Perceptions of migration drivers among rural residents in Lunbunga, Ghana and Kathyaka, Kenya: A comparative analysis using Fuzzy Cognitive Mapping.

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HABITABLE

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 869395.

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1. Introduction
    1.1. Habitable: Linking Climate Change, Habitability and Social Tipping Points: Scenarios for Climate Migration

        1.1.1. Work Package 2: Perceptions and Migration Decisions

The overall goal of HABITABLE is to investigate how and to what extent climate change affects the habitability of socio-ecological systems and transforms current and future migration and displacement patterns.

1.2. Objective of this study: to identify similarities and differences in perceptions of factors influencing the decision to migrate among residents in two communities on opposite sides of the African continent

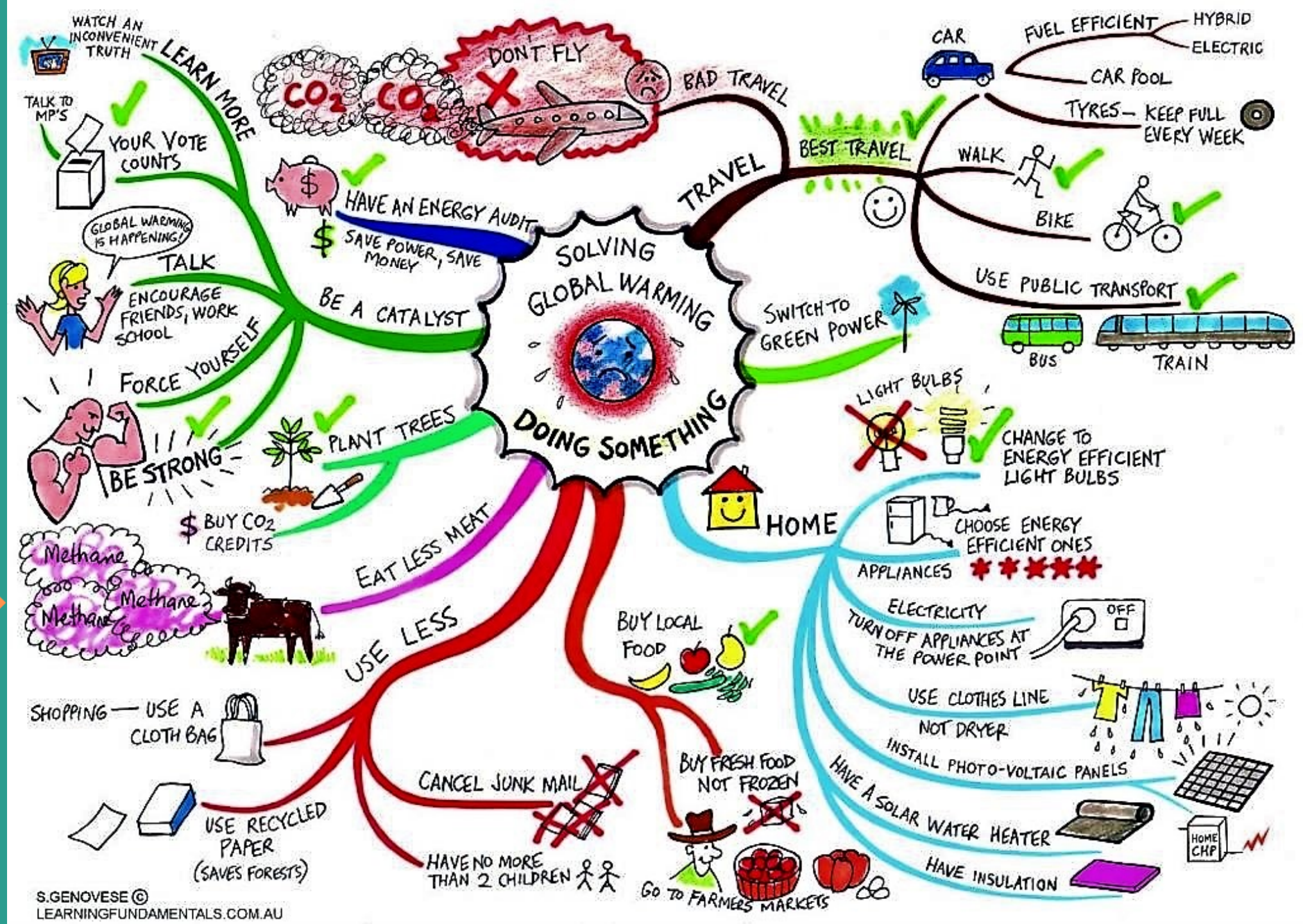
2. Background

2.1. Perception: subjective social reality deviates from objective reality, perception drives ACTION

2.2. Understanding the migration decision making process (informed by perception) gives us a more nuanced picture of potential non-linear climate-driven migration patterns

A cognitive model illustrating sensory input and processing (perception). Fludd, R. (1619)

Photo by Rachel Keeton (2019)


