

## Vulnerability to landslide and flood hazards in north-western Rwanda

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# Outline

- ✓ *Background of the study*
- ✓ *Study objective*
- ✓ *The concept of vulnerability*
- ✓ *Methodology*
- ✓ *Preliminary results*
- ✓ *Next steps*



# Background of the study

**-Natural hazards**  
**-Landslides and**  
**Floods**

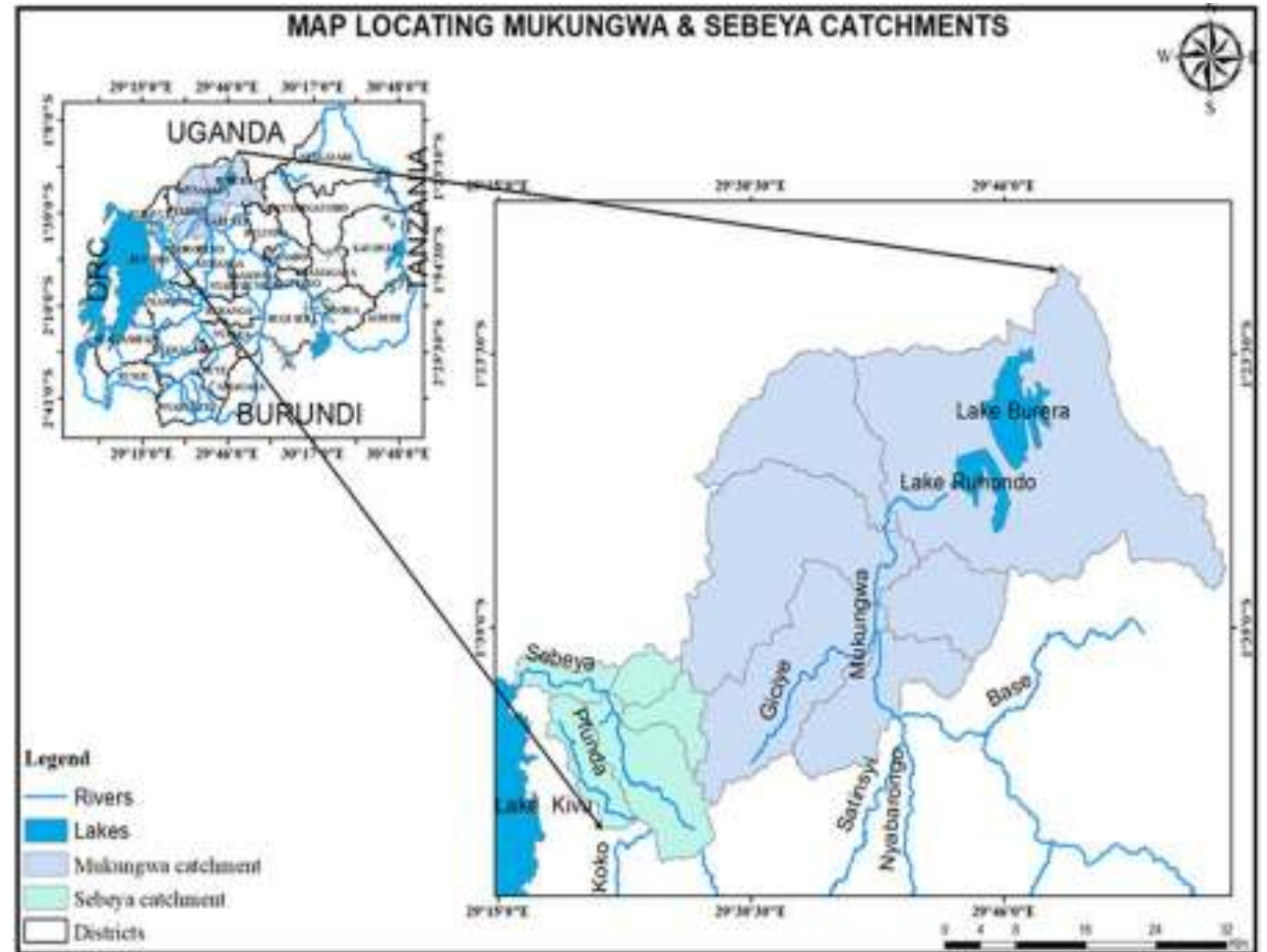
**-Loss of life**  
**-Damage to property**  
**and Infrastructure,**  
**-Displacement of**  
**Residents**



