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CAMEROON BIOSECURITY PROJECT

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

QUANTIFICATION OF MID-PROJECT KNOWLEDGE LEVELS CONCERNING BIOLOGICAL INVASIONS IN CAMEROON

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Under the Supervision of:

Project Component Four Taskforce (MINRESI)

&

The Biosecurity Project Coordination Unit

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Acronyms and Abbreviations

Abbreviation	Full Name
ANOVA	Analysis of Variance
ASFV	African Swine Fever Virus
CAG	Component Advisory Group
CAS	Cameroon Academy of Sciences
CBD	Convention on Biological Diversity
CBP	Cameroon Biosecurity Project
CIDE	Centre de l'Information et du Documentation sur l'Environnement
COP	Conference of Parties
CPB	Cartagena Protocol on Biosafety
FAO	Food and Agricultural Organisation
GEF	Global Environment Facility
GM	Genetically Modified (genetic modification)
GMOs	Genetically Modified Organisms
IAS	Invasive Alien Species
IUCN	International Union for Conservation of Nature
KAP	Knowledge, Attitude and Practice
LMO	Living Modified Organisms
MINADER	Ministry of Agriculture and Rural Development
MINEPDED	Ministry of Environment, Protection of nature and Sustainable Development
MINEPIA	Ministry of Livestock, Fisheries and Animal Industries
MINESUP	Ministry of Higher Education
MINRESI	Ministry of Scientific Research and Innovation
MS	Microsoft
NGO	Non-Governmental Organisation
NPC	National Project Consultants
PAC	Project Advisory Committee
PCR	Polymerase Chain Reaction
PCU	Project Coordination Unit
PTA	Project Technical Advisers
TV	Television
UNEP	United Nations Environment programme
USA	United States of America

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Contact details of those who participated

Authors

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

Ms. Lilian Nfor
Environmental Lawyer-Biodiversity/ Biosafety specialist
MINEPDED
Email: liliannfor@yahoo.com
Tel: 237 652569101

Members of the Project Coordination Unit& Project Technical Advisor (PTA)

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 Declan Chongwa Ambe
Cameroon Biosecurity Project Technical and Administrative Assistant
Ministry of Environment, Protection of Nature and Sustainable Development
Acropole, Yaoundé, Cameroon
Tel: +237 677 02 22 85 / 696 86 66 19
Email: declanambe@yahoo.co.uk

Mr Clouvis Johnbang
Cameroon Biosecurity Project Financial and Administrative Assistant
Ministry of Environment, Protection of Nature and Sustainable Development
Acropole, Cameroon
Tel: +237 675 95 92 97 / 698 09 94 77
Email: clouvisjohnbang@yahoo.com

Dr David Mbah
Cameroon Biosecurity Project Technical Advisor
Cameroon Academy of Science
Yaoundé, Cameroon
Tel: +237 77 83 91 41
Email: dambah@yahoo.co.uk

Members of the Component 4 Taskforce

Dr Roger Noël Iroume
Head Component 4
Inspector General
MINRESI
Yaoundé, Cameroon
Tel: +237 677335433
Email: iroumerog@hotmail.fr

Mrs Priscilla Song Natang
Co-Head Component 4
Social Affairs Administrator Research
Officer N°1 MINEPDED
Ministerial Building No. 2
Yaoundé, Cameroon
Tel: +237 677367449/ +237 693824906
Email: pri_song@yahoo.com

Dr Vitalis R.M. Chepnda
Component 2 Task Team Member
National Coordinator Animal Genetic
Resource Management Program
MINEPIA
Yaoundé, Cameroon
Tel:+237 699003722/ Cell: +237 679688500
Email: drchepnda@yahoo.co.uk

Mrs Colette Edith Ekobo
Resource Person
Former Inspector N°1 for Agricultural
Development Inspection, MINADER
Yaoundé
Tel: +237 677604101
Email: capcao@yahoo.fr

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Executive Summary

INTRODUCTION

CONTEXT AND JUSTIFICATION

This consultancy is executed as Activity D2 under Component 4 on Information and Awareness under the UNEP-GEF Cameroon Biosecurity Project (CBP). The CBP aims to increase capacity to prevent and control the introduction, establishment and spread of Invasive Alien Species (IAS) and management of LMOs in Cameroon through the implementation of a risk-based decision making process.