SOLVING GLOBAL WARMING
DOING SOMETHING
LEARN MORE
WATCH AN INCONVENIENT TRUTH
TALK TO MP'S
YOUR VOTE COUNTS
BE A CATALYST
GLOBAL WARMING IS HAPPENING!
TALK
ENCOURAGE FRIENDS, WORK SCHOOL
FORCE YOURSELF
BE STRONG
HAVE AN ENERGY AUDIT
SAVE POWER, SAVE MONEY
PLANT TREES
BUY CO_2 CREDITS
EAT LESS MEAT
Methane
Methane
Methane
USE LESS
SHOPPING — USE A CLOTH BAG
USE RECYCLED PAPER (SAVES FORESTS)
CANCEL JUNK MAIL
HAVE NO MORE THAN 2 CHILDREN
CO_2
CO_2
DON'T FLY
BAD TRAVEL
TRAVEL
BEST TRAVEL
CAR
FUEL EFFICIENT
HYBRID
ELECTRIC
CAR POOL
TYRES — KEEP FULL EVERY WEEK
WALK
BIKE
USE PUBLIC TRANSPORT
BUS
TRAIN
SWITCH TO GREEN POWER
HOME
LIGHT BULBS
CHANGE TO ENERGY EFFICIENT LIGHT BULBS
CHOOSE ENERGY EFFICIENT ONES
APPLIANCES
ELECTRICITY
TURN OFF APPLIANCES AT THE POWER POINT
OFF
USE CLOTHES LINE NOT DRYER
INSTALL PHOTO-VOLTAIC PANELS
HOME CHP
HAVE A SOLAR WATER HEATER
HAVE INSULATION
BUY LOCAL FOOD
BUY FRESH FOOD NOT FROZEN
GO TO FARMERS MARKETS
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2.3. Description of case studies

2.3.1. Lunbunga (Lingbunga), Tolon District, Ghana

2.3.2. Kathyaka, Makueni County, Kenya

2.3.3. Site selection criteria

Criterion 1: Exposure to environmental stressors
Criterion 2: Rural area with small/mid-size population
Criterion 3: Vulnerability to environmental stressors
Criterion 4: Similar destination from origin point

2.3.1. Lunbunga (Lingbunga), Tolon District, Ghana

2.3.2. Kathyaka, Makueni County, Kenya

3. Methods
   - 3.1. Fuzzy Cognitive Mapping
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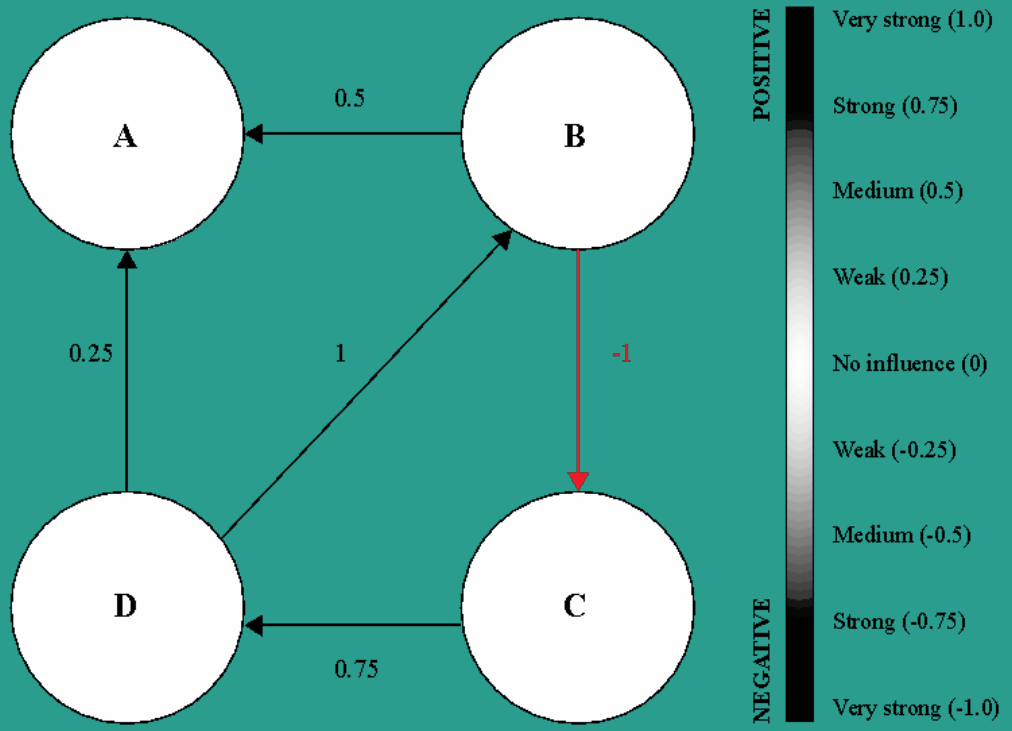
   - 3.5. Data analysis

3.1 Fuzzy Cognitive Mapping (FCM)

Concept map



Adjacency matrix

	A	B	C	D
A				
B	0.5		-1.0	
C				0.75
D	0.25	1.0		

HABITABLE PROJECT

FCM Interview (Sending location)

