





# **CAMEROON BIOSECURITY PROJECT**

Development and Institution of a National Monitoring and Control System (Framework) for Living Modified Organisms (LMOs) and Invasive Alien Species (IAS)

# TRAINING MANUAL IN COMMODITY AUDIT SYSTEMS FOR COMPLIANCE WITH RISK ASSESSMENT PROCESSES

This Training Manual has been produced with the support of UNEP/GEF and the Government of Cameroon via the Ministry of Environment, Protection of Nature and Sustainable Development.

## **Under the Supervision of:**

Project Component Three Taskforce (MINESUP)

&

The Biosecurity Project Coordination Unit (MINEPDED)









October 2017

# **TABLE OF CONTENTS**

TABLE OF C	ONTENTS	i
LIST OF FIG	URES	iv
LIST OF TAE	BLES	V
LIST OF ACE	RONYMS AND ABBREVIATIONS	vi
PREFERRED	WAY TO CITE THIS PUBLICATION	vi
CONTACT O	F THOSE WHO PARTICIPATED	viii
ACKNOWLE	DGEMENTS	x
DISCLAIMER	<b></b>	X
EXECUTIVE	SUMMARY	xii
INTRODUCT	ION	13
OBJECTIV	ES OF THE TRAINING MANUAL	13
EXPECTE	D LEARNING OUTCOMES:	14
LIMITATIO	NS OF THE MANUAL	14
COURSES	STRUCTURE	14
MODE OF	DELIVERY	16
RESOURC	E REQUIREMENTS FOR RUNNING THE COURSE	16
PRE-TRAI	NING EVALUATION	16
POST TRA	INING ASSESSMENT	17
THE LAYO	OUT OF THE TRAINING MANUAL	17
	IE:_BACKGROUND, BASIC CONCEPTS AND LEGAL BASIS FOR	18
1.1 DE	FINITION OF KEY TERMS AND CONCEPTS	19
1.1.1	Biosecurity:	19
1.1.2	Living Modified Organisms	20
1.1.3	Modern biotechnology	20
1.1.4	Invasive Alien Species	20
1.1.5	The Global Biodiversity Strategy and Action Plan	21
1.1.6	Introduction Pathways of IAS and LMOs	22
1.1.7	Commodity Audit Systems	23
1.1.8	Other important concepts and terms	23
1.2 BA	CKGROUND	25

1.2	2.1 The Convention of Biological Diversity	25
1.2	2.2 National Biodiversity Strategy and Action Plan	27
1.2	2.3 Biosecurity	
1.2	2.4 International Agreements	
1.3	RECOMMENDED READING:	32
MODUL	LE TWO:_AN OVERVIEW OF THE COMMODITY AUDIT PROCESS	33
2.1	STEPS IN THE COMMODITY AUDIT SYSTEM.	38
2.2	THE ROLES AND RESPONSIBILITIES OF PERSONS INVOLVED IN A CAS	39
2.3	RECOMMENDED READING:	44
	LE THREE:_BIOLOGICAL RISK MANAGEMENT (BRM) MEASURES_AND AUDIT REMENTS (DURING PRODUCTION)	45
3.1	BRM MANAGEMENT ON LIVESTOCK PRODUCTION SITE	49
3.1	1.1 Isolation	49
3.1	1.2 Traffic Control	50
3.1	1.3 Sanitation	50
3.2	RECOMMENDED READING:	56
	LE FOUR:_BIOLOGICAL RISK MANAGEMENT_AND AUDIT REMENTS (IN-TRANSIT)	57
4.1	MONITORING AND CONTROL	
4.2	COMMUNICATION	
4.3		
	LE FIVE:_BIOLOGICAL RISK MANAGEMENT MEASURES_AND AUDIT REQUIREMEN' HARVEST)	
5.1	AN EXAMPLE OF POST-HARVEST BIOLOGICAL RISK ASSESSMENT	69
5.2	RECOMMENDED READING:	72
	LES SIX AND SEVEN_BIOLOGICAL RISK MANAGEMENT MEASURES AND AUDIT REMENTS (POINT OF ENTRY AND POST ENTRY)	
	INSPECTION FOR COMPLIANCE	
	PECOMMENDED PEADING:	70

MODUI	LE EIGHT: INTRODUCTION PATHWAYS MANAGEMENT	80
7.1	IAS	81
7.2	MANAGEMENT OF INTRODUCTION PATHWAYS:	84
7.3	RECOMMENDED READING:	88
APPEN	IDICES	89
A.1 F	Pre-course Assessment	89
A.2 (	Course Evaluation	91

