



THE REPUBLIC OF UGANDA

MINISTRY OF WATER AND ENVIRONMENT

# **CAPACITY ASSESSMENT TO UNDERTAKE VULNERABILITY AND IMPACT ASSESSMENT (VIA) FOR THE ECOSYSTEM BASED ADAPTATION (EBA) IN MOUNT ELGON ECOSYSTEM-UGANDA**

**AUGUST 2012**





THE REPUBLIC OF UGANDA

## MINISTRY OF WATER AND ENVIRONMENT

**CAPACITY ASSESSMENT TO UNDERTAKE VULNERABILITY AND IMPACT ASSESSMENT (VIA) FOR THE ECOSYSTEM BASED ADAPTATION (EBA) IN MT ELGON ECOSYSTEM-UGANDA**

*With support from  
United Nations Development Programme*

August 2012

Supported by:



based on a decision of the German Bundestag



*Empowered lives.  
Resilient nations.*



## Table of Contents

Summary .....	vii
Acronyms .....	viii
<b>1 Background information .....</b>	<b>1</b>
1.1 Introduction.....	1
1.2 Vulnerability and Impact Assessment (VIA) methodologies and tools.....	1
1.3 Specific link of VIA to Ecosystem Based Adaptation (EBA) .....	2
1.4 Tools used for previous vulnerability and impact assessment in Mt. Elgon Region of Uganda.....	3
1.4.1 Tool used for IUCN project .....	3
1.4.2 Tools used for the TACC project.....	5
1.4.3 Overview of other vulnerability assessment methods that could be integrated in VIA for Mt. Elgon EBA.....	7
<b>2 Strategic direction of the consultancy.....</b>	<b>9</b>
2.1 Objectives of the consultancy .....	9
2.2 Approach and methodology.....	9
2.2.1 Literature review:.....	9
2.2.2 Focus group discussion .....	10
2.2.3 Field observation and photography.....	10
2.2.4 Interview of key informants.....	10
2.2.5 Analysis of information and selection criteria.....	11
<b>3 Key findings: .....</b>	<b>12</b>
3.1 Organizations or bodies with relevant VIA and mapping experience and data in Uganda, with an assessment of their suitability for the needs of the project.....	12
3.1.1 General knowledge and skills needed to undertake the VIA for EBA.....	12
3.1.2 Assessment of institutions/firm with relevant VIA data availability and mapping experiences in Uganda:.....	13
3.1.3 Result of the assessment.....	14
3.2 Training needs of stakeholders in Disaster Risk Reduction (DRR) with a view of informing capacity needs in line with EBA.....	15
3.2.1 Overview of Disaster Risk Reduction (DRR) and specific knowledge and skills needed for EBA.....	15

3.2.2	Assessment of the training needs .....	16
3.2.3	Pictures from Bulucheke Landslide of 2012 Bududa District.....	19
<b>4</b>	<b>Discussions and suggestions for future actions: .....</b>	<b>20</b>
4.1	Guidance on methodology and tools to be followed when integrating and monitoring resilience when undertaking VIA and designing for EBA options for Uganda.....	20
4.2	Ecosystem Based Adaptation VIA model, tools and methodologies to be used during detailed assessment. ....	21
4.2.1	General methodologies for VIA .....	21
4.2.2	Proposed step by step process of undertaking Vulnerability Assessment for climate change adaptation (VIA methods and tools).....	23
<b>5</b>	<b>Conclusions and recommendations.....</b>	<b>30</b>
<b>6</b>	<b>References:.....</b>	<b>31</b>
<b>7</b>	<b>Appendices .....</b>	<b>33</b>
	Appendix 1: Consultancy Terms of Reference .....	33
	Appendix 2: Schedules for field visits .....	38
	Appendix 3: People consulted in the field.....	39
	Appendix 4: Contacts of Institutions/firms assessed for VIA.....	40
	Appendix 5: Questionnaire used for assessing suitability of firm/organization to undertake VIA for EBA in Mt Elgon. ....	41
	Appendix 6: Sketch map of drainage (River systems) of project sites. ....	43
	Appendix 7: Sketch map of drainage (River systems) and contour of project sites. ....	44

## Summary

Mountains are one of the most fragile ecosystems on earth (Karma Tse-ring et al 2012). They are always very rich in biodiversity and water sources. Mountains provide a range of goods and services for the communities living up streams, mid streams and down streams. Like most mountain ecosystems, Mt Elgon Ecosystem is very prone to the effect of climate change. The 2012 land slide in Bududa and Bulambuli districts has impacted negatively on the livelihoods and economy of many communities (personal observation 2<sup>nd</sup> – 5<sup>th</sup> July 2012).

Climatic change related disaster has been and still looms over the Mt. Elgon Ecosystems (Mbooga 2012). It is therefore important to make communities and assets significantly more resilient to the impacts of future disasters. Those who will undertake Vulnerability and Impact Assessment (VIA) for Ecosystem Based Adaptation (EBA) for Mt. Elgon Ecosystem need to have basic concepts on climate change (including modeling different scenarios), environmental degradation, sustainable environmental management, sustainable livelihoods and disaster risk reduction.

It is the view of the paper that Ecosystem Based Adaptation (EBA) is one of the best ways of addressing issues of disasters currently affecting Mt. Elgon Ecosystem. The Mt. Elgon ecosystem consists of an ecological community together with its abiotic environment (such as climate, the parent material which forms the soil and topography), interacting as a system. There is network of interactions among organisms (including man), and between organisms and their environment.

Vulnerability assessment is the process of identifying and presenting present vulnerability and scenarios of future risks—accompanied by a rich understanding

of coping strategies based on identified stresses to inform different livelihood options and alternatives (Thomas E. Dowling et al 2002). The integration of climate risk in development planning is a main goal—adopting existing development frameworks and concepts is a key strength.

In Uganda, attempts to undertake Vulnerability Assessment were done by IUCN (using CRiSTAL tool) and a private individual (Makerere University Lecturer) for TACC-Mable region. The two approaches have been reviewed. In line with the assignment given by UNDP, the consultant identified and recommended the most suitable knowledge and skills for an institution/firm to conduct VIA and identified the organizations or bodies with relevant VIA and mapping experience and data in Uganda, with an assessment of their suitability for the needs of the project.

13 organizations were conducted for assessment and they include Uganda Coalition for Sustainable development, Environmental Alert, National Association for Professional Environmentalists (NAPE), Climate Action Network Uganda (CAN-U), Africa Climate Change Resilience Alliance, DENIVA, Environmental Conservation Trust, Ecological Christian Organisation, Tree Talk, NFA, GIC training, Makerere University and Earth consult.

Only 7 organizations returned the assessment forms for analysis. It is however important to note that the capacity to undertake VIA for Mt. Elgon by institutions or organizations from within Uganda is limited and hence the need to have the best recommended institution/organization to partner and work with an outside firm on this project. Outsourcing a firm in the field of climate change scenario modeling (prediction) and mapping out areas prone to mud/land slides and flooding (the hot spots) are central.

# Acronyms

CAO	Chief Administrative Officer
CCAFS	Climate Change Agriculture and Food Security Program
CRISTAL	Community Based Risk Screening Tool-Adaptation and Livelihoods
CSO	Civil Society Organization
DDPS	District Development Plans
DRR	Disaster Risk Reduction
EBA	Ecosystem Based Adaptation
EM&R	Ecosystem Management and Restoration
ICRC	International Committee of the Red Cross
IUCN	International Union for the Conservation of Nature
ITCP	Integrated Territorial Climate Plan
LC5	Local Council Five
LGBFPs	Local Government Budget Framework Papers
M&E	Monitoring and evaluation
NFA	National Forestry Authority
NUSAF II	Nothern Uganda Social Action Fund 2
OPM	Office of the Prime Minister
PMU	Project Management Unit
PRDP	Peace Recovery Development Plan
SL	Sustainable Livelihoods
TACC	Territorial Approach to Climate Change
UNDP	United Nations Development Program
UPDF	Uganda Peoples Defense Forces
RDC	Resident District Commissioner
VIA	Vulnerability and Impact Assessment



# 1

## Background information

### 1.1 Introduction

Mountains are one of the most fragile ecosystems on earth. They are always very rich in biodiversity and water sources. Mountains provide a range of goods and services for the communities living up streams, mid streams and down streams (Karma Tse-ring et al 2012). In Uganda, Mt. Elgon performs a similar function and is the home of a number of threatened and endemic species. Mt. Elgon is also homes to a number of human beings.

Like many mountains, Mt. Elgon is facing great pressure from various drivers of global and national changes including climate change. The mountains will continue to face a range of effect on its environment, natural resources (including biodiversity) and socio-economic conditions of human that live within its environment.

With little knowledge about vulnerability of mountain ecosystems to climate change in general and with specific reference to mountains in Uganda, there is therefore a need to identify institutions/organizations/firms to undertake assessment of the current situation and predict future scenarios within the Mt. Elgon project area. Any small change in temperature or where there are extreme slopes can lead to a rapid change in climatic zones over a small distance. This will show a mark impact in terms of biodiversity loss, water availability, agriculture production and other hazards that will affect a number of sectors of the economy (Karma Tse-ring et al 2012). This will in turn impact greatly on the general wellbeing of the wider communities.

### 1.2 Vulnerability and Impact Assessment (VIA) methodologies and tools

Vulnerability assessment is very important in securing assessment to climate change impacts in any development planning. There are a number of methods that can be used for undertaking vulnerability assessment in natural hazards, food security, poverty analysis, sustainable livelihoods and related fields. Each method has a core set of best practices for use in studies of climate change vulnerability and adaptation (Thomas E. Dowling et al 2002).

Vulnerability varies widely across peoples, sectors and regions (at international, national and local level). Because of the diversity of resources, economies and societies means that no one approach to vulnerability assessment fits every need. Thomas E. Downing and Anand Patwardhan (2002) recommend that vulnerability assessment to climate change impact be undertaken in a structured approach. There are important five tasks and appropriate methods suitable for the different levels of analysis. The five tasks link a conceptual framing of vulnerability to identification of vulnerable conditions, analytical tools and stakeholders.

The following are the 5 step process for undertaking Vulnerability Assessment:

1. Vulnerability framework and definitions
2. Constructing a development baseline and targeting vulnerable groups
3. Linking the development baseline to climate impacts and risks
4. Drivers of vulnerability: linking the present and future
5. Outputs of the vulnerability assessment

The key analytical tools for Vulnerability Assessment are vulnerability mapping and dynamic simulation of sustainable livelihoods (Thomas E. Downing et al 2002). However, the broader techniques of stakeholder participation and risk assessment are essential. Vulnerability mapping should be undertaken as a snapshot of the present situation – whether applied to a specific hazard like flood or landslides or generic disaster risk or poverty. The approach should look at both present and future climate risk. Further elaboration should provide indications of relative risks and strategies to support sustainable livelihood within the Mt. Elgon ecosystem.

Sections 4.2.1 and 4.2.2 proposes an adopted general and detailed step by step process, methods and tools of undertaking Vulnerability Assessment for climate change adaptation for Mt. Elgon Ecosystems. In relation to the bigger assignment to come, Vulnerability and Impact Assessment (VIA) should aim at identifying the hot spot and who or what are more vulnerable to the impact of hazards or disaster within the Mt. Elgon ecosystems.

### 1.3 Specific link of VIA to Ecosystem Based Adaptation (EBA)

**CBD (2009) observed that “Ecosystem-based adaptation uses biodiversity and ecosystem services in an overall adaptation strategy. It includes the sustainable management, conservation**

**and restoration of ecosystems to provide services that help people adapt to the adverse effects of climate change”.**

An ecosystem consists of an ecological community together with its abiotic environment, interacting as a system. Ecosystems are dynamic entities. They are subject to periodic disturbances and are in the process of recovering from some past disturbance. Within the ecosystem are living and non living things all of which are vulnerable to any disturbances. Whenever a disaster (disturbance) occurs or when a recovery is being undertaken (naturally or by mans intervention), it will be within an ecosystem. Therefore the vulnerability (of living and non living things) and impact of disaster is within the ecosystem itself and hence the link between VIA and EBA.

Ecosystems also provide a variety of goods and services upon which people depend Raffaele Vignola etal (2009). Therefore a well functioning and healthy ecosystem can play a great role in promoting natural resilient to impact of climate change. Such an ecosystem can also reduce the vulnerability of people to the impact of climate change.

