



THE REPUBLIC OF UGANDA



REPORT OF THE STUDY

CAPACITY-BUILDING TO PROMOTE INTEGRATED IMPLEMENTATION OF THE CARTAGENA PROTOCOL ON BIOSAFETY AND THE CONVENTION ON BIOLOGICAL DIVERSITY IN UGANDA

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY



NOVEMBER 2016

Copyright © 2016. National Environment Management Authority

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

P.O. Box 22255

Kampala Uganda

E-mail: info@nemaug.org

<http://www.nemaug.org>; www.chm.nemaug.org

Citation: NEMA (2016), Capacity Building to Support Integrated Implementation of the Cartagena Protocol on Biosafety and the Convention on Biological Diversity

ISBN: 978-9970-881-20-8

Editorial Team

Mr. Ogwal Sabino Francis	- <i>Editor in –Chief</i>
Dr. Julius Ecuru	- <i>Technical editor</i>
Dr. David Hafashimana	- <i>Technical editor</i>
Mr. Issa Katwesige	- <i>Editor</i>
Ms. Sarah Naigaga	- <i>Editor</i>
Mr. Aaron Werikhe	- <i>Editor</i>
Ms. Monique Akullo	- <i>Editor</i>

FOREWORD

Uganda ratified the Convention on Biological Diversity (CBD) on 8th September 1993 and Cartagena Protocol on Biosafety on 24th November 2001. Being a Party to CBD and CPB, Uganda is obliged to implement decisions adopted by the Conference of the Parties to CBD and the Conference of the Parties serving the meeting of the Parties to CPB. In decision BS-V/16, the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety adopted the Strategic Plan for the Cartagena Protocol on Biosafety for the period 2011-2020 and urged Parties to review and align with the Strategic Plan, as appropriate, their national action plans and programmes relevant to the implementation of the Biosafety Protocol including their National Biodiversity Strategies and Action Plans (NBSAPs). In decision BS-VII/5 Parties were urged to integrate and prioritize biosafety in their NBSAPs and national development plans and programmes.

Taking the above guidance into consideration and also bearing in mind that integrated implementation of the CBD and the CPB is critical for promoting synergies in the implementation of activities and programmes and improving efficiency and effectiveness at the national, Uganda has integrated biosafety in the revised NBSAP (2015). This is a result of wide stakeholder consultation and also using the Strategic Plan for the Cartagena Protocol on Biosafety 2011–2020 as guide. The revised NBSAP has national biosafety targets that Uganda has earmarked to implement between 2015 and 2025. Uganda has moved a step further and integrated biosafety in the National Development Plan (NDP) II which not only conforms to decision BS-VII/5 but also has placed biosafety among the priority areas for Government in NDPII.

The study on Capacity-building to Promote Integrated Implementation of the CPB and CBD has made it possible for Uganda to identify constraints affecting mainstreaming biodiversity in sectoral and cross-sectoral plans, policies and programmes. The study has recommended actions which form the building blocks to enhance mainstreaming of biosafety and integrated implementation of the CBD and the CPB in Uganda. The study also points out some of the lessons learnt and good practices on mainstreaming biosafety in Uganda which may be beneficial to Parties to the CBD and CPB. I therefore, on behalf of Government of Uganda, take this opportunity to thank the Government of Japan for providing the financial support to Uganda to carry out this study.



Dr. Tom .O. Okurut
EXECUTIVE DIRECTOR
NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

ACKNOWLEDGEMENT

The National Environment Management Authority (NEMA), on behalf of Government, is grateful the Secretariat of the of the Convention on Biological Diversity (SCBD) for assisting Uganda in getting the financial support from the Japan Biodiversity Fund to carry out this study. NEMA commends the team of experts who carried out the study on its behalf. The findings of the study were presented to technical officers at a round table discussion followed by presentation to policy makers. NEMA extends appreciation to the policy-makers and the technical officers for their valuable input during the preparation of this report. NEMA is particularly grateful to the following institutions for their active participation:

Ministry of Agriculture, Animal Industry and Fisheries
Ministry of Tourism, Wildlife and Antiquities
Ministry of Justice and Constitutional Affairs
Ministry of East Africa Community Affairs
Ministry of Local Government
Ministry of Health
Ministry of Trade, Industry and Cooperatives
Ministry of Water and Environment
National Forestry Authority
National Planning Authority
National Animal Genetic Resource Centre
Uganda National Council for Science and Technology
National Agricultural Research Organization
College of Environmental and Agricultural Sciences, Makerere University
Uganda National Bureau of Standards
Uganda Biotechnology and Biosafety Consortium
Wildlife Conservation Society
Ministry of Finance Planning and Economic Development
Buikwe district local government
Jinja district local government
Kayunga district local government
Wakiso district local government
Uganda Biosciences Information Centre
Science Foundation for Livelihoods and Development
International Food Policy Research Institute
Programme for Biosafety Systems

NEMA is grateful Erie Tamale, Peter Deupmann and Paola Scarone of the SCBD for reviewing and providing additional technical input during the preparation of the report.

Lastly NEMA commends Mr. Ogwal Sabino Francis for coordinating the study and also extends appreciations to Ms Monique Akullo and Dr. Evelyn Lutalo for the support they provided during the implementation of project activities.

Table of Contents

FOREWORD	iii
ACKNOWLEDGEMENT	i
LIST OF ACRONYMS	i
EXECUTIVE SUMMARY	iii
CHAPTER ONE: INTRODUCTION	1
CHAPTER TWO: SCOPE AND METHOD	3
CHAPTER THREE: FINDINGS ON MAINSTREAMING BIOSAFETY IN UGANDA	5
The National Biotechnology and Biosafety Policy	15
The National Science, Technology and Innovation Policy	15
Uganda Food and Nutrition Policy	15
National Forestry Policy	16
The National Biotechnology and Biosafety Bill (2012)	17
The Uganda National Council of Science and Technology Act	18
The National Agricultural Research Act	18
The National Forestry and Tree Planting Act	19
CHAPTER FOUR: CONCLUSIONS AND RECOMMENDATIONS	29
ANNEXES	32
ANNEX 3: TERMS OF REFERENCE FOR THE TEAM OF EXPERTS	34
Appendix 1: Terms of Reference for the Team leader of the team of experts	41

LIST OF ACRONYMS

AATF	African Agriculture Technology Foundation
BCH	Biosafety Clearing House
BIOFIN	Biodiversity Finance Initiative
CBD	Convention on Biological Diversity
CFT	Confined Field Trial
CHM	Clearing House Mechanism
CIP	International Potato Centre
CNA	Competent National Authority
COP	Conference of the Parties
CPB	Cartagena Protocol on Biosafety
DDPSC	Donald Danforth Plant Science Centre
DNA	Deoxyribonucleic Acid
ENR	Environment and Natural Resources
ESIA	Environment and Social Impact Assessment
FAO	Food and Agricultural Organization
GEF	Global Environment Facility
GM	Genetically Modified
GMO	Genetically Modified Organism
GoU	Government of Uganda
IBC	Institutional Biosafety Committee
IITA	International Institute for Tropical Agriculture
LMO	Living Modified Organism
LMOs -FFP	Living Modified Organisms for Food, Feed or Processing
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDA	Ministries, Department and Agencies
MOP	Meeting of Parties
MWE	Ministry of Water and Environment
NARO	National Agriculture Research Organization
NARS	National Agricultural Research System
NBC	National Biosafety Committee
NBF	National Biosafety Framework
NBSAP	National Biodiversity Strategy and Action Plan
NDA	National Drug Authority
NDP	National Development Plan
NEMA	National Environment Management Authority
NEMP	National Environment Management Policy
NFP	National Focal Point
NGO	Non-Governmental Organization
PEAP	Poverty Eradication Action Plan
PNT	Plant Novel Trait
PRSP	Poverty Reduction Strategy Paper
QUT	Queensland University Technology
R&D	Research and Development

SCBD	Secretariat of the Convention on Biological Diversity
SSFA	Small Scale Funding Agreement
S&T	Science and Technology
UNBS	Uganda National Bureau of Standards
UNCST	Uganda National Council for Science and Technology
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

EXECUTIVE SUMMARY

The study on Capacity-building to Promote Integrated Implementation of the Cartagena Protocol on Biosafety (CPB) and the Convention on Biological Diversity (CBD) in Uganda identifies a range of laws, policies and plans that are relevant for mainstreaming biosafety. The study shows that biosafety has been mainstreamed and is well anchored at a strategic level in Uganda namely in National Vision 2040, the National Development Plan (NDP) and the revised National Biodiversity Strategy and Action Plan (NBSAP). The review of NDPI and NBSAPI provided the opportunity to mainstream biosafety in these two very important instruments providing the framework for planning in Uganda.

During the review and updating of NBSAPI, a working group was constituted to specifically collate and synthesize information on the status of biotechnology and biosafety in Uganda; and based on the information obtained, and with guidance from the national focal points for CPB and CBD, the working group proposed national targets on biotechnology and biosafety to be included in NBSAPII. The national biosafety targets have been placed under Aichi target 19 of the Strategic Plan for Biodiversity 2011 -2020. The implementation of these targets is led by target champions. The target champions are government institutions whose mandate directly relates to the national target. NBSAPII identifies a number of strategies and tools to achieve its objectives. Specifically on biotechnology and biosafety, the objective of NBSAPII is to harness modern biotechnology for socio-economic development with adequate safety measures for human health and the environment including biodiversity.

The strategies and tools for achieving the NBSAPII objective on biotechnology and biosafety include Environment and Social Impact Assessment (ESIA) or Risk Assessments on biotechnology policies, programmes or projects, promoting integration of biotechnology value in macroeconomic frameworks, carrying out targeted management research to support safe application of biotechnology for national development as well as employing various tools to increase awareness and capacity for policy makers, technical staff and the public on biosafety. The ESIA will help in generating information on the potential positive and negative impacts of proposed biotechnology and biosafety applications and this which can be used to guide mainstreaming of biodiversity by other sectors.

The review and updating of NBSAP provided the opportunity to create awareness on biosafety. Since the revision of NBSAP, biosafety has been mainstreamed in the NDPII and this is milestone in raising the profile of biosafety among policy and decision makers. It forms a strong basis for mainstreaming biosafety into other sectors. The Ministry of Finance in the First Budget Call Circular on Preparation of the Budget Framework Papers and Preliminary Budget Estimates for FY2017/18 guided and advised sectors to implement the national biodiversity targets stipulated in NBSAPII (and this includes national biosafety targets). Thus NBSAPII is an important entry point for mainstreaming biosafety by other sectors. Furthermore biosafety has been mainstreamed into national environmental laws and policies which are in draft form including the National Environment Bill and the draft revised National Environment Management Policy. These two instruments will soon be tabled before Parliament for approval.

The agriculture sector embraces biotechnology in most of its policies and legislation for example the National Agriculture Policy of 2013 and the National Agriculture Research Act of 2005 have provisions on harnessing benefits of biotechnology for the agriculture sector. Since biosafety largely deals with the safe application of biotechnology, the agriculture sector is a critical sector for mainstreaming biosafety in Uganda. Furthermore on-going Confined Field Trials are for crops in the agriculture sector.