*Photo: Landslide and flood impacts in Western Rwanda, Source: Capture C.IDUKUNDA, March 2022*

# Study objective

To undertake a contextualized assessment of **social vulnerability** to landslide and flood hazards in rural communities of **North-Western Rwanda**.

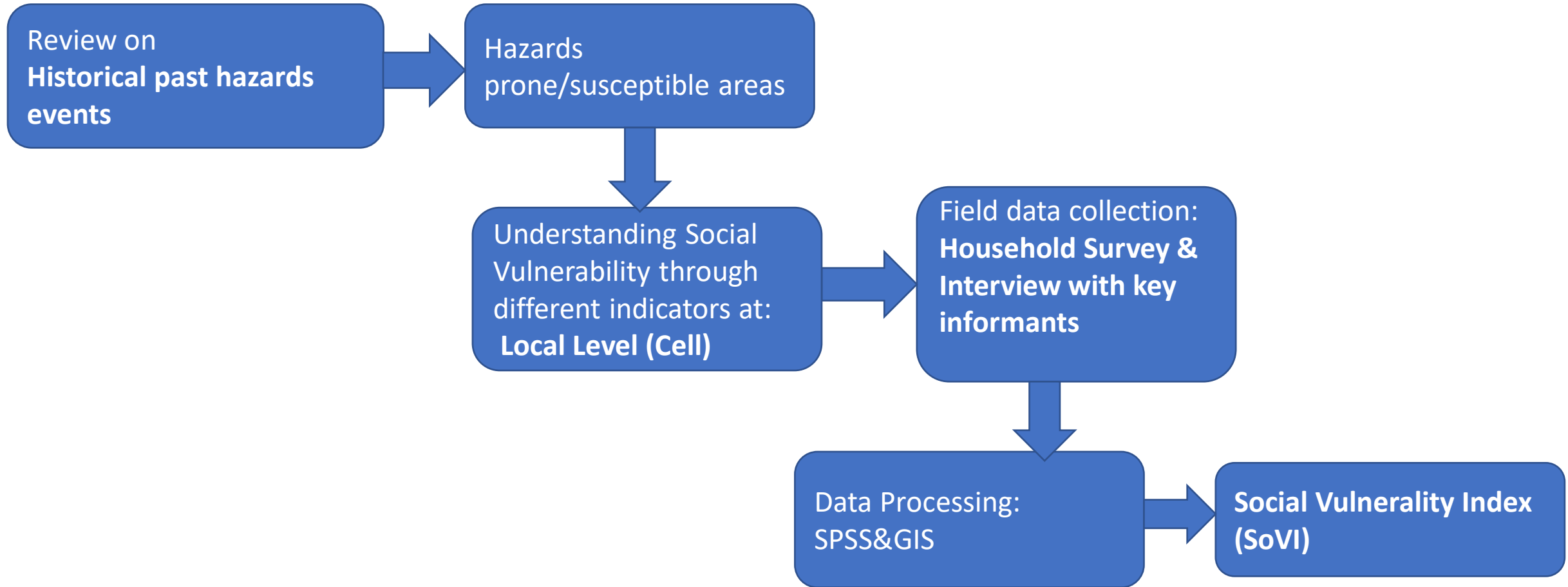


# The concept of Vulnerability

**Vulnerability is defined as:**

- *“the inability to resist a hazard or to respond when a disaster has occurred”.*  
**UNISDR**
- **Social Vulnerability** *“relates to the circumstances of a person or community that affect their capacity to anticipate, confront, repair, and recover from the effects of a disaster”.*

