

Farmers' Adaptation Behavior to Climate Change: the Case of Central Colombia

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DAAD Deutscher Akademischer Austauschdienst German Academic Exchange Service

Introduction

The effects of climate change are being observed worldwide, evident in rising global temperatures, the occurrence of more frequent and severe extreme weather events, as well as disruptions to ecosystems and biodiversity. These changes have significant implications for agriculture (Gerlitz et al., 2017; Mulwa et al., 2016). As climate change intensifies, farmers and farming operations face the urgent need to modify their practices in response to uncertain conditions.

In the central region of Colombia, characterized by a range of altitudes among its municipalities, temperature variations between 0.30 °C and 4.38 °C are expected. The extent of these changes depends on the specific altitude of each municipality. This area has experienced challenges related to climate change, such as an increase in the occurrence of weather emergencies such as landslides and droughts.

As climate change continues, these events are expected to become more frequent. It is crucial to understand how farmers make decisions about adapting their practices and having access to weather information so they can better cope with the unpredictable weather and climate impacts they face (Budhathoki et al., 2020; Tetteh et al., 2020).

Objectives

1. To identify different adaptation measures linked to drought and landslides in central Colombia.
2. To understand how previous experiences of climate emergencies may (or may not) influence farmers' adaptation intention in central Colombia.
3. To understand how access to climate change-related information may (or may not) influence the adaptation intention of farmers in central Colombia.

