

# Info Note

## Unpacking impacts of climate change and variability on agriculture, food security and incomes in Northern Uganda: A gender standpoint

*Stakeholder opinions from seven districts in Northern Uganda*

*Patricia Bamanyaki and George Aogon*

**JUNE 2020**

### Key messages

- Rain-fed subsistence agriculture is a key source of livelihood for the majority of rural households in Northern Uganda and a means to get out of poverty.
- The roles, contribution and status of women in agriculture are disproportional to those of men in Northern Uganda, with women more engaged than men, yet with fewer resources.
- Climate change and variability compound existing challenges of female farmers in Northern Uganda by increasing drudgery and time constraints.
- Policy action to address climate change and variability impacts should prioritize promotion of gender-responsive climate-smart agriculture, gender transformative approaches to empower women and increase farmers' access to productive resources.

Many rural households in the greater Northern Uganda region (Acholi, Lango and Karamoja sub-regions) are rebuilding livelihoods following over two decades of insurgency by the Lord's Resistance Army (1986-2007) or internal conflict. Headcount poverty estimates in Northern Uganda (Acholi and Lango) are higher at 32.5 percent and at 60.2 percent in Karamoja, compared to the national average at 21.4 percent. For more than 60 percent of the households in Northern Uganda, rain-fed subsistence agriculture is the main source of livelihood and a means to get out of poverty (UBOS 2016). Notwithstanding, the increased occurrence of weather unpredictability and extreme events such as drought,

floods and pest infestation threaten agricultural production and, by extension, food security and incomes.

This Info Note takes a gender standpoint to unpack and critically examine the impacts of climate change and variability on agricultural production, food security and incomes of farming households in Northern Uganda. The findings derive from stakeholder opinions generated through focus group discussions held with male and female farmers in seven districts across the region, namely Kitgum, Agago, Oyam, Lira, Amolatar, Dokolo and Napak. The research was conducted during the months of November and December 2019 by the International Institute of Tropical Agriculture (IITA) in collaboration with the GIZ Promotion of Climate Smart Agriculture (ProCSA) project, with the aim of informing the development of gender-responsive climate-smart agriculture options that suit the specific conditions of the respective districts.

### Why focus on agriculture, food security and incomes from a gender standpoint?

Agriculture is an important sector for many developing countries, providing food, raw materials, employment and income for households and nations. Increasing agricultural production in developing countries is especially crucial in the current era, owing to high rates of population growth (3 percent annually in Uganda), increasing urbanization and growing industrialization (FAO 2013). Progressively, agricultural production has been constrained by climate change and variability, which has in turn weakened subsistence farmers' ability to feed their households and earn income to meet other needs. Similarly, the growth rate in gross domestic product

(GDP) from agriculture, forestry and fishing activities in Uganda stagnated at approximately 2.6 percent over the three-year period from 2014/15 to 2016/17 with partial attribution to weather unpredictability and climate change.

Globally, the roles, contribution and status of women and men in agriculture are disproportional and vary according to attributes such as ethnicity, social class, age and location (FAO 2011). In Uganda, more women (70 percent) than men (58 percent) aged 14 to 64 years are engaged in agriculture, forestry and fisheries as their main occupation (UBOS 2017). The Northern Uganda region accounts for the highest proportion of workers engaged in subsistence agriculture, with more women (53 percent) than men (43 percent) respectively (UBOS 2017). Within agricultural households that practice crop farming in Uganda, more than 50 percent of women are unpaid agricultural workers compared to 17 percent men; while employed women in agriculture generally earn fewer wages than men for the same agricultural activities (UBOS 2012). Moreover, women spend more hours per week doing unpaid domestic and care work (30 hours) compared to men (12 hours) and face significant time constraints (UBOS 2017).

While it is acknowledged that agricultural productivity is consistent with access to and/or control over critical assets such as land, modern inputs, technology, information, education, financial services and markets (FAO 2011), only 19.6 percent of rural women in Uganda own land with title deeds in their own names (3.9 percent in Acholi, 9.9 percent in Lango and 3.3 percent in Karamoja). 9 percent of rural women own and use bank accounts (7.6 percent in Acholi and Lango, 2.6 percent in Karamoja). 67 percent of the 36 percent rural women in Uganda who own mobile phones use them for financial transactions (UBOS and ICF 2018). Furthermore, the Uganda Census of Agriculture 2008/09 found that out of the 19 percent of agricultural households that received agricultural extension services, 81 percent were male-headed, while 19 percent were female-headed. Climate change and variability compound the challenges faced by women in agriculture, many of who are less able to diversify to alternative sources of livelihood compared to male counterparts (Agrawal 2018).