# Methodology



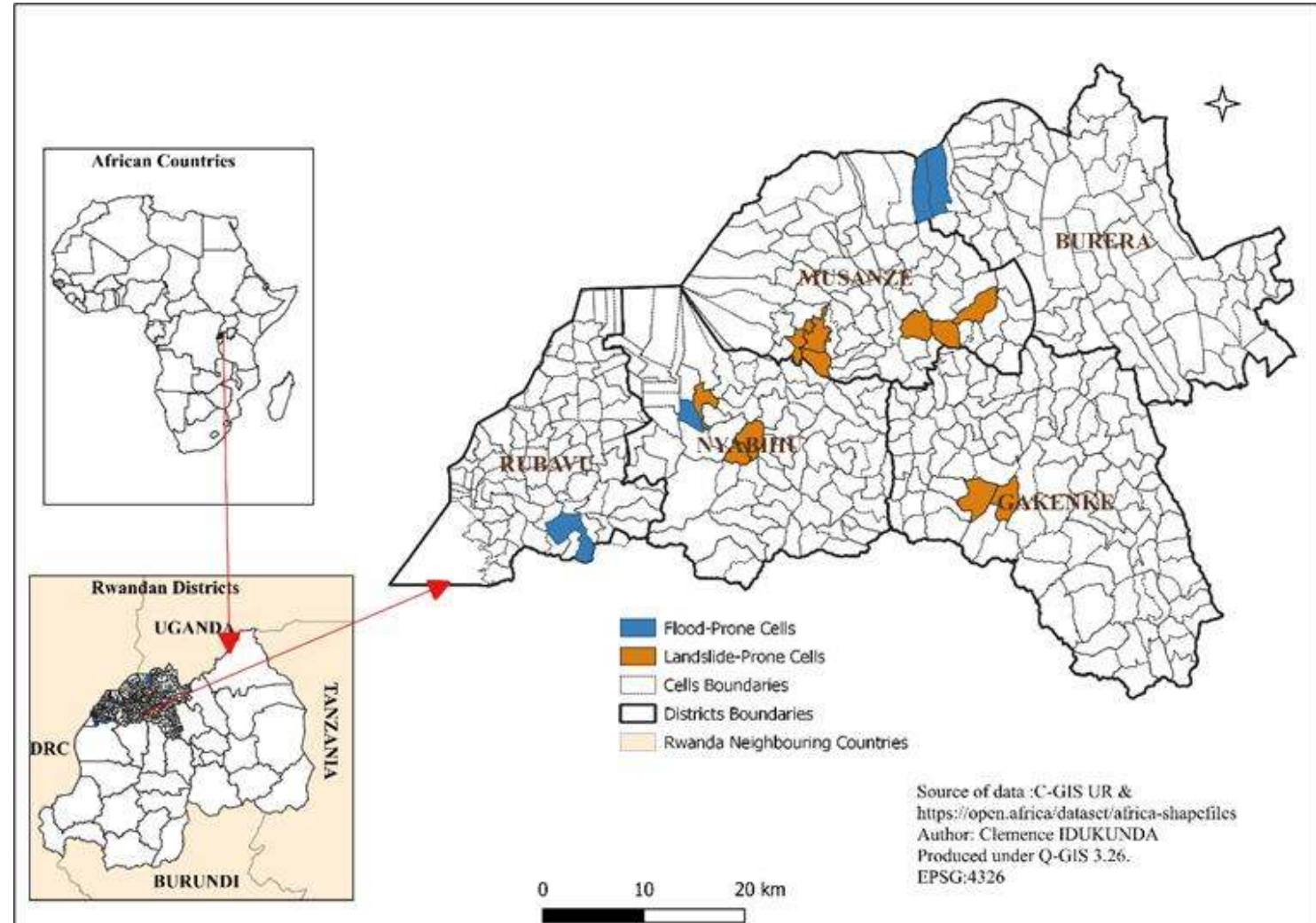
# Preliminary Results

## Surveyed cells

14 Cells from 5 districts

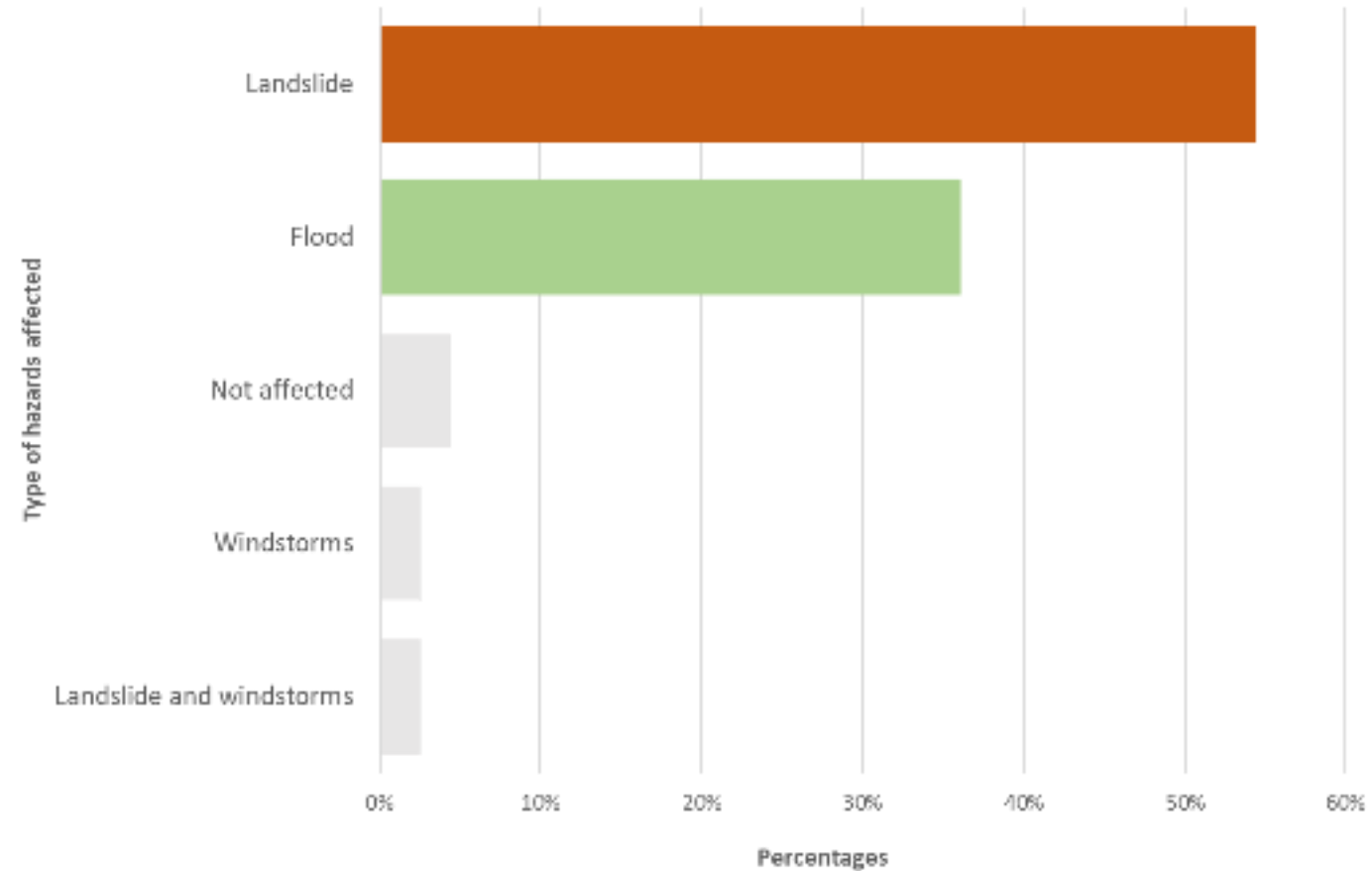
n of Key informants=23

n of household surveyed= 158