While Uganda has made some process in advancing research on genetically modified organisms (GMOs) to build capacity on biosafety, a lot still needs to be done in specific areas to enhance mainstreaming biosafety and this include capacity in detection of GMOs, Risk Assessment and Risk Management, liability and redress, training on biosafety, development and operationalization of a national biosafety clearing house as well as and provision of biosafety information in languages other than UN languages for those local users that do not understand any of the UN languages.

The study has identified lessons associated with mainstreaming biosafety in Uganda. The key lesson learned has been the mainstreaming of NBSAPII into NDPII. Without this, it would be difficult for other sectors to mainstream biosafety into their plans and programmes. Sectors are required to align their development plans and budgets to NDPII. Stakeholder engagement is very critical if mainstreaming is to cascade down to lower levels of planning. It is important to involve the right stakeholders with authority to make decisions and allocate resources. Mainstreaming of biosafety in NDP is an entry point to lobby Ministry of Finance to increase budget allocations for biosafety. It is expected that budgetary allocation on biosafety and biotechnology will steadily increase in the next ten years.

CHAPTER ONE: INTRODUCTION

1.1 Background

Uganda ratified the Convention on Biological Diversity (CBD) on 8th September 1993 and the Cartagena Protocol on Biosafety on 30 November 2001. Uganda also acceded to the Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on 25 June 2014. The CBD has three objectives: (i) the conservation of biological diversity; (ii) the sustainable use of the components of biological diversity; and (iii) the fair and equitable sharing of benefits arising from the utilization of genetic resources. The objective of the CPB is to contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on trans-boundary movements.

By ratifying the CBD and the Cartagena Protocol on Biosafety (CPB), Uganda is bound by the provisions of the CBD and CPB including decisions of the Conference of the Parties (COP) to the CBD and the Meeting of the Parties (MOP) to the CPB. In its decision BS-V/16, the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety adopted the Strategic Plan for the Cartagena Protocol on Biosafety for the period 2011 -2020 and urged Parties to review and align with the Strategic Plan, as appropriate, their national action plans and programmes relevant to the implementation of the Protocol, including their NBSAPs. In decision BS-VII/5, the Conference of the Parties serving as the meeting of the Parties to the Protocol urged Parties and invited other Governments to integrate and prioritize biosafety within their NBSAPs and NDPs and programmes, as appropriate.

The Government of Japan through the Japan Biodiversity Fund supported nine pilot countries to develop and test practical measures to promote integrated implementation of the CPB and CBD. The nine pilot countries are: Burkina Faso, Malawi, **Uganda** (Africa); China, Malaysia (Asia); Ecuador and Mexico (Latin America); Belarus and Moldova (Central and Eastern Europe). The project objectives, outputs and activities, scope and methods use carrying activities for the project are described in the sections below.

1.2 Project objective

The overall objective of the project is to develop and test practical actions to promote integrated implementation of the Cartagena Protocol on Biosafety and the Convention on Biological Diversity. Specifically, the project intends to:

- i) Facilitate the integration of biosafety into national biodiversity strategies and action plans (NBSAPs) and other sectoral and cross-sectoral policies, plans and programmes; and
- ii) Strengthen national inter-sectoral biosafety coordination mechanisms.

1.3 Outputs and activities

Output 1 – A desk study report on mainstreaming biosafety at national level showing the extent to which biosafety is integrated into existing national policies, strategies and activities across various ministries and sectors, the challenges, capacity needs, opportunities, good practices and lessons learned.

Output 2 – A national roundtable on mainstreaming biosafety at national level organized to review the results of the desk study and discuss appropriate actions and modalities for integrated implementation of the CBD and the CPB, as well as lessons learnt from national experience.

Output 3 – A national seminar for policymakers, decision makers and the media on mainstreaming biosafety organized. The purpose of the seminar was to increase participation of policy and decision-makers as well as the media about the importance of biosafety.

Output 4 – A project report on activities, processes and outcomes, including best practices and lessons learnt, as well as practical recommendations for mainstreaming biosafety prepared and submitted to the CBD Secretariat. This output provides an overview of the conclusions drawn from the desk study as well as a summary of inputs from the roundtable and the seminar from output 2 and 3 above. The outline of the report is provided in **Annex 2**.

CHAPTER TWO: SCOPE AND METHOD

2.1 Scope

The project focused on four areas:

- a) Analyzing existing national policies, strategies and activities relevant to biosafety;
- b) Identifying practical steps taken to integrate biosafety into NBSAPs and promote integrated implementation of the CPB and CBD at the national level;
- c) Documenting national experiences, good practices and lessons learned; and
- d) Organizing cross-sectoral meetings as well as awareness-raising activities for relevant policy makers, decision-makers and other key stakeholders.

2.2 Method

The desk study was undertaken by a team of experts with knowledge and experience on matters of biotechnology and biosafety (**Annex 1**). The terms of reference for the expert team (**Annex 3**) were adopted from the terms of agreement for the Small Scale Funding Agreement (SSFA) between the Secretariat of the Convention on Biological Diversity (SCBD) and the National Environment Management Authority (NEMA). The experts team analyzed how and the extent to which biosafety is integrated into existing national policies, strategies and activities across various Government ministries and sectors and identified the challenges, capacity needs, opportunities, good practices and lessons learned.

The team of experts comprised of scientists, a planner and a lawyer. The CBD National Focal Point, the Biosafety National Focal Point and the Competent National Authority (CNA) on Biosafety were part of the team of experts. The team was led by a team leader (Terms of Reference attached as **Appendix 1**) while overall coordination was by the CBD National Focal Point. The team of experts carried out the following:

- a) Analyzed existing national policies, strategies and activities relevant to biosafety in Uganda;
- b) Identified practical steps taken to integrate biosafety into NBSAPs and promote integrated implementation of the CPB and CBD at the national level;
- c) Documented national experiences, good practices and lessons learned on mainstreaming biosafety; and
- d) Organized cross-sectoral meetings as well as awareness-raising activities for relevant policy makers, decision-makers and other key stakeholders.

A review of the national biosafety-related legal, policy and institutional frameworks was done by the team of experts. This involved identification and description of, as well as an analysis of the extent to which biosafety is mainstreamed in: (i) relevant legal and policy documents; (ii) national institutions and bodies involved in biosafety issues, including inter-sectoral bodies and coordination mechanisms and their respective roles and responsibilities with respect to biosafety; (iii) recent and ongoing national biosafety activities and projects.

The team also described the processes and practical steps taken that supported mainstreaming of biosafety, citing the instruments/acts that provided the mandate for such processes as well as the major challenges/difficulties encountered and the lessons learnt in mainstreaming biosafety into the NBSAPs and relevant sectoral and cross-sectoral policies, plans and programmes, including an analysis of replicability of such experiences. The team further analyzed the national capacity needs and strengths to further improve mainstreaming biosafety.

The team began their work with preparation and approval of an annotated outline of the desk review. The team of experts availed the draft report of the desk study to participants from key stakeholders two weeks ahead of the roundtable to meeting. The desk study was finalized taking into account comments and input provided during the roundtable meeting as well as comments/recommendations from the national seminar for policy makers. The final draft report was submitted to the Secretariat for review. The report study has references in footnotes.

CHAPTER THREE: FINDINGS ON MAINSTREAMING BIOSAFETY IN UGANDA

3.1 Status of biosafety in Uganda

Biotechnology has been used traditionally for many years in such processes as making of bread, yoghurt, brewing among others. However, the invention of recombinant deoxyribonucleic acid (DNA) technologies in the last quarter of the 20th Century, marked the dawn of the era of modern biotechnology. Modern biotechnology means the application of: (i) in vitro nucleic acid techniques, including recombinant DNA and direct injection of nucleic acid into cells or organelles and (ii) fusion of cells beyond the taxonomic family¹.

The Uganda National Council for Science and Technology Act² defines biosafety as the safe development, transfer and application of biotechnology and its products. Biotechnology is defined by the CBD as any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use³. The National Biotechnology and Biosafety Policy for Uganda (2008) defines biotechnology as any technique that uses organisms or substances there from to make or modify a product, improve plant or animal breeds, or microorganisms for specific uses⁴.

LMO is defined in the CPB as any living organism that possess a novel combination of genetic material obtained through the use of modern biotechnology. A genetic material is any material of plant, animal, microbial or other origin containing functional units of heredity⁵. The application of modern biotechnology aims at joining together genetic material from multiple sources, creating novel sequences that would not otherwise be found in biological organisms in nature or produced through conventional breeding. Modern biotechnology uses genetic engineering techniques which in turn can create organisms with altered genetic constitution resulting in the production of what have come to be termed as GMOs or LMOs.

Under Uganda's Biosafety Framework, GMOs have to be thoroughly tested and assessed for risks before they are released into the environment for Confined Field Trials (CFTs), contained use or other applications. Modern biotechnology can be applied across many sectors such as manufacturing industry, health, agriculture, forestry among others. This report will focus more

¹ Secretariat of the Convention on Biological Diversity (2000): The Cartagena Protocol on Biosafety, Secretariat of the CPB, 30pp. www.cbd.int

² Uganda National Council for Science and Technology Act (2009)

³ Secretariat of the Convention on Biological Diversity (1992): The Convention on Biological Diversity, Secretariat of the CBD Montreal, Montreal. www.cbd.int

⁴ Ministry of Finance, Planning and Economic Development (2008): National Biotechnology and Biosafety Policy, Kampala, 39 pp. www.finance.go.ug

⁵ Secretariat of the Convention on Biological Diversity (1992): The Convention on Biological Diversity, Secretariat of the Convention on Biological Diversity, Montreal. 30pp. www.cbd.int

on use of modern biotechnology in agriculture because most of the on-going CFTs in Uganda so far are on GM crops modified for various attributes.

A number of institutions such as the National Agricultural Research Organization (NARO) are presently undertaking biotechnology related research and development activities. These activities are being guided by the Uganda Biosafety Framework and national Biotechnology and Biosafety Policy that prescribe mechanisms for the judicious application of biotechnology in Uganda. Conventional forms of agricultural biotechnology developments in Uganda were initiated more than five decades ago with the introduction of cloning technology/tissue culture as a means of providing sufficient planting materials for farmers in a relatively short time, without having to wait for the natural processes of seed formation.

By the end of the last century, various molecular level techniques such as development of bio-fertilizers (Rhizobia), tissue culture, and disease diagnostics were widely in use in Uganda. In the 1990s, a number of studies involving Ugandan scientists were seconded to external laboratories to understand the molecular nature of the major biotic constraints to crop production, such as cassava mosaic virus and maize streak virus. Since mid-2000 genetic engineering work has been going on in Ugandan research laboratories especially at the NARO and has been on the increasing trend to address various agricultural production constraints.

The establishment of the laboratory and associated infrastructure was catalyzed by the needs and challenges at the time. Initially focus was on building capacity which led to the establishment of the National Biotechnology Centre at the National Agricultural Research Laboratories, Kawanda in 2008. Thereafter, focus was on the need to generate complementary solutions to broader problems in the agricultural sector. This led to the establishment of the Biosciences Facility at the National Crop Resources Research Institute in Namulonge and similar facilities in other NARO institutes. Parallel laboratory capacity development is also being undertaken by academic institutions such as Makerere University, Gulu University and Kyambogo University.

