

## Research report - Uganda - Impulsouth project

# Assessment of knowledge, capacity needs and gaps, on the issue of assessing impacts, vulnerabilities and risks of climate change, with an emphasis on gender in Nakasongola District (Uganda).

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## EXECUTIVE SUMMARY

Climate change increasingly affects many regions of Uganda, especially the cattle corridor where Nakasongola district is located. However, the district has inadequate institutional, human capacity and knowledge for vulnerability assessment, to facilitate planning of adaptation and mitigation measures. Assessment of capacity, knowledge gaps, and needs is a key prerequisite in implementation of robust capacity building activities that can strengthen institutions in designing, implementing, coordination, and monitoring and evaluating the country's climate actions.

This study was carried out to identify capacity-building gaps and needs that would contribute to achieving adaptation and mitigation objectives in Nakasongola District, Uganda. Stakeholders consulted were from various departments of Nakasongola Local Government, as well as non-government entities. Procedures used included: (a) desk reviews of global-level and national-level literature, and (b) Participatory rural appraisal (PRA).

The findings from the PRA were categorized into the following: (i) Institutional issues, namely, capacity, gaps, and needs, (ii) human capacity issues, namely gaps and needs, (iii) Knowledge, namely, gaps and needs, (iv) Gender-related issues, and (v) experience from previous adaptation pilots in Nakasongola District.

**Institutional issues:** With regard to vulnerability assessment, Nakasongola district leaders consider the nature of climate change hazard, the geographical area most affected and frequency of occurrence. They also consider available knowledge, skills and exposure to climate change adaptation, possibly to devise appropriate intervention measures. Income levels of the affected communities are also considered, as this would influence to some degree, the nature of interventions to be introduced. The main approaches used in carrying out climate change vulnerability assessment include: conducting participatory rural appraisals (PRA) in the sampled villages/ communities, using standard tools (questionnaire/checklist); drawing from reports of LG departments and UNMA for seasonal weather updates and impacts and development of disaster reduction maps & action plans. These approaches fall short of the standard procedures for vulnerability assessment as presented in USAID (2014) and the *National Climate Change Training Manual for the Inter-Institutional Climate Change Desk Officers and Relevant Stakeholders for Uganda* (MWE, 2017).

**Gender issues :** Although the district does not have a Gender action plan *per se*, gender issues were mainstreamed in all action plans. The most common measures put in place to involve women include: ensuring participation of at least 30% of women and youth in all their activities; involving women and youth in sensitisation and training; promotion of Government and NGO programs involving women and youth as well as conducting needs assessment and supporting the identified needs.

**Regarding Institutional capacity** for climate change-related assessment(s), most respondents identified inadequate funding and poor infrastructure for data collection, followed by absence of a climate change office to develop a climate change action plan that would galvanise planning and response, and inadequate capacity for data collection, analysis and dissemination. In view of this, respondents proposed a need for improvement in infrastructure for data collection, storage and retrieval by digitizing weather stations, purchase computers of higher capacity and improving internet access. Also proposed is the need to build capacity for climate change action and adaptation planning, and the need to recruit more staff (including a climate change officer) in key departments.

**On human capacity** for climate change-related assessment(s), respondents identified : very few staff members with skills for climate change-related issues as the number one capacity gap, followed by lack of a climate change officer to galvanise planning and response. To address these gaps, respondents identified: Training in climate change vulnerability assessment & participatory planning; and the need for Training in climate change action planning, adaptation & mitigation. Generally, most respondents indicated the need for training in climate change assessment and PRA to address few staff with skills and lack of climate change officers.

**On knowledge** for climate change assessment, the majority of respondents identified Limited knowledge on climate change issues (vulnerability assessment, planning, adaptation and mitigation) as a major gap in the district, followed by Insufficient knowledge on research methods, data analysis, interpretation & reporting. There is a need to train district and lower-level Government staff in climate change issues; sensitise communities on climate change adaptation and mitigation, train them in research methods and develop an interactive knowledge management and communication strategy.

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## DEFINITIONS OF ABBREVIATIONS

<b>CHAI</b>	=	<b>Climate change adaptation innovation</b>
<b>FGD</b>	=	<b>Focus Group discussion</b>
<b>IPCC</b>	=	<b>Intergovernmental Panel on climate change</b>
<b>LDCs</b>	=	<b>Least Developed Countries</b>
<b>LG</b>	=	<b>Local government</b>
<b>MDAs</b>	=	<b>Ministries departments and agencies</b>
<b>M&amp;E</b>	=	<b>Monitoring and evaluation</b>
<b>MoFPE</b>	=	<b>Ministry of finance, planning and economic development</b>
<b>MWE</b>	=	<b>Ministry of water and environment</b>
<b>NARO</b>	=	<b>National agricultural organization</b>
<b>NEMA</b>	=	<b>National environment organization</b>
<b>NGO</b>	=	<b>Non-governmental organization</b>
<b>NPA</b>	=	<b>National planning authority</b>
<b>UNMA</b>	=	<b>Uganda national meteorological authority</b>
<b>PRA</b>	=	<b>Participatory rural appraisal</b>
<b>UNDP</b>	=	<b>United nations development programme</b>
<b>VA</b>	=	<b>Vulnerability assessment</b>
<b>UNFCCC</b>	=	<b>United nations framework convention on climate change</b>
<b>USAID</b>	=	<b>United states agency for international development</b>

## 1 INTRODUCTION AND BACKGROUND

Uganda is a signatory to the United Nations Framework Convention on Climate change (UNFCCC) and its Paris Agreement. The ultimate objective of the UNFCCC is to achieve stabilization of greenhouse gases in the atmosphere to ensure sustainable food production and economic development. The Paris Agreement, in enhancing the implementation of the UNFCCC, aims to strengthen the global response to both the mitigation and the adaptation goals in the context of sustainable development and poverty eradication. Uganda, a Least Developed Country astride the equator in East Africa, aspires to become a middle-income country by the year 2040 (NPA, 2013); but the economy to which Uganda's aspiration is hinged is dependent on natural resource, which is highly vulnerable to the impacts of climate change. In the efforts to fulfil the obligation, as party to the Convention, while making efforts to achieve national development targets (NPA, 2013) Uganda has to address the huge challenge posed by climate change (Republic of Uganda, 2021), although climate is considered to be one of Uganda's key natural resources (MWE, 2007), owing to the country's dependence on rain-fed agriculture as the top employer. Thus, the country has continued to actively pursue actions to fulfil her commitments under the various global and national-level climate change-related instruments.

The ever-increasing need and focus for / on climate change action call for various aspects of capacity, both institutional and individual. One of the characteristics of LDCs is "inadequacy in capacity"; and Uganda is not an exception. To address such inadequacies there is need for clear country-driven understanding of the national and sector objectives, needs, and risks so as to design actions for mitigating risks, accelerate development, and reduce poverty. Assessment of capacity, knowledge gaps, and needs is a key prerequisite in implementation of robust capacity building activities that can strengthen institutions in designing, implementing, coordinating, and monitoring and evaluating the country's climate actions.

The present study was thus conducted to identify capacity-building gaps and needs that will contribute to achieving Uganda's adaptation and mitigation objectives. Capacity is "*the ability of individuals, institutions, and societies to perform functions, solve problems, set and achieve objectives in a sustainable manner*" (UNDP, 2007). Capacity development is the 'how' of making development work better and is about improving institutions to deliver and promote human development. Capacity development aims at promoting decision-making and causing flexible changes in behaviour in anticipation and response to external factors. Capacity development contributes to effective institutions through: (i) improved performance (effectiveness and efficiency); (ii) enhanced stability (performance standards and risk mitigation); and (iii) adaptability (innovation and continuous improvement).

Capacity building in the United Nations Framework Convention on Climate Change (UNFCCC) process involves activities at individual level, institutional level, and systemic level as shown in figure 1. The Conceptual framework of Capacity Building under the UNFCCC enables Parties to implement the provisions of the Convention and effectively participate in the Kyoto process.

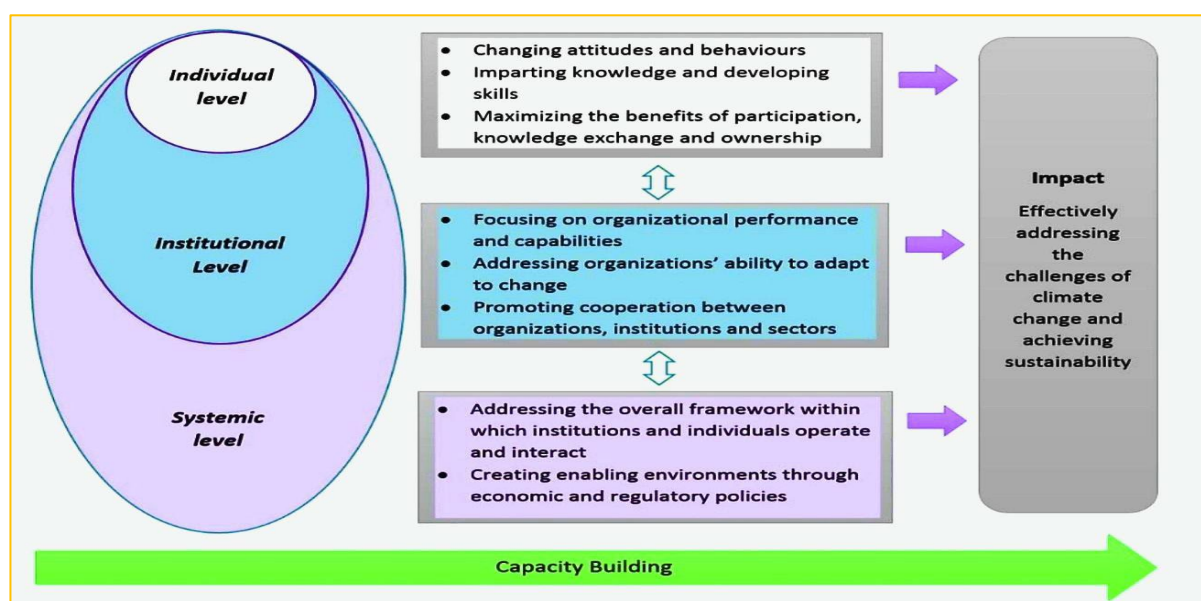


Figure 1: Capacity Building in UNFCCC process. Adopted from UNFCCC, 2015.