Regarding food security, the Global Hunger Index 2019 categorizes Uganda among the countries with a serious level of hunger at a rank of 104 out of 117 qualifying countries, scoring 30.6. At the regional level, Northern Uganda accounts for most households in the country with chronic food insecurity at 40 percent (National Planning Authority 2017). In Uganda, as in many developing countries, women bear the responsibility of household food production and management as ascribed by their reproductive gender role. During periods of food scarcity, women and girls are more likely to face hunger than men

and boys owing to intra-household gender inequality in food distribution (Agrawal 2018).

As Uganda strives to achieve the Sustainable Development Goal 2 targets of doubling agricultural productivity and incomes of small-scale food producers (particularly women), ensuring sustainable food production systems, and the implementation of resilient agricultural practices by 2030, it becomes prudent to critically understand the gender differentiated impacts of climate change and variability on to agriculture, food security and incomes. An in-depth understanding is envisaged to facilitate the development of appropriate and effective strategies for enhanced results.

## Methodology

A qualitative approach was adopted to understand context-specific, lived household and intra-household experiences of climate change and variability effects by gender. The scope of the study was seven districts in Northern Uganda region, notably Kitgum and Agago (Acholi sub-region); Oyam, Lira, Amolatar and Dokolo (Lango sub-region); and Napak (Karamoja sub-region). The seven districts were selected because they encompass the operation area of the GIZ ProCSA project in Northern Uganda.

Stakeholder opinions were obtained through separate focus group discussions held with male and female farmers representing farming households within communities. A total of 55 focus group discussions (28 male, 27 female) were held with 544 farmers in the seven districts. In each of the districts, apart from Oyam, eight focus group discussions (4 male, 4 female) were held in two sub-counties respectively.

The selection of participants for the focus group discussions followed a three-step process. In the first step, a composite set of criteria was used to categorize sub-counties within districts as 'better-off' and 'worse-off'. The criteria were: environmental, social, economic and demographic characteristics; agroecology; access to services such as health, safe water, markets; and distance from the district headquarters). In each of the seven districts, two sub-counties in the operation area of the GIZ ProCSA project were purposively selected, with one better-off and the other worse-off to facilitate a diversity of opinions. The second step involved a compilation of all the agricultural enterprises undertaken by target farmers under the GIZ ProCSA project in each of the 14 selected sub-counties. Separate lists of male and female farmers were generated by agricultural enterprise and the respective totals (by gender and enterprise) were used to proportionately allocate representative farmers to participate in the focus group discussions. Focus group participants constituted 20 males and 20 females per sub-county. In the third step,

Microsoft Excel was used to assign random numbers to each farmer on the lists prepared in the second step. The random numbers were then used to select the 20 male and 20 female farmers per sub-county, who were mobilized to participate in the respective focus group discussions.

Facilitators with the same sex as the respondents in each focus group administered semi-structured interview guides, whose questions sought to ascertain the following, among others: (i) perceptions of climate change and variability; (ii) observed changes in climate in the decade preceding the interview; (iii) how climate change and variability have affected agriculture, food security and incomes of households over the last decade; and (iv) how males and females within households have been affected by climate change and variability over the last decade, with specific reference to agriculture, food security and incomes. The next three sections highlight the findings from the study.

### Perceptions of climate change and observed changes over the last decade

Focus group discussions with male and female farmers across the seven districts revealed similar perceptions of climate change and variability, with common descriptions given as ‘changes in rainfall patterns,’ ‘prolonged dry spells,’ ‘too little or too much rainfall,’ ‘changes in the direction of winds,’ ‘strong winds’ and ‘natural disasters like pests and diseases, floods and hailstorms.’

Focus group participants across the seven districts were asked to describe the observed changes in climate over the past decade. Table 1 summarizes the responses received from male and female farmers by district.