PLACE CODE (CC_Place name):
LINGBUNG

DATE (YY/MM/DD):
2022/05/30

ENUMERATOR NAME:
MOHAMMED HABIB ADAM

1. RESPONDENT CODE (ENUMERATORINITIALS_INTERVIEW#):
MHA 033

2. GENDER:
FEMALE

3. AGE RANGE:
44-49

4. MAIN WORK ACTIVITY:
FARMING

5. HIGHEST GRADE COMPLETED:
NONE

6. HOUSEHOLD MEMBERS (#):
12

7. ADULTS IN HOUSEHOLD (#):
6

8. HOUSEHOLD TYPE (DH / FH / MH*):
MH

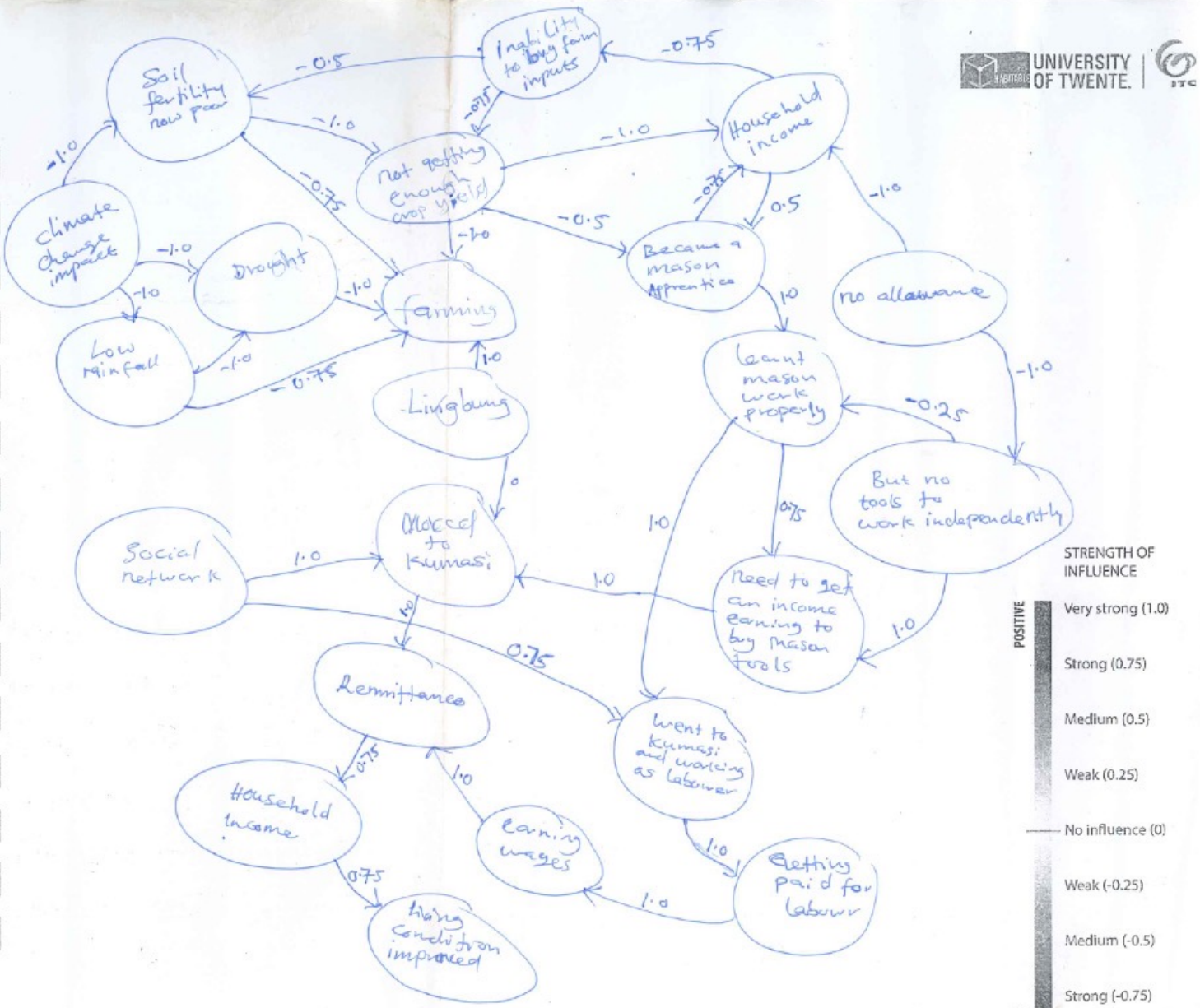
9. CURRENT PLACE OF RESIDENCE:
LINGBUNG

10. MIGRANT'S GENDER:
MALE

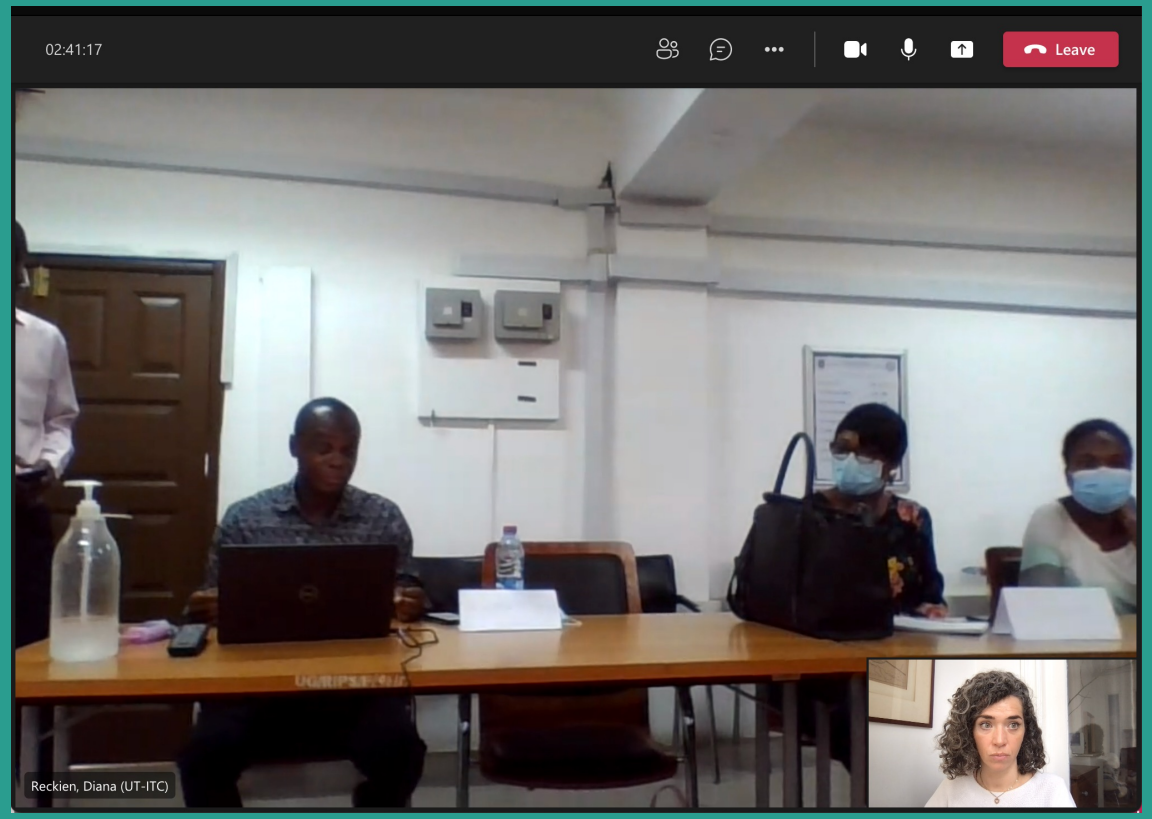
11. MIGRANT'S AGE RANGE AT TIME OF MIGRATION:
18-34