The Mt. Elgon ecosystems (project area) are well defined by the network of interactions among organisms, and between organisms and their environment. Like in many developing countries, the livelihoods and the economy of the people depend mainly on ecosystems Raffaele Vignola etal (2009). Therefore, Ecosystem Based Adaptation is an appropriate entry point for addressing climate change issues in Mt. Elgon.

The consultant is of the view that the VIA for Mt. Elgon ecosystems (project area) should be defined by the network of interactions among organisms, and between organisms and their environment. It is therefore important that when undertaking VIA, the human, the economy and the ecosystem vulnerability is put at the center of the analysis.

Ecosystems processes are controlled both by external and internal factors.

1. External factors control the overall structure an ecosystem and the way things work within it, but are not themselves influenced by the ecosystem. The most important of these is climate.
  - a. Climate determines the biome in which the ecosystem is embedded. Rainfall patterns and temperature seasonality determine the amount of water available to the ecosystem and the supply of energy available (by influencing photosynthesis).
  - b. Parent material, the underlying geological material that gives rise to soils, determines the nature of the soils present, and influences the supply of mineral nutrients.
  - c. Topography also controls ecosystem processes by affecting things like microclimate, soil development and the movement of water through a system.
2. Internal factors not only control ecosystem processes but are also controlled by them and are often subject to feedback loops. While the resource inputs are generally controlled by external processes like climate and parent material, the availability of these resources within the ecosystem is controlled by internal factors like decomposition, root competition or shading, disturbance, succession and the types of species present. Although humans exist and operate within ecosystems, their cumulative effects are large enough to influence external factors like climate.

## 1.4 Tools used for previous vulnerability and impact assessment in Mt. Elgon Region of Uganda

Attempts have been made to undertake vulnerability assessment in Mt. Elgon. The key tool used included CRISTAL tool in combination with other tools under Climate Vulnerability and Capacity Analysis (CVCA) Framework. IUCN Uganda office undertook the assessment in response to the impact of climate risks on maize, beans and coffee production in Uganda (Sophie Kutegeka et al, 2011). Another attempt was made under the Territorial Approach to Climate Change (TACC) project in Mbale Region in the districts of Mbale, Manafwa and Bududa.

Spatial tools and techniques were used to map vulnerability of different sections and sectors of Mbale region to climate changes impact. Vulnerability assessment also benefited from interaction with informed people (stakeholder consultation) from Mbale Region (Mgooga, 2012). A review of both project documents was made and the following observations are made:

### 1.4.1 Tool used for IUCN project

The CRISTAL tool is developed by International Institute for Sustainable Development (IISD), the Stockholm Environment Institute (SEI-US) and IUCN as decision support tool that will help project planners and managers better understand the links among climate change, livelihoods and their work (Marshall et al., 2009). In Uganda, IUCN country office used the tool to assess local responses to the impact of climate risks on maize, beans and coffee production in Uganda: A Case study of Kacheera subcounty in Rakai district and Kawowo sub-county in Kapchorwa district (Sophie Kutegeka et al 2011).

The work undertaken by IUCN presented methodologies and tools used for data collection and data analysis on:

1. Current agronomic practices for maize, beans and coffee production and related changes over time
2. How the impacts of past and present climate hazards (floods and/or droughts) on maize, beans and coffee production have been affecting livelihoods
3. Local responses including the extent to which the identified coping and/or adaptation strategies are sustainable.
4. The barriers and/or enabling factors to adaptation at the local level.

The summary of key methodologies and tools used are as follows:

1. During the initial processes, mapping of the issues in the various communities in Kapchorwa and Rakai Districts were undertaken through literature review, consultation with local communities and district officials in order to select study site.
2. Detailed consultations were later undertaken using the Climate Vulnerability and Capacity Analysis (CVCA) Framework. The CVCA framework helped to understand the implications of climate change on the lives and livelihoods of people. The framework contained a series of tools and processes which were adopted for the survey (included rain calendars, crop calendars, hazard mapping and vulnerability matrices. In addition, focus group discussions). The local consultations were conducted over ten days, with five days in each district
3. Data analysis was done using the CRISTAL tool (Community-based Risk Screening – Adaptation and Livelihoods). CRISTAL which is decision support tool analyzed information from vulnerability assessments gathered

using the CVCA tools. This was done to help users to systematically understand the links between livelihoods and climate risks such as changes in rainfall and temperature and extreme events, hence generating recommendations for supporting communities to adapt. The analysis was done by a team of facilitators who included IUCN staff, UNDP staff, and district officials. The data collected from the field was discussed and entered into a series of excel sheets for analysis.

In general, the structure of CRISTAL tool use should be organized into two modules (stages), each containing a set of framing questions as summarized below (IISD 2009).

1. Synthesizing Information on Climate & Livelihoods
  - a. What is the climate context of the project?
  - b. What is the livelihood context of the project
2. Planning & Managing Projects for Adaptation
  - c. What are the impacts of project activities on livelihood resources that are
  - d. How can project activities be adjusted to reduce vulnerability and enhance adaptive capacity in the project community?

The different stages of the CRISTAL analysis should also provide an opportunity to develop the key strategies that can be used to support the farming communities to adapt to the changing climate. It is important to note that the IUCN assessment did not follow the modules as indicated above. However, most of the questions asked above were answered in the main document.

The limitation of the CRiSTAL tool and the CVCA framework is that both does not consider all the issues that can be raised by the VIA methods and tools. Particularly lacking are the baseline data for the project area, lack of modeled scenarios to climate change impact, lack of maps showing the hot spots (vulnerable sites).

The strength of this study is that a number of participatory tools such as seasonal calendar, participatory mapping, focus group discussion, ranking (prioritizing issues, poverty and gender analysis etc) were used during data collection. This is true for VIA. Also important to note is that sustainable livelihoods is key to both CRiSTAL method and VIA.

CRiSTAL method can be used as a follow on tool from other VA tools and methods especially when undertaking a detailed assessment of and understanding the link between livelihoods and climate change while developing local adaptation methods with local strengths and needs in mind.

#### 1.4.2 Tools used for the TACC project

Discussion with TACC team in Mbale indicated that the assessment took 45 days and was conducted by an individual consultant (personal communication with Rebecca Nanjala). His assessment was mainly desk based. The focus of the study was based on development of climate profiles and vulnerability assessment maps for the territorial approach to climate change (TACC) project.

The goal of the TACC project is to develop an Integrated Territorial Climate Plan (ITCP) for the Mbale region of Uganda, comprising present day Bududa, Manafwa and Mbale districts on the south-western slopes of Mt. Elgon. The ITCP aims at integrating climate change adaptation and mitigation strategies into regional development planning framework. Developments of a policy and investment plan (strategies)

that can be used in identifying appropriate regulatory and financial instruments for the implementation of the actions have been central to the approach.

The work presented a detailed climate profile, and a brief assessment of the vulnerability of the environment, society and economy to climate change for the Mbale region of Uganda. Climate profile used downscaled climate data developed by the Climate Change Agriculture and Food Security (CCAFA). This data for analysis has been limited to the 1961-1990 baseline periods.

The following are the key observations from the TACC project assessment:

- a. Very detailed assessment report on analysis of available meteorological data and climate profile for Mbale region (Mbale, Manafwa and Bududa districts)
- b. Very brief report on vulnerability assessment for Mbale region (Mbale, Manafwa and Bududa districts).
- c. Methods and tools used for vulnerability assessment were not clear in the report. The VIA method is clearly a 5 stages process. Although elements within other stages of vulnerability assessment are seen, elements within stage 1 (clarification on vulnerability framework and definitions) and stage 4 (defining drivers of vulnerability: linking the present to the future) were missing from analysis of the TACC report as observed below:
  - a. Very good pictorial baseline data for rainfall and temperature for the region. However the maps are too small to give details up to subcounty levels. The presentation is similar to stage 2 of vulnerability assessment (constructing development baseline and targeting vulnerable groups)

- b. Baseline climate for the region is described using spatial climate grids, WorldClim developed by a consortia of organizations working on climate change and agricultural and natural resources (Hijmans et al. 2005), Ramirez-Villegas and Jarvis 2010). This is a very useful pictorial presentation which can be used during the VA process (stage 2).
- c. GIS layers on land use from the AFRICOVER programme at the Food and Agricultural Organization –FAO was very useful for a start. This is closely similar to stage 3 of Vulnerability assessment (linking development baseline to climate impacts and risks)
- d. Important data provided by Climate Change Agriculture and Food Security Programme (CCAFS) of the Consultative Group on International Agricultural Research-CGIAR. The use of the downscaled World climate data was very valuable. This is also closely similar to stage 3 of Vulnerability assessment (linking development baseline to climate impacts and risks)
- e. Different scenarios (maps) for risk and vulnerability to climate change produced. Abilities of the communities to cope were also highlighted. This is also similar to stage 3 of Vulnerability assessment (linking development baseline to climate impacts and risks)
- f. Classified landslide hazards map of Mbale, Manafwa and Bududa Districts is done. However it would have been better if the landslide hazards are done for each district with the counties and parish boundaries clearly stated. This is closely similar to stage 3 of Vulnerability assessment (linking development baseline to climate impacts and risks).
- g. Projections of future climate simulated by global circulation models (GCMs) and three emissions scenarios – A1B, A2 and B1. Is also an important presentation in this study which can be used during the VA process (stage 3)
- h. The magnitude of projected changes in climate were used together with socio-economic and topographic data to provide likely exposure of the Mbale region to climate hazards during the 2010-2030 and 2040-2069 future time slices. This is also similar to stage 3 of Vulnerability assessment (linking development baseline to climate impacts and risks).
- i. The final tasks involved assessing the how environment, society and economy can be harnessed to enhance adaptive capacity of the region to climate change over the 21st century. This is similar to stage 5 of VA (Output of vulnerability assessment)
- d. Although the main aim of the TACC project is to develop climatic profile and draft climate change adaptation strategies and action plans, a number of key tools were used like scenario modelling, mapping of hot spots which are the strong points. The weakness with the TACC approach is that it was undertaken by a one man over a short time (45 days). A full VIA will need a multidisciplinary team and for the detail assessment to be undertaken one may need to work for 5-7 months.

There is therefore a need to undertake a detailed VIA so as to map out the vulnerable individuals/communities, vulnerable sites/ ecosystem, and vulnerable livelihoods/ economy using a multidisciplinary team to assist any development program interventions so that partners understand how climate variability/change may affect their project outcome and identify adaptation options which can be integrated into the design of more resilient projects.

### 1.4.3 Overview of other vulnerability assessment methods that could be integrated in VIA for Mt. Elgon EBA.

#### CARE Climate Vulnerability and Capacity Analysis (CVCA)

CARE has developed a specific approach for analyzing vulnerability and capacity to adapt to climate change at the community level known as CARE Climate Vulnerability and Capacity Analysis - CVCA (Morgan 2011). The method aims at gathering, organizing and analyzing information on the vulnerability and adaptive capacity of communities, households and individuals. The method also provides guidance and tools for participatory research, analysis and learning (CARE, 2009).

The approach takes into consideration good practices from household and livelihood security (LHS) approach and from other approaches that focuses on Disaster Risk Reduction (DRR) and hazard identification. The framework (CVCA) facilitates analysis of information gathered from both types of assessment from a climate change perspective (Morgan 2011). The approach assesses both hazards and conditions and analyzes the interaction between the two (CARE, 2009). This approach makes use of aspects of other vulnerability assessment and relate then community, climate change related focus.

Headings for the CVCA framework include (from CARE, 2009):

- CVCA process

- Climate context
- Livelihoods (climate linkages)
- Changing disaster risks
- Institutional Context Related to Climate Change
- Underlying causes of Vulnerability

The strength with CVCA tool is that it is a good template that can be adapted for the EBA project in Mt. Elgon. The framework is more specific and offers more guidance when one is to design a context specific vulnerability assessment. It focuses on livelihood analysis, level of exposure to shocks, coping responses and institutional responsibilities.

However the weakness with this framework is that it does not recognize the goods and services (natural assets) provided to the local communities by species and habitats (Ecosystems). These assets contribute to the livelihoods and hence living them out from climate change vulnerability leaves out the consideration of human vulnerability in the assessment. In VIA, human, economy and the ecosystem vulnerability have to be considered in details.