Uganda has made significant progress in biotechnology research and development (R&D) compared to other countries in Sub-Saharan Africa. There has been steady increase in the number of applications for research on genetically modified (GM) crops received by UNCST and reviewed and approved by the National Biosafety Committee (NBC) over the years. Since its establishment in 1996, the NBC has approved more than 15 events involving GM crops.

To date improvement of five crops for nine plant novel traits (PNTs) using recombinant gene technologies are under various stages of CFTs. Locally developed improved varieties of bananas, cotton, maize and cassava with novel traits currently under CFTs are anticipated to be ready for open release in the next 5-10 years. This trend shows a positive prospect for safe development and application of modern biotechnologies in Uganda for the years to come. However commercial releases will likely to be constrained by the absence of a specific law on

Biotechnology and Biosafety in the country if the legislation process is not completed within that time frame. Table 1 gives a list of on-going and recently concluded CFTs in Uganda.

Uganda is taking measures on risk assessment and risk management to prevent potential adverse effects of LMOs. Uganda has established CFTs (Table 1) which are being carried out in accordance with the National Biosafety Guidelines. A number of Biosafety inspectors, drawn from different Ministries, Departments and Agencies (MDAs) have been trained. The inspectors are mainly from the Crop Protection Department in Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). The inspectors have been trained and provided with skills on biosafety to enable them carry out to inspections to ensure compliance with the guidelines and advice from the NBC. With regard to socio-economic considerations, LMOs have not been approved beyond CFTs due to lack of a national law on biosafety. The National Biotechnology and Biosafety Bill has provisions on socio-economic aspects of GMOs and requires that socio-economic consideration be taken into account in decision-making for approval of releases of LMOs into the Environment and onto the market.

Table 1: GM crops under development in Uganda⁶

Crop	Trait of interest	Status	Location	National and International Partners
Banana	Bacterial wilt resistance	Confined Field Trial (CFT), multi-locational-ongoing	<ul style="list-style-type: none"> • Kawanda, Mbarara, Serere 	<ul style="list-style-type: none"> • NARO • International Institute of Tropical Agriculture, IITA • African Agricultural Technology Foundation, AATF
Banana	Black sigatoka resistance	CFT -completed	<ul style="list-style-type: none"> • Kawanda 	<ul style="list-style-type: none"> • NARO • AATF
Banana	Pro-vitamin A, iron content	CFT -ongoing	<ul style="list-style-type: none"> • Kawanda 	<ul style="list-style-type: none"> • NARO • Queensland University of Technology, QUT
Banana	Nematode and weevil resistance	CFT -ongoing	<ul style="list-style-type: none"> • Kawanda 	<ul style="list-style-type: none"> • NARO • Leeds University • International Institute for Tropical Agriculture, IITA
Cassava	Cassava mosaic virus disease resistant	CFT -completed	<ul style="list-style-type: none"> • Namulonge 	<ul style="list-style-type: none"> • NARO • DDPSC

⁶ UNCST Database (2016)

Crop	Trait of interest	Status	Location	National and International Partners
Cassava	Cassava mosaic virus disease, cassava brown streak virus disease resistance	CFT, multi-locational trials-ongoing	• Namulonge,Serere,Kasese	<ul style="list-style-type: none"> • NARO • Donald Danforth Plant Science Center, DDPS • IITA
Cotton	Bollworm resistance, herbicide tolerance	CFT, multi-locational trials-completed	• Serere,Kasese	<ul style="list-style-type: none"> • NARO • Monsanto
Maize	Insect resistance (stemborer)	CFT -completed	• Namulonge, Kasese	<ul style="list-style-type: none"> • NARO • AATF
Maize	Drought tolerance	CFT- completed	• Namulonge ,Kasese	<ul style="list-style-type: none"> • NARO • AATF
Maize	Drought tolerance and insect resistance (stacked genes)	CFT, multi locational – ongoing	• Namulonge, Kasese, Serere	<ul style="list-style-type: none"> • NARO • AATF
Rice	Nitrogen use efficiency, salt tolerance, water use efficiency	CFT -ongoing	• Namulonge	<ul style="list-style-type: none"> • NARO • AATF
Sweet potato	Virus resistance	Greenhouse - completed	• Namulonge	<ul style="list-style-type: none"> • NARO • International Potato Center, CIP
Potato	Potato blight resistance	CFT- ongoing	• Kabale	<ul style="list-style-type: none"> • NARO • International Potato Center, CIP

The National Biotechnology and Biosafety Bill 2012 was presented and debated in Parliament but its passing into law was deferred pending additional stakeholder consultations. Once passed into law, it will operationalize the National Biotechnology and Biosafety Policy of 2008 and will provide a more unified and harmonized approach to the safe development, handling and application of modern biotechnology in Uganda. The Bill spells out a regulatory framework for biotechnology research and development in line with provisions of the Cartagena Protocol on Biosafety.

The Bill has provision for designation of an institutional framework for implementation of biosafety, the decision-making procedures, public participation and awareness, risk assessment and risk management as tools for decision-making. The Bill also spells out the penalties that shall apply upon breach of the provisions of the law. Hence the passing into law of the Biotechnology and Biosafety Bill is very important

Public awareness and education on Cartagena Protocol on Biosafety, Biotechnology and LMOs is still low and needs to be increased. Lack of awareness on biotechnology and biosafety is a major factor delaying the passing into law of the National Biotechnology and Biosafety Bill 2012. Uganda's biosafety clearing house (BCH) has not yet been developed. In the interim, national clearing house mechanism⁷ (CHM) under the CBD is being used to promote sharing of information on biosafety. A number of public awareness activities have been championed by the CAN and other players.

Uganda has a National Biosafety Framework. Uganda National Council for Science and Technology (UNSCT) is the Competent National Authority (CNA) on biosafety and this is alluded to in the Uganda National Council for Science and Technology (UNCST) Act Cap 209 which gives UNVST the duty of advising Government on matters of science and technology. The Act gives UNCST the mandate as the clearinghouse for scientific research and development in Uganda. UNCST is the Secretariat for NBC. The NBC reviews biotechnology research proposals and applications for contained and confined studies and prescribes appropriate containment/ confinement requirements; spells out conditions for approval if any.

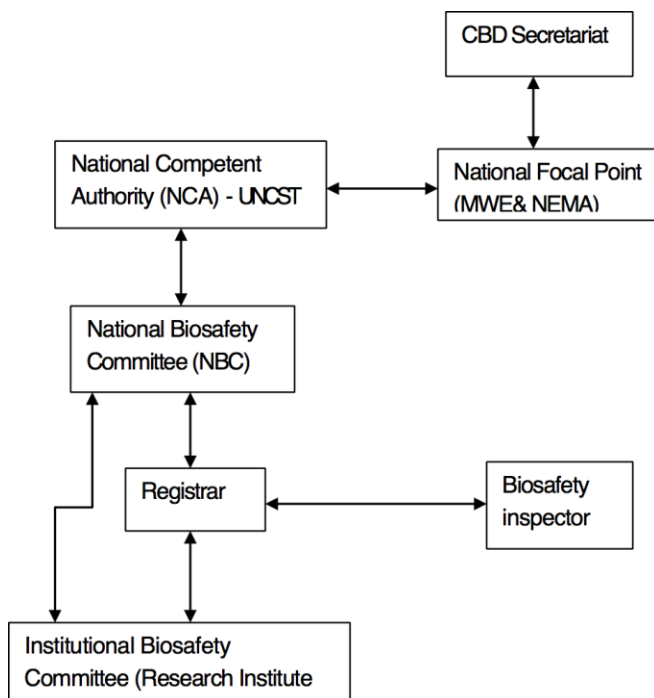
NBC is comprised of a multiplicity of diverse but relevant expertise and this includes: human health specialist, veterinary specialist, conservation/biodiversity expert, Plant Biotechnologist, Social Scientist, Agricultural specialist/ Phytosanitary expert, Entomologist, Legal expert, Environmental Chemist, Ministry of Trade, Uganda National Bureau of Standards (UNBS), Farmers' representative and Consumer representative and has powers to co-opt more experts as and when needed on a case by case basis. The CBD National Focal Point is a member of the member of NBC and this has played a big role in providing the platform for integrated

⁷ The Uganda national Clearing House Mechanism can be visited at: www.chm.nemaug.org

implementation of the CBD and CPB. The NBC maintains links with biotechnology research centers through Institutional Biosafety Committees (IBCs).

In line with the National Biotechnology and Biosafety Policy 2008 the National Biotechnology and Biosafety Bill 2012 proposes an institutional structure that comprises of the CNA, the National Focal Point (NFP), the NBC, National Biosafety Registrar and Inspectorate and Institutional Biosafety Committees (IBCs). This is as summarized in the schematic Fig. 1 below.

Fig.1: Schematic diagram of the Uganda’s Biosafety Institutional Framework



The proposed structure in the Bill is the same as the existing institutional arrangement that has been operational since Uganda ratified the Cartagena Protocol on Biosafety on 30 November 2001. This existing Biosafety system is coordinated by the UNCST using the provisions of the UNCST Act. However, the recommendation by the relevant committee of parliament is for the establishment of a fully operational National Biosafety Authority which would replace the office of the registrar proposed in the Bill and also serve as the Competent National Authority. The Bill also needs to include provisions linking the CBD NFP, CPB NFP and the CNA purposes of promoting integrated implementation of the CPB and the CBD.

The IBCs have been set up in institutions especially those institutions conducting biotechnology research and development. IBCs are responsible for the initial in-house quality assurance by approving, monitoring, reviewing containment and confinement experiments at institutional level. IBCs also ensures that research by the applicant is done in accordance with conditions of

approval set by the NBC, makes submissions to the NBC on behalf of the applicant and makes recommendations to the competent authority in respect of applications for confined testing and deliberate release into the environment or onto the market.

3.2 National institutions involved in biosafety

Government has designed the **Ministry responsible for Environment** is the focal point for the CPB. The responsibility of the National Focal Point is to liaise with the Secretariat of the Convention on Biological Diversity; provide a coordinated exchange of information between relevant government ministries, departments and agencies; governments through approved diplomatic channels; and the CBD Secretariat on matters concerning biotechnology and biosafety and; receive information from the Competent Authority regarding biosafety and biotechnology matters in Uganda. The National Focal Point also liaises and works very closely with the CBD NFP based in NEMA. NEMA is an agency in the Ministry responsible for the Environment and is the principal agency in Uganda for the management of the environment and is mandated to coordinate, monitor and supervise all activities in the field of the environment.

NEMA is the National Focal Point for the CBD and as such is a member of on the NBC. It is even proposed in the National Biotechnology and Biosafety Bill 2012 that the National Focal Points for CBD and CPB get automatic membership to the NBC. NEMA as the principal environmental regulatory authority will play a more significant role in closely monitoring the possible post release adverse effects of GMOs on conservation and sustainable use of biodiversity and the environment in general well as integration of biosafety considerations in national development frameworks, relevant sectoral policies, plans and programs including district development plans as well as ensuring that environment and social impact assessment (ESIA) is carried out prior to any release of GMOs for commercialization one the National Biotechnology and Biosafety Bill is passed into law.