12. MIGRANT'S PLACE OF DESTINATION:
Kumasi

*DH: DUAL-HEADED
FH: FEMALE-HEADED
MH: MALE-HEADED



FCM training in Kathyaka, Kenya
(Image by Samuel Hall, August 2022)



FCM training in Accra, Ghana (May 2022)

3.3. Sampling strategy

Phase 1 (site selection)

Sending and receiving locations (at the district or 3rd tier administrative level) are selected by Country leads based on selection criteria.

Phase 2 (site selection)

Agricultural communities within the selected districts are identified by Country leads based on site selection criteria.

Phase 3 (purposive sampling)

Households meeting selection criteria (i.e. a household member has migrated within the last 10 years) are identified (by local leaders or through existing networks) and invited to participate

Phase 4 (snowball samping)

Household members are asked to identify other households who may also meet sampling criteria until 40 respondents have been identified and interviewed (saturation).

3.4 Data collection

Site	Data collected	Enumerators	Respondents
Lunbunga, Ghana	May, 2022	4 enumerators (2 women, 2 men) 1 field coordinator	59 respondents (24 women, 35 men)
Kathyaka, Kenya	September, 2022	4 enumerators (2 women, 2 men) 1 field coordinator	56 respondents (36 women, 20 men)

FCM interviews in Kathyaka, Kenya (Image by Samuel Hall, September 2022)

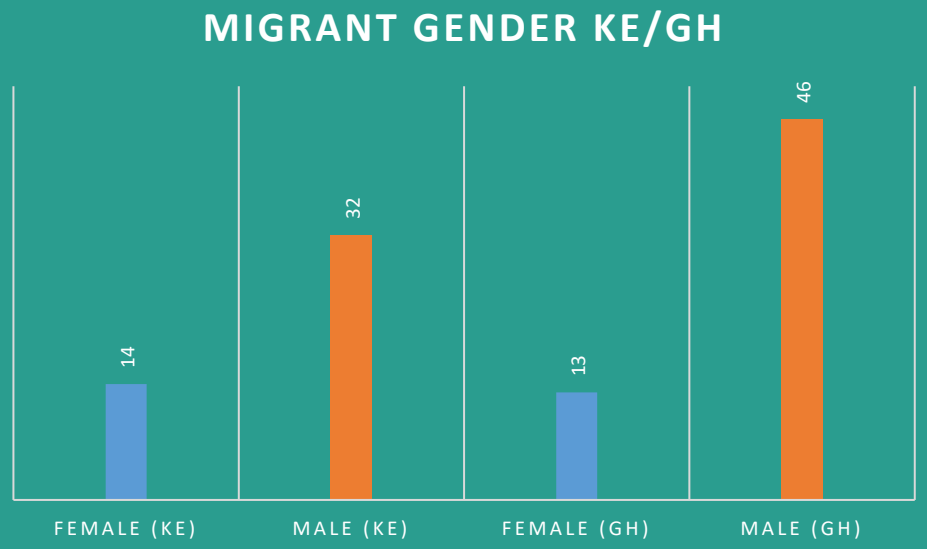
FCM Ghana Pilot,
(Image by Diana Reckien, April 2022)

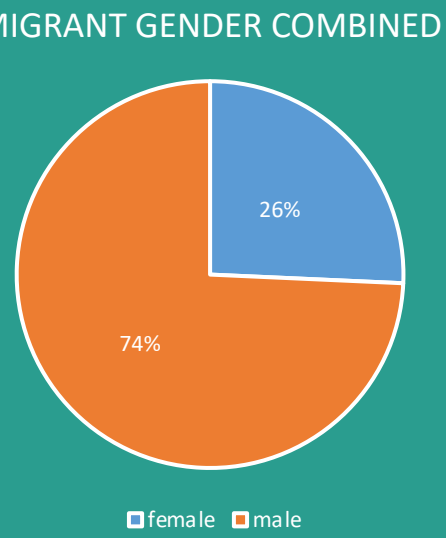
4. Results

4.1. Lunbunga, Tolon District, Ghana

4.2. Kathyaka, Makueni County, Kenya

Who moves?