## Result 1: Type of hazards affecting people in the study area



**Distribution of type of hazards affecting the community**  
(Source: Primary data: C.Idukunda, 2022)



## Result 2: Hazards impact in the surveyed area

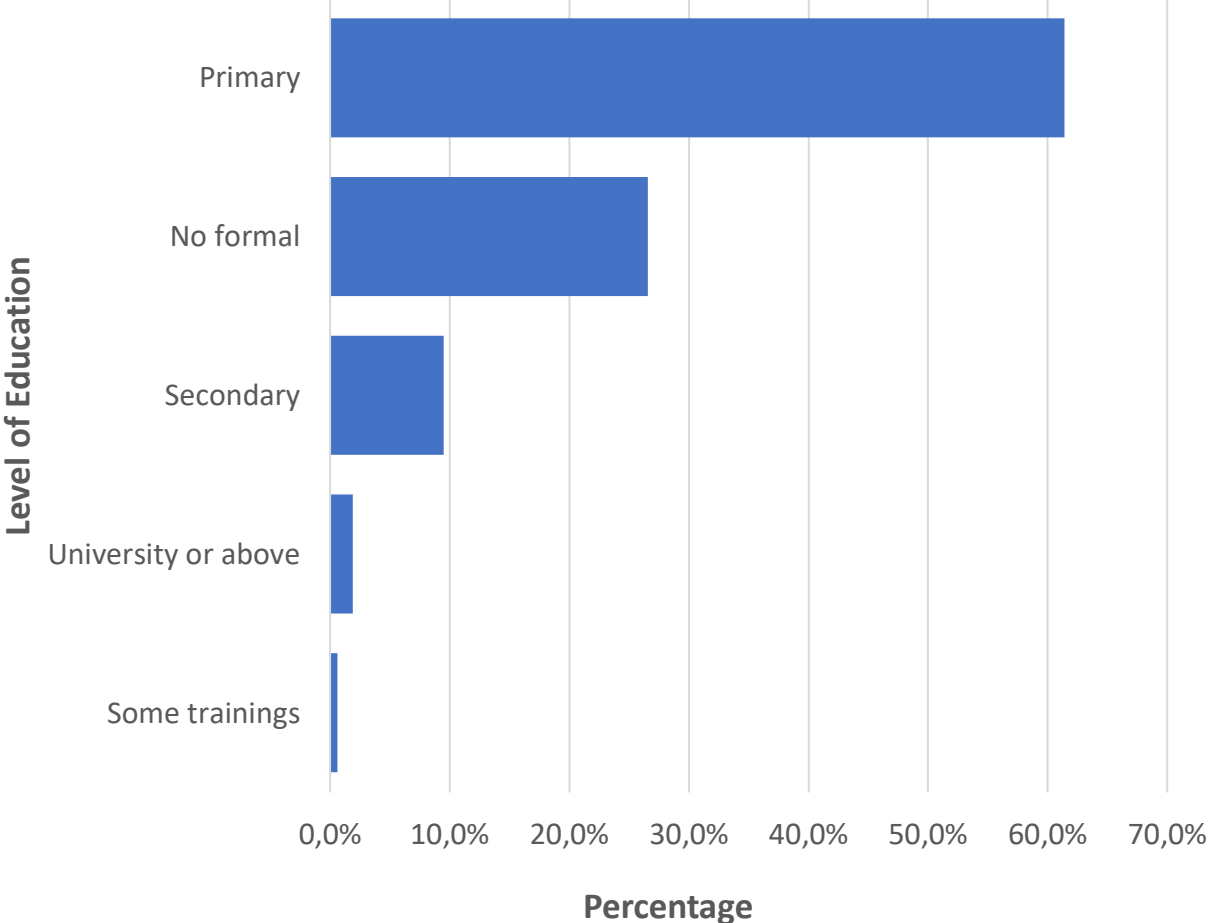
- **House property damage** : 45.48%
- **Crop damage** : 33.33%
- **Loss of cropland** : 13.19%
- **Loss of employment** : 3.12%
- **Other damages** :
  - damage to main common infrastructure such as roads, bridges : 2.77%
  - problem of accessibility to schools, markets, and works :2.11%