## 1.1 Research Objectives

### 1.1.1 Overall research objective

To enhance knowledge and capacity of institutions in Nakasongola District of Uganda in carrying out strategic planning and target setting to better adapt to climate change impacts, *through identifying knowledge gaps and capacity needs in assessment of climate change impacts, vulnerabilities and risks in Nakasongola District, with emphasis on gender.*

### 1.1.2 Specific objectives

- **Objective 1.** To update / establish standard capacity and knowledge requirements for assessing climate change impacts, risks, and vulnerabilities in Nakasongola District through identifying the capacity and knowledge required to undertake assessment of climate change impacts, risks and vulnerabilities;
- **Objective 2.** To support institutions in Nakasongola District in assessing climate change impacts, risks, vulnerabilities, community coping strategies, district adaptation efforts, and targets, among gender categories, using the institutional assessment capacity and knowledge existing in the district;
- **Objective 3.** To provide recommendations on capacity and knowledge for institutions in Nakasongola District regarding assessment of climate change risks, vulnerabilities and adaptation, among gender categories, through assessment of existing capacity and knowledge in Nakasongola District in reference to standards methodology.



## 2 LITERATURE REVIEW

Climate vulnerability refers to the degree to which something or someone can be harmed by or cope with climate stressors. It is determined through climate vulnerability assessment (VA). Vulnerability assessment refers to an analysis of the extent to which human and ecological systems are likely to be affected by climate variability and change (USAID, 2014). Vulnerability assessments range from narrative descriptions of the ways in which climate may affect community livelihoods, to technical analyses of infrastructure assets under scenarios of climate variability and change. The USAID developed a framework to enable understanding and address climate variability and change (USAID, 2014). The Framework is comprised of the following components:

***(a) Identification of climate and non-climate stressors that may affect the location, and population:***

Climate stressors include changes in meteorological conditions such as temperature, precipitation, and wind. In characterizing climate stressors, observations of both past variability and change, as well as model projections of future conditions are taken into account. Climate extremes should also be considered because they generally pose more threat to development than average climate conditions (IPCC, 2012). Non-climate stressors include the development challenges that can increase vulnerability because they harm the functioning of a system and the achievement of development goals. Examples include: Economic stressors (e.g., rising prices), Social stressors (e.g., population growth), Physical stressors (substandard buildings), political stressors (poor governance), and Environmental stressors (e.g., deforestation, and pollution). These non-climate stressors impact directly the development initiatives and, in some cases, overshadow the impacts of climate stressors. They increase sensitivity of a system to future climate stressors;

***(b) Vulnerability assessment after identifying stressors:*** Vulnerability is assessed through assessing the exposure, sensitivity, and adaptive capacity. **Exposure** refers to the extent to which something is subject to a climate stressor. To assess exposure, data is gathered and exposure characterized in terms of whether the sector or population is located in the same place and at same time as a particular stressor. It further analyses how exposure to climate stressors changes over time. **Sensitivity** refers to the extent to which something will be positively or negatively affected if it is exposed to climate stressors. Such effects may be direct (e.g., change in crop yield due to change in precipitation) or indirect (e.g., damages caused by flooding) (IPCC 2001). The more sensitive something is to the stressor, the more vulnerable it is. In finding out sensitivity, one has to find out the following: (i) how the place has been affected by climate stressors in the past, (ii) availability of information on sensitivity of place elsewhere, and (iii) thresholds beyond which the system could become highly affected by stressors. On the other hand, **Adaptive capacity** is the ability to take actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities from current climate extremes as well as long-term climate change. The information gathered under adaptive capacity is useful when identifying strategic adaptation options. In most cases, adaptive capacity is best assessed in qualitative terms (USAID, 2016).

Methods that are commonly used during vulnerability assessment include: (a) Desk review to understand what information is already available and where gaps are; (b) Consultation with stakeholders and experts to get first-hand knowledge about the extent to which climate stressors affect development, (c) community-

based consultation to obtain information that complements outputs from desk reviews and other approaches, and (d) additional analyses and modelling.

**Procedures for Vulnerability Assessment** as outlined in *National Climate Change Training Manual for the Inter-Institutional Climate Change Desk Officers and Relevant Stakeholders for Uganda* include (MWE, 2017):

**(1) Preparing for the vulnerability assessment:** This step involves understanding the context or condition in which the assessment is being conducted, for example, the type of sector (e.g., Agriculture, which in Uganda includes the subsectors of crops, livestock, and fisheries), the adaptation planning stage, and the available resources. This step also includes defining the purpose of the assessment and outcomes expected at the end of the assessment. It is also important to define the scope of the assessment during preparation, in terms of time frame, sectors (or subsectors), impacts (e.g., heavy rain-related) and areas to be covered, and then, prepare an implementation plan with clear tasks and responsibilities of who does what within a specified time period;

**(2) Developing impact chains:** An impact chain explains the links, relationships and consequences of climate change impacts, focusing on cause-effect relationships of direct and indirect impacts, for example, how one particular impact leads to another impact. A Ugandan example is the temperature rise increasing the spread of malaria parasites in the highland ecosystem in Uganda thus increasing the number of malaria infections amongst people which in turn leads to increased deaths as a result of malaria. Another way in which an impact chain can be looked at is that it explains how physical, natural and societal factors link to various vulnerability components and finally to vulnerability or a sequence of events resulting from a direct climate change impact. Developing impact chains mainly involves determining vulnerability of a system through determining potential impacts, exposure, sensitivity and adaptive capacity. Thereafter, one can brainstorm adaptation options that could be helpful in reducing the vulnerability of the system;

**(3) Identifying and selecting indicators:** This step involves identification and listing of sufficiently specific indicators for the various vulnerability components (i.e., exposure, sensitivity, and adaptive capacity), for example, Uganda's GDP is used as an indicator for poverty which is used to determine the climate change adaptive capacity and vulnerability. A good indicator should be valid and relevant, reliable and credible, have a precise meaning, and be clear in its direction, practical, affordable and appropriate;

**(4) Data acquisition and management:** This step involves various aspects related to data, namely, how data is acquired, reviewed and prepared for vulnerability assessment. Furthermore, this step concerns gathering the data, checking if it is of the quality expected and relevant for the assessment, and finally data management which focuses on how data can be transformed into readable information and documents. During this step, one needs to keep in mind the list of indicators generated in step 3 and have knowledge of available resources and data;

**(5) Normalization of indicator data:** 'Normalization' refers to the transformation of the data sets for the indicators from units into unit-less values. The transformations make it easy for the data to be easily aggregated into readable meaningful information such as formulating a scale of: high-to-low, for example, if the units are in Uganda shillings (UGX), UG 10,000 may be high and UGX 2,000 may be low. This makes aggregation of data simple. The unit-less value with a common scale may be arranged, for example "0" to

represent optimal condition in the system (i.e., does not require improvement); and the other end of the scale e.g., “1” to reflect “critical state” in the system (i.e., non-functional);

**(6) Weighting and aggregating of indicators:** Some indicators for a specific vulnerability component, that is, exposure, sensitivity or adaptive capacity may have more influence than others. This necessitates weighing individual indicators and combining them into one composite indicator for each vulnerability component;

**(7) Aggregating vulnerability components to vulnerability:** This includes linking sensitivity and exposure to potential impact, and then use potential impact and adaptive capacity as indicators for vulnerability. If there are various vulnerabilities, they are combined into a composite vulnerability. This is important in choosing suitable adaptation measures;

**(8) Presenting the outcomes of your vulnerability assessment:** After completing all the above steps, it is important to summarize and present the findings of the assessment keeping in mind the objective of conducting the assessment and the target audience to whom the findings are directed. Communicating of results of the Vulnerability assessment to stakeholders and decision makers is necessary to facilitate action and gather support. Early communication of the purpose, and intermediate results, of the assessment helps to increase buy-in for final assessment results. Results may be communicated through Reports, Vulnerability index, Qualitative ranking (e.g., High, Medium, and Low), Maps, and Profiles (MWE, 2017).

## 3 MATERIALS AND METHODS

### 3.1 Scope of the study

The study was carried out in Nakasongola District located within the cattle corridor of Uganda (fig. 2). The cattle corridor, the geographical belt stretching diagonally from the southwest to the northeast is endowed with high cattle population, and thus regarded as the livestock granary of the country. It is, however, a highly fragile ecosystem, characterised by generally low rainfall compared to most parts of the country, a situation aggravated by climate change challenges such as increasingly erratic weather patterns, frequent droughts, heat waves and occasional floods.