The consultancy assignment is to *Quantify Project Personnel Knowledge and Attitudes Concerning Biological Invasions and LMOs in Cameroon*. It builds upon the work undertaken under Component 4 - *Quantification of Baseline Knowledge and Attitudes concerning Biological Invasions in Cameroon* (Activity 4.1.1. /D1).

The Key Concepts surrounding this activity are invasive species and LMOs. The project working definition of an "**invasive species**" is: *A species of any taxa from any provenance that moves beyond its intended location and causes a negative impact: somewhere but not necessarily everywhere; at some point in time, but not necessarily always; and according to some people but not necessarily everyone.*

A living modified organism (LMO) is defined in Article 3 of the Cartagena Protocol on Biosafety(CPB) as *any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology*.

Objectives of the activity are:

- To produce and execute a relevant, replicable and easy to analyse survey protocol to assess the prevailing knowledge and understanding of Project Personnel about issues of relevance to the causes, consequences and management approaches for biological invasions in Cameroon; and,
- Designed to yield an estimate of the degree to which the project interventions have enhanced knowledge, attitude and practice (KAP) regarding pertinent issues among key project stakeholders

METHODS

The Survey Respondents were key CBP stakeholders who have been involved in project activities, comprising members of the Project Coordination Unit; Project Technical Advisors[i]; National Biosafety Committee; National Project Consultants; Component Task Teams; Project Advisory Committee; and, Component Advisory Group, totalling 35 respondents.

Customisation of the 2012 Questionnaire: The survey was customised to reduce its length and increase its clarity as recommended in the 2012 report(MINEPDED 2012) There was a difference in the target stakeholders due to limitations experienced in the project activities, leaving the Component 4 Task Team with the only decision to survey the project personnel. To reconcile this inevitable departure from the 2012 target stakeholders, respondents were asked to recall what their response would have been in 2011 (when the CBP started) on which data was then compared.

The questionnaire was divided into 3 major sections: 1) knowledge/awareness covering relevant terms, information sources, invasive species, causes and management approaches of biological invasions; 2) attitudes/concerns towards biological invasions, GMOs, biological invasion management approaches and reasons for managing biological invasions; and 3) practice-responsibility for the management of biological invasions, and, actions undertaken by respondents to manage biological invasions.

Questionnaire administration was carried out on the24th November 2016 PAC members and on the 25th November 2016 during the Components Advisory Group (CAG) meeting (See participants list in Annexes). The consultants explained in a ten minute introductory talk, the survey background, objectives and instructions on the format of the survey to participants who individually completed the questionnaire between 45 minutes and one and a half hours. Data was entered into an MS Excel spreadsheet and following the results from analysed statistics, a first Draft Report was prepared and submitted to Component 4 Task Team on 30th Dec. 2016 following review by Task Team, corrections were incorporated and a final report was submitted on 2nd April 2017.

[i] Only one of the two PTAs was involved as a respondent as the other (John Mauremootoo) was the international consultant for this activity.

RESULTS

For the purpose of this survey knowledge of terms was used to provide a surrogate index of knowledge and awareness. Perceived knowledge levels were disaggregated by gender, age, education level and occupation category (Sector). There were no statistically significant differences in the overall perceived knowledge levels of men and women for both 2011 and 2016.

This group, was highly educated and had significantly higher knowledge scores than those in the 2012 survey. It is of little value to undertake a detailed comparison between the two groups, because the disparity puts them into two extremes.

Information sources on biological invasions: Survey showed that more people (29) had heard or read information about biological invasions in their area in 2016 than in 2011.There was an overall increase in the number of sources that had provided information on biological invasions to respondents but the increase was not huge.

Knowledge of invasive species: The aim of this part of the survey was to quantify the ability of the respondents to identify some of the species that are responsible for biological invasions in Cameroon. Looking at correct responses of those species known to be present in Cameroon only, the numbers rose from an average of 94 in 2011 to 134 in 2016.