MIGRANT GENDER KE/GH
14
32
13
46
FEMALE (KE)
MALE (KE)
FEMALE (GH)
MALE (GH)

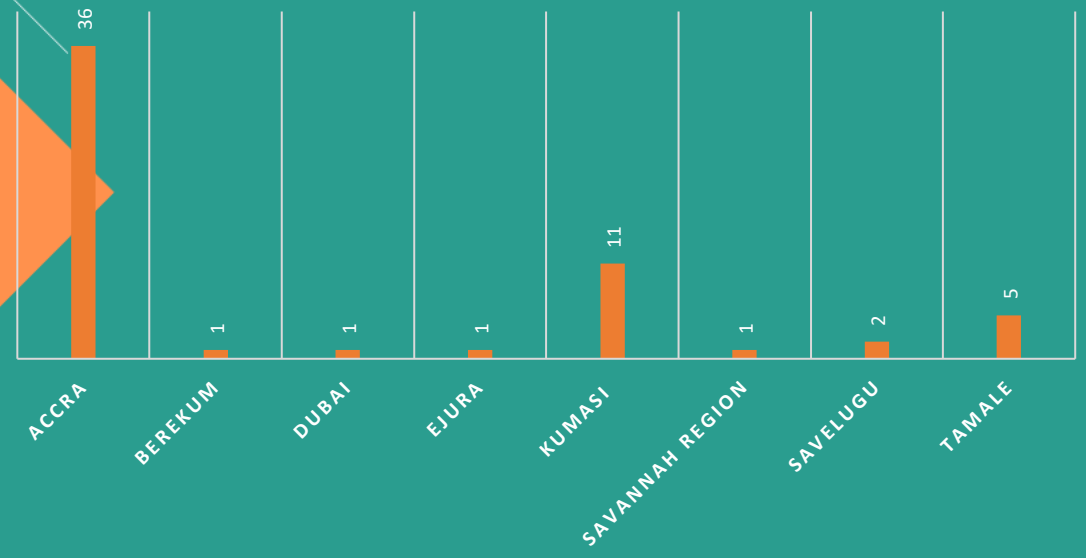

MIGRANT GENDER COMBINED
26%
74%
female
male

Respondent occupation Ghana

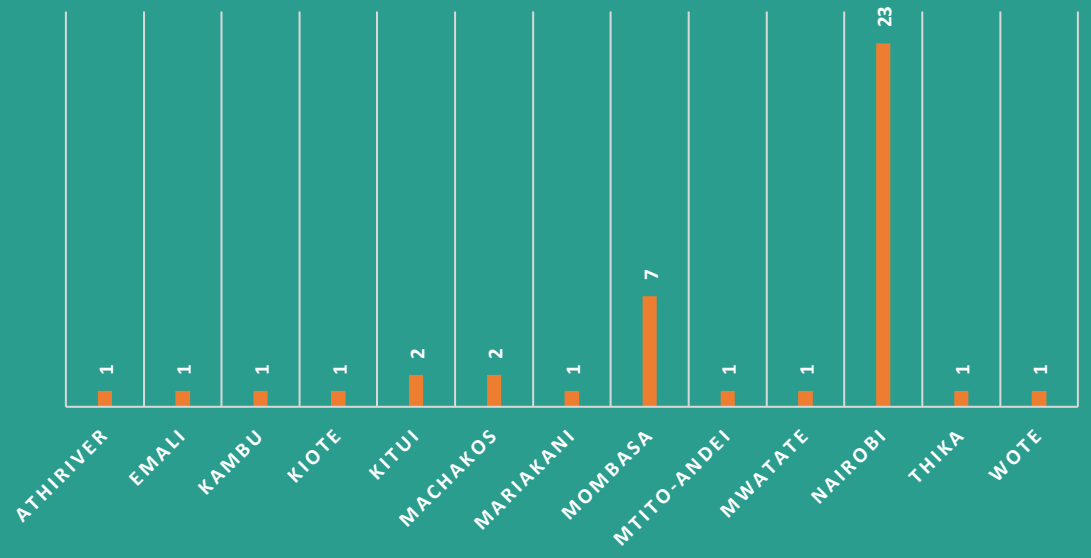
Respondent occupation Kenya

Where do they go?

