Capacity Building with Community Health Organizations in Kenya

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How can grassroots organizations leverage geospatial tools to address community health concerns in low-resource settings?

Goal

Global Health Action

Our research, conducted in partnership with **Global Health Action (GHA)**, aimed to equip seven Kenyan community health organizations with the skills to create maps in QGIS for a community health assessment.

Main Stakeholders

Global Health Action: **Atlanta-based non-profit international health and development organization** seeking to aid their international partners

Kenyan Partners: **Seven community health organizations** seeking to learn more about the areas in which they work in Kenya

QGIS Mapping & Clustering Workflow

Stage 1: County, Subcounty, & Ward Layering

1.
- **Initialize** QGIS Project
- Add Google Satellite

2.
- **Vectorize** for Kenya, County, Sub-County, & Ward

3.
- **Filter & Export** for County, Sub-County, & Ward Layers

Stage 2: Mapping Initial Assessment Area

4.
- **Vectorize** for Road & Building Layers

5.
- **Add** Polygon Shapefile Layer
- **Edit** Layer Around Assessment Area

6.
- **Clip** Buildings over Assessment Area
- **Count** Households in Clipped Table

Stage 3: Clustering Households in Final Area

7.
- **Edit** Assessment Area & **Count**
- **Repeat** Until **~800** Households

8.
- **K-Means Clustering** with 30 Clusters

9.
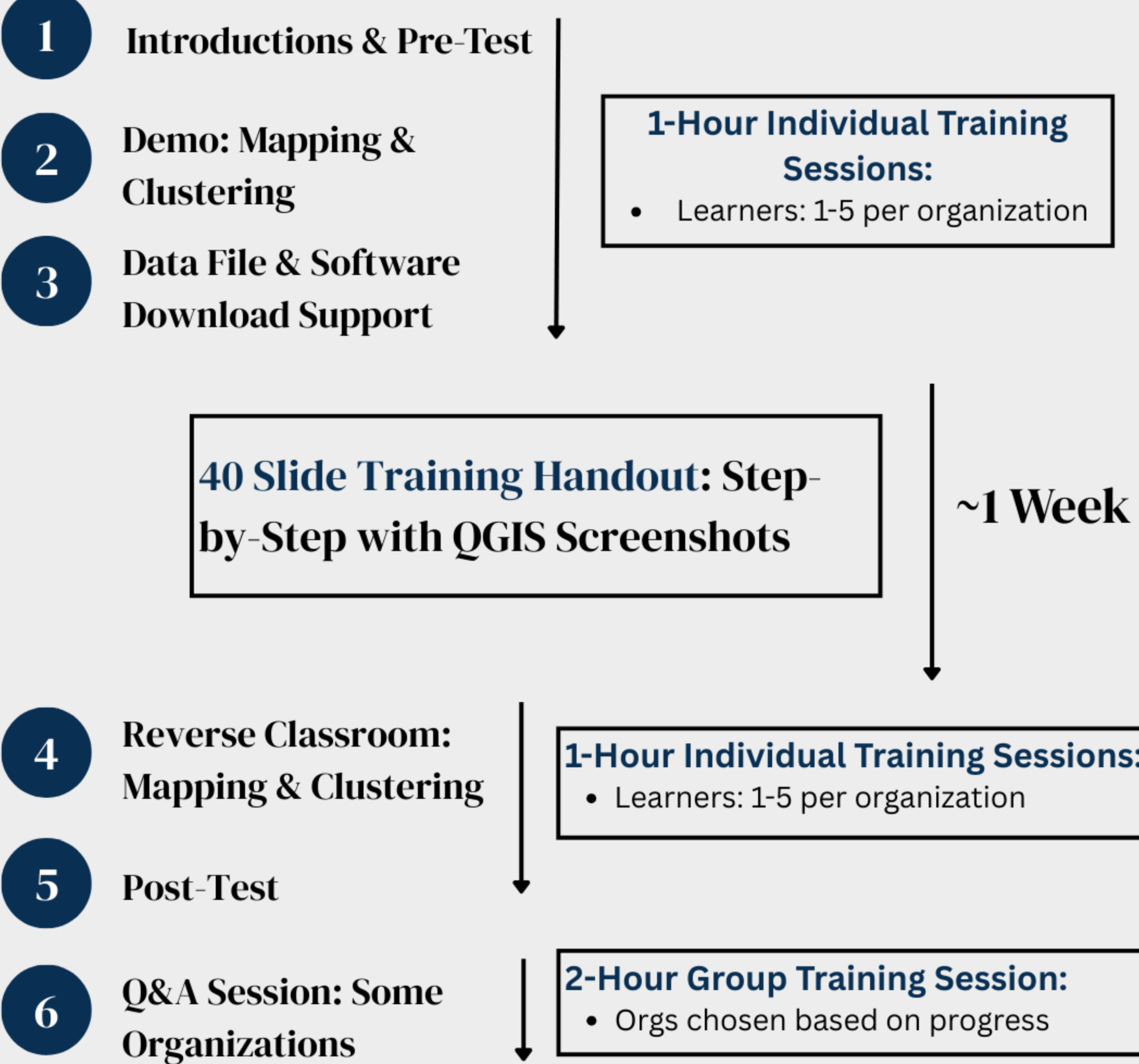- Use **Minimum Bounding Geometry** for Cluster Boundaries

Training Kenyan Partners

8 Organizations → **6** Urban → **2** Rural

18 Training Hours → **16** Individual → **2** Group

QGIS Training Structure

1. Introductions & Pre-Test

2. Demo: Mapping & Clustering

3. Data File & Software Download Support

1-Hour Individual Training Sessions:
- Learners: 1-5 per organization

40 Slide Training Handout: Step-by-Step with QGIS Screenshots

~1 Week

4. Reverse Classroom: Mapping & Clustering

1-Hour Individual Training Sessions:
- Learners: 1-5 per organization

5. Post-Test

6. Q&A Session: Some Organizations

2-Hour Group Training Session:
- Orgs chosen based on progress

Qualitative Analysis: Main Takeaways

	Issue	Root Cause	Steps Took to Address Issue
Pre-Test & Post-Test Difficulties	Lots of initial confusion that led to delays	People didn't understand its use/felt pressure. The main mapper was not filling out the test	Providing a disclaimer at the beginning. Had the main mapper complete the testing
Speed of the Sessions	Some felt the sessions moved too fast	Sessions were limited to an hour. Attendees were not aware of the detailed guide	Providing a disclaimer at the beginning of the sessions
Differing Technological Skills	Certain organizations moved faster than others	Different people had varying levels of technological skills	Providing more hands-on, individual help

Conclusion & Lessons Learned

We feel confident in recommending a **two-pronged approach** for future GIS efforts in low-resource areas:
1. The use of QGIS as an accessible GIS tool
2. Hands-on training sessions to build QGIS skills

For Future Iterations:
- This approach should be taken with a longer time frame and longer sessions
- Future researchers should encourage more engagement of all participating organizations