Table 1: Observed climate risks in the last decade by district

Kitgum District	Agago District
<ul style="list-style-type: none"> <li>■ Delayed onset of first season rainfall, with a shift from March to late April or May.</li> <li>■ Prolonged dry spells in 2013/2014 and 2018/2019.</li> <li>■ Excessive rain causing flooding in low-lying parts of the district.</li> </ul>	<ul style="list-style-type: none"> <li>■ Prolonged dry spells in 2009, 2015, 2017 and 2018.</li> <li>■ Changes in rainfall patterns since 2016. The rains start in May to October instead of from March to June.</li> <li>■ Erratic rainfall in 2018.</li> <li>■ Excessive rainfall in 2019.</li> <li>■ Drought in 2013.</li> </ul>

Oyam District	Dokolo District
<ul style="list-style-type: none"> <li>■ Shifts in the onset of first season rains from March to May.</li> <li>■ Longer dry spells in 2014 and 2017.</li> <li>■ Hailstorms in some sub-counties in 2018 and 2019.</li> <li>■ Erratic rainfall in 2018.</li> <li>■ Excessive rainfall in 2015.</li> <li>■ High temperatures.</li> <li>■ Strong winds.</li> </ul>	<ul style="list-style-type: none"> <li>■ Prolonged dry spells in 2008, 2015, 2016, 2017 and 2018.</li> <li>■ Flooding in Kangai sub-county in 2012.</li> <li>■ Excessive rainfall in 2019.</li> </ul>
Napak District	Lira District
<ul style="list-style-type: none"> <li>■ Drought in 2015 and 2016.</li> <li>■ Too high temperatures in 2017.</li> <li>■ Excessive rainfall in 2015 and 2018.</li> <li>■ Fall armyworm infestation.</li> <li>■ Shifts in onset of rainfall from March to late April or early May.</li> </ul>	<ul style="list-style-type: none"> <li>■ Drought in 2011, 2015 and 2017.</li> <li>■ Delayed onset of rainfall in 2015 and 2019.</li> <li>■ Excessive rainfall in 2019.</li> <li>■ Outbreaks of pests and diseases in maize and cassava fields.</li> </ul>
Amolatar District	
<ul style="list-style-type: none"> <li>■ Excessive rainfall and flooding in 2015 and 2019.</li> <li>■ Hailstorms in some sub-counties.</li> <li>■ Shifts in the onset of first season rainfall from March to April.</li> <li>■ Fall armyworm infestation in 2017.</li> <li>■ Prolonged dry spells in 2008 and 2017.</li> <li>■ Strong winds and bush fires in some sub-counties.</li> </ul>	

As may be seen from Table 1, the dominant occurrences across the region over the past decade are drought, changes in the volume and length of rainfall, changes in rainfall patterns and flooding in low-lying parts of some districts. According to the focus group participants, drought occurred more frequently compared to other hazards and affected households more.

## Impact of climate change and variability on agriculture

The impact of climate change and variability on agriculture is visible in the agricultural production cycle and the productivity of agricultural enterprises (Bamanyaki and Aogon 2020). Across the study region, the following were expressed as the impact of climate change and variability on agriculture:

- False prediction of planting seasons by male and female farmers owing to shifts in the onset of rains, which has led to seed losses or poor harvests.
- Invasive weeds such as *Striga Asciatica* are more prevalent in the region, affecting crop growth and development. Continuous weeding is now necessary, which is burdensome to farmers, especially women.
- High temperatures hamper crop growth, with the most affected crops being rice and groundnuts. During drought, livestock lack pasture and water, and are weakened. Farmers are unable to use oxen to till gardens. Many men abandon agriculture during drought to engage in other enterprises like charcoal burning, leaving the agricultural work burden to women.
- Excessive rainfall destroys crops in the field. For instance, sorghum flowers too early, cassava rots in the soil, while ripe millet germinates before harvest. Floods increase the workload for entire households that must combine efforts to salvage some crops from the gardens. Female members concentrate on harvesting, while male members dig trenches to drain water from the gardens.
- Following drought, planting materials are scarce leading to high prices. Some farmers (mostly male) must rent out portions of their land to afford seed, which reduces the area under crop production. Women offer labor in richer farmers' fields or households in exchange for seed, thereby increasing their work and time burden.

## Impact on food security

Across the study region, guided group discussions revealed the following impacts of climate change and variability on food security:

- Drought depletes household food stocks, with pressing needs such as school fees and medical bills depleting food stocks faster leading to food insecurity. Across the region, women bear the cultural responsibility of ensuring that the household is fed.
- During drought, food is scarce and highly priced. Households purchase fewer quantities of food items that are most times insufficient to maintain the

household diet. Less food is prepared, and the number of meals consumed per day also reduces. Priority of food consumption is given to male household members and children, with women consuming the least.