#### IUCN framework for assessing vulnerability to climate change

These guidelines are set out in the publication by Marshall et al. (2009). Although they are written for the context of coastal communities, it can be adopted for EBA for Mountain communities as well. It integrates a 'system wide' approach, taking into consideration ecological vulnerabilities, which is necessary for resource dependent communities (Morgan, 2011).

The framework focuses mainly on adaptive capacity assessment of a coastal Socio-Ecological System, without focusing on identifying specific risks within the system (for example natural disasters etc) as other Vulnerability Assessments do.

The framework can be implemented at both national/regional and community levels, however the majority of detailed Analysis is at community level. The focus within the framework is on adaptive capacity, as well as implementing resilience-building activities.

The strength with this framework is that it identifies with and takes into consideration dynamic livelihood analysis. This is important in recognizing the relationships between people and planning for the future, which is a very important aspect of VIA for EBA.



## 2

# Strategic direction of the consultancy.

The assignment was guided by the need to produce supporting and baseline information to enable the detailed design, monitoring and evaluation of the project's strategy for promoting ecosystem based adaptation (EBA) to climate change in the Mount Elgon region.

### 2.1 Objectives of the consultancy

The aim of this activity was to assess the current capacity to conduct VIA for the Mount Elgon region and nationally, to enable the identification of a suitable institution or consultants to conduct the project VIA and the definition of the most appropriate VIA method (Activity 1.2.3). The ToR is attached in Appendix 1.

Specifically, the objectives are:

1. To determine the current capacity, institutions, methods and data availability to conduct VIA in Mount Elgon.
2. Assess the training needs of stakeholders in DRR with a view of informing capacity needs in line with EBA.
3. To make recommendations to the *National Coordination Team and UNEP-WCMC on the most suitable institution to be supported in conducting VIA for the project.*

### 2.2 Approach and methodology

The activity was a rapid assessment only, to provide just sufficient information for determining the most suitable institution to be supported in conducting VIA for

the project, as well as a summary **report that articulates the methodology to be followed when integrating and monitoring resilience when undertaking VIA and the design of EBA options for Uganda.**

The consultant visited the Mt. Elgon ecosystem in the districts of Sironko, Bulambuli, Kapchorwa and Kween during which consultations were made with district political leaderships and technical officers on issues relating to VIA for EBA and DRR within Mt. Elgon Ecosystems. The consultant also visited the landslide area in Bulucheke Sub County Bududa District and held discussions with the local leaderships and officials from Office of the Prime minister who were coordinating the recovery activities and emergency relief distribution to the affected communities.

Use was also made of the instruments attached in Appendix 5 to identify appropriate institution/firm to undertake VIA for EBA on Mt. Elgon. This information was analyzed and presented in 3.1.3. Below are some of the key approaches and methods used:

#### 2.2.1 Literature review:

In preparation for the work ahead, the consultant put aside two working days to review available secondary information in the project document developed by UNDP on the Ecosystem Based Adaptation in Mountain Elgon project area. Also reviewed were documents listed section 6 (references) in which focus were put

on the issue of Vulnerability and impact assessment to climate change in general and in mountain ecosystems in particular.

These review helped in constructing a conceptual framework on VIA for EBA and formulating a questionnaire for assessing institutions/firms that could be supported in undertaking a detailed VIA for Mt. Elgon Ecosystem project area.

### 2.2.2 Focus group discussion

Focus group discussion was done at the district level (see attendant lists in appendix 3). The aim of conducting focus group discussion was to orientate the consultants to the field of study, evaluate the different project sites in relation to VIA to climate change and reassess the questionnaires to be asked to those who will eventually undertake the detailed VIA. Particular interest was put in getting participants' interpretation of issues/concerns on natural resources management and conservation, socio-economic activities in their areas and impact of climate change on the livelihoods of the communities.

A cross-section of people based on professional background, gender and life experience were considered. Discussion with each district team took place at different times (see appendix 2 for the dates of the field visits). While conducting the focus group discussion, the consultants provided a short overview of the background to the Mt. Elgon EBA to climate change project. In the process of initiating the discussion, the consultants encouraged the participants to say exactly what they think especially on issues related to climate change impact, the hot spots and the kind of knowledge and skills needed for climate change related Disaster Risk Reduction (DRR).

### 2.2.3 Field observation and photography

One day was put aside on the 5<sup>th</sup> July 2012 to visit the Bududa landslide area in Bulucheke Sub County which occurred a week before the field visit. This enable the consultant to appreciate the level of vulnerability of the people, economy and livelihoods in Mt. Elgon region, the impact of landslide, how the local and central government respond to disaster and find out from the district leaderships the kind of knowledge and skills needed for DRR.

Observed were how households are involved in agricultural activities and land assess for crop regimes and animal keeping. Also observed were a snap shot of the type of crops being grown, productivity of the land and any sign of use of marginal land (Swamp, river banks, hilly areas etc), use of Agro forestry technology and sign of soil erosion.

### 2.2.4 Interview of key informants

Questionnaire was an indispensable tool for primary data collection. Key informants from IUCN Kampala office, TACC Mbale Office and Makerere University School of Forestry Environmental and Geographical Science who have knowledge about vulnerability assessment and had participated in undertaking vulnerability assessment were interviewed. Their interviews were important in order to understand the strength and weakness of the vulnerability assessment methods and tools they used so as to get background information for future VIA work to come and to inform those who will be undertaking the detailed project.

The interview approach incorporated a mix of unstructured/semi-structured and open-ended questions. Questions were related to concerns and issues about vulnerability assessment to climate change in mountain regions based on their experiences. The major justification of the open-ended question is to allow for practical, flexible and contingencies for cultural and research adaptability.

### 2.2.5 Analysis of information and selection criteria

One of the methods used for data analysis revolved around qualitative material analysis. With a lot of information generated during consultation both at the district and at the national level, the consultants transcribed and typed all the notes and information recorded on daily basis. By transcribing the notes immediately after interviews or discussion, the consultant was able to add in or clarify any marginal notes needed about VIA, EBA and climate change impact in Mountain ecosystems. In the long run the approach enabled the consultants to keep legible information which was later used in designing questions for identifying suitable organisation/firm to undertake the VIA.

Detailed data analysis were undertaken using a simple excel spreadsheet designed by the consult. Six critical issues related to VIA, EBA and climate change impact in Mountain ecosystems and the associated knowledge and skill needed were weight and scored. Scoring was then done based on the information emailed back to the consultant (see section 3.2.1 for the result of the analysis).

## 3

# Key findings:

### **3.1 Organizations or bodies with relevant VIA and mapping experience and data in Uganda, with an assessment of their suitability for the needs of the project.**

The following were the key guiding questions used to undertake the assessment:

Q: Is there a full capacity to conduct VIA from within Uganda?

Q: Which institution is better?

Q: Which methods were proposed by the institutions/firms?

Q: Is there complete data availability to undertake VIA from within Uganda?

#### **3.1.1 General knowledge and skills needed to undertake the VIA for EBA**

A lot of good quality information is required for assessing the vulnerability and impacts of climate change, including, climate risk assessments, profiling, mapping and subsequently working out community based resilience, adaptation and coping strategies. Important information needed includes climate data (e.g. temperature, rainfall and the frequency of extreme events), and non-climatic data (e.g. current situation on the ground for different sectors of the economy including water resources, agriculture and food security, human health, terrestrial ecosystems and biodiversity, including primary and anthropogenic induced influences, proximity to the National Park.

A review of the questionnaires presented by possible contenders of undertaking the

project and talking to Dr. Michael Mbooga indicated that there is generally limited information and data on vulnerability to climate change both nationally and at the district level. Although there are temperature and rainfall data available from the meteorological department, non climatic data are very difficult to come by or they are simply not available in Uganda. Dr. Mbooga confirmed that he had to use data from outside the country when he was assigned to undertake the Mbale TACC project (reviewed in 1.4.2).

Undertaking VIA for Mt. Elgon EBA will be a complex undertaking and will require 5- 7 months period for a comprehensive vulnerability and impact assessment to be done. Based on consultation at the national and at the district level, the project will also require an interdisciplinary team comprising of professionals with the following knowledge and skills:

Primary knowledge and skills needed to undertake VIA for EBA:

1. Understanding of climate change concept and related issues
2. Modeling climate change patterns/predicting various climatic change impacts
3. GIS and mapping
4. Disaster risk assessment and mitigation
5. Soil science/geology
6. Natural resources management
7. Socio-economic survey

8. Monitoring and evaluation (Baseline survey and indicator development)

Additional knowledge and skills needed to undertake VIA for EBA:

1. Land use planning
2. Hydrology/water development and management
3. Community development
4. Agriculture
5. Forestry and or
6. Biodiversity inventory and biomass study
7. Economics (Agri-business)
8. Engineering (agriculture, road, building etc.)
9. Public health

### 3.1.2 Assessment of institutions/firm with relevant VIA data availability and mapping experiences in Uganda:

Attempts were made by IUCN Uganda country office and an individual from Makerere University School of Forestry, Environmental and Geographical Science to undertake vulnerability assessment in parts (see sections 1.4.1 and 1.4.2 above). Consultation with organisations/firms involved in climate change related project indicates that undertaking a full VIA is quite challenging considering the limited availability and access to up to date climatic data, knowledge and skills for mapping out detailed disaster hot spots within Mt. Elgon area, and availability of data and skills for modelling different climate impact scenarios for the Mt. Elgon areas. Also limited are the appropriate computer software for modelling and production of vulnerability maps.

The limited data availability is brought about by the gaps in climatic data so far collected for Uganda and Mt. Elgon region, the socio-economic data is rarely

up-to-date and normally, there are little data collected from most of the remote locations within the mountains.

Nevertheless,<sup>14</sup> organizations were contacted for assessment to be part of a partnership arrangement for undertaking VIA and they include IUCN Uganda Office, Uganda Coalition for Sustainable development, Environmental Alert, National Association for Professional Environmentalists (NAPE), Climate Action Network Uganda (CAN-U), Africa Climate Change Resilience Alliance, DENIVA, Environmental Conservation Trust, Ecological Christian Organisation, Tree Talk, NFA, GIC training, Makerere University and Earth consult. Environmental Alert which host Uganda Forest Working Group (UFWG) provided the list of those organisations within Uganda involved in climate change related projects.

Assessment of 7 organisations/firms was undertaken based on the questionnaire submitted back to the consultant. The following organisations/firms (see appendix 4 for contact details) were assessed for suitability to undertake the VIA methods and tools:

1. National Forestry Authority
2. Climate Action Network-Uganda (CAN-U)
3. Development Network of Indigenous Voluntary Association (DENIVA)
4. Earth Consult (U) Ltd
5. School of Forestry, Environmental and Geographical Sciences (MUK)
6. Gio - Information Communication (GIC)
7. Environmental Alert

Use was made of the tool/Questionnaire in appendix 5. Based on the questionnaires sent to the respondents, a score cards was developed to assist with evaluation. The scoring system was pretested and the result is in 3.1.3 below