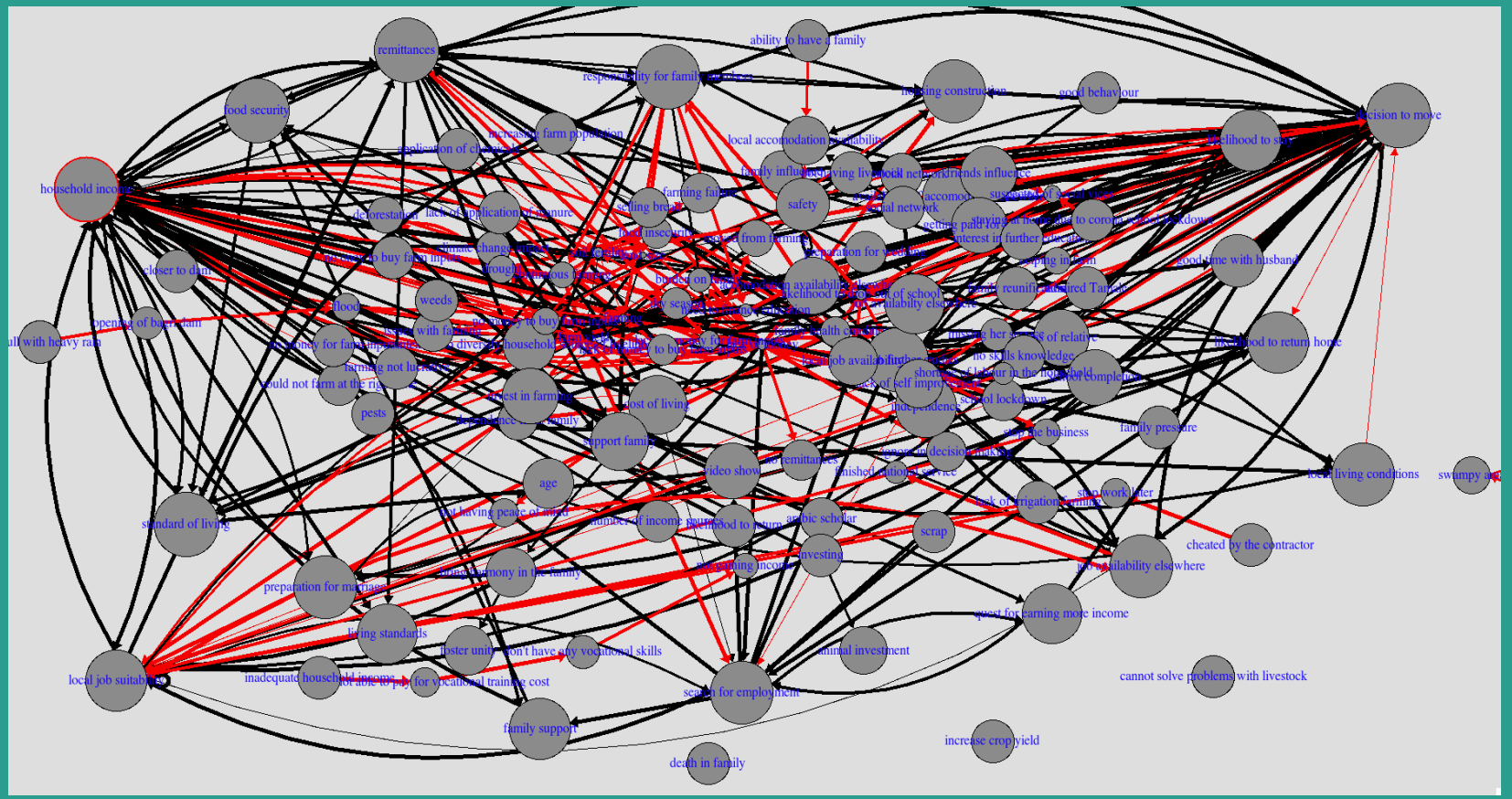
DESTINATION AREA (GHANA)



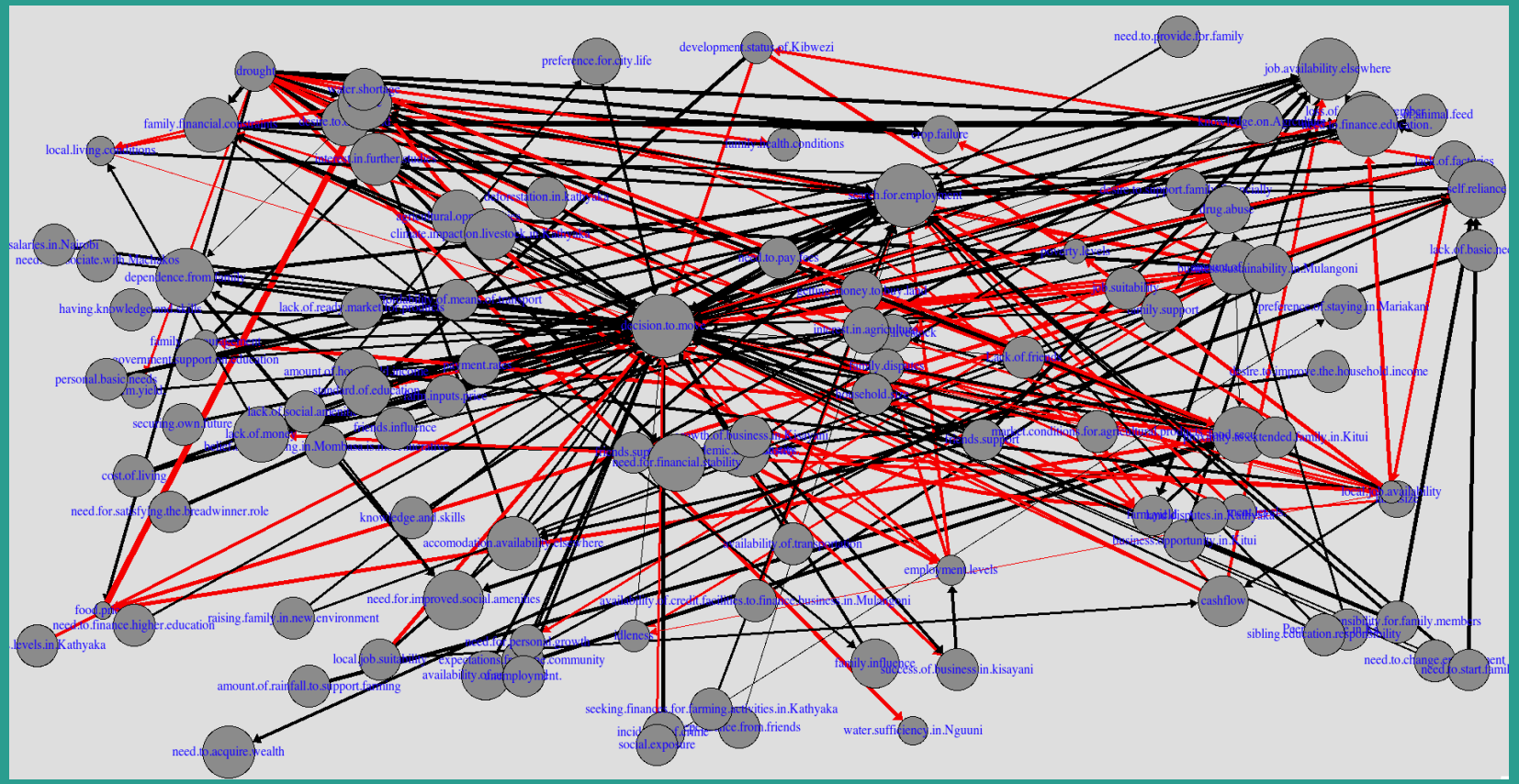
DESTINATION AREA (KENYA)