# LIST OF FIGURES

Figure 1 Modules for training on Commodity Audit Systems	15
<b>Figure 2:</b> Outline of the risk assessment process and Variation in terminology used to describe methodological components common to many risk assessment frameworks (Hill, 2005)	27
Figure 3 Stakeholders and actors in an Integrated Biosecurity framework	30
Figure 4 Biosecurity import risk analysis framework for Australia	31
Figure 5 Interlinked values to address biodiversity conservation.	36
Figure 6 The Ecosystem connection through biological taxonomic levels to the environment	37
Figure 7 Organogram for plant protection services in Cameroon. Source: MINADER	40
Figure 8: Phytosanitary posts at various entry points to Cameroon. Source MINADER	41
<b>Figure 9</b> Determining the extent of IAS management within a small area that is reserved/ protected. Y stands for Yes and N stands for No	47
Figure 10 Parthenium	53
<b>Figure 11</b> Potential Effect of GMOs on human health mediated through environmental impact. Source http://www.fao.org/docrep/meeting/008/y5871e/y5871e0n.htm	60
Figure 12 Inspection of commodities in warehouse (first photo) and in container (second photo) Photos from Tanzania	65
Figure 13 Parkinsonia aculeata	70
Figure 14 E. cisplatnesis Source CSIRO website (05/11/2017)	71
Figure 15 BXW-Xanthomonas campestris pv Musacearum	75
Figure 16 Photo 1 Bactrocera invadens and Photo 2 Bactrocera latifrons (Source: Ministry of Agriculture Tanzania)	75
<b>Figure 17</b> Common pathways were categorized by experts in six groups: Release; Escape; Transportaminants; Transport-Stowaway; Corridors; and Unaided (natural dispersals) [source: UNEP/CBD/SBSTTA/18/9/Add.10	
Figure 18 The life cycle of H. amigera and the larvae on a cotton ball. (Source Stevens et al)	87

# **LIST OF TABLES**

<b>Table 1</b> Quantities of plant material and import purpose for which import permits were granted for	
Cameroon from 2011, 2012 and Jan-April 2013, in tons, packets (seeds) and quantity (seeds)	22
Table 2 Comparison of weed-led and site-led control.	48
Table 3 Proposed line of questioning during CAS visit	51
Table 4 Biosafety Risk Criteria and Recommended level of Biosafety Level Containment	59
Table 5 Biosafety levels for arthropod containment	63

#### LIST OF ACRONYMS AND ABBREVIATIONS

BIRA Biosecurity Import Risk Analysis

BRM Biological Risk Management

BXW Banana Xanthomonas Wilt

CABI Centre for Agriculture and Bioscience Institute

CAS Commodity Audit Systems

CBD Convention on Biological Diversity

CBP Cameroon Biosecurity Project

Codex Codex Alimentarius Commission

CPC Crop Protection Compendium

CPB Cartagena Protocol on Biosafety

CSM Case Specific Monitoring

EU European Union

GEF Global Environment Facility

GS General Surveillance

IAS Invasive Alien Species

IGB Inspector General of Biosecurity

IPPC International Plant Protection Convention

LMOs Living Modified Organisms

MINEPDED Ministry of the Environment, Nature Protection and Sustainable

Development

UNEP United Nations Environment Programme

# PREFERRED WAY TO CITE THIS PUBLICATION

MINEPDED (2017). Training Manual on Commodity Audit Systems for Compliance with Risk Assessment Profiles. Training Manual submitted to MINEPDED under the UNEP/GEF Cameroon Biosecurity Project: Development and Institution of a National Monitoring and Control System (Framework) for Living Modified Organisms (LMOs) and Invasive Alien Species (IAS). Yaoundé, Cameroon.

# **CONTACT OF THOSE WHO PARTICIPATED**

The individuals participated in the development of the Training Manual on Commodity Audit Systems for Compliance with Risk Assessment Profiles in Cameroon:

#### Consultants

Dr Flora Ismail Tibazarwa University of Dar es Salaam

+255 754 572 567

Email: ismailfar8@gmail.com

Prof. Vincent P.K. Titanji Vice Chancellor & CEO

Cameroon Christian University

Bali, P.O. Box 5, NW Region, Cameroon.

(237) 677 756 389

Email vpk.titanji@yahoo.com or

vtitanji@gmail.com

## Project Coordination Unit

Mr Rigobert Ntep

Cameroon Biosecurity Project Coordinator Ministry of Environment, Protection of Nature and Sustainable Development