### 3.1.3 Result of the assessment

Firm/Organisation for undertaking VIA for Mt. Ecosystem																	
No.	Issue	Knowledge and skills needed	Wt	Name of organisation/firm													
				NFA	SFECS	EC	GIC	CAN-U	DENIVA	EA							
Enter 1 = poor; 2 = O.K.; 3 = good - into highlighted boxes only																	
1	General knowledge and skills	Vulnerability & Impact Assessment (VIA)	5	1	2	10	1	5	1	5	1	5	1	5	2	10	
		Disaster Risk Reduction	4	1	4	2	8	1	4	2	8	1	4	2	8	2	8
		Environmental Sustainability	5	3	15	3	15	3	15	3	15	2	10	2	10	3	15
		Climate change concept & modeling	4	1	4	2	8	1	4	1	4	1	4	1	4	2	8
2	Experience in the field	5-10 years in operation	2	3	6	2	4	3	6	3	6	1	2	3	6	3	6
3	Experiences in assessment tool use	Vulnerability analysis/assessment tools	5	1	5	2	10	1	5	1	5	1	5	1	5	2	10
		Livelihood analysis/assessment tools	5	3	15	3	15	3	15	2	10	1	5	2	10	3	15
		Participatory approaches tools	4	3	12	3	12	3	12	3	12	3	12	3	12	3	12
		Env & social impact assessment tools	3	3	9	2	6	3	9	3	9	1	3	2	6	3	9
		Indicator Development & Baseline survey	4	2	8	2	8	2	8	3	12	1	4	1	4	2	8
4	Team composition/specialists	GIS/Mapping specialist	5	3	15	3	15	3	15	3	15	1	5	1	5	2	10
		Computer based scenario modeling	4	1	4	2	8	2	8	2	8	1	4	1	4	1	4
		Disaster Risk Assessment & mitigation	3	1	3	2	6	1	3	2	6	1	3	1	3	3	9
		Land use planning specialist	4	3	12	2	8	3	12	3	12	1	4	1	4	2	8
		Natural resources management	3	3	9	2	6	3	9	3	9	1	3	1	3	3	9
		Socio-economic survey specialist	3	2	6	3	9	3	9	3	9	1	3	2	6	3	9
		Water dev & management (Hydrology)	3	1	3	1	3	1	3	3	9	1	3	1	3	1	3
		Monitoring & Evaluation specialist	3	3	9	2	6	1	3	2	6	1	3	1	3	2	6
5	Data availability	Climatic data	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3
		Landuse and land cover	4	3	12	2	8	2	8	2	8	1	4	1	4	1	4
6	Possibility of working in partnership	Possible	3	1	3	3	9	3	9	3	9	1	3	1	3	3	9
				<b>G/T</b>	<b>162</b>	<b>177</b>	<b>165</b>	<b>180</b>	<b>92</b>	<b>111</b>	<b>175</b>						
<b>Ranking</b>					<b>5</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>7</b>	<b>6</b>	<b>3</b>						
				NFA	National Forestry Authority												
				SFECS	School of Forestry, Environmental and Geographical Science (Makerere University)												
				EC	Earth Consult (U) Ltd												
				GIC	Geo - Information Communication												
				CAN-U	Climate Action Network - Uganda												
				DENIVA	Development Network of Indigenous Voluntary Associations												
				EA	Environmental Alert												
Scored by: <u>Langoya Council Dickson</u>				Sign: _____	Date: <u>12/9/2012</u>												

The assessment has indicated that no single institution/firm has all the needed knowledge and skills for undertaking VIA in house. Three organization/firms have been identified with each having strengths and weaknesses to undertake VIA as summarized below:

**Table 1: Comparison of strengths and weakness of the first three best firms**

Organization	Scores	Strength	Weakness
Geo - Information Communication	180	<ul style="list-style-type: none"> <li>Very good GIS lab and software for mapping</li> <li>Undertook vulnerability assessment for livelihoods and food security</li> <li>Strong baseline data collection and analysis</li> <li>Strong environmental assessment and management background</li> </ul>	<ul style="list-style-type: none"> <li>Limited exposure to climate change experiences.</li> </ul>
School of Forestry, Environmental and Geographical Science (Makerere University)	177	<ul style="list-style-type: none"> <li>Very good knowledge and skills on issues relating to climate change</li> <li>Developing climate data for Uganda (still at its infancy stage)</li> <li>Undertook a short study on climate change in Mt. Elgon region.</li> </ul>	<ul style="list-style-type: none"> <li>Most climate change experience has been more academic than applied in the field.</li> <li>Time limitation to undertake a full VIA due to commitment in lecturing students</li> </ul>
Environmental Alert	175	<ul style="list-style-type: none"> <li>Very good knowledge and skills in socio-economic and environmental assessment</li> <li>Used CVCA tools in some of its project areas</li> </ul>	<ul style="list-style-type: none"> <li>Lack of GIS lab</li> <li>Limited climate change scenario analysis</li> <li>Limited skills in modeling climate change impacts</li> </ul>

One or two of the above organization or firm could partner with an external firm/organization with more specialties in computer modeling of climate change impacts to undertake the task ahead. The consultant therefore recommends that an institution or firm with strong.

GIS/Mapping, climate change modeling and socio-economic/baseline survey expert be brought on board to lead the assessment. Based on the assessment about, the consultant proposes that the first priority should be given to Geo - Information Communication, followed by Environmental Alert and lastly School of Forestry, Environmental and Geographical Science (Makerere University).

### **3.2 Training needs of stakeholders in Disaster Risk Reduction (DRR) with a view of informing capacity needs in line with EBA.**

#### **3.2.1 Overview of Disaster Risk Reduction (DRR) and specific knowledge and skills needed for EBA**

Mt. Elgon region has been experiencing a number of disasters ranging from mud slide and land slide in the hilly areas to flooding down streams. The most significant disaster has been the numerous landslides of various magnitudes in the area nearly every year, some of which cause extensive damage to property and loss of life (Mbooga 2012).

The most recent case is the landslide in Bulucheke Sub County that occurred during the month of June 2012. The landslide has impacted negatively on the livelihoods and economy of many communities within the mountains (personal communication with affected communities and leaderships of Bududa District and Bulucheke Sub County on 5/7/2012). The question that the consultant kept on asking while in the landslide area was are the communities and their leadership prepared for any future disaster in the area?

A good practice note on Disaster Risk Reduction by the World Bank (July 2008) proposes that the objective of DRR is to make communities and their assets significantly more resilient to the impacts of future disasters. The note also suggest that in order to establish an effective disaster risk reduction framework, key institutional actors and stakeholders will need to work together and be aware of their respective roles and responsibilities (World Bank 2008). The institutional actors should include the central government, local governments, the relevant government ministries and agencies, as well as communities. All involved must be properly trained to prevent or manage disaster effectively. It is therefore imperative that those who will implement the EBA to climate change in Mt. Elgon Ecosystem need to understand some basic concepts about DRR.

An effective disaster management system should cover the following five aspects (World Bank 2008):

1. Risk Identification
2. Emergency Preparedness
3. Institutional Capacity Building
4. Risk Mitigation
5. Catastrophe Risk Financing.

#### **Risk Identification:**

The first step is to identify and understand the problem. This can include the updating of hazard maps, community vulnerability and capacity analysis, risk modeling, understanding direct, indirect and secondary effects of disasters. The VIA assignment will address this issue at length.

Risk assessment is the process of evaluating and quantifying the threat of various hazards to the project site. Risk assessments identify hazards, their probability of occurrence, vulnerability to these hazards, probable impact and cost of this impact, and can be carried out at any

level, community to national, or for any sector. Risk assessments are needed, inter alia, for effective disaster risk reduction planning, sustainable development planning, and identifying high risk areas, identifying mitigation and loss reduction strategies and developing preparedness and response plans. Risk assessments are also important for setting risk management priorities.

Risk mapping is the spatial representation of risk through the use of maps. Typically these maps will show the probability of occurrence of the hazard, the area at threat from the hazard and the facilities/resources at risk.

### **Emergency Preparedness:**

These systems need to be simple to operate and applicable to a wide range of hazards. Citizens and government agencies need to be prepared for breakdowns in essential services. Contingency plans need to be developed and these plans implemented and practiced. It is important that all levels of the emergency management system be involved, from the national to local governments. Preparedness arrangements ensure that if a threat exists, it can be detected and that available resources to meet that threat can be efficiently mobilized and deployed.

### **Institutional Capacity Building:**

Strong and effective institutions and the collaboration between them contribute significantly to the efficiency and effectiveness of a hazard risk management system. This would include the review of legal frameworks to support institutions. Capacity building should involve agencies at all levels, including those stakeholders at community level. Successful institutional capacity building needs to have a strong coordinating system, adequate budget and the authority to act. It also needs a focus on the knowledge, awareness, and capacity of the stakeholders involved.

### **Risk Mitigation:**

This comprises activities that reduce potential impacts before the event. This includes activities geared towards preparedness and pre-disaster recovery planning. This can include a wide range of structural and non-structural mechanisms and interventions such as land use planning, structural design and construction practices, building codes, public education, early warning systems and preparing response plans. Special attention needs to be paid to safe building practices in critical facilities.

Mitigation is the process of reducing the impact of hazards and thus saving lives and reducing damage. Implementation of mitigation measures results in the saving of costs through reduced damage and faster recovery. Calculations of cost: benefit ratios can be used to quantify probable savings.

### **Catastrophe Risk Financing:**

This includes mechanisms and instruments that help populations and Governments deal with the economic and financial shocks caused by hazard events. Examples are self insurance, informal community based mechanisms, safety nets, insurance and reinsurance, catastrophe bonds, contingency financing, and calamity funds.

### **3.2.2 Assessment of the training needs**

Public awareness and education is an important part of institution capacity building for DRR. The general population has to be informed about the hazards affecting the community and how they can act to reduce their exposure to hazards. This is particularly important for public officials in fulfilling their responsibilities to save lives and property in the event of a disaster.

Public awareness activities should aim at fostering changes in behaviour leading to a national culture of prevention and mitigation. Activities include information dissemination, education, radio or television broadcasts, use of printed media,



as well as the establishment of information centres and networks and community participatory activities.

During consultation both at the district and at the national level, a number of gaps for preparing the district leaderships and officials for DRR were identified. Undertaking training in the areas identified when undertaken could assist in DRR for the Mt. Elgon Ecosystem project.

Below is a tabulated summary of what participant proposed as the knowledge and skills they need improved upon. The following are the key actors that needs

- to be trained or retrained in Disaster Risk Reduction (DRR) relating to climate change
1. National level-OPM, ICRC, Uganda Red Cross, UPDF, Uganda Police
  2. District level-C/man LC5, CAO, RDC, CSO
  3. Other technical staff involved in long term preparation (DRR)
  4. Local community level

It is important to note that the knowledge and skills gaps are not ranked according importance but rather put at random.

**Table 2: Knowledge and skill gaps for DRR**

Key actors/Institutions	Knowledge and skills needed
National level	<ul style="list-style-type: none"> <li>• Introduction to Disaster management</li> <li>• Presentation and facilitation skills</li> <li>• Understanding and working with groups</li> <li>• Coping with problems</li> <li>• Hazard/risk identification and mapping</li> <li>• Risk assessment, evaluation &amp; prediction.</li> <li>• Vulnerability assessment</li> <li>• Impact and cost of impact</li> <li>• Development of disaster preparedness and response plans</li> <li>• Resource mobilization</li> <li>• Contingency planning</li> <li>• Emergency management</li> <li>• Knowledge and risk management</li> <li>• Institutional arrangement for DRR</li> </ul>

<p>District level (Political)</p>	<ul style="list-style-type: none"> <li>• Introduction to Disaster management</li> <li>• Community mobilization and sensitization</li> <li>• Understanding working with groups</li> <li>• Coping with problems</li> <li>• Hazard/risk identification and mapping</li> <li>• Development of disaster preparedness and response plans</li> <li>• Resource mobilization</li> <li>• Emergency management</li> <li>• Implementation of emergency plans</li> <li>• Institutional arrangement for DRR</li> </ul>
<p>District level (Technical)</p>	<ul style="list-style-type: none"> <li>• Introduction to Disaster management</li> <li>• Presentation and facilitation skills</li> <li>• Understanding and working with groups</li> <li>• Community mobilization and sensitization</li> <li>• Hazard/risk identification and mapping</li> <li>• Risk assessment, evaluation &amp; prediction.</li> <li>• Vulnerability assessment</li> <li>• Development of disaster preparedness and response plans</li> <li>• Sustainable development planning</li> <li>• Mitigating risk/loss reduction strategies</li> <li>• Contingency planning</li> <li>• Emergency management</li> <li>• Institutional arrangement for DRR</li> <li>• Implementation of emergency plans</li> </ul>
<p>Community level</p>	<ul style="list-style-type: none"> <li>• Hazard/risk identification and mapping</li> <li>• Risk assessment, evaluation &amp; prediction.</li> <li>• Vulnerability assessment</li> <li>• Development of disaster preparedness and response plans</li> <li>• Emergency management</li> <li>• Implementation of emergency plans</li> </ul>

In summary, the findings indicate that there is limited/low capacity of the duty bearers especially at the district and the community level in understanding the issues of DRR especially in relation to the EBA.

### 3.2.3 Pictures from Bulucheke Landslide of 2012 Bududa District



DRR is about preventing this from occurring (Bulucheke Landslide July 2012).



Discussing emergency response in Bulucheke Landslide (July 2012).

## 4

# Discussions and suggestions for future actions

### 4.1 Guidance on methodology and tools to be followed when integrating and monitoring resilience when undertaking VIA and designing for EBA options for Uganda.