Relationship between knowledge of terms and knowledge of invasive species:

There was an increase in people's ability to list biological invaders between 2011 and 2016.However, the spread of responses was very large with two individuals unable to list any species and only two correctly identifying ten biological invaders. There was very little outright inaccuracy in the responses with cotton being a notable exception.

Knowledge of the causes of biological invasions: The aim of this part of the survey was to quantify the degree to which the respondents could identify the causes of biological invasions. There was a very large increase in people's ability to list biological invasion causes between 2011 and 2016.

Knowledge of biological invasions management approaches: There was a very large increase in people's ability to list biological invasions management approaches between 2011 and 2016 even though there were some misapprehensions which are indicative of a superficial understanding of biological invasions management approaches. The index of concern values indicated that on average respondents were somewhat concerned about biological invasions.

ATTITUDES CONCERNING BIOLOGICAL INVASIONS

On the whole, respondents were more concerned about biological invasions in 2016 than they had been in 2011 but the changes were small and not statistically significant in many cases.

Reasons for managing biological invasions: Respondents mostly supported statements relating to reasons for managing biological invasions and this support increased between 2011 and 2016. The strongest support came for managing biological invasions to protect livestock and crops followed by support for managing invasions that damage forests and human health contrary to buildings and infrastructure.

***Attitudes towards biological invasions management approaches*:** Respondents' average responses to proposed biological invasions management approaches in 2011 were closest to "somewhat agree" but closer to "strongly agree" in 2016. This change was statistically significant. Overall scores for managing particular pests rose between 2011 and 2016 but the changes were small and none was statistically significant. Respondents largely agreed that man should manage biological invasions and should not leave nature to take its own course and that there is a need for rules and regulations about the methods used to manage biological invasions.

Responsibility for the management of biological invasions: Respondents, for the most part appreciated that they had a personal responsibility to help to manage biological invasions. This represented a change from 2011 where many people were unsure of where management responsibilities lay due to lack of clarity about biological invasions but also a lack of clarity about mandates and responsibilities.

ATTITUDES CONCERNING GMOS

Questions were framed to assess respondents' attitudes- negative or affirmative- with regards to the use of GMOs in Cameroon, including use of GM seed and GM animal to improve agricultural productivity, as well as consumption of food items derived from GMOs. Statistical analysis of responses in these 4 areas showed that differences in "yes" and "no" responses disaggregated by knowledge scores were not statistically significant.

DISCUSSION

Encouragingly, many individuals displayed a thorough knowledge of biological invasions but there was a remarkable disparity between those with a day to day involvement in the CBP activities who tended to have the highest levels of knowledge compared to the performance of the other respondents. This disparity in the results in terms of knowledge level with some individuals

showing very low levels of knowledge, as well as the variance between people's perceived and actual knowledge levels of key terms is a cause for concern.

The attitudes towards the management of biological invasions were positive in most cases which shows that respondents' philosophies on biological invasions management were broadly aligned with each other. This alignment helps when it comes to communication, policy and on the ground actions that centre on a risk-based approach to the management of biological invasions. However, knowledge and awareness levels need to be deepened beyond those relatively few highly knowledgeable individuals if the stakeholders surveyed are to become effective ambassadors for biological invasions management in Cameroon. There were positive trends for biological invasions knowledge, management and practice from 2011 to 2016. However, the fact that the changes are unlikely to have trickled down very far in Cameroonian society, and even possibly within the CBP implementing organisations, is a cause for concern.

Attitudes towards GMOs: Respondents were split between those who were in favour and those against. On the whole, respondents appeared to be more in favour of GM technology in 2016 than they had been in 2011 and this was due, to some extent, to their exposure to the benefits of the technology through the CBP. Increased knowledge will facilitate an informed dialogue. Many of the responses in this survey indicate that this process is currently in its infancy in Cameroon.

Possible next steps to maximise the utility of this study

A thorough orientation of key stakeholders on GMO through training is recommended; with the modules covering biosafety, risks and benefits of modern biotechnology, risk analysis of GMOs, and public awareness, consultation and participation.

Specific steps to follow up this survey

It is strongly recommended that a survey of this kind is undertaken at the beginning of any follow-up project to ensure that the project implementation team is aware of prevailing KAP levels among the key stakeholders as a prelude to capacity building work to ensure a sound foundation for future efforts.