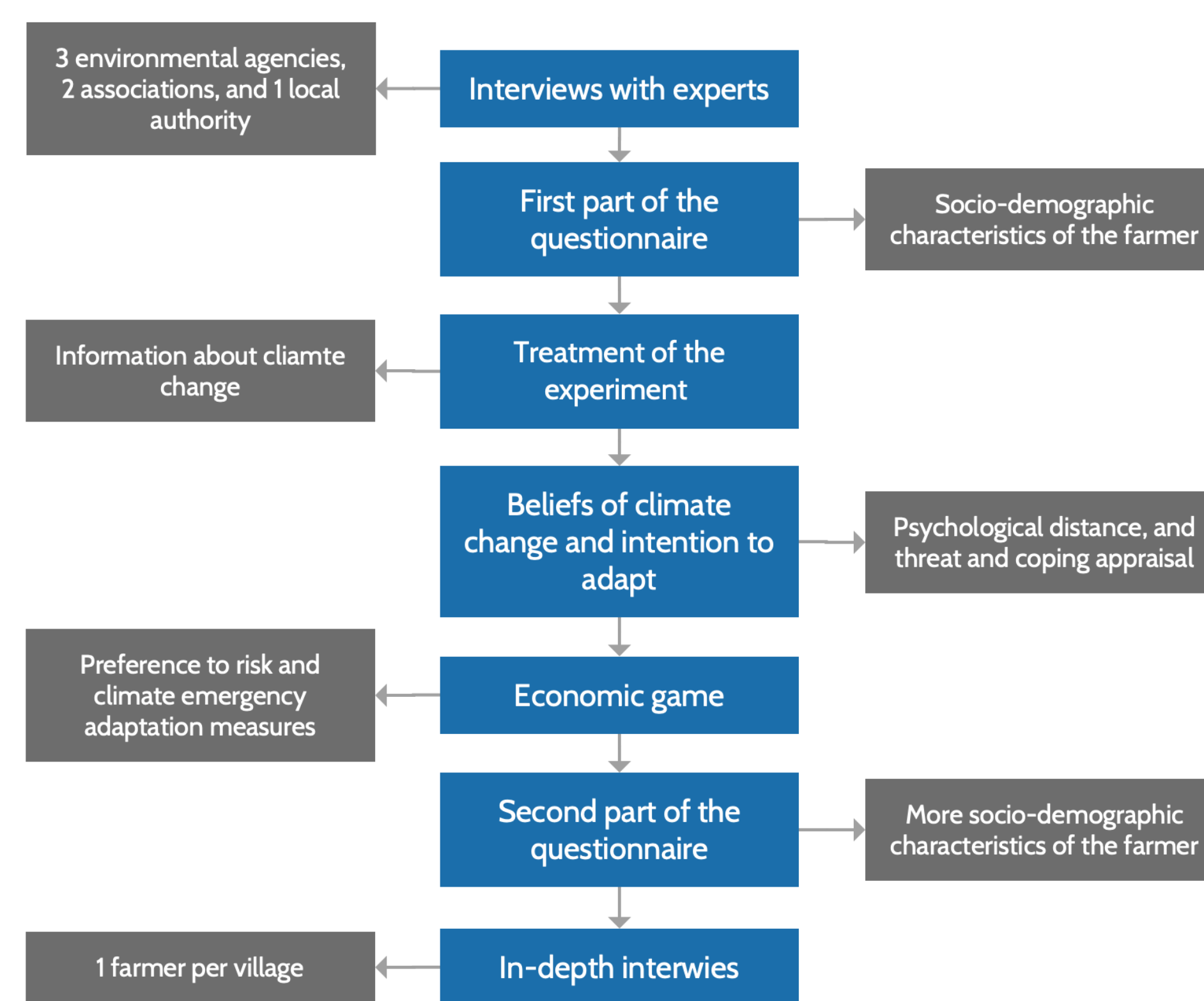


Fig 1: Data collection process

Methods and Materials

Field research: Oct 2022 – Feb 2023.

Location: 12 villages (4 with reported landslides, 4 with reported droughts, and 4 with none of these events).

Sample: 30 farmers per village for a total of 360 farmers visited.

The methods of data collection were as follows:

- Interviews with experts.
- An experiment was conducted where half of the farmers received information about climate change and its expected effects in the region (treatment) and its influence on their climate change beliefs and their intention to adapt was measured.
- A game to look at their preferences for adaptations to a particular event and their preference for risk.
- A questionnaire for socio-demographic information.
- In-depth interviews with some farmers.



Fig 2: Landslide at one of the research locations. Fig 3: Example of eroded soil in a farm.
Fig 4: Monocrop of coffee without agroforestry. Fig 5: Creek in the middle of a sugar cane crop.

Preliminary Results

The average age of the farmers surveyed was 51 years, with the oldest being a man of 89 years.

39% only completed elementary school and 34% indicated that they had not completed elementary school.

Regarding their income, 65% indicated that they have an income lower than the national monthly wage and 60% answered that all their income comes from their farms and 13% from work on other farms.