A lot of good quality information will be required for assessing the vulnerability and impacts of climate change (UNFCCC 2007). This will include climate risk assessments, profiling, mapping and subsequently working out community based resilience, adaptation and coping strategies. Important information that will be needed includes:

1. Climate data (e.g. temperature, rainfall and the frequency of extreme events), and
2. Non-climatic data (e.g. current situation on the ground for different sectors of the economy (including water resources, forest resources, agriculture and food security), livelihoods, human health, terrestrial ecosystems and biodiversity, primary and anthropogenic induced influences and proximity to Mt. Elgon National Park.

The following are the suggested tools that could be used when integrating and monitoring resilience (<http://www.rotterdamclimateinitiative.nl>) when undertaking VIA and designing for EBA options:

- Defining indicators to determine the level of resilience to climate change in Mt. Elgon region. This will require concrete measurement of the climate and non climate data suggested above. Some indicators may be more difficult to define, for example, community

perception of the changing rural climate. Every option available must be found to incorporate this type of notions into the monitoring system.

- Climate barometer, a communication tool also needs to be developed for the project area. The communication tool which indicates the level of climate change resilience of the project area as a whole can be published on regular basis. This will enable project managers keep a tight grip on project implementation. The tools can also provide some clarity on the connection and correlation between the various projects, so that all of the parties and people involved in these initiatives can distil an idea of their specific contribution to climate change resilience.
- Sharing knowledge: With information and data from the monitoring system and climate barometer becoming available to the wider audiences, such information could be shared especially with collaborating partners implementing VIA for EBA for mountain ecosystems. Also important is that such information and experiences can be used as a model for other mountain ecosystems to use for monitoring resilience to climate change

Based on field assessment and review of literatures, the consultant is of the view that the EBA approaches options for sustainable management, conservation and restoration of Mt. Elgon ecosystems (project area) include but not limited to the

following:

1. Community based wildlife management
2. Comprehensive watershed management
3. Increasing crop diversity (multiple crop varieties)
4. Restoration of degraded ecosystems
5. Ecosystem resilience and food security

The view of the consultant is that the most appropriate EBA approach for Mt. Elgon area is the comprehensive watershed management. The EBA Program/project intervention should look at bigger watershed management areas of Mt. Elgon ecosystem. The boundary of the project area should be determined by the major river drainage boundaries in the 4 districts all of which ends in Lake Kyoga through Lake Opeta, Lake Bisina and Awoja swamp.

1. The higher parts of Kapchorwa, Kween, Bulambuli and Sironko Distrits are at the upstream or head water areas where most of the water originates, and therefore the area with more soil erosion and landslides.
2. The lower parts of the districts of Kapchorwa, Kween, Bulambuli and Sironko are the downstream area where flooding takes place.

It is therefore imperative that for each of the climatic and non climatic data, baseline data is put in place. The baseline information can then be used for designing and assessing the different EBA options, which will be very vital in monitoring resilience during the implementation of the EBA project.

#### **4.2 Ecosystem Based Adaptation VIA model, tools and methodologies to be used during detailed assessment.**

Climate change vulnerability, impacts and adaptation assessments methods and tools which are to be developed in the near future should generate outputs that are

policy relevant. The climate change data which will be developed should include future impacts and vulnerabilities which can be integrated with socioeconomic data and analyses across a range of sectors. Such results can be tailored for policy makers and stakeholders. Preserving appropriate indigenous knowledge that is relevant to community level responses, studies on coping strategies, and gender specific vulnerability assessments should be an important elements to determining adaptation options.

The main output of the VIA should be a relatively robust presentation of present vulnerability and scenarios of future risks—accompanied by a rich understanding of coping strategies based on identified stresses to inform different livelihood options and alternatives within the project area. The integration of climate risk in development planning at the local, district and regional level should be a main goal. Planners and implementers of the VIA for EBA should remember that adopting existing development frameworks (at the district and national level) and concepts is a key strength to a successful design and implementation of the EBA project.

##### **4.2.1 General methodologies for VIA**

The consultant is of the view that the VIA methods to be undertaken should include both top-down and bottom-up approaches. Both methodologies should be linked to promote integrated adaptation assessments.

1. Top-down methodologies should include the use of modelling and scenario analysis. This can provide useful background to decision making and is strong in terms of the biophysical aspects of impacts. However the models do not perform well in representing human interactions and local abilities to adapt.

2. Bottom-up approach, which recognizes and builds upon local coping strategies and relevant indigenous knowledge and technologies, and the capacity and coping range of communities, local institutions and sectors in responding to current climate variability should be used too. This approach helps to incorporate human and economic dimensions of the local communities, particularly livelihood aspects and inter-sectoral relationships. It is useful in developing specific strategies and

policy implementation. However, it exhibits a weaker attribution to future climate change.

In generally, the tools described table 3 is not a comprehensive list of tools necessary to conduct climate-relating planning activities. Rather, these tools help communities focus on a set of tools to get started in planning for climate change. The tools are divided into sections according to function:

**Table 3: General methods and tools for planning for climate change activities**

Activity to be undertaken	Tool to use	output
1. Designing and conducting planning with communities.	<p><b>Process tools:</b></p> <ul style="list-style-type: none"> <li>• Participatory approaches (good &amp; bad facilitation skills)</li> <li>• Stakeholder analysis</li> <li>• Mapping</li> <li>• Visioning</li> <li>• Timeline</li> <li>• Pair wise ranking</li> <li>• Venn diagram</li> <li>• Seasonal calendars</li> <li>• Conflict mapping</li> <li>• Resource assessment</li> </ul>	Incorporate unique elements of vulnerability, risks and uncertainties linked to climate change planning
2. Determine the effect of potential future conditions and explore scenarios to determine potential effect of planning decisions.	<p><b>Analytical tools:</b></p> <ul style="list-style-type: none"> <li>• GIS software</li> <li>• Use of modelling experts</li> <li>• Specialised training</li> </ul>	Allow planter to investigate current conditions and ecosystem process.
3. Engaging stakeholders through pictures or diagrams	<p><b>Visualization tools:</b></p> <ul style="list-style-type: none"> <li>• Web based GIS</li> <li>• Participatory mapping</li> <li>• Pictorial (drawings)</li> </ul>	Help stakeholder to visualise simulations

Activity to be undertaken	Tool to use	output
4. Providing community level socio-economic data	<b>Socio-economic tools:</b> <ul style="list-style-type: none"> <li>• Age and gender tracking</li> <li>• Wealth ranking</li> <li>• Livelihood analysis                             <ul style="list-style-type: none"> <li>○ Main strategies</li> <li>○ Ability to cope with stress/ shocks</li> <li>○ Ability to sustain capitals/ assets</li> </ul> </li> </ul>	Planners and stakeholders visualize, explore & understand social impacts that could result from future hazards and climate change
5. Assessing vulnerability of ecosystem or specific species to climate change	<b>Natural resource tools:</b> <ul style="list-style-type: none"> <li>• Transect walk</li> <li>• Mapping (participatory)</li> <li>• Seasonal calendars</li> </ul>	Mapping out hot spots (vulnerable ecosystem or species)

Adopted from: FAO 2004 (New resource CD on Participatory approaches, methods and tools)

#### 4.2.2 Proposed step by step process of undertaking Vulnerability Assessment for climate change adaptation (VIA methods and tools)

This is a 5 step process adopted from Thomas E. Downing and Anand Patwardhan (2002) and the suggested tools are adopted from FAO 2004 (New resource CD on Participatory approaches, methods and tools). The tools and methods are summarised below and as detailed in table 4:

1. Vulnerability framework and definitions
2. Constructing a development baseline and targeting vulnerable groups
3. Linking the development baseline to climate impacts and risks
4. Drivers of vulnerability: linking the present and future
5. Outputs of the vulnerability assessment

**Table 4: Suggested Vulnerability Assessment methods and tools (process guidelines)**

Stages (What to be done)	Method (How it is done)	Tools	Output (Why)	Responsibility (Who)
a. Vulnerability framework and definitions	<ul style="list-style-type: none"> <li>Clarification on conceptual framework and definitions</li> <li>Review NDP, Poverty Reduction Strategy Paper, Environmental Sustainability Plans, Natural hazard assessment plan etc.</li> </ul>	<ul style="list-style-type: none"> <li>Literature reviews of existing regional or national conceptual frameworks that relate to vulnerability</li> </ul>	<ul style="list-style-type: none"> <li>Definition of vulnerability which varies across people, sectors &amp; regions</li> <li>Diversity in the “real world” is the starting place for vulnerability assessment</li> </ul>	Interdisciplinary team
	<ul style="list-style-type: none"> <li>If there is a common approach in use – e.g. development planning or mapping hazards, then that will be your starting point.</li> <li>Extend the framework to incorporate climate risks and climate change</li> </ul>		<ul style="list-style-type: none"> <li>Working towards a common language while keeping focus on a working framework and practical steps to be taken.</li> </ul>	Interdisciplinary team
	<ul style="list-style-type: none"> <li>If existing reviews are not suitable or not available, then develop your own conceptual and analytical framework</li> </ul>	<ul style="list-style-type: none"> <li>Stakeholder consultation (SH led exercise)</li> </ul>		Interdisciplinary team



Stages (What to be done)	Method (How it is done)	Tools	Output (Why)	Responsibility (Who)
<p>b. Constructing a development baseline and targeting vulnerable groups (Who are vulnerable? To what? Where?)</p>	<ul style="list-style-type: none"> <li>Review present condition in order to target vulnerable group</li> <li>Establish a development baseline</li> <li>The starting point is from any existing vulnerability assessment</li> <li>Review any development and conservation projects being undertaken e.g. NAADS, PRDP, NUSAF2 etc. for indicators and baseline data.</li> </ul>	<ul style="list-style-type: none"> <li>Literature review of existing related inventories e.g. poverty maps, human development indices, environmental sustainability indices etc.</li> </ul>	<ul style="list-style-type: none"> <li>Development baseline should incorporate a set of spatial indicators of vulnerability &amp; target vulnerable groups that are a priority for adaptation policy</li> </ul>	Interdisciplinary team
	<ul style="list-style-type: none"> <li>Choosing the target of the vulnerability assessment.                             <ul style="list-style-type: none"> <li>Assess demographic group.</li> <li>Assess livelihoods.</li> <li>Assess population at risk from diseases.</li> <li>Assess socio-economic groups (organizations, sectors or institutions).</li> <li>Assess vulnerable areas (S/ Counties)</li> </ul> </li> <li>Target vulnerable livelihoods e.g. peasant farming, formal and informal employments.</li> </ul>	<ul style="list-style-type: none"> <li>Review problems identified in scoping of the project. Is the target:                             <ul style="list-style-type: none"> <li>People?</li> <li>Resource?</li> <li>Economic activity?</li> <li>Region?</li> </ul> </li> <li>Livelihood analysis</li> <li>Stakeholder analysis</li> <li>Institutional analysis</li> <li>Conflict management</li> <li>Natural resource assessment</li> <li>GIS/Mapping</li> <li>Pair wise ranking</li> </ul>	<ul style="list-style-type: none"> <li>A set of vulnerable indicators &amp; identification of vulnerable livelihoods</li> <li>Central concern of vulnerability assessment is people (to be protected from adverse climatic variation/change)</li> <li>The collection of vulnerability indicators underpins the analysis &amp; identification of priorities for adaptation</li> </ul>	Interdisciplinary team

Stages (What to be done)	Method (How it is done)	Tools	Output (Why)	Responsibility (Who)
c. Linking the development baseline to climate impacts and risks	<ul style="list-style-type: none"> <li>Check out the proposed EBA with risk maps of present climatic variation if available:                             <ul style="list-style-type: none"> <li>National models for agriculture production</li> <li>Hydrological sensitivity to climatic variation</li> <li>Areas prone to landslides</li> </ul> </li> <li>If available, then they can be added to indicator data set.</li> </ul>	<ul style="list-style-type: none"> <li>Literature review</li> <li>Participatory mapping</li> <li>Web based GIS mapping</li> </ul>	<ul style="list-style-type: none"> <li>An understanding of the present probability of a range of climatic conditions and hazards.</li> </ul>	Interdisciplinary team
	<ul style="list-style-type: none"> <li>Check out for more quantitative impact assessment data of present climatic risks (e.g. probability of drought).</li> <li>If data are not available undertake historical episodes review with the communities (e.g. extreme drought, extreme rainfall can help define at risk areas)</li> </ul>	<ul style="list-style-type: none"> <li>Historical time line</li> <li>Participatory mapping</li> <li>Web based GIS mapping</li> </ul>	<ul style="list-style-type: none"> <li>The combination of the climatic hazards and development baseline comprises the present climatic vulnerability</li> </ul>	Interdisciplinary team
	<ul style="list-style-type: none"> <li>Check for formal models of present climatic impacts &amp; data on climatic risks. If not available, expert opinion &amp; examples from similar cases from nearby countries can be used to develop plausible impact scenarios.</li> </ul>	<ul style="list-style-type: none"> <li>Modeling (scenarios)</li> </ul>	<ul style="list-style-type: none"> <li>The collection of vulnerability indicators underpins the analysis and identification of priorities for adaptation</li> </ul>	Interdisciplinary team

