



CAMEROON BIOSECURITY PROJECT

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

Introduction to the Integrated Management of Biological Invasions using the Principles of the Ecosystem Approach: TRAINING MANUAL

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)



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Acronyms and abbreviations

Abbreviation	Full Name
AGID	Agar Gel immunoDiffusion
AHS	African Horse Sickness
ALB	Asian Longhorned Beetle
APHIS	US Animal and Plant Health Inspection Service up to 2005
ASFV	African Swine Fever Virus
BRGNP	Black River Gorges National Park (Mauritius)
BSE	Bovine Spongiform Encephalopathy
CAS	Cameroon Academy of Science
CBD	Convention on Biological Diversity
CBP	Cartagena Protocol on Biosafety (on biosafety)
CII	Cooperative Initiative on Invasive Species on Islands
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNMI	Commonwealth of the Northern Mariana Islands
CNS	Central Nervous System
CBD	Convention on Biological Diversity
COP	Conference of the Parties
DEFRA	Department for Environment, Food and Rural Affairs
DoC	Department of Conservation (New Zealand)
ED/RR	Early Detection and Rapid Response
EMPRES	Emergency Prevention System
FAO	Food and Agricultural Organisation (of the United Nations)
FICMNEW	Federal Interagency Committee for the Management of Noxious and Exotic Weeds (USA)
FMD	Foot and Mouth Disease
FMDV	Foot and Mouth Disease Virus
GEF	Global Environment Facility
GISP	Global Invasive Species Program
GMO	Genetically Modified Organisms
GREP	Global Rinderpest Eradication Programme
HEAR	Hawaiian Ecosystems at Risk
IAS	Invasive Alien Species
IEAG	Island Eradication Advisory Group

Abbreviation	Full Name
IMO	International Maritime Organisation
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
IRAD	Institute of Agricultural Research for Development
ISAC	Invasive Species Advisory Committee (USA)
ISPM	International Standards for Phytosanitary Measures
ISSG	Invasive Species Specialist Group (of the Species Survival Commission of IUCN)
IUCN	International Union for Conservation of Nature (World Conservation Union)
KNP	Kakadu National Park (Australia)
LMO	Living Modified Organism
LVEMP	Lake Victoria Environmental Management Project
MAB	UNESCO Man and the Biosphere Programme
MAF	Ministry of Agriculture and Forestry (New Zealand)
MEPC	Maritime Environmental Protection Committee of the International Maritime Organisation (IMO)
Mfish	Ministry of Fisheries (New Zealand)
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
MINRESI	Ministry of Scientific Research and Innovation
MRC	Mekong River Commission
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Governmental Organisation
NISC	National Invasive Species Council (USA)
NPPO	National Plant Protection Organisation
NZ	New Zealand
OIE	Office International des Epizooties
OTA	Office of Technology Assessment
PPR	Peste des Petits Ruminants
PRD College	Poverty Related Disease College (PRD College), University of Yaoundé 1, Cameroon
RIFA	Red Imported Fire Ant

Abbreviation	Full Name
RNA	Ribonucleic Acid
RPPO	Regional Plant Protection Organisation
SARS	Severe Acute Respiratory Syndrome
SIDS	Small Island Developing States
SPREP	South Pacific Regional Environment Programme
TBT	Tri-butyl-tin
ToT	Training of Trainers
UNCCD	UN Convention to Combat Desertification
UNEP	United Nations Environment Programme
UNESCO	United Nations Organization for Education, Science and Culture
USGS	US Geological Survey
WfW	Working for Water (South Africa)
WHO	World Health Organisation
WRA	Weed Risk Assessment
WTO-SPS Agreement	WTO Agreement on the Application of Sanitary and Phytosanitary Measures (The SPS Agreement)

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EXECUTIVE SUMMARY

The objective of the Cameroon Biosecurity Project (CBP) (Development and Institution of a National Monitoring and Control System (Framework) for Living Modified Organisms (LMOs) and Invasive Alien Species (IAS)) is 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.

This objective is to be achieved through the successful execution of four project technical components: establish policy, regulatory and institutional framework for effective prevention and control of the introduction, establishment and spread of biological invaders (Component 1); implement sustainable strategies for the risk-based management of priority pathways and species for IAS and LMOs (Component 2); build capacity to enable the control of the entry, establishment and spread of IAS and management of LMOs (Component 3); and raise awareness of key stakeholder groups on risks, impacts and management of IAS and LMOs (Component 4). This manual has been produced under Project Component 3.

Component 3 activities form an integrated training programme for staff at all levels of responsibility in all organisations with biosecurity-related mandates. The programme consists of two phases: a training of trainers (ToT) phase where international experts lead in-country courses and a second phase when those previously trained train operational staff. Hence this component comprises of a series of training of trainers (ToT) activities followed by national training activities in which those trained will in turn train national stakeholders. Training topics include risk analysis and other objective decision-making processes (e.g. cost-benefit analysis, socio-economic analysis, expert systems, etc.), diagnostics, detection and monitoring (traditional and molecular), biodiversity informatics, inspection systems including treatments, commodity audit systems and invasive species control procedures.

This manual has been produced to support the following ToT: Introduction to the integrated management of biological invasions using the principles of the ecosystem approach. The overall course objective is to teach stakeholders about biological invasions: definitions, impacts, causes and management approaches for Cameroon. It provides trainees with a strategic overview of biological invasions and an ability to ask the right questions when planning biological invasion management efforts. However, it is not designed to develop “hands-on” skills such as how to undertake a risk assessment, how to control a plant invasion or how to inspect and treat commodities.