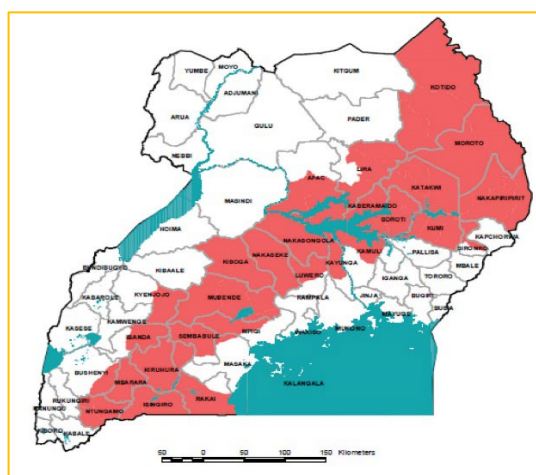


Figure 2: The Cattle Corridor of Uganda (reddish colour)

(Source: Uganda CEA- WB, 2012)

The study involved District technical staff and selected district-based Development Organisations involved in supporting Natural resource management, crop and livestock farmers, which are the dominant livelihood activities in the district. Review of local and international literature as well as reports of MDAs was carried out, sourced from the internet and libraries. Furthermore, the study covered institutions and organisations (government, NGOs, private sector), at national level which collaborate with the district in environment-related activities. Interactions with the district and these partner organisations and institutions enabled the research team to capture information regarding climate risks and vulnerabilities and made it possible to replicate strategies as well as participatory planning to facilitate development of adaptation strategies. Key focus areas during the research were: policy and legislative capacity, institutional capacity, monitoring and reporting capacity, human resources and leadership capacity, financing capacity, and information, knowledge and technological capacity.

### 3.2 Stakeholders engagement

Stakeholders consulted were from various departments of Nakasongola Local government, as well as non-government entities.

### 3.3 Methodological design and tools

#### 3.3.1 Tools

Two tools were used, namely, desk reviews, and focus group discussions, owing to prevailing national circumstances.

##### 3.3.1.1 Desk review

This involved a review of literature from different sources of recognized origin such as: Official submissions of the country to the UNFCCC and reports from MWE relevant to the subject of the study. This tool was vital in identifying the capacities and knowledge desired to perform a strong assessment system for impacts, vulnerability, and risks of Climate Change. Furthermore, by making comparisons with the existing capacities and knowledge, the tool was vital in making conclusions on the gaps and needs, and recommendations to strengthen such capacities.

Table 1: Consulted Literature

Ser. No	Consulted Literature
01	<b>Government of Uganda (2021a).</b> <i>Technology needs assessment report for climate change adaptation: Technology action plan for adaptation. Water, Agriculture and Forestry sectors 148 Pp</i>
02	<b>Joe Bolger (2000).</b> <i>Capacity Development, why, what, and how, Joe Bolger, CIDA Policy Branch, Capacity Development, Occasional Series, Vol.1.May 2000</i>
03	<b>Intergovernmental Panel on Climate Change (IPCC) (2012).</b> <i>Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582pp.</i>
04	<b>Intergovernmental Panel on Climate Change (IPCC) (2001).</b> <i>Climate Change 2001: Synthesis Report, R.T. Watson and the Core Writing Team (eds). Appendix B. Glossary of Terms. A Contribution of Working Groups I, II, and III to the Third assessment Report of Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK and New York.</i>
05	<b>Republic of Uganda (2021b) Technology Action plan report: Mitigation</b>
06	<b>Ministry of Water and Environment (MWE) (2017).</b> <i>National Climate Change Training Manual for the Inter-Institutional Climate Change Desk Officers and Relevant Stakeholders for Uganda. Ministry of Water and Environment. Pp 99.</i>
07	<b>Ministry of Water and Environment (MWE) (2013).</b> <i>Gender and climate change in Uganda: who should carry the burden? Ministry of Water and Environment. 153 Pg.</i>
08	<b>National Planning Authority (NPA) (2020).</b> <i>Third National Development Plan (NDP III) 2020/21 - 2024/25.</i>
09	<b>National Planning Authority (NPA) (2013).</b> <i>Uganda Vision 2040. National Planning Authority, Kampala.</i>
10	<b>PCCB TOOLKIT</b> <i>to assess capacity building gaps and needs to implement the Paris Agreement. UN Climate Change Paris Committee for Capacity building. 220126 BLS 21379 UCC PCCB Toolkit v04.pdf.</i>
11	<b>Republic of Uganda (2021).</b> <i>National climate change act 2021, Republic of Uganda. Entebbe Uganda</i>

12	<b>United States Agency International for Development (USAID) (2014).</b> <i>Climate Resilient Development: A Framework for Understanding and Addressing Climate Change</i> . U.S. Agency for International Development, Washington, DC, March.
13	<b>Republic of Uganda (2021).</b> <i>National Strategy and Action Plan to strengthen human resources and skills to advance green, low-emission and climate-resilient development in Uganda 2013 – 2022</i> . Uganda National Climate Change Learning Strategy. June 2013.
14	<b>United States Agency International for Development (USAID) (2016).</b> <i>Climate vulnerability assessment. An annex to the USAID climate-resilient development framework</i> . Pp54
15	<b>United Nations Framework Convention on Climate Change (UNFCCC) (2007).</b> <i>The Convention on Climate Change. 29 Pgs., Climate change Secretariat, Bonn, Germany. Building gaps and needs to implement the Paris Agreement</i>

### 3.3.1.2 Focus group

This tool involved holding discussions with a small number of representatives (without deliberate quantification of each gender category) (Appendix 5) (considering gender and youth inclusion) from the district, on issues related to capacities and knowledge of assessing impacts, vulnerability, and risks of Climate Change, using a checklist (Appendix 1). Typed and hand-written qualitative data were collected and voices recorded and transcribed into excel sheets, then analysed. The tool enabled identification and evaluation of existing capacities; as well as discussion of the findings, plus generation of recommendations.

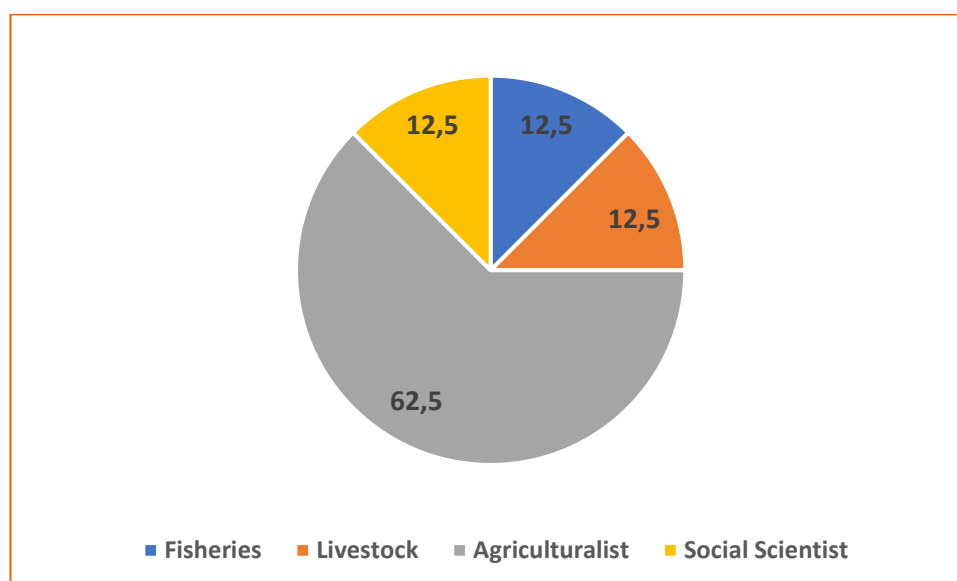
### 3.4 Data Analysis and Presentation

Typed and hand-written qualitative data were collected and voices recorded. The data were then transcribed into excel. Content and thematic analysis procedures were used to establish answer patterns to the raised issues and in tandem with the themes created based on the objectives of the study. Themes and sub-themes relevant to the study objectives were identified to enable coding. Closely related responses were grouped into distinct clusters. Where necessary an extra cluster (others) was also established to cater for the few responses that could not fit in the above clusters. These were the less frequently pronounced responses mentioned by 1 or 2 respondents. The data were coded and analysed in SPSS (IBM SPSS Statistics version 20) to obtain trends, then reported in tables and figures. Triangulation of data generated from various sources was done to generate conclusions to inform recommendations from the study, in the form of a report.

## 4 FINDINGS FROM THE STUDY

### 4.1 Nature of respondents

The study covered 26 respondents out of which 75% were male and 25% female. Respondents came from four professional disciplines: agriculture (62.5%), livestock (12.5%), Fisheries (12.5%), and social science (12.5%) (Figure 3). The majority of them were district technical staff.



*Figure 3. Professional disciplines of the respondents by percentage*

### 4.2 Institutional involvement, factors and approaches used in climate change-related activities

#### 4.2.1 Institutional involvement and factors used in climate change-related activities

The study first explored whether the respondents' institutions were involved in climate change-related activities. All (100%) of them answered in the affirmative; they also indicated that their institutions were involved in climate change vulnerability assessment.

The study then explored what factors are considered by the institution in carrying out vulnerability assessment. Table 2 presents the varied responses obtained. Results show that 15.8% consider the nature of climate change hazard, the geographical area most affected and frequency of occurrence. They also consider available knowledge, skills and exposure to climate change adaptation, possibly to devise appropriate intervention measures (14.0%). Income levels of the affected communities (10.3%) are also considered, as this would influence to some degree, the nature of interventions to be introduced. Respondents (8.8%) indicated that they also consider the gender category most likely to be affected and the adaptation options available, possibly to recommend different measures for the different gender categories. Another 7.0% considered the livelihood activity most affected by climate change and the institutions that can help the

affected communities. Furthermore, 5.3% indicated that they consider the production sector most affected, as well as access to water for farming and household use. There were other factors mentioned by 17.5% of the respondents. These included: available resources, knowledge and skills, access to wood fuel for household use, access to wood fuel for smoking fish, land use, biodiversity, housing, settlement pattern, impact on productivity of enterprise.