Stages (What to be done)	Method (How it is done)	Tools	Output (Why)	Responsibility (Who)
d. Defining drivers of vulnerability: linking the present and future	<ul style="list-style-type: none"> <li>Find out what is shaping the exposure to climate risks.                             <ul style="list-style-type: none"> <li>Socio-demographic situation (Population growth)</li> <li>Livelihood strategies (Economic production)</li> <li>Social consumption behavior (Wealth)</li> </ul> </li> <li>What is the scale of exposure?</li> </ul>	<ul style="list-style-type: none"> <li>Interactive exercises like mapping among experts and stakeholders</li> <li>Through experiments</li> <li>Case studies</li> <li>In depth semi-structured interviews</li> <li>Facilitating discussions</li> <li>Close dialogues</li> </ul>	<ul style="list-style-type: none"> <li>Refined initial vulnerability assessment framework.</li> <li>Suggested linkages between vulnerable groups, socio-institutional factors, their resources, economic activities and the threats or opportunities resulting from climatic variation.</li> </ul>	Interdisciplinary team
	<ul style="list-style-type: none"> <li>"Mapping" the structure of present vulnerability and how it might change in the future.</li> </ul>	<ul style="list-style-type: none"> <li>Discussions</li> <li>Close dialogues</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative descriptions of present structure of vulnerability, future vulnerabilities and a revised sets of vulnerability indicators ( and scenarios)</li> </ul>	Interdisciplinary team

Stages (What to be done)	Method (How it is done)	Tools	Output (Why)	Responsibility (Who)
<p>e. Outputs of the vulnerability assessment</p>	<ul style="list-style-type: none"> <li>• Check out for &amp; confirm:               <ul style="list-style-type: none"> <li>- Description &amp; analysis of present vulnerability</li> <li>- Representative vulnerable groups (specific livelihoods at risk of climatic hazards)</li> <li>- Description of potential vulnerabilities in the future</li> <li>- Analysis of pathways that relates the present to the future</li> <li>- Comparison of vulnerabilities under different socio-economic conditions, climatic changes and adaptive responses</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Presentation &amp; Discussions</li> <li>• Close dialogues</li> </ul>	<ul style="list-style-type: none"> <li>• Bringing together indicators into a meaningful vulnerability assessment</li> </ul>	<p>Interdisciplinary team</p>
	<ul style="list-style-type: none"> <li>• Present the range of outputs to stakeholder decision making, public awareness and further assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Presentation &amp; Discussions</li> <li>• Close dialogues</li> </ul>	<ul style="list-style-type: none"> <li>• Presented useful information that is analytically sound and robust across the inherent uncertainties</li> </ul>	<p>Team Leader</p>

Stages (What to be done)	Method (How it is done)	Tools	Output (Why)	Responsibility (Who)
	<ul style="list-style-type: none"> <li>Confirmation if stakeholders and decision makers already have decision criteria to apply to strategic and project analyses?</li> <li>Find out if Millennium Development Targets (MDT) may have been adopted in a development plan (e.g. NDP, DFDP etc.)</li> <li>Find out if there is an existing map of development status that can relate to the indicators of climate vulnerability</li> <li>Confirm explicitly that the vulnerability assessment relates to existing framework, terminology and target.</li> </ul>	<ul style="list-style-type: none"> <li>Consult and review of development plan (e.g. NDP, DFDP etc.) and</li> <li>If so, can the set of vulnerability indicators be related to the development plans and Millennium Development Targets?</li> <li>Multi-level assessment of:               <ul style="list-style-type: none"> <li>Household coping strategies</li> <li>Effectiveness in different economic &amp; climatic conditions</li> <li>How markets might be affected by drought/flood or too much rains</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Not to attempt to construct a new language solely for the climate change issue</li> <li>The output should link to further steps in the adaptation planning framework</li> <li>The focus on representative livelihoods and multiple scales of vulnerability can form the basis of an analysis of coping strategies including contingencies planning for drought/flood</li> </ul>	Interdisciplinary team

Adopted from: Thomas E. Downing and Anand Patwardhan (2002) and FAO (2004)

5

## Conclusions and recommendations

Undertaking VIA for Mt. Elgon EBA will be a complex undertaking and will require 5- 7 months period for a comprehensive vulnerability and impact assessment to be done. Based on consultation at the national and at the district level, the project will also require an interdisciplinary team comprising of professionals with the following knowledge and skills: Understanding of climate change concept and related issues, Modeling climate change patterns/predicting various climatic change impacts, GIS and mapping, Disaster risk assessment and mitigation, Soil science/geology, Natural resources management, Socio-economic survey and Monitoring and evaluation (Baseline survey and indicator development)

A review of the questionnaires presented by possible contenders for undertaking the project and talking to Dr. Michael Mbooga indicated that there is generally limited information and data on vulnerability to climate change both nationally and at the district level. Although there are temperature and rainfall data available from the meteorological department, non climatic data are very difficult to come by or they are simply not available in Uganda. Dr. Mbooga confirmed that he had to use data from outside the country when he was assigned to undertake the Mbale TACC project (reviewed in 1.4.2).

In relation to capacity to undertake VIA, the current capacity assessment has indicated that no single institution/ firm has used all the needed methods, knowledge and skills and neither do they

have data for undertaking VIA in house. Three organization/firms have been identified with each having strengths and weaknesses to undertake VIA. It is the view of the consultant that one or two of the organization or firm could partner with an external firm/organization with more specialties in computer modeling of climate change impacts to undertake the task ahead.

The consultant recommends that an institution or firm with strong GIS/ Mapping, climate change modeling and socio-economic/baseline survey expert be brought on board to lead the assessment. First priority should be given to Geo - Information Communication, followed by Environmental Alert and lastly School of Forestry, Environmental and Geographical Science (Makerere University) as reviewed in section 3.1.3.

With respect to DRR training needs assessment, the findings indicate that there is limited/low capacity of the duty bearers especially at the district and the community level in understanding the issues of DRR especially in relation to the EBA to mountain ecosystems. Suggested specific DRR areas that need training include but not limited to those summaries in table 2.

## 6

# References

- Barihaihi, M. (2010). A review of Uganda's Disaster Risk Reduction and Climate Change Adaptation Status. Africa Climate Change Resilience Alliance (ACCRA). Kampala.CARE International, 2009. Climate Vulnerability and Capacity Analysis (CVCA) Handbook.
- FAO (2010). The FAO Guidance, Intentions and Commitment to Climate Change for Uganda (2010 – 2014)
- FAO (2011). Resilient Livelihoods, Disaster Risk Reduction for food security.
- ICIMOD (2010). Climate Change Vulnerability of Mountain Ecosystems in the Eastern Himalayas. MacArthur Foundation.
- ICRC. A Framework for community safety and resilience in the face of disaster risks.
- IUCN et al (2009). Community Based Risk Screening tool-Adaptation and Livelihood (CRiSTAL) Users manual.
- Marshall, N. Marshall, P. Tamelander, J. Obura, D. Malleret-King, D. Cinner, J. 2009. A Framework for Social Adaptation to Climate Change: Sustaining Tropical Coastal Communities and Industries. Gland, Switzerland: IUCN.
- Morgan, C. L. (2011). Vulnerability Assessment: A Review of Approaches. Gland, Switzerland: IUCN.
- Philip Thornton et al (2007). Vulnerability, climate change and livelihoods-Research opportunity and challenges for poverty alleviation. An open access journal published by ICRISAT.
- Raffaele Vignola et al (2009): Ecosystem-based adaptation to climate change: what role for policy-makers, society and scientists
- Sophie Kutegeka, Barbara Nakangu and Robert Bagyenda (2011). LOCAL RESPONSES TO THE IMPACTS OF CLIMATE RISKS ON MAIZE, BEANS AND COFFEE PRODUCTION IN UGANDA. A Case study of Kacheera subcounty in Rakai district and Kawowo sub-county in Kapchorwa district. IUCN, UNDP iisd.

- Thomas E. Dowing and Anand Patwardhan (2002). Assessing vulnerability for climate change adaptation. Technical paper 3.
- UNDP (2012), CAPACITY DEVELOPMENT ACTION PLAN TO PROMOTE LOW CARBON, CLIMATE CHANGE RESILIENT DEVELOPMENT IN THE MBALE REGION
- UNDP (2012), Climate profiles and climate change vulnerability assessment for the Mbale region of Uganda - Territorial Approach to Climate Change project for the Mbale region of Uganda
- Winifred Masiko, (2012). Development of climate change policy and implementation strategy for Uganda. Policy, Institutional and Coordination issue background paper (MWE-Climate Change Unit).
- [http://www.rotterdamclimateinitiative.nl/en/about\\_rotterdam\\_climate\\_initiative/rotterdam\\_climate\\_initiative/archive\\_newsletters?xzine\\_id=136&article\\_id=1347](http://www.rotterdamclimateinitiative.nl/en/about_rotterdam_climate_initiative/rotterdam_climate_initiative/archive_newsletters?xzine_id=136&article_id=1347)



# 7

## Appendices

### *Appendix 1: Consultancy Terms of Reference*

#### **Consultancy Terms of Reference for**

#### **“Collate tools, data and methods used for VIA (Vulnerability and Impact Assessment) in Uganda for the Ecosystem Based Adaptation in Mt Elgon Ecosystem Project Strategy”**

##### **1. Overall Project Description**

The Ecosystem Based Adaptation (EBA) Programme for Mountain Ecosystems in Uganda, Nepal and Peru aims strengthen the capacities of these three countries, which are particularly vulnerable to climate change impacts, to strengthen ecosystem resilience for promoting ecosystem-based adaptation (EBA) options and to reduce the vulnerability of communities, with particular emphasis on mountain ecosystems.

The programme is funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) through its International Climate Initiative, and is implemented through a partnership of the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP) and the International Union for the Conservation of Nature (IUCN).

Climate change impacts are already affecting the functioning and integrity of several ecosystems and are adding to the stress resulting from other anthropogenic interventions such as unsustainable land use practices. The project countries and targeted ecosystems have been identified as particularly vulnerable to climate change impacts. A multitude of communities depend upon the services provided by these ecosystems.

Specifically the project will support: (i) the development of methodologies and tools for mountain ecosystems; (ii) the application of the above tools and methodologies at the national level; (iii) the implementation of EBA pilots at the ecosystem level; and (iv) the formulation of national policies and building an economic case for EBA at the national level.

The project will create new opportunities for experimental learning between regions and among countries within the same region. Through parallel and cooperative development and application of methodologies and tools and the implementation of pilot projects, the project will shorten the learning curve of local and national institutions and fast-track the transfer of knowledge and experience in relation to building ecosystem resilience.

The four year (2012-2014) Ecosystem Based Adaptation to climate Change Adaptation (EBA) Project is implemented by the Ministry of Water and Environment in partnership with UNDP, IUCN and UNEP. The different partners are responsible for certain components through the coordination by the Programme Management Unit (PMU) within the MWE covering the implementation in the districts of Kapchorwa, Kween, Bulambuli and Sironko.

## 2. Overall Consultancy Need and Objectives

This consultancy will produce supporting and baseline information to enable the detailed design, monitoring and evaluation of the project's strategy for promoting ecosystem based adaptation (EBA) to climate change in the Mount Elgon region. It will provide information for the fulfilment of project components in Uganda:

1. Development of methodologies and tools for EBA decision-making in mountain ecosystems.
2. Application of methodologies and tools at ecosystem level.

The Project Document and Results Framework describe a number of Outputs and Activities for the project components. This consultancy will be to undertake the following Activity for Component 1:

- 1) Collate tools, data and methods used for VIA in Uganda.

The results of this consultancy will be used by the project team to identify and contract a suitable institution to conduct VIA, and to guide the design of the VIA.