Preliminary Results

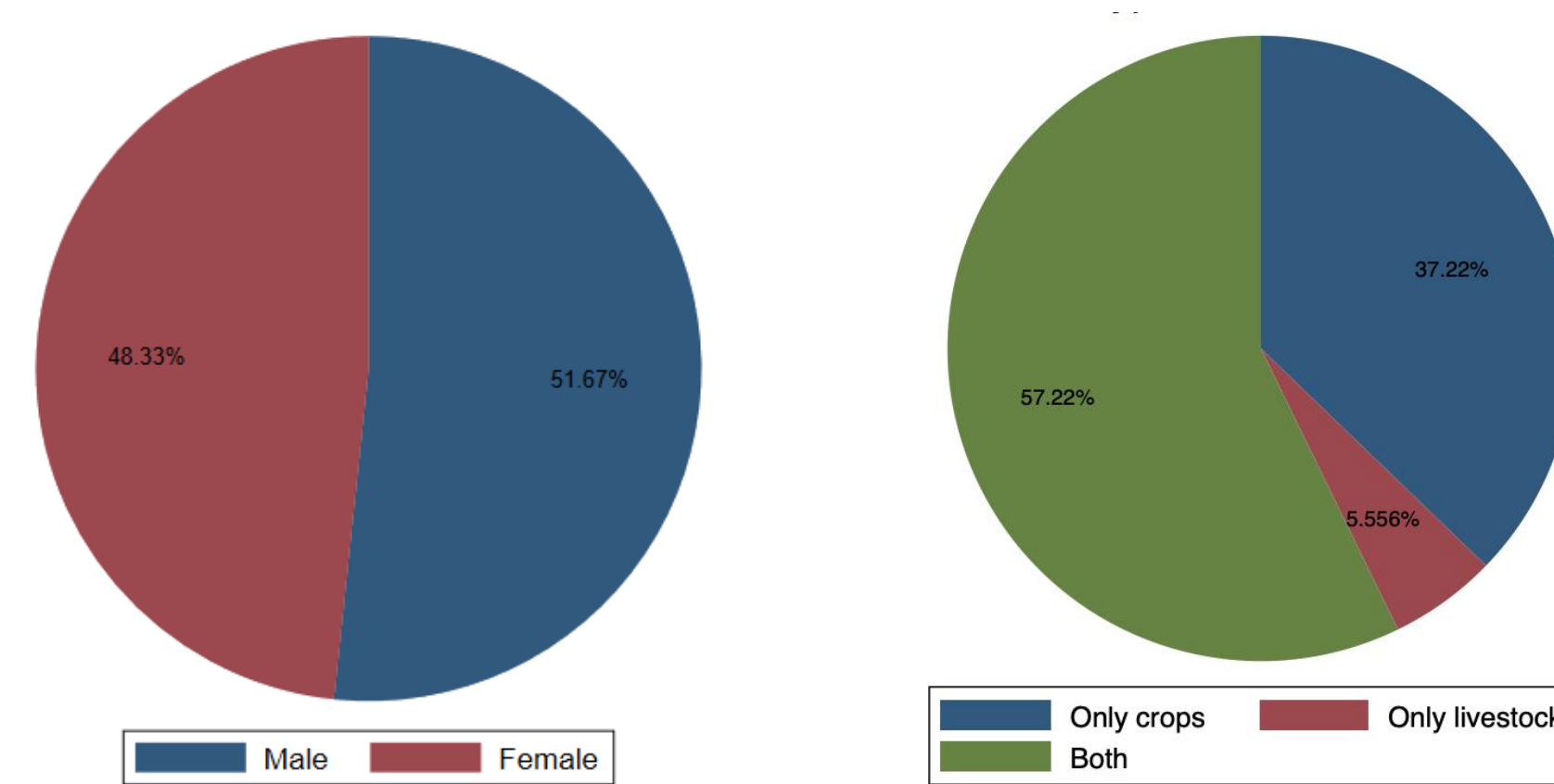


Fig 6: Gender of the farmers

Fig 7: Type of production

The average size of the farms visited was 6.74 hectares. However, they range from 0.1 hectares to 270 hectares.