Table 2. Factors considered by the institution in carrying out vulnerability assessment

Nature of climate change hazard, geographical area most affected and frequency of occurrence	15.8%
Available knowledge, skills and exposure to climate change adaptation	14.0%
Community income levels	10.5%
Gender category most likely to be affected	8.8%
Adaptation options available	8.8%
Livelihood activity most affected by climate change	7.0%
Institutions/organisations to help	7.0%
Production sector most affected	5.3%
Access to water for farming and household use	5.3%
Others	17.5%
<b>TOTAL</b>	<b>100.0%</b>

#### 4.2.2 Institutional approaches for carrying out climate change vulnerability assessment

On the institutional approaches used in carrying out climate change vulnerability assessment, 50% of respondents indicated that they conduct participatory rural appraisals (PRA) in the sampled villages/communities, using standard tools (questionnaire/checklist) (Table 3). Some (12.5%) reported drawing from reports of Local Governments (LG) departments and Uganda National Meteorological Authority (UNMA) for seasonal weather updates and impacts, plus development of disaster reduction maps and action plans. Other approaches mentioned (by 6.3% of respondents) included: seasonal data collection, analysis and interpretation on production, food security; zoning the district in sub-Agro-ecological zones (AEZs), and using extension workers to assess affected/susceptible communities. Information collected from the above activities are compiled into a report which is then presented to the District Technical Planning Committee for consideration and incorporation into the district annual work plan.



*Table 3. Institutional approaches used in carrying out climate change vulnerability assessment*

Conduct PRA in the sampled villages/ communities, using standard tools (questionnaire/checklist)	50.0%
Drawing from reports of LG departments and UNMA for seasonal weather updates and impacts	12.5%
Development of disaster reduction maps & action plans	12.5%
Seasonal data collection, analysis and interpretation on production, food security	6.3%
Zoning the district in sub AEZs	6.3%
Use extension workers to assess affected/susceptible communities	6.3%
Present report to District Technical Planning Committee for consideration and incorporation into the district annual work plan	6.3%
<b>TOTAL</b>	<b>100.0%</b>

#### 4.2.3 Relationship between factors considered and the institutional approaches for carrying out climate change vulnerability assessment.

The study also investigated possible relationships between the factors considered for vulnerability assessment, and the institutional approaches used for carrying out climate change vulnerability assessment. Regarding “Nature of climate change hazard, geographical area most affected and frequency of occurrence”, this was considered as the number one factor considered for vulnerability assessment (Table 2), the majority (75%) of respondents related it with use of PRA tools as the approach used for carrying out vulnerability assessment (Figure 4). Twenty five percent (25%) related it with use of local government & UNMA reports, and development of disaster reduction maps & action plans. On the other hand, 12.5% related with seasonal data collection, analysis and interpretation on production, food security; zoning the district in sub–Agro Ecological Zones and use of extension workers to assess affected/susceptible communities.

With available knowledge, skills and exposure to climate change adaptation options as a factor considered in vulnerability assessment, 50% of respondents related it with use of PRA tools; 25% related it with Development of disaster reduction maps & action plans, while 12.5% related it with use of local government & UNMA reports; seasonal data collection, analysis and interpretation on production, food security and zoning the district into sub–Agro Ecological Zones (Figure 4).

Respondents also reported Community income levels as a factor in assessing vulnerability assessment. The majority of respondents (75%) related it with use of PRA tools, 25% associated it with use of reports of local governments (LG) departments and Uganda National Meteorological Authority, while 12.5% related it with Development of disaster reduction maps & action plans; Seasonal data collection, analysis and interpretation on production, food security; Zoning the district in sub–Agro Ecological Zones (AEZs) and use of extension workers to assess affected/susceptible communities (Figure 4).

With Gender category most likely to be affected as a factor in vulnerability assessment, 62.5% of respondents related it with use of PRA tools; 25% associated it with Development of disaster reduction maps & action plans; while 12.5% related it with use of reports of local governments (LG) departments and Uganda National Meteorological Authority (UNMA); seasonal data collection, analysis and interpretation on production, food security; Zoning the district in sub–Agro Ecological Zones (AEZs) and use of extension workers to assess affected/susceptible communities (Figure 4).

Respondents also consider the adaptation options available, as a factor during climate change vulnerability assessment. The majority (75%) related it with use of PRA tools; 25% related it with Development of disaster reduction maps & action plans, while 12.5% related it with use of reports of local governments (LG) departments and Uganda National Meteorological Authority (UNMA); Seasonal data collection, analysis and interpretation on production, food security, and zoning the district in sub-Agro Ecological Zones (AEZs) (Figure 4).

With livelihood activity most affected by climate change as the factor considered, respondents identified use of PRA tools, use of local government and UNMA reports, development of disaster reduction maps and action plans, seasonal data collection, analysis an interpretation and zoning the district into sub AEZs as possible approaches for vulnerability assessment (Figure 4). Fifty percent (50%) of respondents related livelihood activity most affected with use of PRA approaches; 25% related it to development of disaster reduction maps and action plans; while 12.5% related it with use of local government and UNMA reports, and seasonal data collection, analysis an interpretation and zoning the district into sub AEZs.

Also considered for vulnerability assessment are the Institution/organisations to help in case of a climate change-related hazard. Respondents (37.5%) related it with use of PRA tools while 12.5% related it with use of reports of local governments (LG) departments and Uganda National Meteorological Authority (UNMA) and Development of disaster reduction maps & action plans (Figure 4).

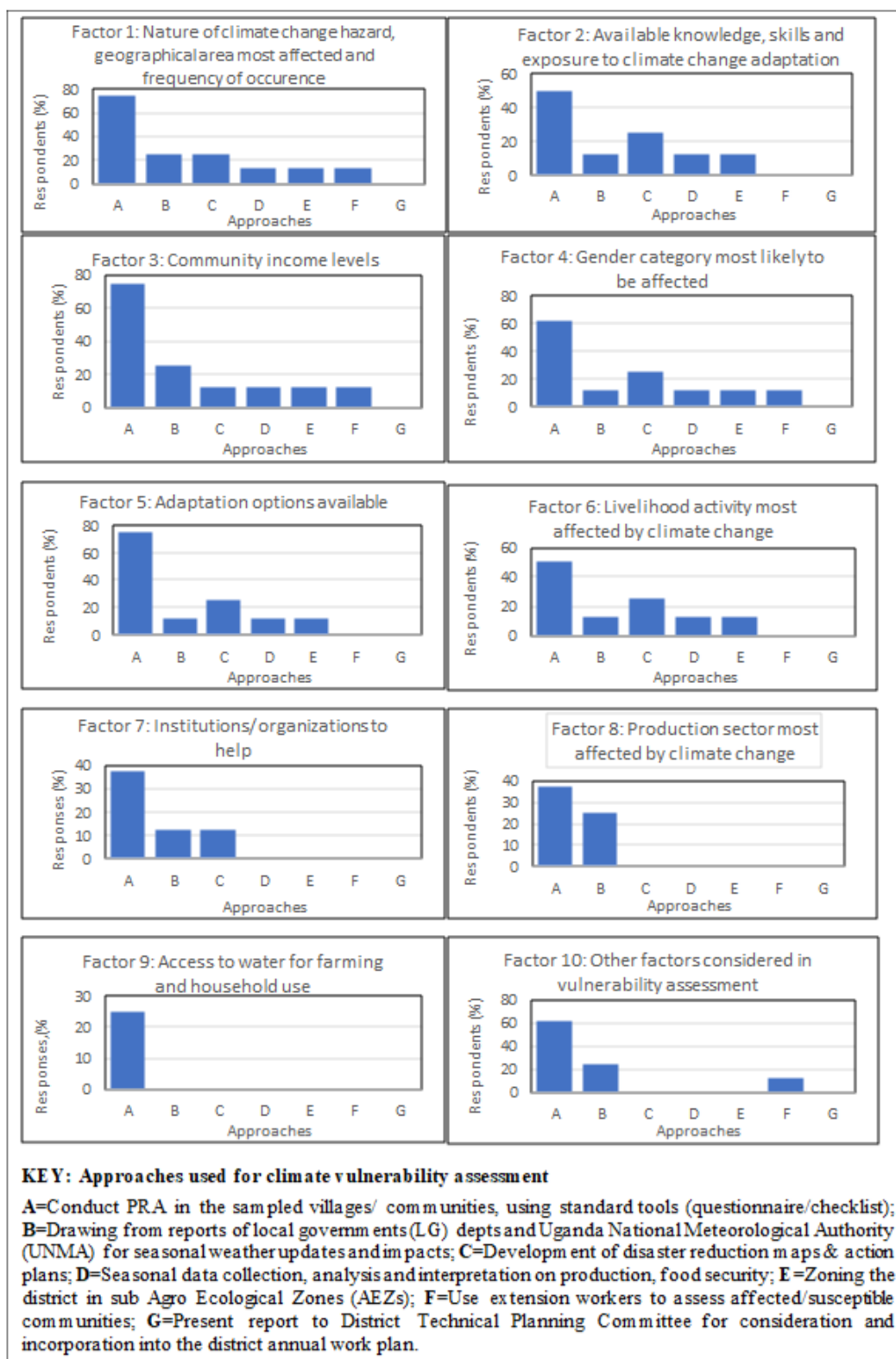
With production sector most affected as a factor considered, respondents identified PRA and local government and UNMA reports as the only approaches used in vulnerability assessment (Figure 4). Production sector most affected was related to PRA tools by 37.5% and to local government and UNMA reports by 25% of the respondents. Respondents also consider access to water for farming and household use, as a factor in climate change vulnerability assessment; 25% of respondents related with only use of PRA tools.