The training comprises of the following seven modules:

- Module 1: Overall Introduction and Knowledge Assessment
- Module 2: Introduction to biological invasions
 - A. Global overview: definitions, impacts and causes
 - B. Introduction to biological Invasions in Cameroon
- Module 3: A strategic overview of the management of biological invasions

- Module 4: Hierarchical approach to the management of biological invasions
 - A. Prevention
 - B. Early detection & rapid response
 - C. Eradication
 - D. Control
 - E. Active restoration and mitigation
- Module 5: International and National dimensions of biological invasions management
- Module 6: The Cameroon Biosecurity Project
- Module 7: Knowledge Reassessment and Workshop Evaluation

This manual contains trainer's notes and an accompanying PowerPoint presentation for each module. The information given in the trainer's notes is much more detailed than that given in the PowerPoints. It is essential that trainers familiarise themselves with the trainer's notes and some of the key references cited in order for them to have a thorough knowledge of the subject matter before leading a training workshop.

Each module contains boxes – “Trainer notes”, “Key Points”[○], “Activities” and “Examples”. The trainer notes contain instructions to trainers, e.g. facilitation tips and information to support the concepts outlined in the main text. Key points reinforce essential learning messages. Activities are suggestions only. It will not be possible to undertake all the suggested activities. Neither do these activities constitute an exhaustive list. The facilitators are encouraged to be creative and innovative in devising activities of their own. Examples are used to illustrate the points made in the text. They are sometimes but not always summarised in the PowerPoints. Facilitators are encouraged to use examples about which they have particular knowledge in addition to the examples used here.

The modules are designed to be a living document and to be updated with new information as it becomes available, particularly information which is relevant to the prevention and management of biological invasions in Cameroon.

The course has been customised by John Mauremootoo and David Mbah from a course produced for the Global Invasive Species Programme (GISP) by Souad Boudjelas (Cooperative Islands Initiative), Maj De Poorter (then of the University of Auckland), John Mauremootoo and Geoffrey Howard (IUCN).

The objectives of each module are summarised below:

Module 1 - Overall Introduction and Knowledge Assessment

The objective of the knowledge assessment is to understand the prevailing knowledge of the participants before the training. Assess the effectiveness of knowledge transfer through the course and to establish a knowledge baseline for the project as a whole.

Module 2 - Introduction to biological invasions, A. Global overview: definitions, impacts and causes.

By the end of this module the trainees should be able to:

- Understand some key terms
- Understand different types of impacts & the costs associated with biological invasions
- Give examples of problematic species – internationally and in Cameroon
- Understand the process of biological invasions
- Understand the root causes of biological invasions
- Understand factors contributing to increased risk of biological invasion

Module 2 - Introduction to biological invasions, B. Introduction to biological Invasions in Cameroon.

By the end of this module the trainees should be:

- More aware of the nature of biological invasions in Cameroon
- Able to give examples of problematic species in Cameroon
- Able to understand the range of species contributing to biological invasions in Cameroon
- Be aware of some of the management approaches undertaken.

Module 3 - A strategic overview of the management of biological invasions.

By the end of this module the trainees should:

- Understand some key interlinked principles of the ecosystem approach as applied to biosecurity planning.
- Start to understand some of the components of a biosecurity framework for Cameroon.

Module 4 - Hierarchical approach to the management of biological invasions, A. Prevention.

By the end of this module the trainees should be able to:

- Know what prevention is
- When and where it might be undertaken
- Know principles of invasive species prevention
- What approaches and tools for invasive species prevention are available.

Module 4 - Hierarchical approach to the management of biological invasions, A. Early detection & rapid response.

By the end of this module the trainees should be able to:

- Understand the role of early detection and rapid response (ED/RR)
- Understand the principles of ED/RR
- Know the components of ED/RR and associated issues.

Module 4 - Hierarchical approach to the management of biological invasions, C. Eradication.

By the end of this module the trainees should be able to:

- Know what eradication is
- When and where it might be undertaken
- What conditions must be met for eradications to be successful
- Recognise the key steps in undertaking an eradication operation

Module 4 - Hierarchical approach to the management of biological invasions, D. Control. By the end of this module the trainees should be able to:

- Know what control is and how it differs from eradication
- Recognise the requirements that must be met if control objectives are to be achieved and desired outcomes sustained
- Recognise the direct and indirect approaches to control.

Module 4 - Hierarchical approach to the management of biological invasions, E. Active restoration and mitigation. By the end of this module the trainees should be able to:

- Know what active restoration is
- Know when and where active restoration might be undertaken
- Know what mitigation is
- Know when and where mitigation might be undertaken
- Know some mitigation options.

Module 5: International and National dimensions of biological invasions management.

By the end of this module the trainees should:

- Be familiar with key international instruments that are relevant to biological invasions
- Be familiar with key international Programmes that cover biological invasions
- Be able to describe the essential components and content of a strategic national framework for biosecurity, including:
 - A National Biosecurity Strategy
 - Leadership, coordination & cooperation
 - Legal, policy & institutional framework
 - Implementation approaches and related issues
- Be familiar with key international instruments that are relevant to biological invasions
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 - A National Biosecurity Strategy
 - Leadership, coordination & cooperation
 - Legal, policy & institutional framework
 - Implementation approaches and related issues

Module 6: The Cameroon Biosecurity Project.

By the end of this module the trainees should:

- Understand the rationale behind the Cameroon Biosecurity Project.
- Be aware of the objective of the Cameroon Biosecurity Project.
- Be aware of the components of the Cameroon Biosecurity Project.

Module 7: Knowledge Reassessment and Workshop Evaluation.

By the end of this module the trainees should:

- Be aware of what they have learned from this course
- Assess the value of the workshop.

Following the course trainers will be selected to conduct national training workshops based on the ToT and this course manual.