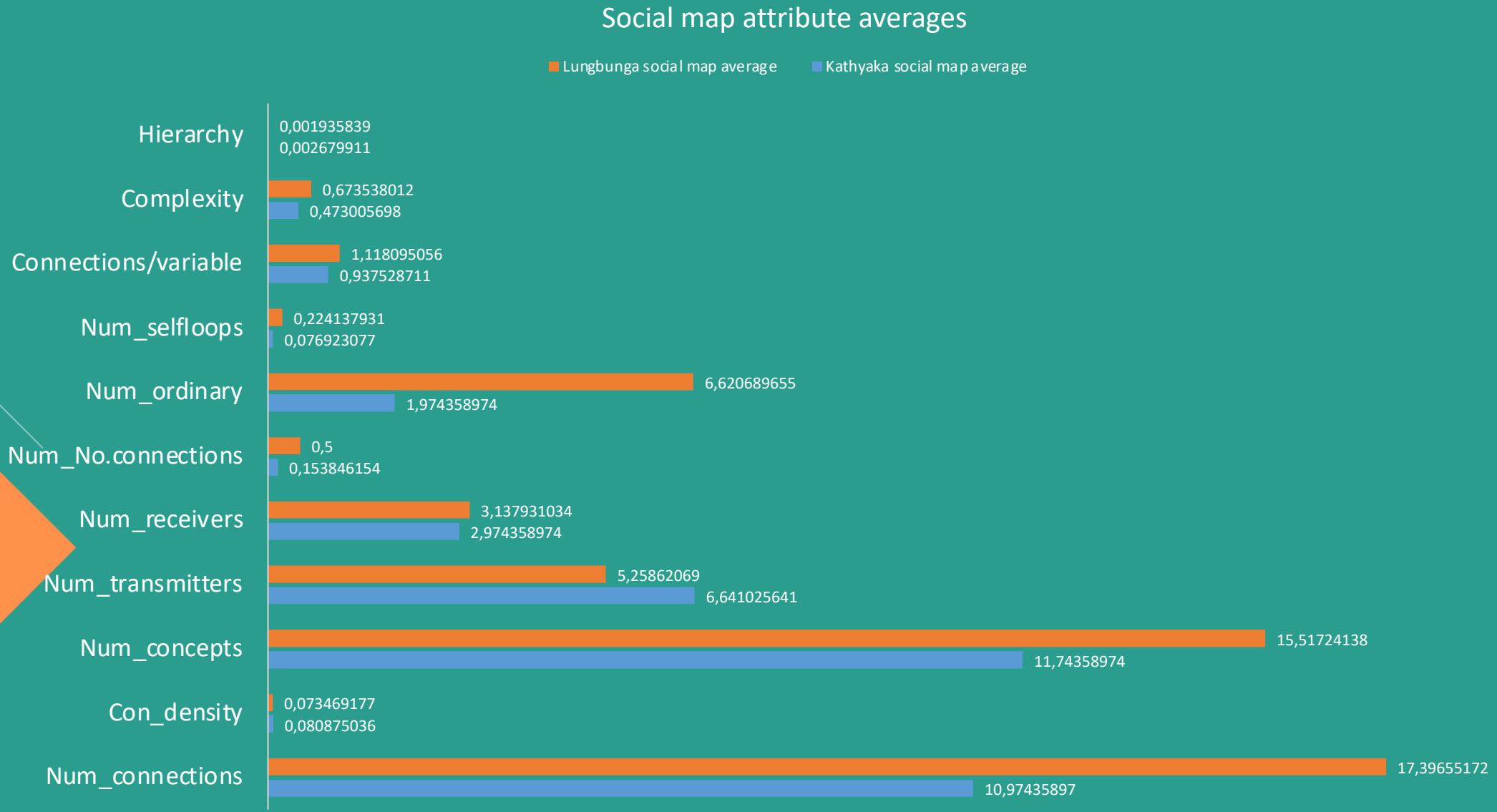


Lingbunga aggregated social map (59)