The Ministry of Agriculture, Animal Industry and Fisheries through its Crop Protection department and in collaboration with the NBC oversees inspection for compliance with Phytosanitary and other terms and conditions of approval. Inspectors from the Crop Protection Department receive any LMOs that are from out of Uganda at the port of entry into Uganda and if they are satisfied that it conforms to the set standards, escorts the consignment of LMOs up to the importing agency and also oversees the planting/ application of the said LMO and presides over the destruction or storage of any excess material that remains after planting / contained use/ other application.

The National Drug Authority (NDA) is responsible ensuring the availability, at all times, of essential, efficacious and cost-effective drugs to the entire population of Uganda as a means of providing satisfactory healthcare and safeguarding the appropriate use of drugs⁸. In so doing NDA regulates and controls production, importation, distribution and use of human and veterinary medicines and other healthcare products to ensure their quality and safety for use. There has been and there is likely to be more trials of GMO-derived vaccines in the country. It is expected that if some of these trials prove promising and safe, they are likely to be approved for wider use and application in Uganda. This makes the regulatory agency for drugs in Uganda an important stakeholder in Biosafety. For this reason, a representative from the health sector in this case, NDA or Ministry of Health is a member of the NBC. Currently the health expert on the NBC is from the NDA.

Uganda National Bureau of Standards (UNBS) among others enforces standards in protection of public health and safety and the environment against dangerous and sub-standard products⁹. It is a statutory body in the Ministry of Trade, Industry and Co-operatives. UNBS main relevance for biosafety is their role in ensuring safety of foods (especially manufactured/ processed foods) before they are allowed to be sold or distributed on the Ugandan market. UNBS is member of the NBC.

3.3 Existing policies and legislations

The Constitution of the Republic of Uganda

The Constitution of the Republic of Uganda has provisions on protection of the natural resources, the environment and biodiversity¹⁰. Under Objective XXVII the State is required to ensure that the utilization of natural resources of Uganda is managed in such a way to meet the development and environmental needs of the present and future generations of Uganda. The State, including local governments are required to promote the rational use of natural resources so as to **safeguard and protect the biodiversity** of Uganda. This above Constitutional provisions on environment and natural resources though not specifically explicit biotechnology or biosafety is broad enough to incorporate issues on biotechnology and biosafety. This is an entry point for matters relating to the biosafety which deals with the safe application of modern biotechnology to protect biodiversity and human health.

The National Environment Management Policy

The National Environment Management Policy (NEMP) 1994¹¹ provides guiding principles for general environment management in Uganda. It is a framework policy broadly addressing management of all matters relating to environment and natural resources in Uganda. The goal of

⁸ National Drug Act Cap 206

⁹ Uganda National Bureau of Standards Act Cap 327

¹⁰ Government of Uganda (1995): The Constitution of the Republic of Uganda, Government of Uganda, Kampala, 196pp

¹¹ MWLE (1994). National Environment Management Policy, Ministry of Water and Environment, Kampala. 48pp. ISBN 9970022

the Policy is sustainable social and economic development which maintains or enhances environmental quality and resource productivity on a long term basis that meets the needs of the present generations without compromising the ability of future generations to meet their own needs. A specific policy objective of the National Environment Management Policy on biodiversity is: to conserve and manage sustainably Uganda's terrestrial and aquatic biodiversity in support of national socio-economic development. The policy has no specific provision on biosafety or biotechnology (perhaps because it predates the Cartagena Protocol on Biosafety, a time when knowledge on biosafety was very scanty), but does provide for strengthening links to international biodiversity conventions. The CPB could therefore be taken to be included by this provision.

The NEMP has been reviewed to take into account the prevailing situations in Uganda on environment since 1994 and also to capture new and emerging issues. The review of NEMP was supported by United Nations Development Programme (UNDP). Wide stakeholder consultations were conducted at the national and district level as well as focused group discussion with technical officers and experts in biotechnology and biosafety. This approach made it possible to identify gaps and mainstream biosafety and biotechnology in the final draft of Policy NEMP¹².

The draft policy was presented to the Top policy in the Ministry of Water and Environment and to the Policy Committee (PCE)¹³ and therefore has got necessary political support. The PCE is comprised of ministers representing a wide range of sectors namely natural resources; agriculture, animal industry and fisheries; finance and economic development; education; health; lands, housing and urban development; local government; gender and community development; tourism, wildlife and antiquities; trade and industry. The PCE is chaired by the Prime Minister with NEMA as the Secretariat. Since NEMA is the CBD National Focal Point and also liaises and works closely with the CNA for biosafety, PCE provides a strategic entry for NEMA to advance mainstreaming of biosafety during PCE meetings.

Furthermore the Uganda National Council for Science and Technology (UNCST) which is the CNA on biosafety, the National Planning Authority (NPA) which is responsible for the development and revision of National Development Plans (NDP), NARO were among the key Government institutions consulted and this enhanced mainstreaming of biosafety into the final draft NEMP. The final draft Policy points out the need to address concerns on the use of modern biotechnology to avoid negative impacts on human health and the environment. The specific objectives of the revised draft policy with respect to biosafety and biotechnology are:

- (i) To ensure safe application of biotechnology; and
- (ii) To promote use of biotechnology for socio-economic development while managing concerns associated with its application.

The strategies on biosafety and biotechnology in the revised draft Policy are:

¹² NEMA (2016): The National Environment Management Policy for Uganda. Final Draft.

¹³ The PCE is established by the National Environment Act Cap153

- a) Ensure that relevant laws and regulations contain precautionary measures
- b) Ensure that precautionary measures are used in regulation of LMOs
- c) Expedite the enactment of the Bio-safety Bill and the accompanying laws / regulations
- d) Develop / build research capacity in biotechnology and biosafety in the relevant sectors
- e) Promote a cautious pursuance of GMOs in agriculture and industry

The major determining factors for mainstreaming biosafety into NEMP the existence of the National Biotechnology and Biosafety Policy, on-going Confined Field Trials (CFTs) by NARO, the need to enhance the benefit of biotechnology and biosafety for national development and importance of having a national law on biosafety and biotechnology.

The National Biotechnology and Biosafety Policy

The National Biotechnology and Biosafety Policy (2008) define a framework for the safe application of biotechnology towards national development. The Policy recognizes modern biotechnology as a tool that can be used to enhance agricultural productivity, improve food and nutrition security, promote conservation and sustainable use of natural resources, and enhance human and environmental health. The Policy is consistent with the principles laid out in the National Environment Act, Cap 153 as well as the Biosafety Protocol that commits all Parties to institute measures for the safe transfer, handling and use of GMOs. It defines an institutional framework for biotechnology research and development and articulates strategies for capacity building, infrastructure development and technology transfer.

The National Science, Technology and Innovation Policy

The Policy was adopted in 2009. The policy articulates strategies for the increased utilization of science, technology and innovation in national development. This policy acknowledges that: ‘Science and Technology (S&T) is the cornerstone of progress upon which a nation depends to attain economic growth and a vibrant, integrated self-sustaining economy. The extent to which a country has embraced and harnessed S&T has a direct bearing on the level of development. It is therefore imperative for Uganda to embrace S&T as a vital tool for accelerating the country’s economic growth.’

The areas of capacity building emphasized are research and development, development of traditional technologies, technology transfers and application, engineering design and consultancy, technology adaptation, S&T manpower training, S&T safety and ethics and S&T information and popularization. In the case of modern biotechnology, policy recognizes that emerging technologies such as biotechnology can have a direct impact on the priority areas of agriculture, health, industry and environment as well as indirect contributions on the social and economic well- being of the people of Uganda.

Uganda Food and Nutrition Policy

The Uganda Food and Nutrition Policy (2003) was developed within the context of the overall National Development Policy objective of eradicating poverty as spelt out in the Poverty Eradication Action Plan (PEAP). The major policy focus is food security, improved nutrition and

increased incomes. Considering the available evidence showing modern biotechnology and biosafety as relevant for addressing food and nutritional security this policy has sections that are of relevance to biosafety though not explicitly mentioned because at the time of its formulation, knowledge about biosafety was still scanty in Uganda.

National Forestry Policy

Guiding Principle 2.4 of the National Forestry Policy (2001)¹⁴ states that Forest sector development should safeguard the nation's forest biodiversity and environmental services through effective conservation strategies. The same policy under Policy Statement 7: on the conservation of forest biodiversity states that “forest sector development should safeguard the nation's forest biodiversity and environmental services through effective conservation strategies. In the strategies for implementing the policy, there are relevant strategies such as:

- a) Support the implementation of **international biodiversity obligations** and cross-border conservation initiatives, with any required subsidiary legislation and regulations;
- b) Integrate and co-ordinate methods of forest **genetic and species conservation** through seed banks, botanical gardens and arboreta.

The above strategies can apply to GM trees which are already under trial in different countries outside Uganda, but which could find their way into Uganda. In addition, the strategy on forest genetic resources and species conservation through seed banks, botanical gardens and arboreta directly links to GMOs in case some of those tree seeds and planting materials happen to be genetically modified. However, there is no explicit mention of GM trees since at the time of drafting the policy, the knowledge of biosafety in Uganda was still scanty. The policy therefore needs to be revisited to include biosafety-related provisions.

The Uganda Wildlife Policy

There is no explicit provision in the Uganda Wildlife Policy (2014) that provides for bio-safety. In appendix II of the policy, international and regional treaties, conventions and protocols relating to wildlife conservation in Uganda are recognized. The policy recognizes the CBD which imposed a duty on its Parties to take a number of measures to implement its provisions.

Land-use Policy

The land use policy (2014) was designed to address issues of agriculture, urbanization and human settlement, industrialization and infrastructure development, environmental management and conservation with particular focus on the nature of utilization under which land is currently put or the possible kinds of uses in future.

¹⁴ MWLE (2001): Uganda Forest Policy, Ministry of Water, Lands and Environment, Kampala

The overall goal is “To achieve sustainable and equitable socio-economic development through optimal land management and utilization in Uganda”. The policy also has specific goals and they include to: adopt improved agriculture and other land use systems ; reverse and alleviate adverse environmental effects at local, national, regional and global levels; promote land use activities that ensure sustainable utilization and management of environmental, natural and cultural resources for national socio-economic development; ensure planned, environmentally friendly, affordable and well-distributed human settlements for both rural and urban areas; and update and harmonize all land use related policies and laws, and strengthen institutional capacity at all levels of Government.

Under Policy Statement 20, the policy acknowledges the need to halt loss of, maintain and restore biodiversity. Several strategies are proposed including implementing the National Biodiversity Strategy Action Plan (NBSAP). The NBSAP has incorporated biosafety and this provides a window for mainstreaming biosafety issues during the implementation of the land-use policy.

The Land Act

The Land Act provides for four forms of land tenure; freehold, leasehold, customary and mailo. The Act enables government (national or local) to acquire land, for the purpose of wildlife protection. The Act also has provisions which oblige an occupier of land to manage and utilize the land in an environmentally sound manner, and in accordance with provisions of the National Environment Act and other relevant laws.

The Plant Protection Act

The Plant Protection Act has provisions to help prevent the introduction and spread of diseases destructive to plants. The Commissioner for Agriculture is charged with the due administration of the Act, and the responsible Minister has power to make rules for the prevention of spread of and introduced pests, among others.

