



LEARNING ABOUT ADAPTATION POSSIBILITIES BY TALKING TO KENYAN FEMALE AND MALE FARMERS SEPARATELY

AUTHORS: P. KRISTJANSON, Q. BERNIER, E. BRYAN, C. RINGLER, R. MEINZEN-DICK., AND J. MANGO
CONTRIBUTORS: C. KOVARIK, E. HAGLUND, C. QUIROS, M. HERRERO, M. RUFINO, AND S. SILVESTRI

In Kenya and elsewhere, male and female farmers have different roles and responsibilities on the farm. What this means in terms of how they will adapt their farming practices in the face of a changing climate, and what governments, development agencies, NGOs, and researchers can do to facilitate this, is not so well known. We set out to explore gender differences in how men and women perceive climate change and its impacts, and the ways they are responding to these changes by interviewing a woman and man in 400 Kenyan rural farming households. We asked the same set of questions of the men and women, and found interesting similarities and differences in their answers.

Results come from two contrasting areas – one in western Kenya (Nyando, near Kisumu) with more rainfall, and one in eastern Kenya (Wote, near Machakos) that is semi-arid. Both areas face many farming challenges, along with myriad ongoing socio-economic, environmental, and cultural changes. The results show considerable differences between men and women in terms of their decision-making roles, perceptions of climatic changes and shocks, access to information, and adaptation strategies.

GENDERED DECISION-MAKING IN AGRICULTURE

Men and women report different roles, responsibilities, and decision-making authority on farms. We were particularly interested in women's decision-making power. Livestock production, for example, is clearly a woman's domain, particularly milk production. Over two-thirds of women in Nyando and three-quarters of women in Wote say they are able to make decisions regarding the sale or disposal of an animal, and decide how to spend the income earned from this or the sale of livestock products.

Three-fourths of the women interviewed in Nyando also said they could decide how to use crops (sell, process, and consume), but only half of them could make decisions on how to spend income from crops. In the semi-arid site, 80% of women make decisions on the use of crops and 72% decide how to use the income



Image: Woman adopting agroforestry in Nyando (credit: P. Kristjanson)

from the sale of crops. Men have a high degree of involvement in decisions related to land preparation, input use, and crop management in Wote. Women play a greater decision-making role than men in both sites when it comes to harvesting crops, engaging in any post-harvest food processing activities, and weeding.

GENDERED PERCEPTIONS OF CLIMATE SHOCKS AND CLIMATE CHANGE

Farmers in Kenya experience both long-term changes in climate (i.e. changes in temperature, rainfall, and weather patterns observed over the long run) and short-term climatic shocks and disasters. However, these experiences differ by gender.

In Nyando, 42% of the female respondents reported experiencing a flooding event during the last five years, but only one-fifth of the men reported this shock. Men and women had similar perceptions of recent climate-related shocks in Wote, where droughts and heat waves were the predominant events experienced.

In terms of the impacts of those climate extreme events, more men than women noticed increased soil erosion in Nyando as well as crop-related shocks. Very few respondents in Wote associated climate shocks with soil erosion, perhaps owing to this region’s long history with soil conservation efforts.

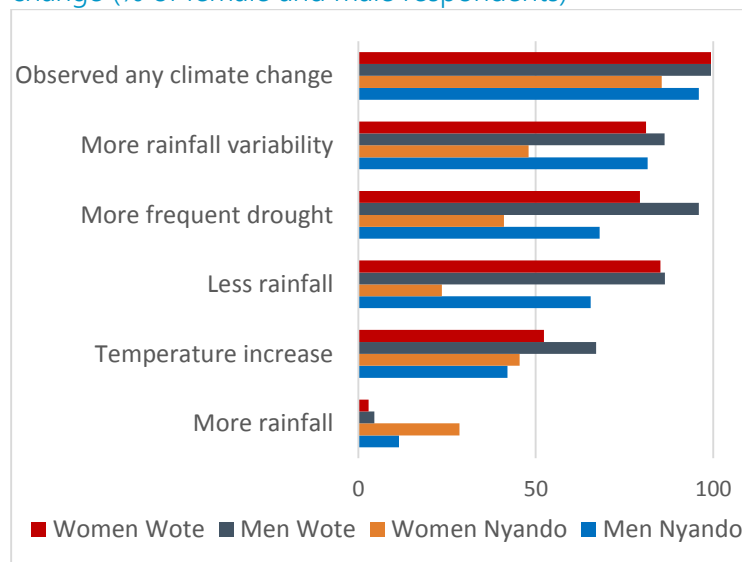
It is challenging to ask people about their perceptions of climate change over the long-run. Clarifying the long-run nature of the question is key to eliciting sound answers. Farmers all over the world are more in tune with their environment and rainfall patterns than people living in urban areas, and most do have a clear opinion on such long-term changes. However, as shown in Figure 1 there are gender differences in perceptions of climate change. In Nyando, 82% of the men we interviewed perceived increased rainfall variability and 68% identified increasing frequency of droughts over the long run, while only half of the women reported observing growing rainfall variability and only 41% reported observing more droughts. On the other hand, more women than men, in Nyando, witnessed higher temperatures over their lifetimes. Similarly, in Wote, almost all men have observed an increasing frequency of droughts over their lifetimes, while fewer women reported this (although still more than three-quarters of women did).