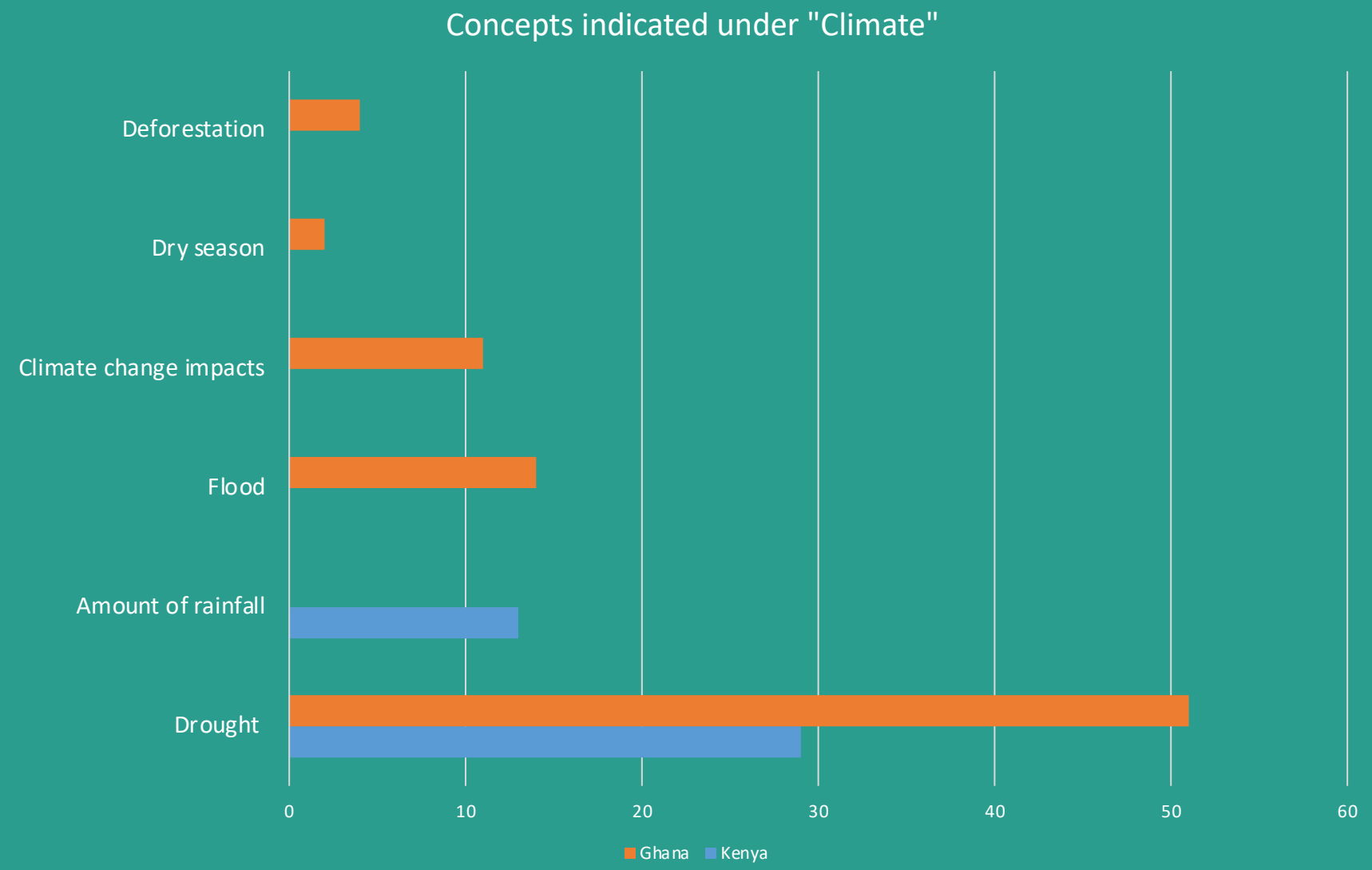


Kathyaka aggregated social map (39)




Social map attribute averages
Lungbunga social map average
Kathyaka social map average
Hierarchy
0,001935839
0,002679911
Complexity
0,673538012
0,473005698
Connections/variable
1,118095056
0,937528711
Num_selfloops
0,224137931
0,076923077
Num_ordinary
6,620689655
1,974358974
Num_No.connections
0,5
0,153846154
Num_receivers
3,137931034
2,974358974
Num_transmitters
5,25862069
6,641025641
Num_concepts
15,51724138
11,74358974
Con_density
0,073469177
0,080875036
Num_connections
17,39655172
10,97435897


Concept group frequency of mention
Transportation and infrastructure
Health and body
Personal development
Community
Food security
Likelihood to stay
Housing conditions
Education
Decision to move
Family
Climate
Agriculture, livestock, forestry and fishing
Employment
Economy and finance
2
3
11
16
24
21
27
27
42
12
0
60
25
55
27
67
42
68
46
80
45
83
33
196
94
138
86
270
0
50
100
150
200
250
300
350
400
Kenya
Ghana


Concepts indicated under "Climate"
Deforestation
Dry season
Climate change impacts
Flood
Amount of rainfall
Drought
0
10
20
30
40
50
60
Ghana
Kenya

5. Discussion and conclusion
    5.1 Limitations of the study:
        Language / translation,
        Remote training,
        Cannot generalize beyond the sample,
        Researcher bias

    5.2 Future research directions:
        Deeper insight into aspirations and capacities
        Combine and triangulate with quantitative data
        Transformative approach

    5.3 Consistent with previous research
        Individuals don't necessarily report climate change as a main driver in migration decision making – part of a causal cascade