The Plant Variety Protection Act 2014

The Act provides for the promotion of development of new plant varieties and their protection as a means of enhancing breeders innovations and rewards through granting plant breeders rights and for other related matters. For any GMO material to be imported in the country, license is granted by MAAIF by the plant protection department after the applicant has obtained from UNCST approval. NBC reviews applications and advises UNCST whether or not to approve it.

The National Biotechnology and Biosafety Bill (2012)

The Biotechnology and Biosafety Bill (2012) once passed into law will operationalise the Biotechnology and Biosafety Policy of 2008 and provide a more harmonized approach to the safe development, transfer and application of modern biotechnologies in Uganda. It will also provide a legal basis upon which to mainstreaming biosafety into other sectoral and cross-sectoral policies, plans and programmes. The Bill spells out a regulatory framework for

biotechnology R&D in line with provisions of the Biosafety Protocol; it designates a Competent Authority and a National Focal Point, establishes a National Biosafety Committee, Institutional Biosafety Committees and provides an overall framework for the regulation for the research, development and general release of GMOs in Uganda.

It is envisaged that the proposals in the Bill when passed into law will provide greater legal clarity on procedures for evaluating and managing any commercial or environmental releases of GMOs in Uganda. At present there is no commercial use or release of MGOs in Uganda. The passing of the Bill into law will also provide a basis for amending or re-aligning other relevant laws and policies made before the onset of the knowledge of biosafety to bring them in line with the new law and streamline the operational relationships between these agencies and those implementing the biosafety law.

The Uganda National Council of Science and Technology Act

The Uganda National Council for Science and Technology (UNCST) Act (Cap 209) was enacted in 1990. Under section 2, the Act establishes the UNCST whose functions under section 4 include (i) formulating policies and strategies for science and technology in all fields of science and technology; (ii) advising on and coordinating the formulation of an explicit national policy covering all fields of science and technology; (iii) assisting in the promotion and development of indigenous science and technology; and (iv) assisting in the rationalization of the use of foreign science and technology. Section 4 is therefore relevant for biotechnology and biosafety.

Under section 4 (d) UNCST also acts as a clearing house for all information on research and development, and Section 5, mandates the UNCST to establish specialized committees and councils to undertake specific duties. Therefore, UNCST within, its aforesaid mandate, led the formulation of a National Biotechnology and Biosafety Policy that was approved by Cabinet in 2008 and the same body is currently spearheading the passing into law of the National Biotechnology and Biosafety Bill 2012 currently gazetted as a Bill in parliament. It is also under the same provisions that UNCST established the National Biosafety Committee in 1996 to provide advice, oversight on and regulate experiments and research involving GMOs.

The National Agricultural Research Act

The National Agricultural Research Act (2005) provides for the development of an agricultural research system to improve research service delivery in the country. Section 5 establishes the National Agricultural Research Organization (NARO) whose major function is to provide guidance and coordinate all agricultural research activities in Uganda. Modern biotechnology being a new research tool with potential to improve agricultural productivity inherently matches with the goal and functions of NARO and other players in the National Agricultural Research System (NARS). Indeed, some institutes under the NARO are already actively involved in research, trials and testing GM technologies in different parts of the country, to address a number of challenges facing the Agriculture sector in Uganda. The specific biotechnology programs to be undertaken have to be consistent with research priorities. Hence it is expected that

biotechnology research programmes to be undertaken in Uganda will be qualified and guided by this provision.

The National Agriculture Policy

The National Agriculture Policy (2013) aspires for “A competitive, Profitable and Sustainable Agriculture Sector”. The objective of the policy is to promote food and nutrition security and to improve household incomes through coordinated interventions that will enhance sustainable agricultural productivity and value addition; provide employment opportunities, and promote agribusinesses, investments and trade. The sector intends Increase access to recommended technologies and inputs and mechanization is critical for raising farm productivity. One of the strategies highlighted to achieve this is to develop and implement a policy and regulatory framework for biotechnology in agriculture¹⁵ .

The National Forestry and Tree Planting Act

The National Forestry and Tree Planting Act (2003) does not exactly refer to biosafety but calls for protecting and regulating access to forest in collaboration with other laws, conventions and protocols relating to the management and control of biological resources including cross-border biodiversity. The Act also gives the Minister responsible for Environment powers to apply a precautionary principle in protecting and preserving tree species. However the provisions of the Act on protecting and preserving tree species can help mainstreaming biosafety issues in the implementation of the Act.

The National Environment Act

The National Environment Act 153¹⁶ provides for the conservation of biological diversity. It among others requires NEMA to specify national strategies, plans and programmes for the conservation and sustainable use of biological diversity. The Act does not have specific provision on biotechnology and biosafety. The Act is now under review and issues on biotechnology and biosafety have been included in the draft National Environment Bill 2016. The Bill provides that NEMA may, in consultation with the lead agency, issue guidelines and prescribe measures: –

- (a) for the protection of the environment and management of risks to human health from genetically modified organisms; and
- (b) on liability and redress in respect to damage inflicted on biological diversity and / or the Environment arising from genetically modified organisms.

The development of the Bill was spearheaded by NEMA. NEMA consulted UNCST and invited comments from scientists, CBD National Focal and individuals who with knowledge on

¹⁵ Ministry of Agriculture, Animal Industry and Fisheries (2013): National Agriculture Policy, Ministry of Agriculture, Animal Industry and Fisheries, Entebbe. www.agriculture.go.ug

¹⁶ National Environment Act Cap 153. Laws of Uganda 2000 edn 82pp.

biosafety to ensure that mainstreaming of biosafety into the Environment Bill was properly guided. UNCST as the CAN on biosafety provided technical input which facilitated mainstreaming of biosafety into the National Environment Bill. The Bill was presented to different stakeholders including at national and sub-national level to obtain comments from the technocrats, political leaders and public. The factor that contributed to mainstreaming biosafety in the Bill is the need to ensure safe application of biotechnology in Uganda. The review of the National Environment Act was supported by UNDP and Government of Uganda.

3.4 Existing strategies, plans and activities

National Vision 2040

The National Vision 2040 intends to transform Uganda from a peasant to a modern and prosperous country by 2040. The Vision is conceptualized on strengthening fundamentals to harness existing opportunities. Science, Technology, Engineering and Innovation are one of the fundamentals identified for strengthening. The Uganda Vision singles out biotechnology as a key innovative pathway that can be used to circumvent economic challenges benchmarking Cuba which has made biotechnology part of its health system.

In the same vein, the vision notes challenges posed to the environment and natural resources emanating from the use of Genetically Modified Organisms. This emanates partly from incomplete information and limited public awareness on Genetically Modified Organisms which have led to loss of biodiversity and environmental degradation in general. Over the Vision period, Government will promote the development, adoption and equitable transfer of environmentally sound technologies and assist the population to internalize the full environmental and social cost of goods and services. Biotechnology is one of such technologies and biosafety is one of the precautions that can be taken to reduce any potential adverse effects on the environment. The National Vision 2040 is also contextualized in the global setting which upholds biosafety targets and precautions¹⁷

Biosafety and Biotechnology were mainstreamed in the Uganda Vision 2040 during the national, sectoral and local government consultations. The Uganda Vision 2040 being a national document, widespread consultation processes were undertaken among state and non-state actors (private sector and civil society) to build ownership across a spectrum of all players who have key roles in implementation. The Uganda Vision 2040 is conceptualized around harnessing opportunities such as water resources, agriculture and tourism among others by strengthening fundamentals such as infrastructure, human resource and science, technology and innovation.

Since the Uganda Vision 2040 is a strategic long term plans with broad goals and objectives, it is not very explicit and prescriptive on biotechnology and biosafety. Nevertheless, it sets the stage

¹⁷ National Planning Authority (2013): Uganda Vision 2040. National Planning Authority, Kampala, 135pp. www.npa.ug

and provides guidance for the mainstreaming of biosafety and biotechnology in the five-year National Development Plans, Sector Plans and District Development Plans which describe prescriptive policy options for ensuring biosafety in the development process. The Vision identifies biotechnology as one of the fundamentals that must be strengthened in the science, technology and innovation area.

There was political support especially from the highest levels such as parliament and the Executive wings of government. The political will was initiated and generated by institutions such as the UNCST, NPA and NEMA who built an economic case for the need to pursue biosafety and biotechnology. UNCST indicated that for Uganda to transition into middle income status and achieve the Uganda Vision 2040 aspirations, it must strengthen the fundamental of science, technology and innovation whose components include biotechnology and biosafety among others. Through this lobbying and demonstration of the economic, environmental and social essence of how biotechnology and biosafety can improve the production and productivity of sectors such as agriculture in the face of falling yields driven by climate change and environment degradation.

The Vision 2040 set a precedence for incorporation of biotechnology and biosafety in development planning. Since it is implemented through medium term five-year National Development Plans, there is an opportunity every five years to mainstream biosafety in development planning at national, sectoral and local government level. The relevant institutions mandated to handle biosafety and biotechnology issues played a key role in mainstreaming biotechnology and biosafety in the Uganda Vision 2040. Public participation and awareness raising played and are still playing a key role in mainstreaming at lower levels of planning.

There was need to manage public expectations of biotechnology, biosafety and the use of GMOs. The public especially the Civil Society had a negative perception of biotechnology and GMOs and used its platform to inculcate the same belief in the masses through advocacy. Providing scientific information about the benefits of biotechnology, GMOs and role of biosafety in mitigating any adverse effects of biotechnology & GMO changed the mindsets of some sections of the society to embrace biosafety. A number of awareness workshops to create awareness and understanding of the terms have been held especially at national level. More needs to be done at sectoral and local government levels.

Proper timing is very important for successful mainstreaming. The right timing is during the development /drafting process of the NDPs that provide the strategic direction for planning at lower levels. If mainstreaming biosafety is not done at the apex of planning (NDPs), it becomes next to impossible to introduce it in the sector development plans and the district development plans. Involving and creating awareness among the key decision makers such as Parliament and Cabinet is critical to ensure ownership at the highest levels. Involving NPA and the Ministry of Finance, Planning and Economic Development is essential in generating local

resources to fund planned mainstreaming activities. The major lesson learnt was on stakeholder engagement. Stakeholder engagement is very critical if mainstreaming is to cascade down to lower levels of planning. There are many issues lined up for mainstreaming and therefore it is important to involve the right stakeholders with authority and clout to make decisions and allocate resources.

National Development Plan II

Issues on biosafety and biotechnology have been incorporated in NDPII¹⁸. Under Objective two on ENR, implementation of the national biodiversity and biosafety targets is stated under objective two on increasing sustainable use of ENR. The revised and updated NBSAPII has national targets on biosafety. The NDPII is Uganda's medium term strategic direction with a goal of transforming Uganda to a lower middle income status by 2020 with a per capita income of US\$ 1,039. The preparation of the NDPII was preceded by review of relevant national documents such as the National Biodiversity Strategy Action Plan (NBSAP) and sector issues papers which informed respective chapters of the NDPII. It is at this stage that biosafety was integrated in NDPII.