### 1. Consultancy Implementation Arrangements

The contract will be performance-based, spanning a period of 3 months totaling 40 person-days. Terms and conditions of service linked to the type of proposed contract will apply.

The consultant/consultants will be under the overall supervision and guidance of the EBA Programme Management Unit (PMU) and will report on a weekly basis. Coordination of the consultancy activities with the EBA partner/implementing organizations, and stakeholders in the Mount Elgon districts and national level, will be conducted with the EBA secretariat (PMU), to ensure appropriate communications about the project and easy access to stakeholders.

UNEP-WCMC will provide guidance for the detailed technical design and implementation of the consultancy activities, in co-ordination with the Uganda EBA National Programme Coordinator. The consultancy technical reports will be submitted to and approved by UNEP-WCMC regarding their technical content. The final approval of these reports will be by the Uganda EBA National Programme Coordinator.

The contractor may be invited to present the results of the contract at workshops or meetings of the project. Costs for any such participation are not included in this tender or contract.

### 2. Detailed Consultancy Activities - 1 product

#### *Activity 1) Collate tools, data and methods used for VIA in Uganda.*

Steps required to fully implement EBA at the district, catchment or mountain scale include a VIA, the selection and design of EBA options, and the implementation of a management and monitoring plan. For the design and implementation of EBA at the local village or community scale the use of computer-assisted VIA and mapping of options is unlikely to be appropriate or feasible. The project can provide guidance on the types of issues and questions to be addressed in designing EBA at the village level, but its principal focus will be on supporting VIA and EBA design at the district, catchment or mountain scale. It should be recognised that a major constraint in this work is likely to be a lack of suitable and accessible data at the sub-national scale.

The assessment of ecosystem services and resilience is not currently integrated within mainstream Vulnerability and Impact Assessment (VIA) methods, so the project will work to adapt and develop a VIA method with an 'ecosystem approach'. There are different approaches and methods to VIA and there are probably a range of experiences in Uganda, including some work that has been

conducted for Mount Elgon.

This is Activity 1.2.1 in the Project Document Results Framework.

### **Aims and Objectives**

The aim of this activity is assess the current capacity to conduct VIA for the Mount Elgon region and nationally, to enable the identification of a suitable institution or consultants to conduct the project VIA and the definition of the most appropriate VIA method (Activity 1.2.3). The objectives are:

- 1) To determine the current capacity, institutions, methods and data availability to conduct VIA in Mount Elgon.
- 2) Assess the training needs of stakeholders in DRR with a view of informing capacity needs in line with EBA.
- 3) To make recommendations to the National Coordination Team and UNEP-WCMC on the most suitable institution to be supported in conducting VIA for the project.

### **Issues and Scope**

The activity is a rapid assessment only, to provide just sufficient information for determining the most suitable institution to be supported in conducting VIA for the project, as well as the most appropriate VIA methods to be built upon by the project. It may be conducted by interviews with suitable institutions and/or a call for expressions of interest by relevant organisations.

The scope is for conducting VIA for Mount Elgon, but experience of VIA in other regions will be considered.

### **Uses and Users of the Results**

The report will be an internal project document for use in the first instance by the National Coordination Team and UNEP-WCMC.

### **Detailed Requirements**

- a) To be briefed by UNEP-WCMC on likely VIA methods and data needs for Mount Elgon;
- b) To determine with UNEP-WCMC and the project staff the likely government, NGO, academic and commercial institutions with relevant VIA and options mapping capacity in Uganda;
- c) To agree and implement with project staff a plan for contacting and obtaining information to determine VIA capacity, methods and data availability for Mount Elgon, which may include a call for expressions of interest;
- d) To conduct a survey of organisations with relevant VIA and options mapping capacity, and the availability relevant data;
- e) To produce a report with recommendations for the Project National Steering Committee and UNEP-WCMC;

Some of the institutions to be considered will include; Makerere University's College of Agricultural and Environmental Sciences; the Mountain Research Centre; the Wetlands Management Department in the Ministry of Water and Environment; the National Environment Management Authority; the Uganda Wildlife Authority; the Climate Change Unit.

It is estimated that the work will be a total of up to **10 person days** over the contract.

### 3. Consultancy Final Deliverables

- 1) Collate tools, data and methods used for VIA in Uganda - a report that identifies the organisations or bodies with relevant VIA and mapping experience and data in Uganda, with an assessment of their suitability for the needs of the project. 15-20 pages maximum, excluding appendix.
- 2) Guidance document on Integrating VIA - a report that articulates the methodology to be followed when integrating and monitoring resilience when undertaking VIA and the design of EBA options for Uganda. 10 pages maximum, excluding appendix.

## 4. Consultancy Timetable

Week 1: Inception Report & Review of relevant EBA Project Documents. Meetings with EBA secretariat (PMU) and UNEP-WCMC (by telephone or in person) to have clarity of the scope and requirements of the consultancy work.

Week 2 -3: Information collection and stakeholder interviews.

Week 4: Writing and submission of Draft Report.

Week 5- 6: Finalization (by consultant) and approval (by EBA- PMU and stakeholders) of the Final Report

## 5. Required Experiences, Competencies and Skills

Applicants shall be legally registered and shall demonstrate sufficient capacities to implement the required activity in a satisfactory manner. The successful applicants will have:

- At least a Masters Degree in natural resources management, social science, development studies, or a relevant field (7 years of relevant experience with a relevant Bachelor's Degree will substitute the Master Degree requirement)
- At least 5 years of work experience in programme management and monitoring in development work. Work experience in sustainable livelihoods is a strong asset, including experience in direct execution of similar assignments; Experience in the fields of environment, agriculture or climate change would be a distinct advantage; Proven research experience;
- Demonstrated knowledge and experience in working on policy development and capacity building - this includes use of methodologies that maximize performance for ecosystem-based adaptation
- Strong knowledge / experience in results-based management and results-oriented approach to project implementation
- Experience with working with various stakeholders in Uganda including civil society, government institutions, and international organizations; and experience carrying out baseline surveys;
- Demonstrated ability and excellent communication skills to facilitate and coordinate interviews and focus group discussions;
- Results driven, ability to work under pressure and to meet strict deadlines; remains calm and in control under pressure
- Experience in report writing,

- Excellent inter-personal and technical communication (oral, written and visual) skills with high level English language writing skills are essential;
- Ability to work with staff from the PMU

**Core skills:**

- Technical knowledge and understanding of climate change and ecosystem-based adaptation, as well as community-based natural resource management
- Technical knowledge in Monitoring and evaluation
- Comprehensive Knowledge in Vulnerability Impact Assessments

## Appendix 2: Schedules for field visits

### ECOSYSTEM BASED ADAPTATION TO CLIMATE CHANGE IN MOUNTAIN ECOSYSTEMS MT.ELGON DRAFT PROGRAM FOR THE VIA CAPACITY ASSESSMENT 2<sup>nd</sup> – 6<sup>th</sup> July 2012

DATE	RESPONDENTS	ASSESSMENT PARAMETER	VENUE	RESPONSIBLE
2 <sup>nd</sup> /07/12	TACC MBALE/ MERECP/MSF	10:00 TACC LEARNING LESSONS 2:30 District Local Government	TACC OFFICES DLG -MBALE	PROJECT Coordinator EBA, PROJECT MANAGER TACC
3 <sup>rd</sup> /07/12	Morning SIRONKO DLG	11-12 COMMUNITY CASE STUDIES AND EXPERIENCES MEBCK , Selected CSOs, & SVIP	SIRONKO DLG BUGITIMWA & BUHUGU S/CTY	DEO Sironko Mr. RahsidMafabi
3 <sup>rd</sup> /07/12	Afternoon BULAMBULI DLG	2:30 DISTRICT LOCAL GOVERNMENT EXPERIENCES. COMMUNITY NGO EXPERIENCES	BULAGO S/CTY	DEO Bulambuli,
4 <sup>th</sup> /07/12	Morning KAPCHORWA DLG	10:00 SANZARA KACODA&IUCN 12:00 DISTRICT LOCAL GOVERNMENT EXPERIENCES	SANZARA	DEO Kapchorwa Mr. Awadh
4 <sup>th</sup> /07/12	Afternoon KWEEN DLG	10:00 DISTRICT LOCAL GOVERNMENT EXPERIENCES KWOTI REFLECTIONS	KWOTI PARISH	DEO Kween Mr. Samuel Chemusto
5 <sup>th</sup> /07/12	Bududa	10:00 DISTRICT LOCAL GOVERNMENT EXPERIENCES	Bududa	DEO - Bududa
5 <sup>th</sup> /07/12	Mbale	2:30 Meeting with the UWA Officials	Mbale	Mr. Bitora
6 <sup>th</sup> /07/12	TRAVEL BACK TO KAMPALA			

**Appendix 3: People consulted in the field****People met during inception meeting**

No.	Name	District	Organization
1	Anna Nakayenze	Mbale	District Natural Resources Officer
2	Charles Wakube	Mbale	Environment Officer
3	Rebecca Nanjala	Mbale	TACC
4	Matanda Richard Godfrey	Mbale	UWA
5	Wambazu Amborse	Sironko	Nabuzo Inver Cons
6	Mniaku John	Sironko	Bumba Energy Stove
7	Namasoko Stephen	Sironko	Bunabuso Environmental Project
8	Rose Nasugo	Sironko	Sironko Valley Integrated Project
9	Gidale Franco	Sironko	Community Partnerships for Development
10	Wakoko Eric	Sironko	Central Youth Development Initiative
11	Halasi Gidongo Z	Sironko	District Agriculture Officer
12	Kisaali Bosco	Sironko	Mt. Elgon Beekeeping Community
13	Mugusho Stephen	Sironko	District Forest Officer
14	Wagoli Geofree	Sironko	Entomologist
15	Tsekeli Alfred	Bulambuli	District Agriculture Officer
16	Bukomba John	Bulambuli	Entomologist
17	Wokuri Jotham	Bulambuli	Fisheries Officer
18	Magomu Charles Ogiducke	Bulambuli	Agriculture Extension officer
19	Wasenga M	Bulambuli	Assistant Agriculture Officer
20	Muduku Charles	Bulambuli	Assistant CAO
21	Lunyolo W. Desilanta	Bulambuli	District Community Development Officer
22	Dr. Wonekha N. Deogracious	Bulambuli	Veterinary Officer
23	Wamayeye Ronald Sam	Bulambuli	Internal Auditor
24	Gibutayi Florence	Bulambuli	Chairperson W.C
25	Solomon Ojiambo Edwards	Bulambuli	Program Officer ECODEF
26	Nambuya Pertua Wekono	Bulambuli	Secretary Social Services
27	Chemangei Awadh	Kapchorwa	District Natural Resources Officer
28	Ojangole O. Silvestar	Kapchorwa	Senior Environment Officer/DFO
29	Olal David	Kapchorwa	Water Officer
30	Apil Nelson	Kapchorwa	District Production Officer
31	Sokutan Wantin	Kapchorwa	Coordinator KACODA
32	Paul. K Machinjach	Kween	Ag. District Chairperson
33	Difas Sarchi	Kween	Secretary for Production
34	Cherotwo Joseline	Kween	District Speaker
35	Yapsilorina Eunice	Kween	Secretary for Gender
36	Chemusto Samuel	Kween	Environment Officer
37	Chepsikor Patric Mella	Kween	Assistant Engineer
38	Mary Cherukut	Kween	Committee Tuikat Watershed initiative
39	Akiti Alfred	Kween	Chairperson Tuikat Watershed initiative
40	Mubani Arapkissa	Kween	Ag. District Agriculture Officer
41	Charles D. Juma	Kween	Ag. Community Development Officer
42	Charicha Kamuyeke	Kween	Population Officer
43	Cherotich Michael. K.	Kween	DEO
44	Dr. Yoshu N.L	Kween	Ag. DVO
45	Musamali Michael	Bududa	DFO/Ag. District Natural Resources Officer
46	Walimbwa Simon Peter	Bududa	Secretary Social Services
47	Barasa Alice Pekle	Bududa	Senior Assistant Secretary Bulucheke S/C
48	Kezia B. Wakhata	Bududa	Secretary CBS
49	Namwokoy Francis	Bududa	Vice chairperson
50	Paul Nteza	Kampala	EBA National Coordinator