In addition to the above, there were other factors mentioned as being considered in climate change vulnerability assessment. These included: available resources; access to wood fuel for house-hold use; access to wood fuel for smoking fish; land use; biodiversity; housing; settlement pattern; and impact on productivity of enterprise. Respondents (62.5%) related these to use of PRA tools; 25% associated them with use of reports of local governments (LG) departments and Uganda National Meteorological Authority (UNMA), while 12.5% related them with use of extension workers to assess affected/susceptible communities.

Further to the above findings, during the focused group discussion (FGD) district staff expressed sentiments about the appropriateness of the approaches they were using in vulnerability assessment. One of such sentiments is depicted in Box 1.

It is clear from the above synthesis that the commonest factors considered in vulnerability assessment in Nakasongola district include: identifying the nature of climate change hazard, geographical area most affected and frequency of occurrence; assessing the available knowledge, skills and exposure to climate change adaptation, taking into consideration the income levels of the affected communities, the gender category most likely to be affected, the livelihood activities most likely to be affected, available knowledge, skills, exposure to climate change adaptation, and the adaptation options available. Use of PRA tools is the most common approach used in vulnerability assessment, and is ranked highest among all the ten factors considered. As presented in Chapter 2 (Literature Review), these procedures fall short of the standard procedures for vulnerability assessment as presented in USAID (2014) and the *National Climate Change*

*Training Manual for the Inter-Institutional Climate Change Desk Officers and Relevant Stakeholders for Uganda (MWE, 2017).*

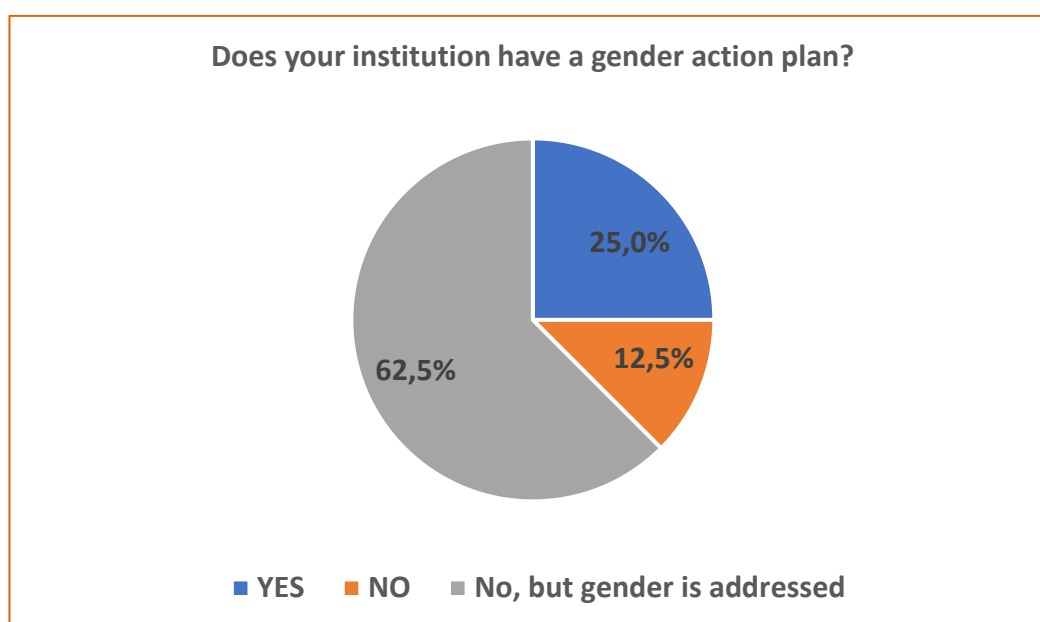


*Figure 4. Relationship between factors considered and the institutional approaches for carrying out climate change vulnerability assessment.*

## 4.3 Gender mainstreaming in climate change-related issues

### 4.3.1 Gender action planning and mainstreaming in the district

The study engaged respondents to find out whether the institution had a gender action plan. There were varied responses, 25% indicated that they had while 12.5% said they did not. Nonetheless, the majority (62.5%) of respondents said they did not have a gender action plan *per se*, but gender issues were mainstreamed in all action plans (Fig. 5). As to whether the gender action plan took into consideration climate change vulnerability, respondents indicated “Yes” it did, but to a small extent. On further interaction during the focused group discussions, members observed that there was generally misconception about gender (see Box 2).



*Figure 5. Gender action planning in Nakasongola district*

### 4.3.2 Measures taken to involve women and youth in climate change-related actions

With regard to involvement of women and youth in climate change-related actions, the most common measures put in place include: involving at least 30% of women and youth in all their activities, as mentioned by 75% of respondents; involving women and youth in sensitisation and training (50%). Respondents (25%) reported promotion of Government and NGO programs involving women and youth as well as conducting needs assessment and supporting the identified needs (Figure 6). Other measures identified (by 13% of respondents) include: Sensitising local (technical & political leaders) on climate change causes, impacts & adaptation; Providing free tree seedlings and engaging women & youth in energy saving cook stoves.

A number of respondents identified two measures each; 50% indicated they carry out sensitisation and training on climate change adaptation as well as involving at least 30% of women and youth in all their activities. Similarly, 13% identified involvement of women and youth in their sensitisation and training on climate change adaptation plus sensitisation of local (technical & political leaders) on climate change causes, impacts & adaptation. Other respondents identified three measures each; 13% mentioned sensitisation and training communities (involving women, youth) on climate change effects & adaptation, involving at least 30% of women, youth in all activities plus promoting gender inclusive Government and NGO programs

involving women, youth. There was also 13% of respondents who identified four measures: Sensitisation and training communities (involving women, youth) on climate change effects & adaptation; involvement of at least 30% of women, youth in all activities; provision of free tree seedlings and engagement of women & youth in energy saving cook stoves.

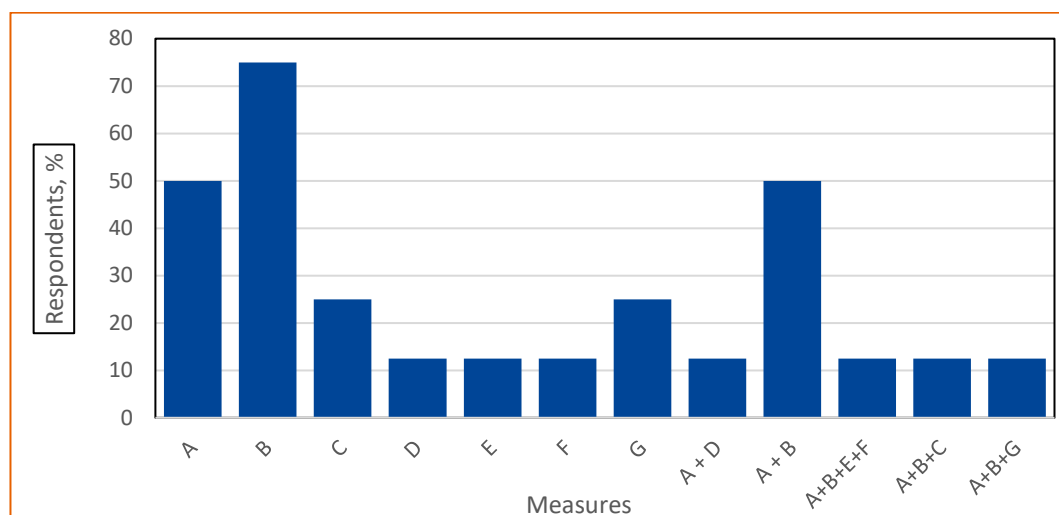


Figure 6. Measures to involve women and youth in climate change-related actions

#### 4.4 Capacity gaps and needs regarding climate change-related assessment(s)

##### 4.4.1 Institutional capacity gaps regarding climate change-related assessment(s)

Most respondents identified inadequate funding and poor infrastructure for data collection, each mentioned by 21.4% of the respondents (Table 4). These were followed by absence of a climate change office to develop a climate change action plan that would galvanise planning and response, and inadequate capacity for data collection, analysis and dissemination, each mentioned by 14% of respondents. The lowly mentioned (7.1%) gaps included: understaffing, lack of transport, inadequacy of climate change policies and inadequate planning capacity.

Table 4. Institutional gaps regarding climate change-related assessment(s)

Inadequate funding for data collection, analysis and dissemination, and for climate change interventions	21.4%
Inadequate infrastructure for data collection, storage and retrieval (undigitized weather stations, very few computers and of low capacity and expensive internet).	21.4%
Institution does not have a climate change office to develop climate change action plan to galvanise planning & response	14.3%
Inadequate capacity for data collection, analysis & dissemination and therefore given low priority.	14.3%
Understaffing in a key dept. e.g. Natural Resources; dept lacks a professional with expertise in climate change-related issues	7.1%
Lack of transport (very few motorcycles)	7.1%
Inadequacy of climate change policies;	7.1%
Inadequate planning capacity especially at strategic level	7.1%
<b>TOTAL</b>	<b>100.0%</b>

#### 4.4.2 Institutional capacity needs regarding climate change-related assessment(s)

Most highly identified (26%) was the need to improve infrastructure for data collection, storage and retrieval by digitizing weather stations, purchase computers of higher capacity and improving internet access. Next were two factors, each identified by 21% of respondents: the need to build capacity for climate change action & adaptation planning, and the need to recruit more staff in key departments, e.g., Natural resources. Lastly were six needs, each identified, by 5.3% of respondents: the need for provision of transport for field staff; financial resource mobilisation; the need for climate change policies; need for support to develop and promote community livelihood options; provision of equipment for climate change technologies demonstrations, and the need to prioritise data collection, analysis and dissemination on climate change (Table 5).