The mainstreaming process began with an independent study on the integration of environment concerns in the NDPII which squarely captured the issues of biodiversity. The report of the study informed the NDPII and guided on the key environment concepts to integrate in the NDPII in line with the Uganda Vision 2040 priorities. Besides the independent study on the integration of environment sustainability in the NDPII, sectors produced issues papers underlining their key priorities for the next five years to inform the respective sectoral chapters of the NDPII. The water and environment sector issues paper identified a number of strategic interventions on conserving biodiversity but the one that stands out is the implementation of biodiversity and biosafety targets over the NDPII period.

There was political support right from the Ministerial Level (the Minister responsible for Water and Environment) and the His Excellency the President of the Republic of Uganda president who eventually approved NDPII that had integrated biosafety issues. Expectedly, the political will was generated by NEMA that stated the loss the economy would incur due to biodiversity loss. NPA also maintained that environmental issues such as biodiversity and biosafety must be prominently stated in the NDPII given their implication on economic growth and development. NEMA has produced a number of reports that indicate the economic contribution of biodiversity (specifically forestry resources) among others which were used to generate political will. The NBSAP also establishes the nexus between the NBSAP and livelihoods of the people and this made prioritizing biosafety in various political manifestos.

¹⁸ National Planning Authority (2015): Second National Development Plan (2015/16 – 2019/20), National Planning Authority, Kampala, 343pp. www.npa.ug

The opportunity to draft the second National Development plan at a time when Uganda was finalizing the review of its NBSAP provided an opportunity to mainstream biodiversity in the NDPII. It is important to note that biosafety is not prominently pronounced in the Uganda Vision 2040 and was also mildly addressed in the NDPI (2009/10-2015/16). The development of the NDPII therefore presented Uganda with an opportunity to renew its commitment to biosafety by clearly enumerating various strategic interventions aimed at promoting biosafety over the NDPII tenure. The ongoing drafting of sector development plans further provides another opportunity to concretize biosafety mainstreaming at the lower levels of planning.

NEMA played a leading role in mainstreaming. UNCST and NPA also played a supportive role in the mainstreaming process. Resources from both the Government of Uganda earmarked for the development of the NDPII contributed to the mainstreaming process. Development Partners such as the United Nations Development Program (UNDP) and the Food and Agriculture Organization (FAO) of the United Nations provided financial support for the independent study on the mainstreaming of environment sustainability in the NDPII (2015/16-2019/20).

Public participation and awareness rising played a role in the mainstreaming especially the academia and researchers who developed empirical articles on biosafety. There is however need for more public participation and awareness to ensure that mainstreaming trickles down to lower plans and budgets. The nature of stakeholders consulted and involved can determine the extent of success registered in mainstreaming. Involvement of both planners and those responsible for resource allocation implies that biosafety will be mainstreamed in development planning and followed by the requisite budget for implementation. Given the plethora of needs for Uganda, the government may not fully fund all biosafety intervention but the involvement of the Ministry of Finance, Planning and Economic Development avails the resources to start with in promoting biosafety.

More involvement of the Civil Society especially those who have not fully grasped and appreciated biotechnology and biosafety is a key determining factor. They have a high interface with the public and have the capacity to change their (public) perception into being anti-biosafety. Another success factor is effective mainstreaming where mainstreaming stretches beyond planning into budgeting accompanied with clear targets and indicators to measure progress. This guides in monitoring annual progress towards the biosafety targets.

Uganda's planning framework is shaped by long term thirty-year plan that guides subsequent medium term plans also referred to as five-year NDPs. Similarly, the NDPs guide lower development plans at the sector and local government level. They also guide the budgeting process and the NPA is consulted during the budgeting process to ensure that the budget is in sync with the NDPII priorities. There are also sector development planning guidelines and local government development planning guidelines which guide sectors and local government in developing plans aligned to the NDPII in both content and timeframe. Having biosafety

mainstreamed in the NDPII implies that sector development plans and district development plans will also mainstream it since they are informed and guided by the NDPII.

Biosafety in NBSAP

NBSAPI (2002) was not strong enough on biotechnology and biosafety and hence issues on biotechnology and biosafety have been strengthened in NBSAPII with a specific objective which is “To harness modern biotechnology for socio-economic development with adequate safety measures for human health and the environment” NBSAPII has the following Strategies for biotechnology and Biosafety in Uganda¹⁹:

- a) Assess national capacities in biotechnology and Biosafety;
- b) Enhance the availability and exchange of information on Biotechnology and Biosafety;
- c) Establish a mechanism(s) for continuous Human and Infrastructural Resource Capacity Development, deployment and retention;
- d) Develop a fully functional National Biosafety System;
- e) Enhance regulatory performance of the National Biosafety Committee and the Institutional Biosafety Committees;
- f) Establish a national repository for plant and animal genetic resources. The Plant Genetic Resources Centre has a gene bank and a botanical garden which serve as holding centers for live plant materials. The National Animal Genetic Resources Centre and Data Bank has animal gene bank and livestock farms which could serve as holding facilities for livestock. However these need to be designated and their mandate expanded to include issues on GMOs. Environment Impact Assessment (EIA) and/or risk assessment will have to be done prior to introducing GMOs to ensure that their facilities are modified to create special areas for GMOs.
- g) Promote research in medical, agricultural, environmental and other areas of biotechnology and biosafety;
- h) Update information on biotechnology and biosafety;
- i) Establish a strong and effective monitoring system for biotechnology use and application;
- j) Undertake EIA or risk assessments on biotechnology policies, programmes or projects that are likely to have significantly negative impacts on human health and the environment including biodiversity;
- k) Promote trade in biotechnology products;
- l) Develop mechanisms for sharing costs and benefits of biotechnology;
- m) Promote integration of biotechnology values into macroeconomic frameworks;
- n) Support awareness and education on the benefits and risks of biotechnology and biosafety;
- o) Develop and disseminate biotechnology awareness materials.

Unlike NBSAPI, NBSAPII has national targets on biosafety and these included the following:

¹⁹ NEMA (2015): National Biodiversity Strategy and Action Plan (2015 -2025). Advance copy. NEMA, Kampala. 207 pp. www.cbd.int; www.chm.nemaug.org

1. By 2015, the Nagoya–Kuala Lumpur Supplementary Protocol on Liability and Redress under the Cartagena Protocol on Biosafety is ratified;
2. By 2018, public awareness, education and participation in biotechnology and biosafety are enhanced;
3. By 2018, national capacity for biotechnology applications and use is adequate
4. By 2018, the national biotechnology and biosafety law in place
5. By 2020, there is widespread application and use of biotechnology and its products for national development.

3.5 Mainstreaming biosafety in Uganda

The review and updating of the NBSAP provided the platform for creating awareness on biotechnology and biosafety. A working group was constituted during the review and updating of NBSAP to collate and synthesize information on the status of biotechnology and biosafety; and based on the information obtained, the working group proposed national targets on biotechnology and biosafety to be included in the NBSAP. The national targets were also developed taking into account the Strategic Plan for the Cartagena Protocol on Biosafety 2011 - 2020.

Implementation of national targets in NBSAPII is by target champions. The target champions are Government institutions whose mandate directly relates to the national targets. NBSAPII has biosafety targets developed within the framework of the Strategic Plan for Cartagena Protocol on Biosafety 2011 – 2020. The national targets on biosafety are placed under Aichi target 19 in the revised NBSAP. Aichi target 19 states that “By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied”.

Since the revised NBSAP has been mainstreamed into the NDP II, issues on biosafety and biotechnology have been mainstreamed in the NDP II. One of the strategic interventions for implementing objective two of the ENR in NDPII is implementing national biodiversity and biosafety targets in the revised NBSAP. Furthermore, issues on biosafety and biotechnology have been mainstreamed into the National Environment Bill and the draft revised National Environment Management Policy. These two instruments will soon be tabled to the higher Government authorities for approval

Uganda has relatively modest experience working with GM experimentation. While this experience has also enabled capacity building in some areas, a lot still needs to be done. The specific areas that need capacity to enhance mainstreaming of biosafety include capacity in GM detection. While at the NARO there are equipment that could be used, e.g. Real Time PCR equipment, Government has not designated the centre as its official testing centre. It would therefore be proper to designate and build capacity of one or two testing facilities for the purpose.

Training on biosafety is also another factor that needs to be addressed as strategic intervention to facilitate mainstreaming of biosafety. New members of the NBC have been appointed and several of them will need training. Additionally, staff of competent authority, focal points, inspectors, IBCs and other agencies needs training. It is important that regulatory agencies also develop in-house capacity to handle GMOs. Training and capacity building being dynamic need to be incorporated in national plans and priorities so that training in biosafety is recognized s a continuous process.

There is no biosafety clearing house mechanism yet in Uganda to promote sharing of information on biosafety. The provision of biosafety information in languages rather than the UN languages for those users that do not understand any of the UN languages is another challenge in Uganda due to the high multiplicity of languages spoken, yet some of the terms used in biosafety are very difficult to translate in local languages as they have no local equivalents in most local languages.

3.6 Conclusions on mainstreaming biosafety

Overall most of the policies and laws (with the exception of the National Biotechnology and Biosafety 2008), were formulated before Uganda ratified the Cartagena Protocol on Biosafety. Consequently specific mention of biosafety is lacking in those policies and laws and this include: The National Environment Management Policy (1994); the National Forestry Policy (2001); Uganda Wildlife Policy 2014, Land-use Policy 2014; the National Environment Act Cap153; the National Forestry and Tree Planting Act (2003) and The Plant Protection Act.

The agriculture sector embraces biotechnology in most of its policies and legislation for example the National Agriculture Policy of 2013 and the National Agriculture Research Act of 2005 have provisions on harnessing benefits of biotechnology for the agriculture sector. Since biosafety largely deals with the safe application of biotechnology, the agriculture sector is a critical sector for mainstreaming biosafety in Uganda. Furthermore on-going CFTs are for crops in the agriculture sector. However a proper coordination mechanism for mainstreaming biosafety is needed to enhance mainstreaming of biosafety into sectoral, cross-sectoral policies, plans and programmes. The passing of the Bill into law will expedite mainstreaming of biosafety into sectoral policies and laws.

3.7 Challenges associated with mainstreaming biosafety in Uganda

Biosafety has largely mainstreamed at the strategic level for example in National Vision 2040, NDPII and NBSAP2. However the challenge is at operational level and this due to the following:

- a) The existing laws are not explicit on biosafety and hence the issue of mandates for the different sectors is not clear. Most of the existing laws and policies were formulated before Uganda ratified the Cartagena Protocol on Biosafety
- b) There is no guideline in place for mainstreaming biosafety in sectoral and cross-sectoral policies, plans and programmes.
- c) There is still no national law on biosafety and this is a set-back for promoting mainstreaming biosafety in other sectors.
- d) Limited institutional capacities in critical areas of biosafety risk assessment and management, GMO detection, liability and redress, socio-economic issues and communicating science of biosafety to non-scientists.
- e) Benefits of biosafety not clearly understood and hence biosafety is viewed as advancing GMOs which many people believe will negatively affect farmers and especially local communities by making them dependent on GM seeds which they have to buy rather than using the traditional seeds. There is no supporting socio- economic data on the benefits of biosafety to the well-being of local communities.
- f) Uganda does not have a fully functional Biosafety Clearing House mechanism to facilitate information sharing.
- g) Maintaining the existing capacity for biosafety research and development and enhancing capacity of the competent national authority/authorities for biosafety enforcement and biotechnology management.
- h) Lack of continuous training on biosafety especially for new personnel. Some of the personnel trained on biosafety have moved on or retired and therefore leaving a gap in terms of experience on matters concerning biosafety.
- i) Lack of centre excellence in specialized areas of biosafety like detection of GMOs. This centre is very vital as far as dissemination of public information on GMOs in Uganda is concerned.
- j) The media lack knowledge on biosafety and this affects their reporting on biosafety. Some of terminologies are difficult to translate into local languages making communication of biosafety very difficult lack of harmonized messages on biosafety resulting into misinformation/misconceptions.
- k) There are no clear institutional arrangements to enhance mainstreaming of biosafety at national and sub-national level. Though knowledge of biosafety in national institutions is improving, there is still a big knowledge gap at local government (sub-national) level yet this where biosafety risks would be felt most (at farm level).