## Appendix 4: Contacts of Institutions/firms assessed for VIA

Name of organization	National Forestry Authority (NFA)
Name of respondent	Mugumya Nyindo Xavier
Your Title	Coordinator, Climate Change
Your contact details (phone, email)	xavierm1962@gmail.com

Name of organization	School of Forestry Environmental and Geographical Sciences
Name of respondent	Michael S. Mbogga
Your title	Dr. /Lecturer
Your contact details (Box No., phone, email)	PO 7062 Kampala, 0772-483723, michael.mbogga@gmail.com

Name of organization	Earth Consult(U) Ltd
Name of respondent	Fred Lali
Your title	Managing Director
Your contact details (Box No., phone, email)	Mob:+256772841118, info@earthconsultu.com or fred.lali@earthconsultu.com or lalifred@gmail.com

Name of organization	Geo-Information Communication (GIC)
Name of respondent	Andrew Malinga
Your title	Training and Services Manager
Your contact details (Box No., phone, email)	Phone: 256 414 288 057 Email: training@gic.co.ug

Name of organization	Climate Action Network- Uganda (CAN-U)
Name of respondent	Anthony Wolimbwa
Your title	Research and Capacity Development Officer
Your contact details (Box No., phone, email)	Cell phone +256 712 498 461 Landline +256 414 390 509

Name of organization	Development Network of Indigenous Voluntary Associations (DENIVA)
Name of respondent	Akwango Anne Grace
Your title	Director of Programs
Your contact details (Box No., phone, email)	P.O Box 11224 Kampala, gakwango@deniva.or.ug; akwangoanna@gmail.com, 256 775 66 99 42/ 041

Name of organization	Environmental Alert (EA)
Name of respondent	Dr. Charles Walaga
Your title	Executive Director
Your contact details (Box No., phone, email)	Email:Executive.director@envalert.org, Phone contact: 0772-407-259/ 0414510547



## Appendix 5: Questionnaire used for assessing suitability of firm/organization to undertake VIA for EBA in Mt Elgon.

### Suitability of Organization/firm to undertake Vulnerability and Impact Assessment (VIA) for Ecosystem Based Adaptation to Climate change for Mt. Elgon Ecosystem.

Background:

Mr. Langoya Council Dickson was contracted by UNDP-Uganda office to assess the current capacity of organization/firm to conduct VIA for the Mount Elgon region and nationally, to enable the identification of a suitable institution or consultants to conduct the project VIA and the definition of the most appropriate VIA method (Activity 1.2.3).

Specifically, the objectives are:

- To determine the current capacity, institutions, methods and data availability to conduct VIA in Mount Elgon.
- Assess the training needs of stakeholders in DRR with a view of informing capacity needs in line with EBA.
- To make recommendations to the *National Coordination Team and UNEP-WCMC on the most suitable institution* to be supported in conducting VIA for the project.

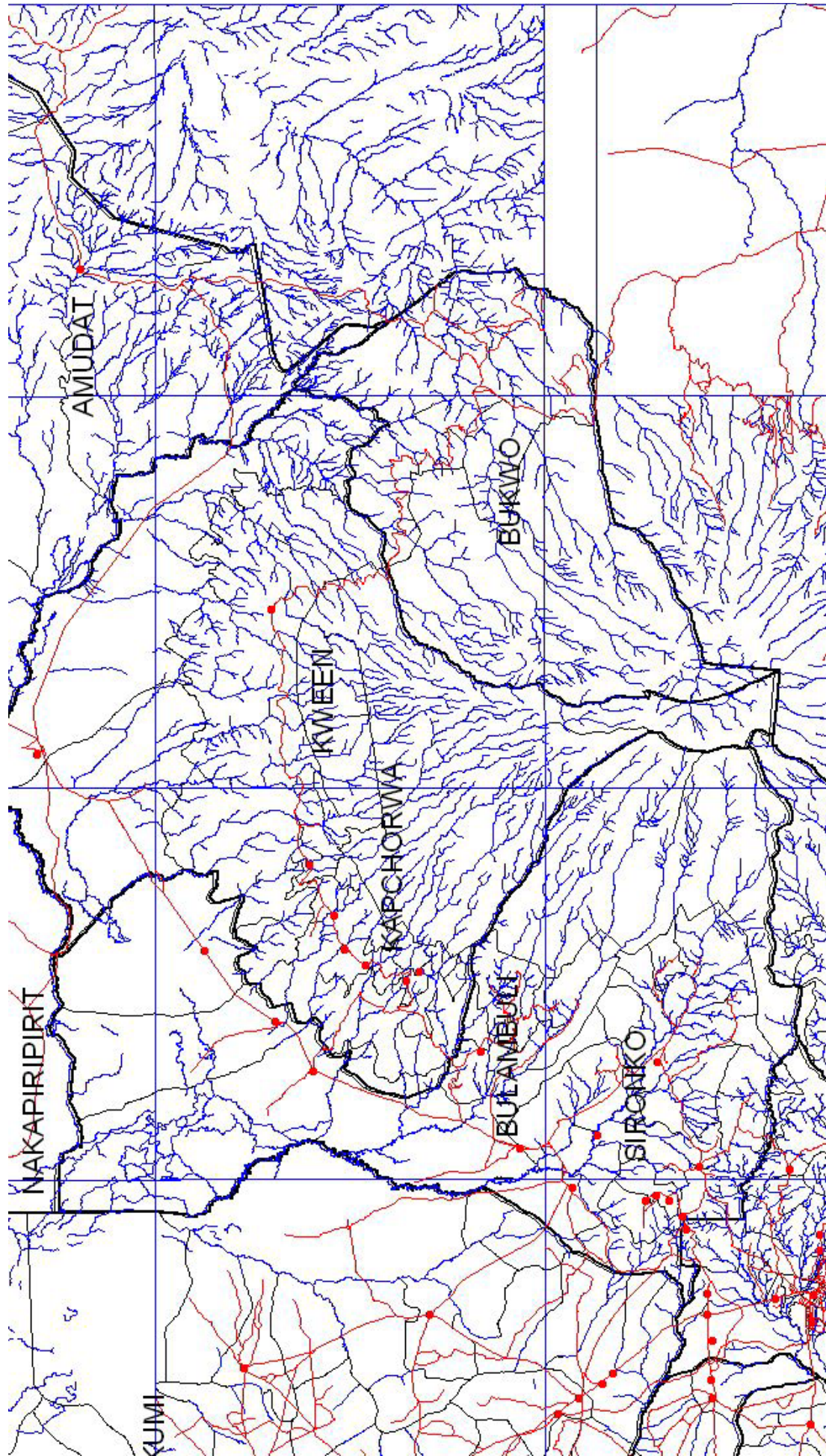
Your organization/firm has been identified as a potential candidate for undertaking the above assessment. You are therefore requested to fill in the questionnaire to the best of your knowledge and ability and mail it to langoyacd@yahoo.com before 23<sup>rd</sup> August 2012. The information you provide will be used for assessing and recommending the most suitable institution/firm to conduct VIA for the project.

Name of organization	
Name of respondent	
Your title	
Your contact details (Box No., phone, email)	

1. What is your institution/firm knowledge and skills with respect to VIA and assessment for disaster risk reduction, environmental sustainability, and/or climate change adaptation. Give examples of your involvement in planning or implementing a similar program.
2. Highlight any environmental or social assessment methods and tools you have used in any previous work?
3. What would be the team composition for the professionals that would be involved in the VIA for EBA for Mt. Elgon Ecosystem, if you were to do such an assessment?
4. What are the proposed measures to promote disaster risk reduction by your institution for a fragile ecosystem like Mt. Elgon?
5. What would be the capacity developments needs related to ecosystem-based disaster risk reduction for Mountain Ecosystem?

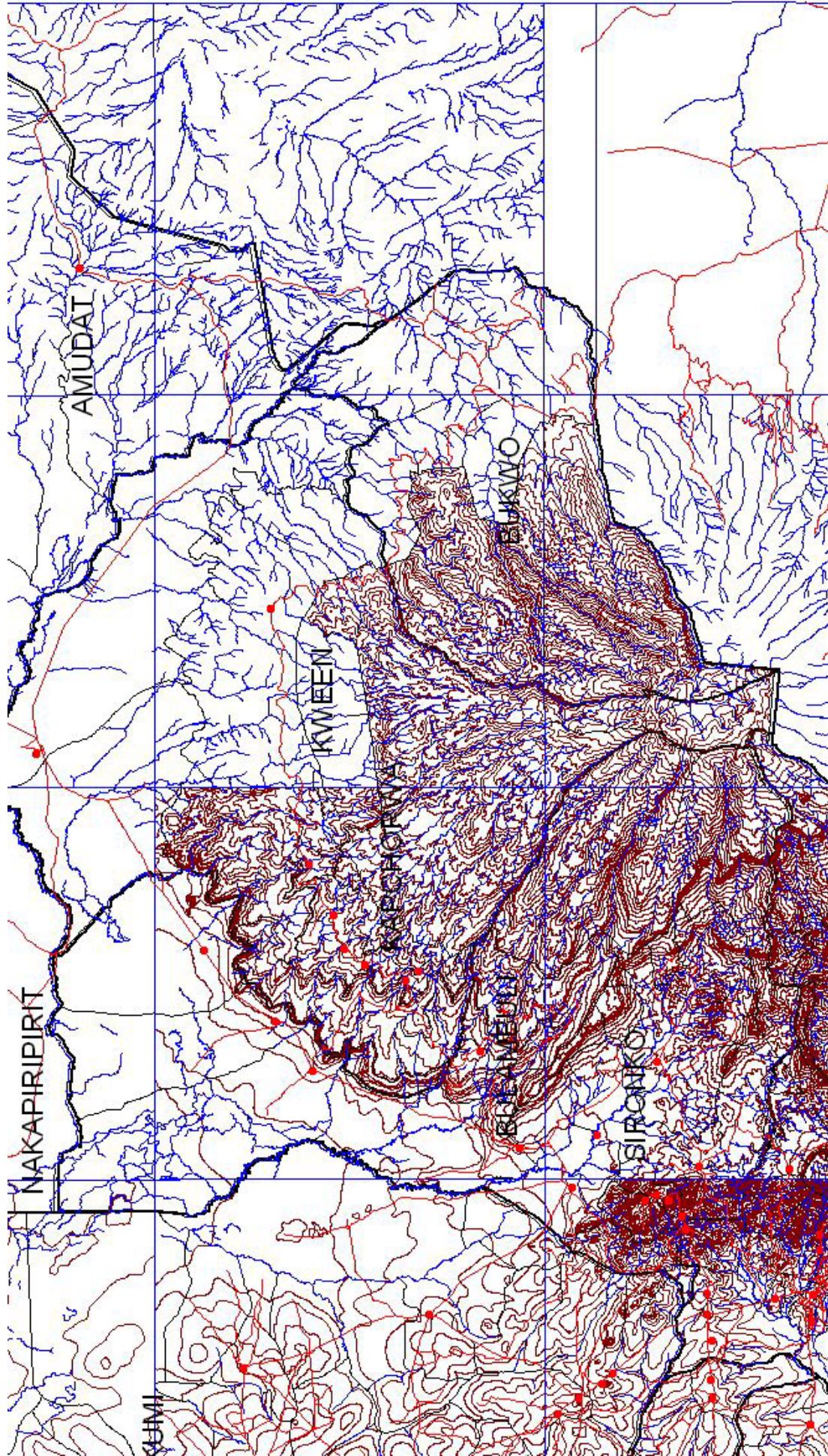
6. What are the environmental or ecosystem aspects that you recommend incorporating in the stages of a VIA for EBA, including disaster risk reduction/ management?
7. Briefly highlight (how) the methods and tools that you would use to undertake a VIA for Mount Elgon?
8. What other institutions or organizations would be relevant or necessary to include in a VIA for Mount Elgon?
9. Would you want to work in partnership with a specific organization/firm, if you were to do such an assessment? Which organization/firm and why?
10. Do you see any particular challenges or issues for conducting a VIA for EBA for the Mount Elgon region?

Appendix 6: Sketch map of drainage (River systems) of project sites.



The sketch map was developed by Langoya Council Dickson

Appendix 7: Sketch map of drainage (River systems) and contour of project sites.



The sketch map was developed by Langoya Council Dickson









**Ministry of Water and Environment,  
Directorate of Environment Affairs  
Ecosystem Based Adaptation (EBA) Project.  
P.O Box 20026, Kampala, Uganda**