What were women concerned about? Significantly more women than men said they just do not know what the impacts are likely to be. In Nyando, women expressed concern about a changing climate leading to reduced agricultural productivity, greater poverty and more health issues. At the same time, some women think that climate change will lead to positive agricultural change and additional water becoming available. In Wote, on the other hand, more women than men worry about climate change leading to reduced water availability and livestock production problems, as well as reduced agricultural productivity in general.

Women are more likely to report having responded to climatic shocks by selling assets (38% in Wote and 15% in Nyando), accepting food aid (16% of women in Nyando, but roughly 60% of both men and women in Wote), and relying on remittances (20% of women in Wote), usually from family members that migrated and found jobs in urban areas). Men in Nyando and women in Wote are more likely to report borrowing money to cope with shocks. By far the most common response to weather-related shocks, for both men and women, was to make changes in food consumption (which includes both eating less food and consuming different foods, or a combination). This coping response was reported by

48% of men and 42% of women interviewed in Nyando, and over 72% of both men and women in Wote. The frequency of such crisis-related responses indicates that there is still much work to be done to meet the development goal of building long-term resilience to climate shocks.

Figure 1. Women and men’s perceptions of climate change (% of female and male respondents)



Source: IFPRI-CAAFS Kenya intra-household survey.

CLIMATE INFORMATION SERVICES AND GENDER

Research has shown that female farmers in many African countries struggle to get access to weather forecasts and information about better options regarding agricultural practices, including crops, livestock and agroforestry. This study confirms that this continues to be an issue in Kenya. Men report greater access to climate and agricultural information than do women. The survey found low rates of access to government extension agents in Nyando but not Wote, and to farmer organizations, agricultural shows, and farmer field schools in both sites—traditional sources of critically-needed information by both male and female farmers and others across the food system.

Cell phones and private sector input suppliers continue to be unlikely sources of weather information for farmers, but men have more access to information via cell phones and newspapers than do women. Radio reaches and is being relied upon for information by almost all rural men and women, and shows that describe improved agricultural practices are being introduced in Kenya (<http://www.africaknowledgezone.org>). This study found that only 5% of women and 15% of men are accessing information through television in Wote and even fewer farmers in Nyando.

Table 1. Top five changes made by men and women to adapt to climate change (share of those who reported making an agricultural, livestock, or livelihood change in response to climate change)

Men in Nyando	Women in Nyando	Men in Wote	Women in Wote
Planting trees on farm (31%)	Change crop variety (9%)	Soil and water conservation (73%)	Change crop type (52%)
Change crop variety (25%)	Soil and water conservation (7%)	Change crop variety (55%)	Soil and water conservation (46%)
Change planting dates (24%)	Change planting dates (6%)	Change crop type (43%)	Change planting dates (35%)
Change crop type (14%)	Plant indigenous crops (6%)	Planting trees on farm (41%)	Planting trees on farm (28%)
Soil and water conservation (12%)	Change crop type (5%)	Change planting dates (29%)	Change crop variety (28%)

Source: IFPRI-CCAFS Kenya intra-household survey.

However, television programs showing visual demonstrations of improved food production and livelihood practices, such as Shamba Shape-Up (www.shambashapeup.com), are gearing up with promising results.

Community meetings appear to be dominated by men; in Nyando, 64% of men access weather and agriculture-related information at these meetings whereas only 38% of women do. At the same time, we saw several sources that were more available to women, such as religious groups, farmer organizations, and NGOs.

What kind of information are men and women getting access to? Men in both these areas have greater access than women to information on extreme weather events (e.g. droughts), short-term weather forecasts, seasonal weather forecasts, and information on pest and disease outbreaks. On the whole, men have better access to information about climate, while women have better access to information related to crop and livestock production.

The good news is that when men and women have access to information, they are likely to use this information to make agricultural changes. When women have access, they are more likely to report using this information to change some agricultural practices than are men. Understanding the gender-specific barriers to the use of certain types of information, in particular short-term weather forecasts, information on pest and disease outbreaks, as well as information on droughts, will be key to improving the use of climate information.

GENDER DIFFERENCES IN ADAPTATION TO CLIMATE CHANGE

Of those who have observed climate changes, more than half of women and more than three-quarters of men in Wote have reported adapting their agricultural practices in response to the longer-term changes that they have experienced. In Nyando, fewer farmers reported adapting to climate change—more than half of men, but only 1/3 of women reported making changes. Table 1 lists the five main changes made in response to perceived climate

change by men and women in the two sites, as well as the rate of adoption of these changes. In Wote, men invested in soil and water conservation structures, switched crop varieties, changed crop types, planted trees, and changed their planting dates. Women changed their crop types, implemented soil and water conservation activities, changed planting dates, planted trees on farm, and changed crop varieties.