3.8 Lessons learnt and good practices for mainstreaming biosafety

The lessons learnt and good practices for improving mainstreaming biosafety into sectoral and cross-sectoral plans, policies and programmes in Uganda are summarized below.

- a) The CBD National Focal, Biosafety NFP and the CNA have to work as team. This approach is vital for networking and close collaboration among the officers assigned this responsibility.
- b) Awareness creation on biosafety among technical people who do not know about biosafety is critical for mainstreaming biosafety. This should be done concurrently at the national and local government level to close the knowledge gap.
- c) A centre of excellence for detecting GMOs needs to be established. This will build public confidence in the capacity of Government to handle GMO related issues and is also expected to enhance mainstreaming of biosafety by other sectors.
- d) Review of policies and laws provides opportunity for mainstreaming biosafety. The review the National Environment Act and the National Environment Management Policy has made it to mainstream biosafety to the National Environment Bill 2016 and the revised draft National Environment Management Policy 2016.
- e) Targeted and continuous training on biosafety is needed to ensure availability of skilled personnel on biosafety.
- f) Aggressive public awareness on biosafety is needed. Currently there is a lot of propaganda on biosafety and GMOs. A clearing house mechanism is needed to facilitate sharing of information on biosafety.
- g) Integrating biosafety in the NDPII is a mile stone and forms a strong basis for mainstreaming biosafety into other sectors and also makes it possible to make justification budgetary allocation for biosafety.
- h) The media is critical for promoting awareness on biosafety but are limited by lack of knowledge on biosafety and therefore do not effectively play their role on biosafety mainstreaming.
- i) There is no streamlined budget for implementation of biosafety and biotechnology and this is mainly attributed to the absence of a national biosafety law which would provide the institutional framework and budget.

- j) Biosafety activities are skewed to production and health with little emphasis on environment in general
- k) The Biosafety Policy was formulated before the National Biotechnology and Biosafety Bill 2012 hence it may be necessary to revise the Policy when the Bill is passed into law.

CHAPTER FOUR: CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Below is a summary of the conclusions derived from the review of the national policies, strategies and activities on mainstreaming biosafety in Uganda as well as effort so far made on the integration of biosafety into the revised NBSAP, sectoral policies and plans.

1. The Constitution of the Republic of Uganda recognizes the importance of safeguarding and protecting Uganda's biodiversity. This broad provision forms a basis for mainstreaming biosafety into sectoral and cross-sectoral policies, plans and programmes.
2. Regulatory agencies need to build internal capacity to mainstream and implement biosafety. Existing institutional capacity for implementation of the Convention on Biological Diversity and the Cartagena Protocol on Biosafety is inadequate and this is affecting mainstreaming of biosafety.
3. Awareness on biosafety is very limited and mainly confined to the few scientists who are interested in the subject. There is poor perception and pessimism about biosafety as a result of lack of awareness and knowledge about biosafety. This is one of the barriers contributing to the delay in the approval of the National Biotechnology and Biosafety Bill 2012 into law.
4. Public awareness is crucial to overcome the often polarized views on biosafety in Uganda. While several consultations have been done with several stakeholders and members of the public, new actors continue to emerge in the public debates and these needs to be engaged.
5. A number of Uganda's policies and strategies support biosafety development. However, proper coordination is needed for effective mainstreaming and implementation to achieve greater impact.
6. The media cannot play an effective role on educating the public about biosafety if they are not trained on biosafety.

4.2 Recommendations

The recommendations highlighted below aims at giving direction for strengthening mainstreaming and integrated implementation of the Cartagena Protocol on Biosafety and Convention on Biological Diversity in Uganda. The implementation of these recommendations is to be jointly undertaken by UNCST and NEMA in collaboration with relevant stakeholders.

1. Intensive awareness and public education on biosafety aimed at the following:
 - a) supporting mainstreaming biosafety into sectoral policies, plans and programme;
 - b) passing into law the National Biotechnology and Biosafety Bill 2012 to enable Government regulate matters biosafety in the country;
 - c) lobby for increased Government support for research and development to harness the benefits of biosafety to fund nationally identified priority activities for socio-economic development in Uganda;
 - d) changing the negative perception about biosafety. Changing the mind set of different categories of society to appreciate biosafety is the first step in improving mainstreaming;
 - e) engaging the private sector and making of a business case for biosafety is envisaged to accelerate mainstreaming biosafety;
 - f) building capacity of the media on biosafety to enhance their reporting on biosafety issues for effective reporting that can support mainstreaming biosafety;
 - g) developing and implement a national communications strategy to provide well balanced factual information on biosafety to properly guide and inform the public, policy and decision makers on biosafety;
 - h) establishing and operationalizing a BCH to enhance sharing of information on biosafety to be a one-stop centre for biosafety-related information authenticated as true by the CNA;
 - i) translating science jargon into key local languages to help the general public to appreciate well-intentioned scientific efforts on biotechnology and biosafety;

- j) putting in place a national team of experts to guide and ease decision making by policy makers on matters concerning biosafety including mainstreaming biosafety;
 - k) labelling of GMO's to facilitate traceability, monitoring, liability and redress;
 - l) strengthening national biosafety reporting, monitoring and verification against standard indicators and legal obligations.
2. Expedite passing into law the National Biotechnology and Biosafety Bill currently before Parliament
 3. A National Biosafety Authority should be established as recommended by Parliament to replace the registrar proposed in the National Biotechnology and Biosafety Bill 2012. The NBA will serve as the CNA.
 4. Identify and prioritize activities on biosafety to be supported by GEF and should be integrated into one project under the project under the biodiversity focal area allocation. This approach is also in line with COP decision on concurrent implementation of the CBD and its Protocols. However a decision of the Conference of the Parties is vital to provide guidance to the GEF.
 5. Develop guidelines for integration of biosafety into the different sectoral plans and activities. The guidelines should among others make provisions for establishment clear coordination and collaboration among the different institutions including setting out distinct roles
 6. Institutional arrangements to mainstream and implement biosafety should be properly streamlined including establishing focal points/ desk officers on biosafety in the different sectors. The biodiversity section of NEMA should be strengthened to enable NEMA effectively monitor implementation of the CBD and CPB in including mainstreaming of biosafety considerations into sectoral and cross-sectoral policies, plans and programmes.
 7. Entry points for mainstreaming biosafety should be continuously explored including (i) the budgeting process to lobby Ministry of Finance to allocate resources for biosafety; (ii) review of NDPs, sectoral policies, plans and programmes; and (iii) incorporating biosafety in the Biodiversity Finance Plan being developed under the BIOFIN project to mobilize resources for mainstreaming biosafety and also for implementing activities on biosafety in NBSAPII;
 8. Capacity building (including training and infrastructure development) of the various regulatory agencies is needed in various aspects on biosafety. An assessment of the national biosafety needs including national stakeholder analysis, targeted capacity building for policy makers and planners at national, sectors and local government level; and strengthening national/accredited depositories as centres of excellence in the respective fields are vital.
 9. Review the existing laws and policies that were enacted before Uganda ratified the Cartagena Protocol on Biosafety to bring them up-to-date with current developments on biosafety
 10. Conduct cost benefit analysis for biosafety applications

ANNEXES

ANNEX 1: THE EXPERTS TEAM

#	Name	Designation	Institution	Task	T e-mail address
1.	Ogwal Sabino Francis	Natural Resources Manager (Biodiversity and Rangelands/CBD National Focal Point	National Environment Management Authority	Coordinator	fogwal@nemaug.org sabinofrancis@gmail.com
2.	Dr. Julius Ecuru	Assistant Executive Secretary/CAN Biosafety	Uganda National Council for Science and Technology	Team leader	j.ecuru@ecuruline.com j.ecuru@yahoo.com j.ecuru@uncst.go.ug
3.	Dr. David Hafashimana	Director of Research/Biosafety National Focal Point	National Agricultural Research Organization	Member	davidhaf2000@yahoo.com
4.	Ms Sarah Naigaga	Legal Officer	National Environment Management Authority	Member	snaigaga@nemaug.org
5.	Issa Katwesige	Senior Forest Officer	Ministry of Water and Environment	Member	issakatwesige@gmail.com , Issa.katwesige@mwe.go.ug
6.	Aaron Werikhe	Research Officer	National Planning Authority	Member	aronwerikhe@gmail.com

ANNEX 2: OUTLINE OF THE REPORT FOR OUTPUT 4

- 1) Overview of project activities and implementation;
- 2) Results of the round-table;
- 3) Results of the seminar;
- 4) Summary description of biosafety framework in the country, including description of:
 - (i) key-issues identified in the desk study;
 - (ii) lessons learnt and difficulties encountered in mainstreaming biosafety in the national context, including an analysis of replicability of such experiences
 - (iii) national capacity needs and skill gaps and strengths;
 - (iv) recommendations to further improve mainstreaming biosafety.
- 5) *Outcomes of the project and experience gained*

ANNEX 3: TERMS OF REFERENCE FOR THE TEAM OF EXPERTS

“Capacity-building to promote integrated implementation of the Cartagena Protocol on Biosafety and the Convention on Biological Diversity at the national level”

1. Background

The overall aim of the project is strengthening the capacity of ten pilot countries to develop and test practical measures to promote integrated implementation of the Cartagena Protocol on Biosafety (CPB) and the Convention on Biological Diversity (CBD). Within each pilot country, the project, *inter alia*, seeks to facilitate the integration of biosafety into national biodiversity strategies and action plans (NBSAPs) and other sectoral and cross-sectoral policies, plans and programmes and strengthen national inter-sectoral coordination mechanisms. To this end, each pilot country will:

1. Analyze its existing national policies, strategies and activities relevant to biosafety,
2. Identify practical steps taken to integrate biosafety into NBSAPs and promote integrated implementation of the Cartagena Protocol and the Convention at the national level,
3. Document national experiences, good practices and lessons learned, and
4. Organize cross-sectoral meetings as well as awareness-raising activities for relevant policy makers, decision-makers and other key stakeholders.

Drawing on the results of the above activities in the pilot countries, the Secretariat of the Convention on Biological Diversity (SCBD), in cooperation with UNEP and other organizations, will:

- a) Synthesize relevant experiences, good practices and lessons learned from the pilot countries;
- b) Assess the national capacity needs and skill gaps,
- c) Develop training and guidance materials on mainstreaming biosafety into NBSAPs and national development plans and
- d) Organize a workshop for CBD and CPB national focal points to learn and share experiences and lessons learned in the integration of biosafety into NBSAPs and integrated implementation of the Convention and the Protocol.