## Result 3: Factors contributing to vulnerability assessment in the households

- *Level of education*
- *Economic status*
- *Single-Sector Economic Dependence*
- *Financial capacity to move to safe location*
- *Quality of housing*
- *Source of cooking fuel energy*

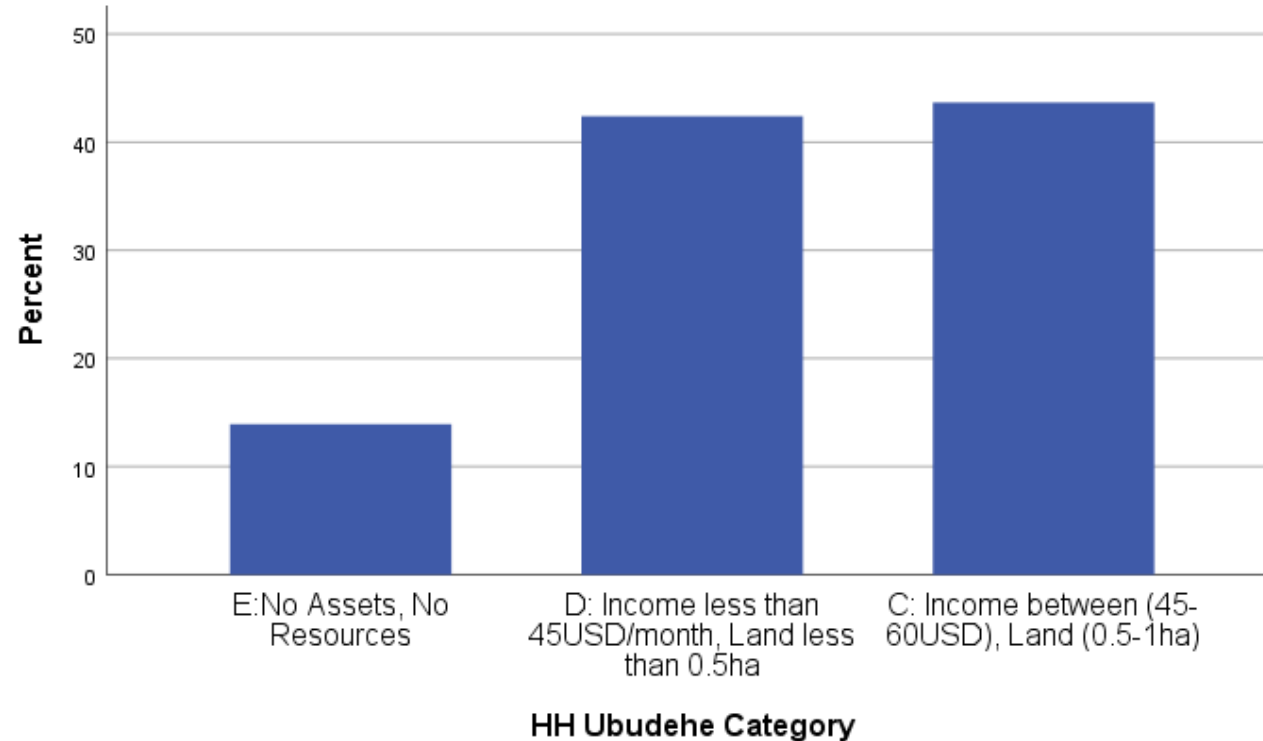
# Low level of education of the respondents



Source: Field survey, C.Idukunda, 2022

- **Low education** implies low perception as well as a low understanding of the proposed mechanisms for hazards preparation and coping measures as well as early warning systems to hazards.