In Nyando, men were more likely to report making a number of crop production-related changes in response to perceived climate change including: changing crop varieties, changing crop types, changing planting dates, adopting soil and water conservation measures, and planting trees on the farm. Men there were also more likely than women to make a number of livestock changes, including decreasing the number of livestock and changing animal species.

Many of the changes already being made by men and women in response to climate change do not require much investment, such as changing planting dates or crop varieties. Additional efforts, such as increased awareness raising, and ensuring access to credit, are needed both to increase adoption of practices with short-term benefits and to encourage adoption of more fundamental changes that might well be needed as rainfall becomes more variable and temperatures rise, such as water harvesting, irrigation, or changing from crops to mixed crop-livestock systems. The challenge will be to better understand what is needed to increase the number of farmers—both men and women—who are willing and able to take up new, transformative practices that enhance their resilience to a changing climate.

DISCUSSION AND CONCLUSIONS

Why do we care about sex-differentiated perceptions and impacts? Nyando in western Kenya provides a perfect example. There, women are more cognizant of increasing temperatures because it negatively affects their vegetable crops and milk production, while men are more aware of more frequent droughts because of lower

food and cash crop yields. The implications for programs and policies (that should aim at being gender equitable) is that appropriate adaptation strategies will need to address the different concerns and needs of both men and women. If programs focus only on maize or sugar cane, for example, benefits are unlikely to be realized by women.

Differences in access to different sources and types of information are likely to account, to some extent, for men's and women's different perceptions of climate change. The findings highlight some key areas where women are largely excluded from accessing critical information, such as community meetings. In addition, the relatively low rate of access to government extension services seems to be hampering knowledge exchange and transfer in Nyando. Moreover, cellphones have yet to increase widespread awareness of improved agricultural practices and strategies. Ensuring that women have access to these different information sources is critical because they are more likely to adapt practices when they do have access. Several information sources are more available to women, such as religious groups, farmer organizations, and NGOs. This finding highlights the importance of considering alternative means of communicating information about climate change and options for dealing with it to women and men. While women are less likely to be aware of climate-smart agricultural practices, they are just as likely to adopt some of these practices when they are aware, as the analysis shows for Nyando, in particular. Women are also more likely to be concerned about health issues, so this is a possible entry point for meeting their information needs and preferences on climate-smart agricultural practices.

We also observed differences in coping strategies reported by men and women, with women more likely to sell assets than men when extreme weather events or unforeseen shocks occur. This highlights the need to continue efforts and explore ways to both build up and protect women's assets, in particular, to increase their resilience to climate shocks. Changing food consumption patterns is the most common response to climate shocks for both men and

women, suggesting a great need for policies and actions aimed at avoiding such deprivation. Options for increasing resilience to shocks could include weather-based index insurance, information on livelihood diversification opportunities and strategies, food-for-work programs, and conditional cash transfer programs.

There is some evidence that more men than women are adapting to perceived climate change. Examples include uptake of tree planting in both regions and soil and water conservation practices in Wote. Few women are making these longer-term adaptations that will be critical for sustainable food production in the long-run, although encouragingly some women in Wote are starting to harvest rainwater. Barriers to adaptation for both sexes are lack of money and insufficient knowledge of appropriate options. An analysis of what determines adoption of improved agriculture practices shows that women's access to credit is positively associated with adoption. Practitioners and policy-makers need to work closely with a diverse range of community members to co-develop innovative approaches to sharing information and enhancing the access and use of it, and overcoming constraints to widespread uptake of approaches and practices that will increase agricultural productivity and enhance resilience to climate change.

FURTHER READING:

Bernier Q, Meinzen-Dick R, Kristjanson P, Haglund E, Kovarik C, Bryan E, Ringler C, and Silvestri S. 2015. Gender and Institutional Aspects of Climate-Smart Agricultural Practices: Evidence from Kenya. CCAFS Working Paper No. 79. CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS). Copenhagen, Denmark. <https://ccafs.cgiar.org/publications/gender-and-institutional-aspects-climate-smart-agricultural-practices-evidence-kenya#.VfbL487WRek>

Patti Kristjanson (p.kristjanson@cgiar.org) is affiliated with the World Agroforestry Center; **Quinn Bernier** (quinn_bernier@brown.edu) is a former research analyst; **Elizabeth Bryan** (e.bryan@cgiar.org) a senior research analyst, **Claudia Ringler** (c.ringler@cgiar.org) deputy division director and **Ruth Meinzen-Dick** (r.meinzen-dick@cgiar.org) senior research fellow at the International Food Policy Research Institute and **Joash Mango** (j.mango@cgiar.org) is staff at the World Agroforestry Center.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

A member of the CGIAR Consortium | A world free of hunger and malnutrition

2033 K Street, NW | Washington, DC 20006-1002 USA

T: +1.202.862.5600 | F: +1.202.467.4439

Email: ifpri@cgiar.org | www.ifpri.org

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