2. Outputs and Activities

Output 1 – A desk study report on mainstreaming biosafety at national level compiled, peer-reviewed, discussed and made available to SCBD

Definition of the Output

Prepare a **desk study** to analyze how and the extent to which biosafety is integrated into existing national policies, strategies and activities across various Ministries and sectors and identify the challenges, capacity needs, opportunities, good practices and lessons learned;

The desk study should provide:

- a. A concise overview of the national biosafety-related legal, policy and institutional frameworks as well as cross-sectoral mechanisms, including:
- b. An identification and description of, as well as an analysis of the extent to which biosafety is mainstreamed in:
 - (i) relevant legal and policy documents, including:
 - (ii) national institutions and bodies involved in biosafety issues, including inter-sectoral bodies and coordination mechanisms and their respective roles and responsibilities with respect to biosafety, including:
 - (iii) Recent and ongoing national biosafety activities and projects, including:
- c. Description of processes and practical steps taken that supported mainstreaming of biosafety, citing the instruments/acts that provided the mandate for such processes. Following processes and practical steps will be reviewed and described among others:
- d. Description of the major challenges/difficulties encountered and the lessons learnt in mainstreaming biosafety into the NBSAPs and relevant sectoral and cross-sectoral policies, plans and programmes, including an analysis of replicability of such experiences. Following lessons learnt will be described among others:
- e. Description of national capacity needs and skill gaps and strengths, focusing among others on:
- f. Recommendations to further improve mainstreaming biosafety, focusing among others on:

Related activities

- 1) Identify and appoint an author/experts team of the desk study, on the basis of draft Terms of Reference provided in the Appendix;
- 2) Ensure preparation and approval of an annotated outline of the desk study on the basis of the outline provided under 2.1.1. (a).1 above;

- 3) Provide guidance and ensure preparation of desk study on the basis of the outline provided under 2.1.1. (a).1 and outline above;
- 4) Make available a cleared desk study two weeks ahead of the roundtable to participants;
- 5) Ensure finalization of desk study taking into account any comments and input provided during the round table (see below);
- 6) Clear national desk study and submit to the Secretariat for review;

The desk study should be drafted in English, French or Spanish, include a front page, list of acronyms and list of contents, an introduction and conclusions. References should be made in footnotes.

Output 2 – A national roundtable on mainstreaming biosafety at national level organized

Definition of the Output

Organize a national roundtable for government officials and other stakeholders from relevant sectors to review the results of the desk study (see above) and discuss appropriate actions and modalities for integrated implementation of the CBD and the Protocol, as well as lessons learnt from national experience;

The roundtable should provide an opportunity to review the results of the desk study and in particular actions and modalities for integrated implementation of the CBD and the Cartagena Protocol on Biosafety, as well as lessons learnt from national experience should focus on among others following aspects:

- a. Improving the integration of biosafety into NBSAPs and other relevant sectoral and cross-sectoral plans, policies and programmes, national budgets, bilateral and multilateral cooperation programmes (projects);
- b. Options for establishing or strengthening national inter-sectoral coordination mechanisms to facilitate a coordinated approach to the implementation of the Convention and the Protocol; and
- c. Prioritizing biosafety among projects/activities to be supported under the national GEF-6 allocation for biodiversity;

The national round table should bring together stakeholders from government, private sector, NGOs and user groups, where applicable, representing the multiple sectors related to biosafety. Participants should receive the desk study sufficiently in advance of the round table to allow them to familiarize themselves with its content.

Related activities

- 1) Organize logistics of national round table, ensuring participation of representatives of all stakeholders including government, private sector, NGOs and user groups, where applicable, representing the multiple sectors related to biosafety;
- 2) Review and clear the draft desk study and make it available to participants at least two weeks ahead of the national roundtable with clear guidance on the input expected;
- 3) Present desk study, and solicit input on:
 - (i) State of mainstreaming biosafety at national level;
 - (ii) Progress made in mainstreaming;
 - (iii) Lessons learnt and challenges faced;
 - (iv) Recommendations that could be made, including ways and means of:
 - i. Improving the integration of biosafety into NBSAPs and other relevant sectoral and cross-sectoral plans, policies and programmes, resource mobilization plans and national budgets;
 - ii. Establishing or strengthening national inter-sectoral coordination mechanisms to facilitate a coordinated approach to the implementation of the Convention and the Protocol; and
 - iii. Prioritizing biosafety among projects/activities to be supported under the national GEF-6 allocation for biodiversity;
- 4) Prepare a report of the roundtable proceedings, including a summary of the contributions provided by participants. The main outcomes (conclusions and recommendations) of the roundtable are to be incorporated in the final project report to be prepared under output 2.1.4 (below)
- 5) On the basis of the input provided during the roundtable, request the consultant to update the desk study in accordance with 2.2.1(a)(iv).

Output 3 – A national seminar for policymakers, decision makers and the media on mainstreaming biosafety organized

Definition of the Output

Organize a seminar to increase awareness of policymaker and decision-makers (including parliamentarians, senior government officials from relevant Ministries and sectoral agencies, National GEF Operational Point, etc.) and media about the importance of biosafety in order to

secure the necessary political support taking into consideration the conclusion of the final desk study;

The seminar is intended to bring together key policy- and decision makers from a wide range of institutions directly and indirectly involved in decision-making processes pertaining to biosafety and representing multiple sectors, as well as the media.

Presentations will be made on the status of implementation of the Cartagena Protocol on Biosafety at the national level and the mainstreaming of biosafety, based on the findings and conclusions of the desk study (which may also reflect the findings and input provided at the national round table).

Related activities

- 1) Organize logistics of the national awareness seminar, ensuring the participation of key relevant decision- and policy-makers as well as the media;
- 2) Prepare presentations, and identify speakers, on:
 - (i) The status of biosafety and the Cartagena Protocol on Biosafety in the country
 - (ii) The main findings and conclusions of the desk study
 - (iii) Lessons learnt, challenges faced and recommendations for improving mainstreaming of biosafety, including, among others, ways and means of:
 - i. Improving the integration of biosafety into NBSAPs and other relevant sectoral and cross-sectoral plans, policies and programmes, resource mobilization plans and national budgets;
 - ii. Establishing or strengthening national inter-sectoral coordination mechanisms to facilitate a coordinated approach to the implementation of the Convention and the Protocol; and
 - iii. Prioritizing biosafety among projects/activities to be supported under the national GEF-6 allocation for biodiversity;

A copy of the desk study report will be made available as a background document;
- 3) Prepare a report of the proceedings of the national awareness seminar. The main outcomes (conclusions and recommendations) from the seminar will be incorporated in the final project report to be prepared under output 2.1.4 (below).

Output 4 – A project report on activities, processes and outcomes, including best practices and lessons learnt, as well as practical recommendations for mainstreaming biosafety in other countries prepared and submitted to the Secretariat.

Definition of the Output *Prepare a report on the project activities, processes and outcomes, including best practices and lessons learnt, as well as practical recommendations that respond*

to the requirements of article 7 of the Agreement and provide an overview of the conclusions drawn from the desk study as well as a summary of inputs from the roundtable and the seminar.

A concise report describing the processes and their outcomes as well as the experience gained will be prepared and submitted to the Secretariat. The report contains:

- 6) Overview of project activities and implementation;
- 7) Results of the round-table;
- 8) Results of the seminar;
- 9) Summary description of biosafety framework in the country, including description of:
 - (v) key-issues identified in the desk study;
 - (vi) lessons learnt and difficulties encountered in mainstreaming biosafety in the national context, including an analysis of replicability of such experiences
 - (vii) national capacity needs and skill gaps and strengths;
 - (viii) recommendations to further improve mainstreaming biosafety.
- 10) *Outcomes of the project and experience gained*

Related activities

- 1) Prepare a project report including elements outlined under 2.1.4(f) and incorporating the findings of the national round table and national awareness building seminar;
- 2) Submit the national project report to the Secretariat for input and clearance. If requested to do so by the Secretariat, address input and comments.

3. Work plan and Timeframe (Duration)

Activities at national level must be concluded by May 2016 to allow sufficient time to organize a global workshop for all participating countries and prepare a report before COP-MOP 8.

Overall project activities at global level will be terminated by COP-MOP 8.

Project activities will be implemented in accordance with the work plan provided below:

	Activity	Month (2016)
1.	Finalization project documentation and formalities	1
2.	Selection of author/consultant of desk study	1
3.	First draft desk study submitted to national institution/agency responsible for project execution.	3
4.	Draft desk study made available (input national institution/agency addressed)	4
5.	Round table held	5
6.	Report round table submitted for comments/clearance to national authorities	5
7.	Draft desk study updated and submitted for clearance to national institution/agency responsible for project execution	5
8.	Comments on draft desk study addressed, study cleared and submitted to Secretariat for comments	6
9.	Seminar held	7
10.	Report seminar submitted for comments/clearance to national authorities	7
11.	Project report submitted to Secretariat	8
12.	Comments on desk study addressed, final desk study cleared and submitted to Secretariat	9
13.	Comments on project report addressed, final report cleared and submitted to Secretariat	9

4. Responsible Officer

The **NEMA** will identify and communicate the name of a Responsible Officer who is charged with the management and monitoring and the proper implementation of the Agreement.

The responsible officer on behalf of the Secretariat of the Convention on Biological Diversity is Mr. Erie Tamale.

Appendix 1: Terms of Reference for the Team leader of the team of experts

Under the supervision and guidance of the **NEMA** the team leader will support the implementation of the project “Capacity-building to promote integrated implementation of the Cartagena Protocol on Biosafety and the Convention on Biological Diversity at the national level”. In particular, the Consultant will:

1. In close collaboration with **Ministry of Water and Environment (MWE), Biosafety Focal Point** prepare a work plan that allows timely delivery of outputs;
2. Finalize an annotated outline of a desk study on mainstreaming biosafety following an outline provided by **NEMA**;
3. Submit draft desk study to **Executive Director, NEMA** at least 6 weeks ahead of national round table;
4. Address any comments and input provided on the desk study and make available updated desk study ahead of national round table;
5. Prepare a presentation and present on the results of the desk study at the national round table, focusing on elements to be provided by **NEMA**;
6. Be responsible for the substantive parts of report writing during the national round table;
7. Ensure that comments and input provided during discussions are reflected and addressed in the desk study and available in concise format for final project report;
8. Submit the desk study report incorporating the input and comments provided at national round table to **NEMA** within one week following the conclusion of the national round table;
9. Support preparation of a national awareness raising seminar on mainstreaming biosafety;
10. Prepare presentations on project activities and desk study outcomes, focusing on lessons learnt and recommendations made and present these at the seminar.
11. Be responsible for the substantive parts of report writing during the national awareness building seminar;
12. Prepare a project report following the elements to be provided by **NEMA**;
13. Finalize desk study and project report following instructions provided by **NEMA** and Secretariat of the Convention on Biological Diversity, within the set time frame.



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

NEMA House Plot 17/19/21 Jinja Road

P.O. Box 22255 Kampala Uganda

Tel: +256 -414-251064/5/8

Fax: +256 -414-257521

Email: info@nemaug.org

Website: <http://www.nemaug.org>



9 789970 881215