

Module 4

# Introduction to GIS Applications

Capacity Building with Government Officials  
Accra, Ghana  
May 26-29, 2010

# Geographical Information Systems Applications (GIS)

- A computer system capable of capturing, storing, analyzing, and displaying geographically referenced information (data identified according to location) (USGS)
- An integrated system of computer hardware, software, and trained personnel linking topographic, demographic, utility, facility, image and other resource data that is geographically referenced (NASA)

# What does GIS do?

- Allows us to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts
- Helps you answer questions and solve problems by looking at your data in a way that is quickly understood and easily shared
- GIS technology can be integrated into any enterprise information system framework (ESRI)

# The Power of the Image



Fernand Braudel, hoping to emphasize the importance of Africa to the communities of Mediterranean Europe, presented a familiar image with an unconventional orientation in his 1996 book *La Mediterranee*

# GIS Applications are:

- Different from other information systems because they allow spatial relationships to be analyzed and produce maps with collected data
- Useful because complex data can be organized into an easily understood format (a map) “that engages decision makers and provides new insight into complicated problems” (Morrow, 2009: 3)

# What does GIS look like?

- **Database View** – “Geodatabases”
- **Map View** – windows into the database
- **Model View** – creating new information from existing information

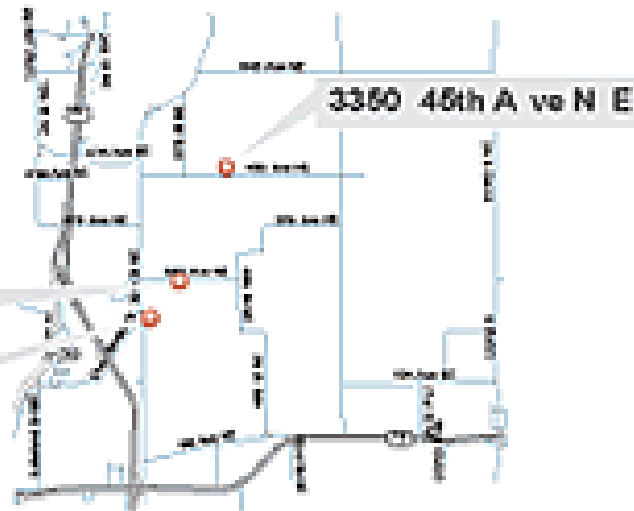
# The Database View

- “Information system for geography”
- Geographic database, or *geodatabase* for short
- Describes the world in geographic terms, such as a street grid in a city:

## Addresses

3350 45th Ave NE  
3383 30th Ave NE  
2459 Country Rd. 9 NE

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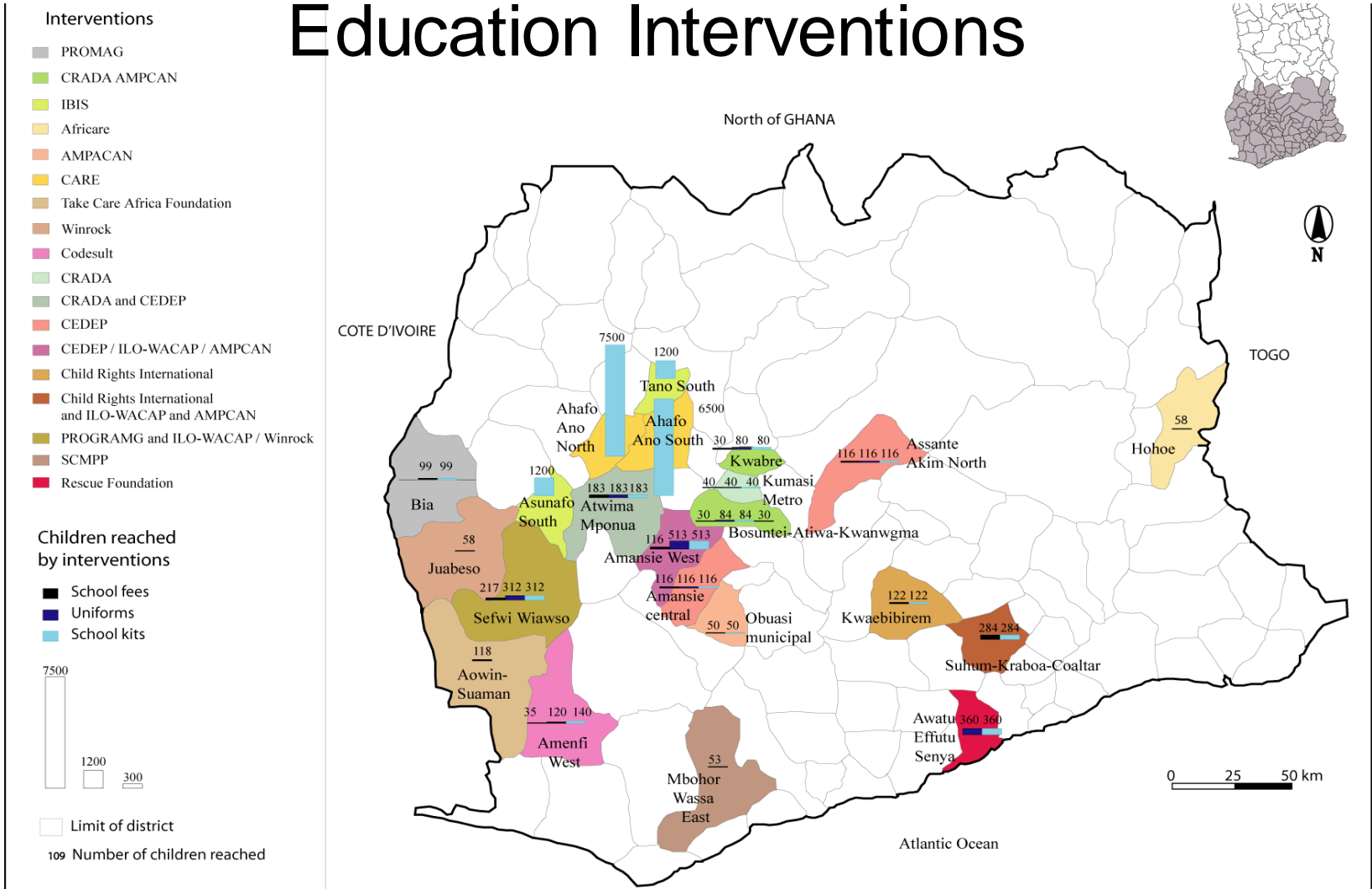


