. The MIC team is composed of staff members from all faculties, Library, IDE and administration at UNISWA and affiliated institutions such as William Pitcher Teacher Training College and Ngwane Teacher Training College. The Southern African Nazarene University (SANU) and SEA have observer status in the MIC. All members of the MIC as described above participated in the training workshop (Figure 1). The workshop was also attended by two MESA members from Mozambique representing the Eduardo Mondlane University and Pedagogical University.

The workshop was officially opened by Dr T.D. Mkatshwa who started her address by stating how excited she was to be part of the training as well. She also praised the MIC members for the good turn up for the workshop as there was a recognizable number of participates. She encouraged everyone to make use of this opportunity and capture as much information and knowledge as much as possible on the subject and she concluded by wishing everyone good luck for the day. The workshop was facilitated by Mr Mandla Mlipha, who is also the chairperson for MIC.

Prof A.M. Dlamini, from the Faculty of Agriculture, gave a presentation titled “Biotechnology and Biosafety; Basic concepts, techniques and issues” which was aimed at giving background information on modern biotechnology and biosafety. After this presentation which also gave the participants skills on how to obtain modern biotechnology and biosafety information, the participants were then divided into groups to try and acquaint with the search approaches and key clauses of the National Biosafety Act. The groups then made presentations afterwards (Figure 2).

Modern biotechnology is defined as “any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use” (CBD, 1992). Biosafety therefore with the safe handling of products of modern biotechnology. Modern biotechnology has found extensive use in several industries including, agriculture, food and beverage, pharmaceutical and biomedical industries, all of which impact our lives directly or indirectly.

Ms Constance Z. Dlamini from SEA unpacked the National Biosafety Act, 2012, and the participants were also engaged in **interactive groups** where they were guided on how the Act can be used. The time was insufficient due to the interactive nature of the workshop and the willingness of the participants to engage more with the workshop activities.

The official closing of the workshop was done by Mr S. Zuke, Executive Director of SEA, who joined the workshop towards the end of the workshop. In his closing remarks, he appreciated witnessing the intense deliberations taking place at the moment of his arrival. He also congratulated members for maintaining good numbers for the duration of the workshop. He also acknowledged the presence of our Mozambican counterparts from Eduardo Mondlane University.