- Massive crop failures among communities create food shortages, which in turn increase the incidences of food theft from household gardens and granaries, thereby heightening insecurity. Women have to move long distances to obtain food (wild roots and fruit) or offer labor to other households in exchange for food or wages to purchase food.
- Access to clean water is affected by drought and floods. Nearby water sources dry up during drought, while water sources get contaminated with eroded soil during floods making the water unfit for human consumption. Access to firewood is also hampered during periods of excessive rain, affecting the households' ability to prepare meals. Women and girls must move long distances to access clean water and firewood.
- Excessive rain hampers proper drying of crops (maize, soybean, beans) prior to storage. The crops get affected by molding and aflatoxin contamination, rendering them unsafe for consumption. Entire households are exposed to health risks from the consumption of contaminated food.

## Impact on incomes

Low agricultural production and productivity due to climate change and variability affect incomes. According to focus group participants across the districts, the following are the related impacts:

- Climate variability over the years, with some years experiencing only one rainy season instead of two, affects anticipated annual incomes of farming households and, consequently, livelihoods. Women across the region have limited alternative sources of income (beside agriculture) compared to men and are more affected.
- Poorer and landless households across the districts depend on offering agricultural labor in the farms of better-off households to sustain livelihoods. During periods of drought, and in the absence of irrigation facilities, there is limited farming activity, implying limited chances of employment and income.
- During drought, livestock farmers (especially in Napak) have to migrate with their animals in search of pasture and water, exposing the animals to theft leading to losses. Thinning of livestock is also prevalent during drought, as well as reduced milk production. Livestock traders fetch lower prices for their cattle, while milk producers make lower sales.

- Excessive rainfall affects the proper drying of cash crops such as groundnuts and cotton, resulting in losses for farmers at post-harvest stage.

## Conclusion and implications for policy

The study findings demonstrate that whereas male and female farmers are equally exposed to climate change and variability, rural women in Northern Uganda appear to be more adversely affected compared to men. Prevailing cultural norms in the region that predispose women as responsible for household food production and management imply that rural women from predominantly low-income households in the region must engage in subsistence agriculture (particularly food production) or offer agricultural labor in other fields to sustain livelihoods and maintain household wellbeing. With limited ownership of assets, access to productive resources (finance, information, technology) and lucrative alternative sources of livelihood, rural women's adaptive capacity to climate change and variability is weak. Two noticeable gender differential impacts drawn from the study are that climate change and variability increase drudgery and time constraints for rural women in farming households compared to men.

Consequently, gender-responsive policy action aimed at addressing climate change and variability impacts on agriculture, food security and incomes in the Northern Uganda region should consider the following:

- A focus on the promotion of climate-smart agriculture technologies and practices that strengthen farmers' resilience and adaptive capacity to climate change and variability, while reducing women's labor and time burden. Such technologies and practices may include high-yielding crop and animal varieties that are tolerant to drought and pests and diseases; soil and water conservation methods; water harvesting techniques; agroforestry and post-harvest management such as solar drying technologies, among others.
- Gender-transformative approaches that challenge negative practices that stifle rural women's access to and control over resources and decision-making ability. Such approaches may include the engagement of cultural leaders as champions of change; use of the Gender Action Learning System among communities (see Reemer and Makanza 2014); and economic and social empowerment of women groups.
- Enhancing farmers' access to quality and affordable seed (through promotion of community seed banks); timely agrometeorological information using appropriate channels (radio, climate information centers, and community gatherings); financial

services including crop insurance. Such strategies should include provisions that explicitly target women.

Overall, integrating a gender standpoint is crucial to enhancing agricultural production and productivity, as well as household food security and incomes.

## Further Reading

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*This Info Note is part of the CCAFS Policy Action for Climate Change Adaptation (PACCA) project, implemented by the International Institute of Tropical Agriculture (IITA) in collaboration with the International Center for Tropical Agriculture (CIAT) and the International Livestock Research Institute (ILRI). This Info Note describes stakeholder participation as a strategy for inclusion across scales and highlights participatory approaches adopted in the formulation of guidelines for mainstreaming climate change adaptation and mitigation in the agriculture sector in Uganda. The views expressed in this Info Note are those of the authors and not necessarily endorsed by the representatives of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), the International Institute of Tropical Agriculture (IITA), the International Center of Tropical Agriculture (CIAT), and partners.*

#### **About the authors:**

**Patricia Bamanyaki, PhD** ([p.bamanyaki@cgiar.org](mailto:p.bamanyaki@cgiar.org)) is a Visiting Scientist/Researcher on gender, climate change, food security and nutrition at IITA.

**George Aogon** ([aogon15@gmail.com](mailto:aogon15@gmail.com)) is an Agronomist at the Uganda National Crops Resources Research Institute (NaCRRRI).

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