## Low economic status: (Based on Ubudehe Categories)

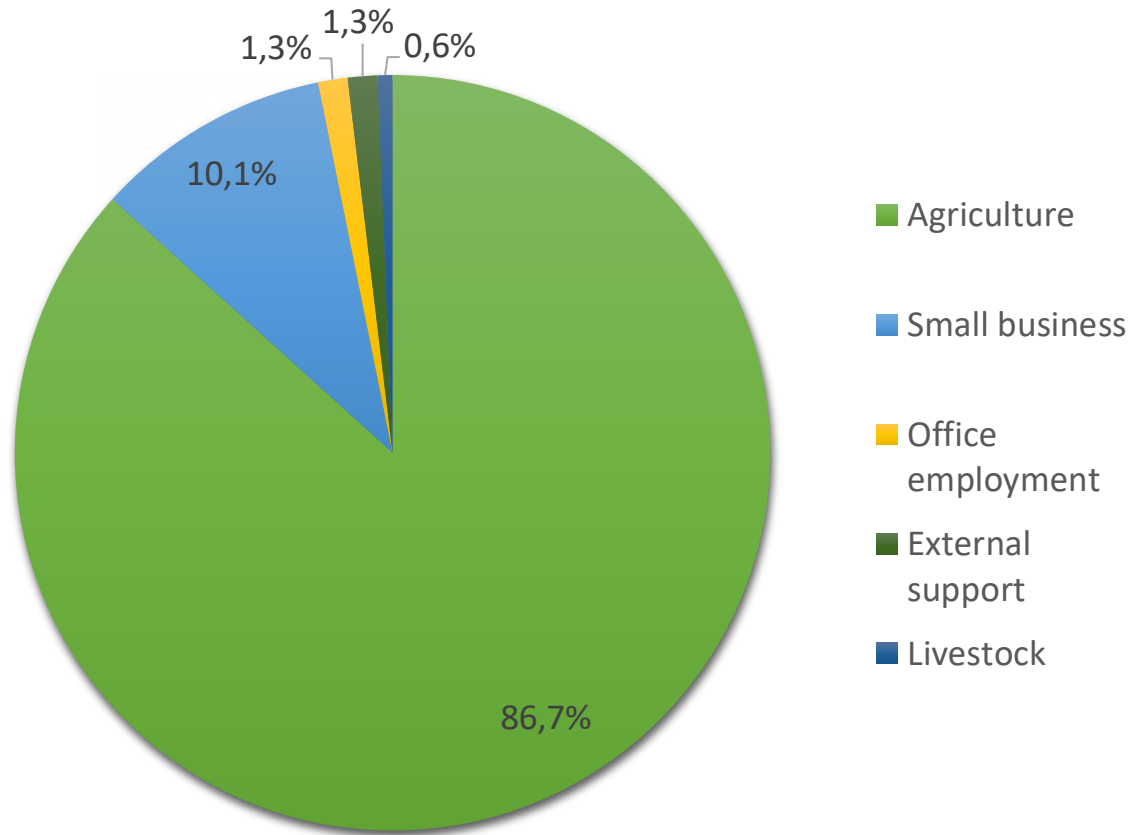


Source: Field survey: C.Idukunda, 2022

- Low income earners can not cope well with hazards impact
- Low-income implies other characteristics that make community to be vulnerable to hazards