*Table 5. Institutional capacity needs regarding climate change-related assessment(s)*

Institutional need	Percentage
Improve infrastructure for data collection, storage and retrieval (digitize weather stations, purchase computers of higher capacity and internet access.	26.3%
Build capacity for climate change action & adaptation planning	21.1%
Recruit more staff in key departments, e.g. Natural resources	21.1%
Provide transport for field staff	5.3%
Financial resource mobilisation	5.3%
Need for climate change policies	5.3%
Support development and promotion of community livelihood options	5.3%
Provide equipment for climate change technologies demonstrations	5.3%
Need to prioritise data collection, analysis and dissemination on climate change	5.3%
<b>TOTAL</b>	<b>100.0%</b>

#### 4.4.3 Relationship between identified institutional capacity needs and gaps for climate change-related assessment(s)

The relationships between the institutional gaps and the needs to address the identified gaps were investigated using SPSS (IBM SPSS Statistics version 20) software. Generally, there were weak relationships between institutional gaps and the needs (Figures 7 and 8). For inadequate funding, there were 37.5% of respondents who showed the need for capacity building for climate change action and adaptation planning to address inadequate funding. In addition, 25% of the respondents observed the need of digitising weather stations, purchasing better computers and improving internet access (25.0%) to address inadequate funding. Other needs identified to address inadequate funding included: provide transport; financial resource mobilization; provide climate change policies; develop and promote community livelihood options; provide equipment for demonstrating adaptation to climate change to enable prioritization of climate change data collection and management. For unclear reasons, there seems to be a mismatch between the gap and the need identified to address it.

Furthermore, regarding inadequate infrastructure for data collection, 25% of the respondents indicated the institutional need of digitising weather stations, purchasing better computers and improving internet access (Figure 8). Other responses such as the need to build capacity for climate change action and adaptation planning, and recruit more staff among others, were each identified by 12.5% of the respondents. It is worth

noting that some of the respondents gave more than one response (Figure 8). Secondly, some of the needs identified do not match the gap to which they were meant to address.

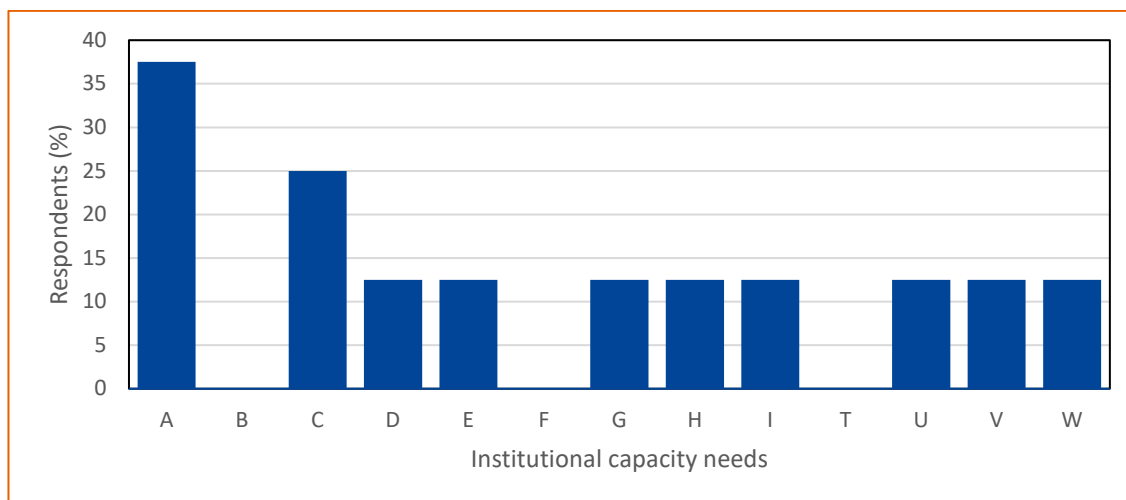


Figure 7. Institutional capacity needs for climate change assessment in response to inadequate funding for climate change interventions, data collection, analysis, and dissemination.

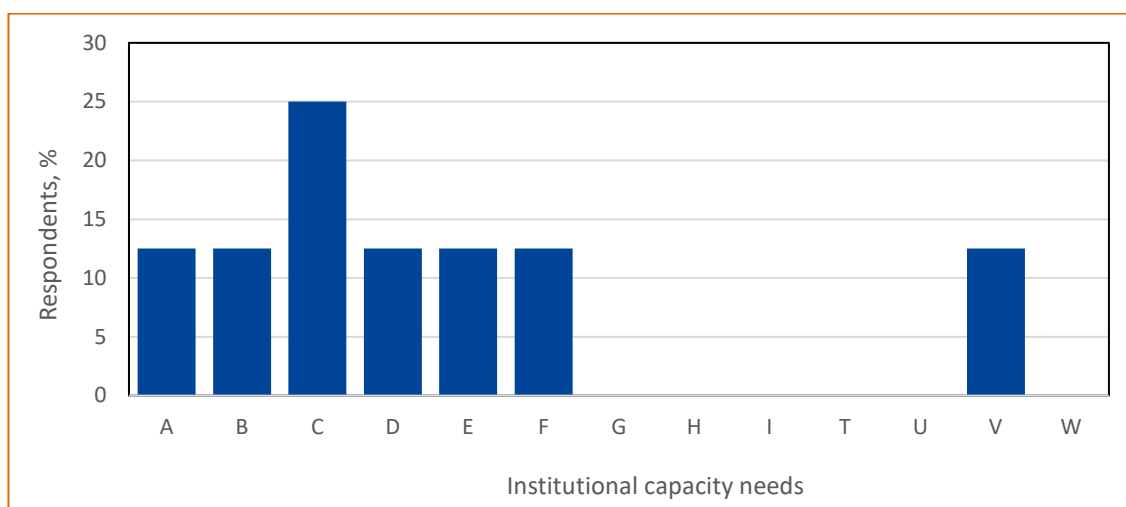


Figure 8. Institutional needs for climate change assessment in response to inadequate infrastructure for data collection and management.

## 4.5 Human capacity gaps and needs in regard to climate change related assessment(s)

### 4.5.1 Human capacity gaps in regard to climate change related assessment(s)

Respondents (33.3%) identified very few staff members have skills for climate change-related issues as the number one capacity gap (Table 6). Secondly it was also identified the lack of a climate change officer, that galvanises planning and response.. Other gaps identified included: Very few staff members with skills for participatory planning techniques; inadequate staff capacity to scale up climate change adaptation and mitigate measures; low staff capacity to develop climate change adaptation plans; limited staff with skills on

survival and rescue; limited staff with computer skills and limited capacity for in-depth assessment/analysis of critical sections/segments (including gender). Each of these was lowly identified by 8.3% of respondents.

*Table 6. Human capacity gaps in relation to climate change related assessment(s)*

Human capacity gap	Percentage
Very few staff members have skills for climate change-related issues e.g. vulnerability assessment, forecasting climate related disasters, planning and implementation of adaptation interventions	33.3%
We don't have a formal climate change officer to galvanise planning and response	16.7%
Very few staff members have skills for participatory planning techniques	8.3%
Inadequate staff capacity to scale up climate change adaptation and mitigate measures	8.3%
Low staff capacity to develop climate change adaptation plans	8.3%
Limited staff with skills on survival and rescue	8.3%
Limited staff with computer skills	8.3%
Limited capacity for in-depth assessment/analysis of critical sections/segments (including gender)	8.3%
<b>TOTAL</b>	<b>100.0%</b>

#### 4.5.2 Human capacity needs in regard to climate change-related assessment(s)

The number-one need was training in climate change vulnerability assessment & participatory planning, identified by 36.4% of respondents. Secondly, 27.3% of respondents identified the need for training in climate change action planning, adaptation & mitigation. Other needs identified included: training in survival & rescue skills (esp. for fishing communities); training in weather forecasting climate-related disasters; training in data collection, analysis and dissemination and training in project formulation & management, M&E, with each being identified by 9% of the respondents.

*Table 7. Human capacity needs in regard to climate change related assessment(s)*

Human capacity need	Percentage
Training in climate change vulnerability assessment & participatory planning	36.4%
Training in climate change action planning, adaptation & mitigation	27.3%
Training in survival & rescue skills (esp. for fishing communities)	9.1%
Training in weather forecasting climate-related disasters	9.1%
Training in data collection, analysis and dissemination	9.1%
Training in project formulation & management, M&E.	9.1%
<b>TOTAL</b>	<b>100.0%</b>

#### 4.5.3 Relationship between identified human capacity needs and gaps for climate change-related assessment(s)

There were minimal responses to human capacity needs towards solving the identified human gaps (Figures 9 and 10). Generally, most respondents indicated the need for training in climate change assessment and PRA to address few staff with skills and lack of climate change officer. Figure 8 shows 25% of respondents identified the need for training in climate change assessment and PRA skills to address the issue of few staff with skills in climate change. Most needs such as the need for training in climate change action planning, adaptation and mitigation; the need for training in survival and rescue skills among others, were each



mentioned by 12.5% of the respondents (Figure 9). A few (12.5%) gave more than one need to resolve issues related to few staff with skills in climate change issues. The respondents who gave two needs each, at least mentioned the need to train in climate change assessment and PRA tools. The 12.5% that mentioned combining three factors identified: the need to train in climate change action planning, adaptation and mitigation; training in survival and rescue skills and training in weather forecasting and climate change disasters.