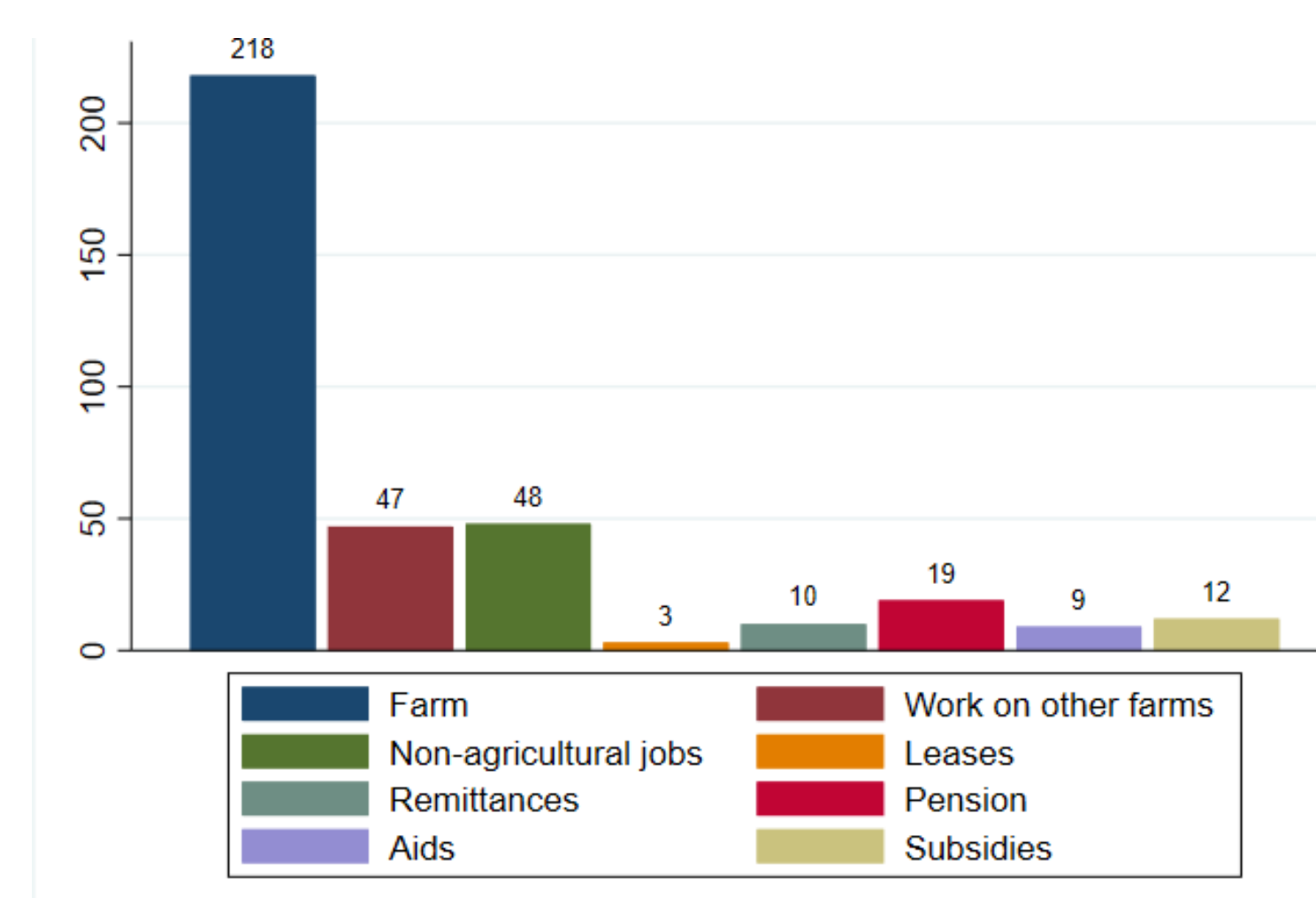


Fig 8: Income sources

57% of farmers indicated that they have both crops and some type of livestock (e.g., livestock, poultry, or fish). And 37.22% mentioned that they only have crops on their farm, with coffee being the most common.

Adaptation Measures	Yes		No	
	Frequency	%	Frequency	%
Protection of water sources	321	89.17	39	10.83
Agroforestry or agrosilvopastoral practices	236	65.56	124	34.44
Soil coverage	247	68.61	113	31.39
Retaining walls	55	15.28	305	84.72
Diversify off-farm income	121	33.61	239	66.39
Borrow money from a financial institution or purchase some type of insurance	14	3.89	346	96.11
Borrowing money from a family member, friend, or neighbor	58	16.11	302	83.89

Table 1: Climate change adaptation measures identified

Conclusions

The socio-demographic attributes of the farmers (including age, gender, level of education, and income) align with the national trends of the Colombian rural sector. It was also found that farmers are aware of the change and have already incorporated specific strategies into their farming operations.

The central region of Colombia has experienced heavy rainfall due to the La Niña phenomenon since September 2021. As a result, it is expected that farmers will be more concerned about landslides than droughts, which will affect their psychological distances.

In addition, it is anticipated that access to climate change information will influence their inclination toward implementing adaptive measures on their farms.

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