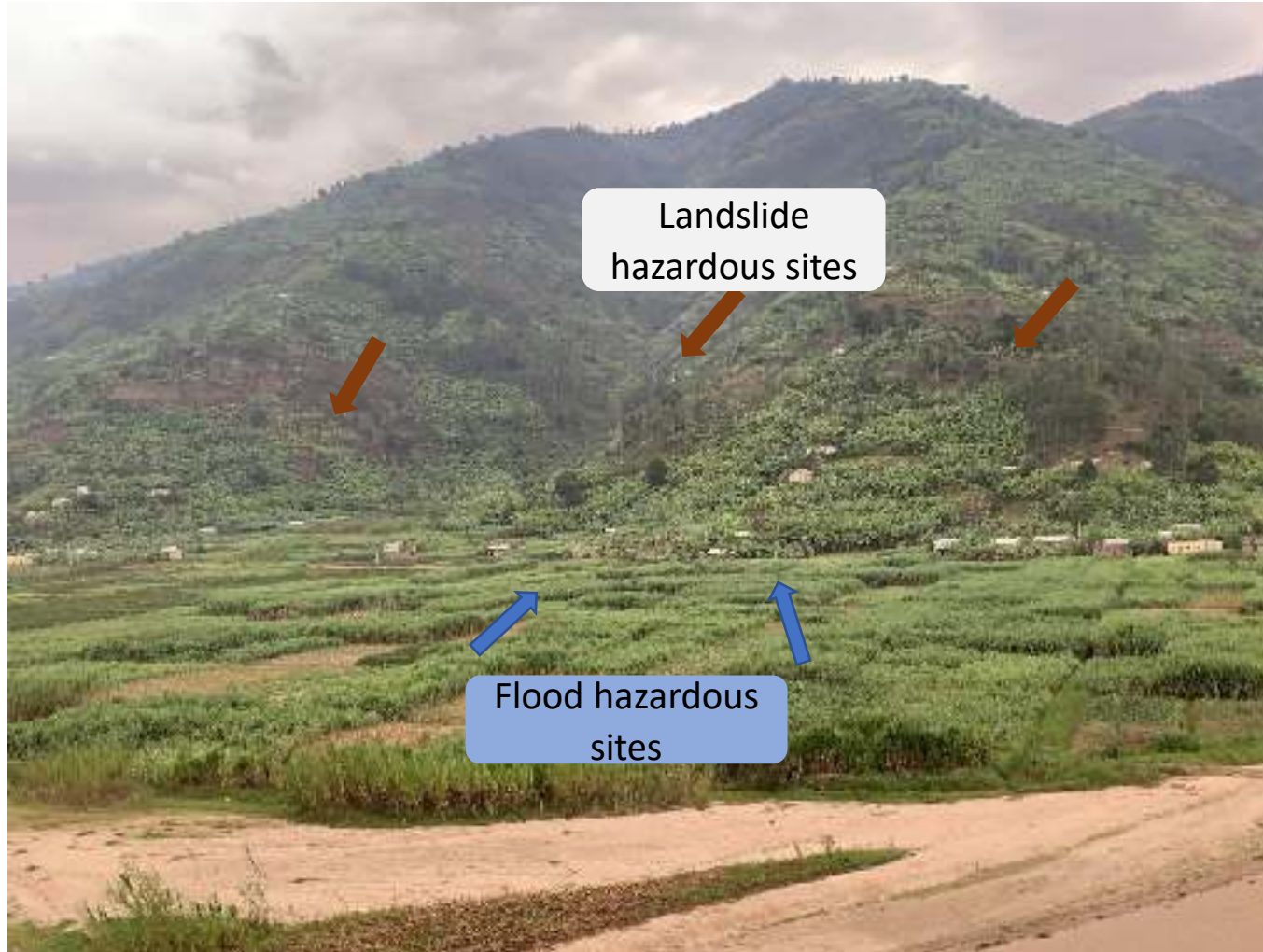
# Agriculture Dependence



The agriculture practiced in the area is rainfed, which is more vulnerable given its dependence on climate.

Source: Field survey: C.Idukunda, 2022

## Limited financial capacity to afford safe location



Source: Field survey, Clemence 2022

- 54.55%** : No financial means to relocate from this area
- Land use Master Plan not updated
- The less quality of housing **97.47%**



## Poor quality of housing

- No harvesting tools to collect rainwater from their houses 'roofs : **69.6%**
- Flash flood for those in down slope
- House foundations are permeable
- Not long-lasting building materials for walls: e.g: Mud bricks, no cement



*Photo taken during field survey: C.Idukunda, 2022*



# Result 4: Adaptive measures to risk to landslide/flood in the surveyed area

Terracing: making radical terraces in the farms at the steep slopes



Building water retention walls on the steep slopes



Relocating people from hazard-prone areas to safe places

Source: Photos taken during Field survey, C.Idukunda, 2022



## The next steps

- To make deep analysis of social vulnerability in the study area through extended survey by understanding:
  - The magnitude of Hazards impact to the community in the study area
  - The effectiveness of Adaptive measures to risk of landslide and flood
  - The extent of social vulnerability to risk of landslide and flood at cell level
  - The spatial distribution of social vulnerability in the study area
  - The comparison
- To inform decision makers about appropriate measures towards vulnerability reduction adapted to local (microscale) context

*Thank you!*