Figure 10 shows that 37.5% of the respondents identified need to train in climate change assessment and PRA skills to address the issue of lack of a climate change officer in the district. The 12.5% of the respondents mentioned both training in climate change assessment and PRA and training in climate change action planning, adaptation and mitigation. The rest of the needs were not mentioned by respondents in regard to addressing lack of climate change officer.

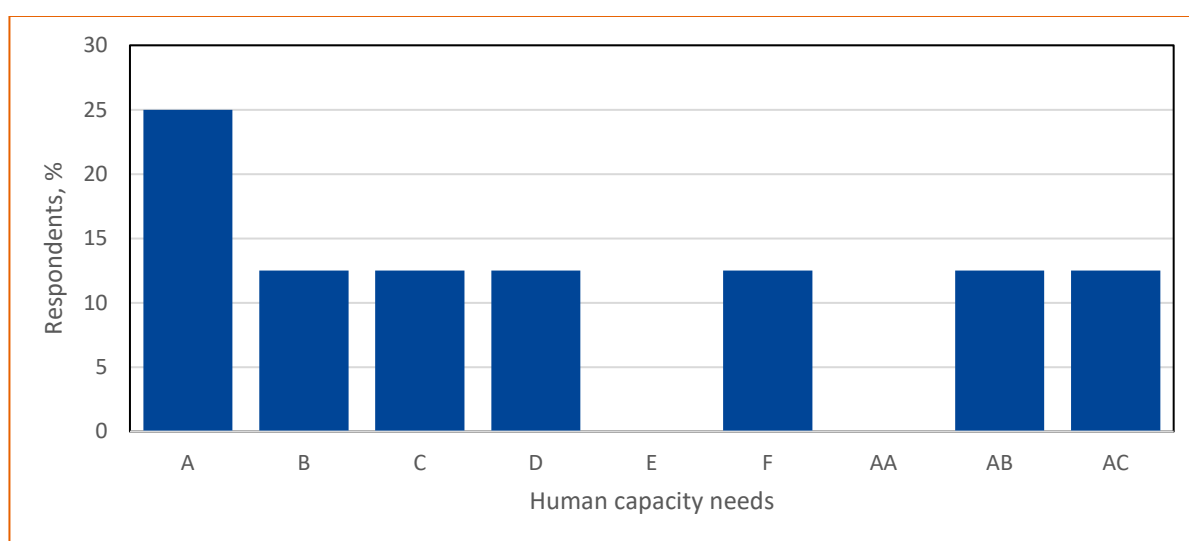


Figure 9. Human capacity needs in response to few staff with skills for climate change related issues.

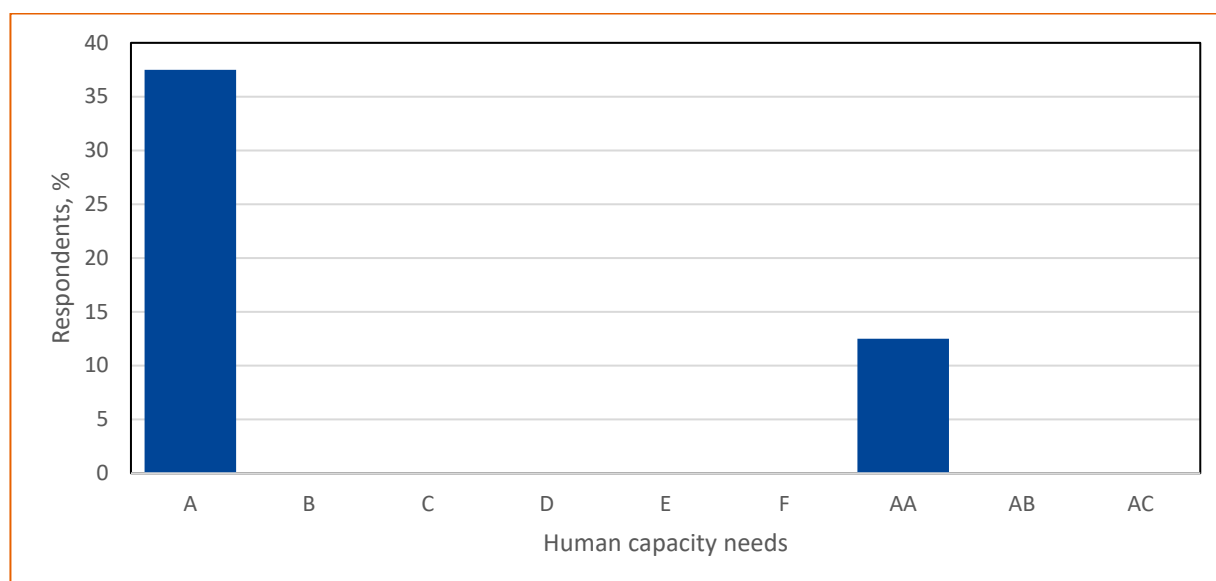


Figure 10: Human capacity needs responses to lack of a climate change officer.

## 4.6 Knowledge gaps and needs for climate change assessment

### 4.6.1 Knowledge gaps for climate change assessment

The majority (50%) of respondents identified limited knowledge on climate change issues (vulnerability assessment, planning, adaptation and mitigation) as the number one gap (Table 8). This was followed by insufficient knowledge on research methods, data analysis, interpretation & reporting (16.7%). Other gaps mentioned included: Inadequate knowledge on appropriate technologies and practices for climate change adaptation/mitigation; Inadequate skills and knowledge for communities to adapt to climate change and cope with the vagaries of climate change; Lack of a knowledge management & communication strategy and Inadequacy of 2-way communication, each identified by 8.3% of the respondents (Table 8).

*Table 8. Knowledge gaps for climate change assessment*

Limited knowledge on climate change issues (vulnerability assessment, planning, adaptation and mitigation)	50.0%
Insufficient knowledge on research methods, data analysis, interpretation & reporting	16.7%
Inadequate knowledge on appropriate technologies and practices for climate change adaptation/mitigation	8.3%
Inadequate skills and knowledge for communities to adapt to climate change and cope with the vagaries of climate change	8.3%
Lack of a knowledge management & communication strategy	8.3%
Inadequacy of 2-way communication	8.3%
<b>TOTAL</b>	<b>100.0%</b>

### 4.6.2 Knowledge needs for climate change assessment

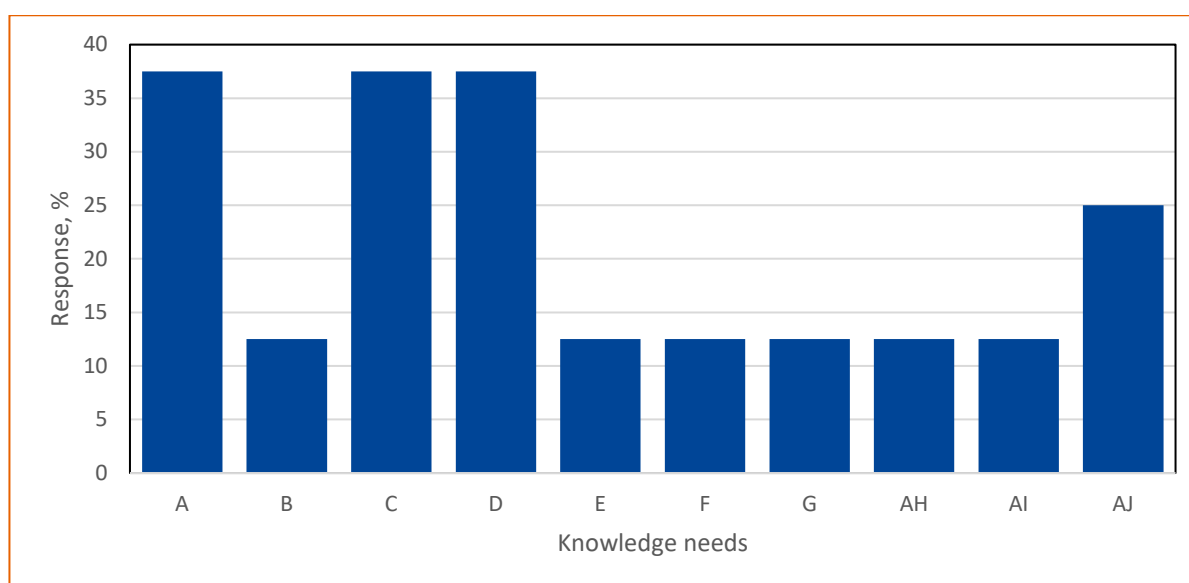
Respondents (28.6%) identified the need to train district and lower-level Government staff in climate change issues, vulnerability assessment and adaptation, including refreshing the ones who were trained earlier (Table 9). Equally ranked (at 28.6%) was the need to develop a knowledge management and communication strategy incorporating an interactive two-way system to facilitate knowledge exchange between the district leadership and other stakeholders. Respondents (21.4%) also identified the need to sensitise and train communities to cope with and develop resilience against climate change impacts, including appropriate technologies and practices for climate change adaptation/mitigation. There was also the need to Train district and lower-level staff on appropriate technologies and practices for climate change adaptation/mitigation, identified by 14.3% of the respondents.