Acropole, Yaoundé, Cameroon

Tel: +237 677 30 39 32 Email: rntep@yahoo.fr

Mr Clouvis Johnbang

Cameroon Biosecurity Project Financial

Assistant

Ministry of Environment, Protection of Nature

and Sustainable Development

Acropole, Cameroon

Tel: +237 675 95 92 97 / 698 09 94 77

Email: <u>clouvisjohnbang@yahoo.com</u>

Mr Declan Chongwa Ambe

Cameroon Biosecurity Project Assistant Ministry of Environment, Protection of

Nature and Sustainable Development

Acropole, Yaoundé, Cameroon

Tel: +237 677 02 22 85 / 696 86 66 19

Email: <a href="mailto:declanambe@yahoo.co.uk">declanambe@yahoo.co.uk</a>

#### Project Technical Advisers

Dr John Mauremootoo

Supporting Project & Programme Planning,

Monitoring and Evaluation

Phone/Fax: +44 (0)1934 876565

Email: John@InspiralPathways.com

Skype: johnmaure

Website: www.inspiralpathways.com

Dr. David MBAH

Executive Secretary,

Cameroon Academy of Sciences

Yaounde,

Tel: 237 677 839 141

Email: dambah@yahoo.co.uk

## Members of the Component 3 Taskforce

#### Dr. Annie WAKATA

**Head Component 3** 

**MINESUP** 

Tel: +237 6 74 60 03 31

Email: annie beya@yahoo.fr

# Mr. Valentin Wagnoun

Component 3 Co-Lead

**MINEPDED** 

Tel: +237 677 86 69 58

Email: valiwa1@yahoo.fr

# Dr. Vitalis R.M. Chepnda

Component 2 Task Team Member

Permanent Secretary

National Programme for the Prevention and MINRESI

Fight against Zoonoses

**MINEPIA** 

Yaoundé, Cameroon

Tel: +237 699003722/ Cell: +237 679688500

Email: drchepnda@yahoo.co.uk

#### Dr. Roger Noël Iroume

Component 3 Task Team Member

Inspector General

Yaoundé, Cameroon

Tel: +237 677335433

Email: iroumerog@hotmail.fr

## Mr. Alain Hervey Njike Tchoukwam

Component 3 Task Team Member

**MINESUP** 

Tel: 237655258484

Email: ahnjike1@yahoo.fr

#### **ACKNOWLEDGEMENTS**

This activity was conducted as part of UNEP/GEF Project number: GFL/3651 entitled "Development and Institution of a National Monitoring and Control System (Framework) For Living Modified Organisms (LMOs) and Invasive Alien Species (IAS)", known as the Cameroon Biosecurity Project. The Ministry of Environment, Protection of Nature and Sustainable Development (MINEPDED) is the Project National Executing Agency. This Manual has been prepared for MINEPDED by Dr Flora Ismail Tibazarwa and Professor Vincent P. K. Titanji.

The authors acknowledge, the financial support of the Global Environment Facility (GEF), the technical and supervisory support of the Ministry of Environment, Protection of Nature and Sustainable Development (MINEPDED) and the United Nations Environment Programme UNEP.

The authors are grateful for the considerable assistance given in the undertaking of this assignment by stakeholders drawn from government ministerial departments and agencies, academic institutions and the private sector in Cameroon as well as some regional and international actors in the field of Commodity Audit Systems. The pertinent and useful contributions of the stakeholders is highly appreciated and hereby acknowledged.

#### **DISCLAIMER**

The information contained in this publication was, to the best of the authors' knowledge, correct at the time of publication. Images used have not been independently verified so there is the possibility of error. The opinions expressed in this publication do not necessarily reflect those of UNEP, MINEPDED or the organisations represented in the Component 3 Task Team. UNEP, MINEPDED or the organisations represented in the Component 3 Task Team are not responsible for the information provided in this document. These organisations do not make any warranty of any kind, expressed or implied, including, but not limited to, warranties of accuracy, reliability, completeness, or content of such information in this document.

Under no circumstances shall UNEP, MINEPDED or the organisations represented in the Component 3 Task Team be responsible for any loss, damage or liability or expense incurred or suffered which is claimed to have resulted from the use of or reliance upon the information contained in this document, including, but not limited to, any fault error, mistake, omission or defect. Under no circumstances shall these organisations be liable for any direct, indirect, incidental, special, punitive or consequential damages.

## **EXECUTIVE SUMMARY**

Cameroon is party to the Convention on Biological Diversity (CBD) which is focused on the conservation of biodiversity, sustainable use of its components and equitable sharing of benefits derived from genetic resources. The Ministry of Environment, Protection of Nature and Sustainable Development (MINEPDED) has been tasked to ensure that Cameroon is in compliance to the international agreement and adhere to relevant national and regional policies and legislation. To fulfil this, MINEPDED has commissioned capacity building and development of frameworks under a Biosecurity Programme entitled 'Development and institution of a National Monitoring and Control System for Living Modified Organisms (LMOs) and Invasive Alien Species (IAS). One of the capacity building initiatives is, the development of a Training Manual on Commodity Audit Systems (CAS) and specifically Biological Risk Management (BRM) of biological risks of Living Modified Organisms (LMOs) and Invasive Alien Species (IAS) from production, during transit and post-harvest considering all points of entry in Cameroon.

The Training Manual on CAS is to be used by national trainers to train operational staff in Cameroon, by drawing special attention to LMOs and IAS based on best practises. The staff responsible for CAS at the operational level hail from diverse disciplinary backgrounds and thus the Training Manual aims to guide the trainers to provide the basic concepts of CAS in relevance to biosecurity.

The manual is structured to provide explanations of key concepts from the international and national premises for biodiversity conservation, agriculture, risk analysis and modern biotechnology and the process of CAS as can benefit Cameroon. This is followed by individual modules to address BRM at site of production (for internally produced commodities), in transit (for imported commodities), post-harvest and at points of entry and exit (to cater for trade across national borders). For each module hands on exercises are used to demonstrate the concepts presented. The participants at the training are expected to share their diverse disciplinary expertise to the CAS to enrich the learning outcomes.