# The Map View

- A set of maps showing features and relationships between features on the earth's surface
- Maps of geographic information “can be constructed and used as ‘windows into the database’ to support queries, analysis, and editing of the information” (ESRI)
- **The following map shows the extent to which educational interventions have reached children in the cocoa sectors:**



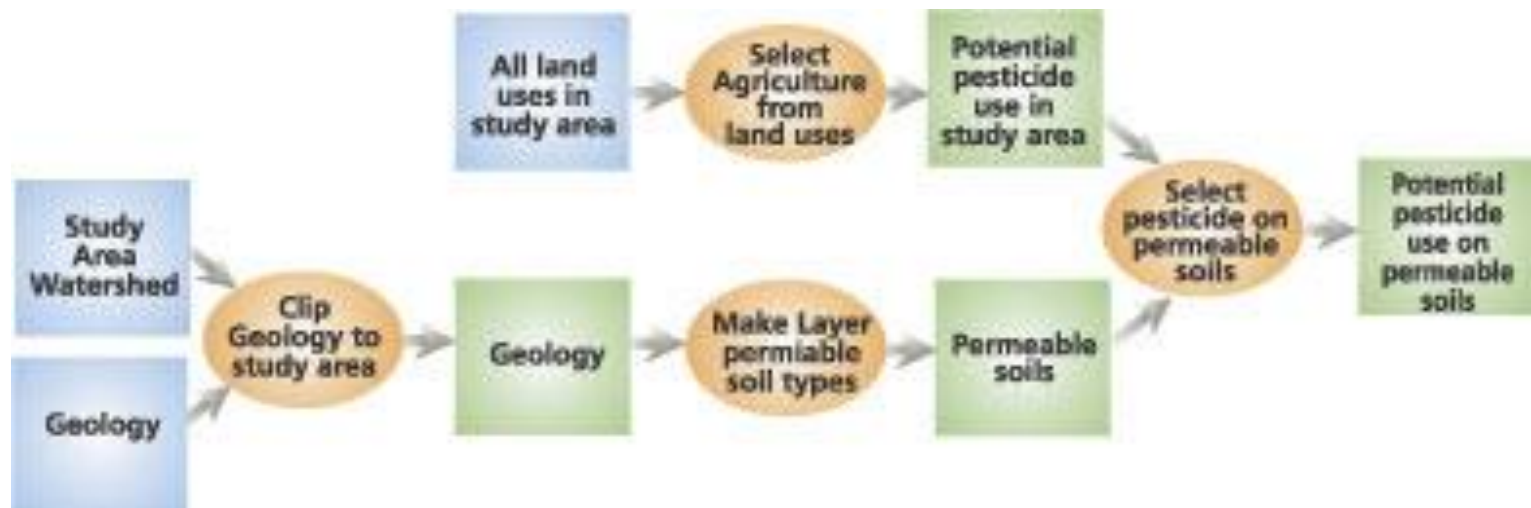
# Education Interventions



(Tulane University and the West African Health Organization Intervention Database)