*Table 9. Needs for climate change assessment*

Train district & lower-level Government staff in climate change issues, vulnerability assessment and adaptation, refresh those who were trained earlier	28.6%
Develop a knowledge management and communication strategy incorporating an interactive two-way system to facilitate knowledge exchange between the district leadership and other stakeholders	28.6%
Sensitise and train communities to cope with and develop resilience against climate change impacts, including appropriate technologies and practices for climate change adaptation/mitigation	21.4%
Train district and lower-level staff on appropriate technologies and practices for climate change adaptation/mitigation	14.3%
Train staff in research methods & implementation, data analysis & reporting	7.1%
Training in in-depth assessment/analysis of critical sections/segments (including gender)	7.1%
Training communities in infrastructure protection	7.1%
<b>TOTAL</b>	<b>100.0%</b>

#### 4.6.3 Relationship between the identified knowledge needs and gaps for climate change-related assessment(s)

Figure 11 presents an analysis of the knowledge needs identified to respond to the issue of limited knowledge on climate change issues (vulnerability assessment, planning, adaptation and mitigation), which was the number one challenge (Table 8). A synthesis of the knowledge needs identified for other knowledge gaps is presented in Appendix 4. Respondents (37.5%) identified the need to train staff in climate change issues, sensitise communities on climate change adaptation and mitigation, and develop an interactive knowledge management and communication strategy. Other needs such as training staff in appropriate climate change adaptation technologies and practices, training staff in research methods among others, were mentioned by 12.5% of the respondents. Some respondents mentioned more than one need. There were 25% of respondents who expressed the need for sensitisation of communities on climate change adaptation and mitigation as well as the need to develop an interactive knowledge management communication strategy. The 12.5% that mentioned combining three factors identified: the need to train staff in climate change issues (including those who were trained earlier), the need to train staff in research methods, and the need to train staff in critical in-depth analysis. Overall, these training needs respond to the identified number-one challenge of limited knowledge on climate change issues.



*Figure 11. Knowledge needs in response to limited knowledge on climate change issues*

#### 4.7 Experiences from previous climate change adaptation pilots in Nakasongola district

During the FGD, respondents identified the need to have role models who can promote the best measures and practices in climate change adaptation. In addition, there is a need to study the income status of the households to check whether they can afford the good technology and practices that we are promoting (Box 3). Past experiences can also be a basis for adoption of adaptation technologies and practices (Box 4).

##### Box 3. Appropriateness of climate change adaptation & coping strategies

“...we need to look at which adaptation and coping strategies will work in community B and which will work in community A because I think the problem, we are having is taking coping and adaptation strategies across the board, to think that they will work across all communities”.

Mr. Henry Kaweesi, *Senior Agriculture Officer Nakasongola district.*  
20<sup>th</sup> July 2022

##### Box 4. Past experiences as a basis for adoption of climate change adaptation

“We normally fail to learn from the past like for instance in Nakasongola we had a very serious dry season and there is a man who lost over 8 animals because of shortage of pastures. When rain came, I advised him to establish pasture gardens. The man told me, I have my native grass now. This man is now calling me let us establish the pastures”.

Mr. David Nsamba, *Nakasongola District Forestry Officer Nakasongola District,*  
20<sup>th</sup> July 2022

## 5 CONCLUSIONS AND RECOMMENDATIONS

Climate change increasingly affects many regions of Uganda, especially the cattle corridor where Nakasongola district is located. However, the district has inadequate institutional, human capacity and knowledge for vulnerability assessment, to facilitate planning of adaptation and mitigation measures. This study has shown that with regard to vulnerability assessment, Nakasongola district leaders make use of the nature of climate change hazard, the geographical area most affected and frequency of occurrence. They also utilize available knowledge, skills and exposure to climate change adaptation, possibly to devise appropriate intervention measures. Income levels of the affected communities are also considered, as this would influence to some degree, the nature of interventions to be introduced.

**On the institutional approaches** used in carrying out climate change vulnerability assessment, respondents indicated that they conduct participatory rural appraisals (PRA) in the sampled villages/ communities, using

standard tools (questionnaire/checklist). They also draw from reports of LG departments and UNMA for seasonal weather updates and impacts, and development of disaster reduction maps & action plans. These approaches fall short of the standard procedures for vulnerability assessment as presented in USAID (2014) and the *National Climate Change Training Manual for the Inter-Institutional Climate Change Desk Officers and Relevant Stakeholders for Uganda* (MWE, 2017).

**Gender issues:** Although the district does not have a gender action plan *per se*, gender issues were mainstreamed in all action plans. The most common measures put in place to involve women include: ensuring participation of at least 30% of women and youth in all their activities; involving women and youth in sensitisation and training; promotion of Government and NGO programs involving women and youth as well as conducting needs assessment and supporting the identified needs.

**Regarding institutional capacity** for climate change-related assessment(s), most respondents identified inadequate funding and poor infrastructure for data collection, followed by the absence of a climate change office to develop a climate change action plan that would galvanise planning and response, and inadequate capacity for data collection, analysis and dissemination. There is a need for improvement in infrastructure for data collection, storage and retrieval by digitizing weather stations, purchasing computers of higher capacity and improving internet access. There is also a need to build capacity for climate change action & adaptation planning, and the need to recruitment of more staff (e.g. climate change officer) in key departments e.g. Natural resources.

**On human capacity** for climate change related assessment(s), respondents identified: very few staff members with skills for climate change-related issues as the number one capacity gap, followed by lack of a climate change officer who galvanises planning and response. To address these gaps, respondents identified: Training in climate change vulnerability assessment & participatory planning; and the need for training in climate change action planning, adaptation & mitigation. Generally, most respondents indicated the need for training in climate change assessment and PRA to address few staff with skills and lack of climate change officer.

**On knowledge** for climate change assessment, the majority of respondents identified limited knowledge on climate change issues (vulnerability assessment, planning, adaptation and mitigation) as a major gap in the district, followed by insufficient knowledge on research methods, data analysis, interpretation & reporting. There is a need to train district and lower-level Government staff in climate change issues; sensitise communities on climate change adaptation and mitigation, train them in research methods and develop an interactive knowledge management and communication strategy.

Needs and gaps	Recommendations
1. Inadequate capacity for climate change planning	Need to build capacity of the district in climate change action, planning & adaptation (establish a climate change office to galvanise planning and response).
2. Inadequate funding and poor infrastructure	Infrastructural support and financial resource mobilisation to facilitate planning, data collection, storage and retrieval (digitise weather stations, improve computers, internet) and transport for timely response interventions.
3. Very few staff have skills in climate change vulnerability assessment and development of climate change adaptation and mitigation plans	Training in climate change vulnerability assessment and participatory planning, climate change action planning.
4. Approaches used for vulnerability assessment fall short of the nationally recommended standards, as outlined in the <i>National Climate Change Training Manual for the Inter-Institutional Climate Change Desk Officers and Relevant Stakeholders for Uganda</i> (MWE, 2017).	Refresher training for using the updated training manuals on vulnerability assessments.
5. Refresher training for staff previously trained in vulnerability assessment.	Capacity enhancement in gender mainstreaming, specifically in climate change-related actions.

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## 7 APPENDICES

### Appendix 1: Summary Questions Checklist

1. Is your institution involved in climate change-related actions (e.g. policy, technical, adaptation, mitigation, etc)? Y/N
2. Among the climate change actions is “assessing how vulnerable a (system/entity/community is” to impacts of climate change. Is your institution involved in climate change vulnerability assessment? Y/N
  - a. If yes, what factors does your institution consider in carrying out climate change vulnerability assessment?
3. What are your institutional approaches in carrying out climate change vulnerability assessment?
4. Does your institution have a gender action plan? Y/N
  - a. If yes, does the gender action plan take into consideration climate change vulnerability?
5. What measures do you have in place to involve women and youth in implementing climate change-related actions?
6. What gaps and needs have you observed in your institution, regarding climate change-related assessment(s) in relation to each of the following:
  - a. institutional capacity,
  - b. human capacity and
  - c. knowledge



## Appendix 2. Stakeholder Consultation

N o	Name	Designation	Subcounty
1	Ms. Nankabirwa Jalia	Agriculture Officer	Nabiswera
2	Ms. Nabisaso Mastullah	Agriculture Officer	Kalungi
3	Mr. Muwonge L Robert	Agriculture Veterinary Officer	Kalungi
4	Mr. Sebwato Joshua	Agriculture Officer	Wabinyonyi
5	Mr. Semwanga Richard	Agriculture Officer	Nakitoma
6	Mr. Sarah Nakamya	Actg. District Production Officer	Nakasongola Government Local
7	Mr. Mukooza Henry	Senior Community Development Officer	Nakasongola Government Local
8	Dr. Kitaka Gerald	NADIFA	Nakasongola
9	Mr. Bakwesani Juma	VCO	Nakasongola Government Local
10	Mr. Nsamba David	District Forestry Officer	Nakasongola Government Local
11	Mr. Kaweesi Henry	Senior Agriculture Officer	Nakasongola Government Local
12	Mr. Muwonge Hussein	District Water Officer	Nakasongola Government Local
13	Mr. Seggayi Vicent	Agricultural Officer	Nakasongola Government Local
14	Prof. John B. Kadu	CHAI	CHAI
15	Mr. Milton Waiswa	Manager, Station Networks	Uganda National Meteorology Authority
16	Mr. Patrick Kibaya	CHAI	CHAI
17	Mr. Paul Nkata	CHAI	CHAI
18	Ms. Saudah Mwagale	CHAI	CHAI

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