# The Model View

- A tool to transfer information by taking data from existing datasets, applying analytic functions, and writing results into new derived datasets
- Creates a model to help answer questions



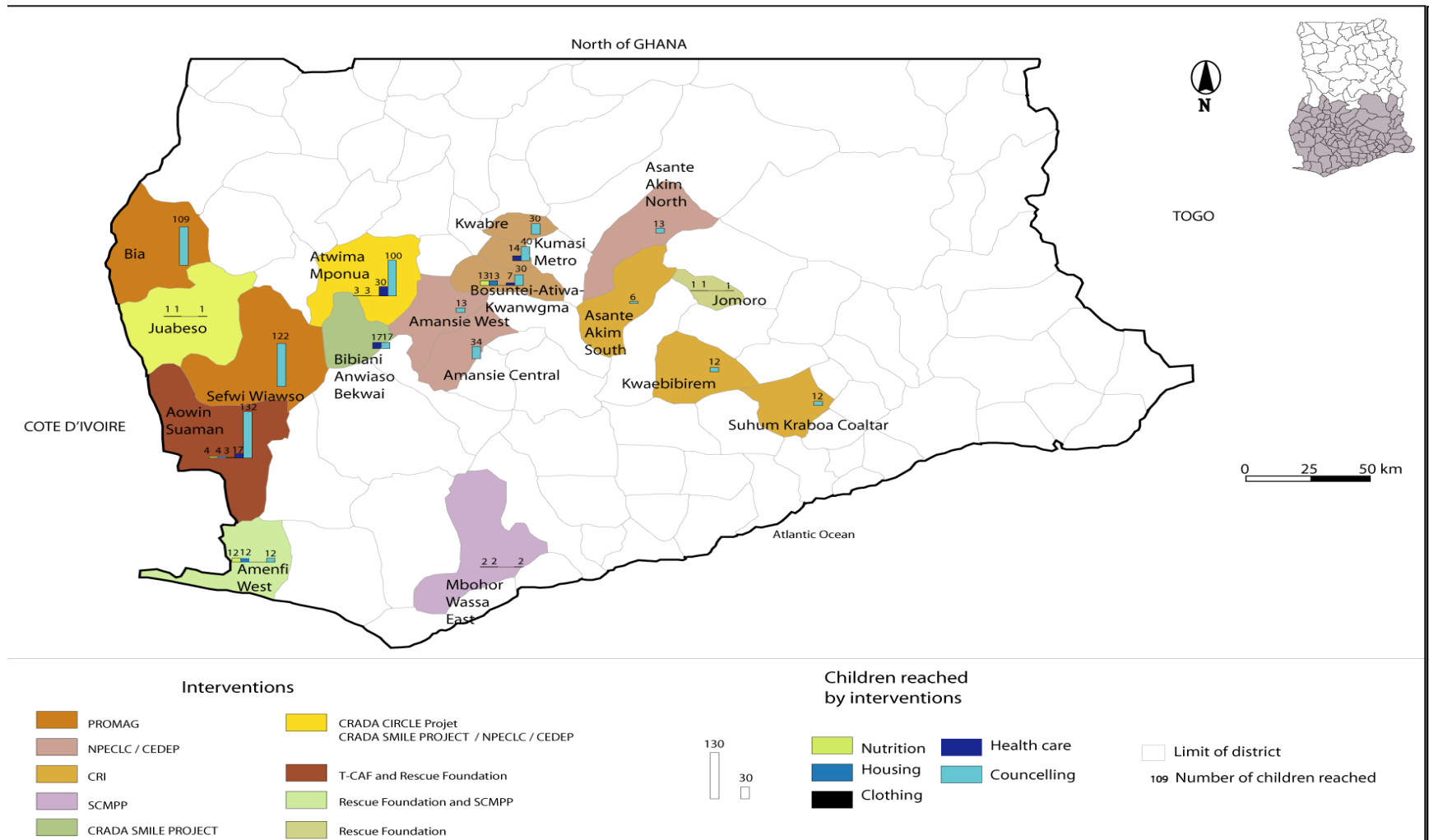
# GIS in Social Sciences

- Integration and comparison of contextual data from different standpoints
  - Social
  - Environmental
  - Physical
- Analysis of similarities, correlations, and interactions between locations

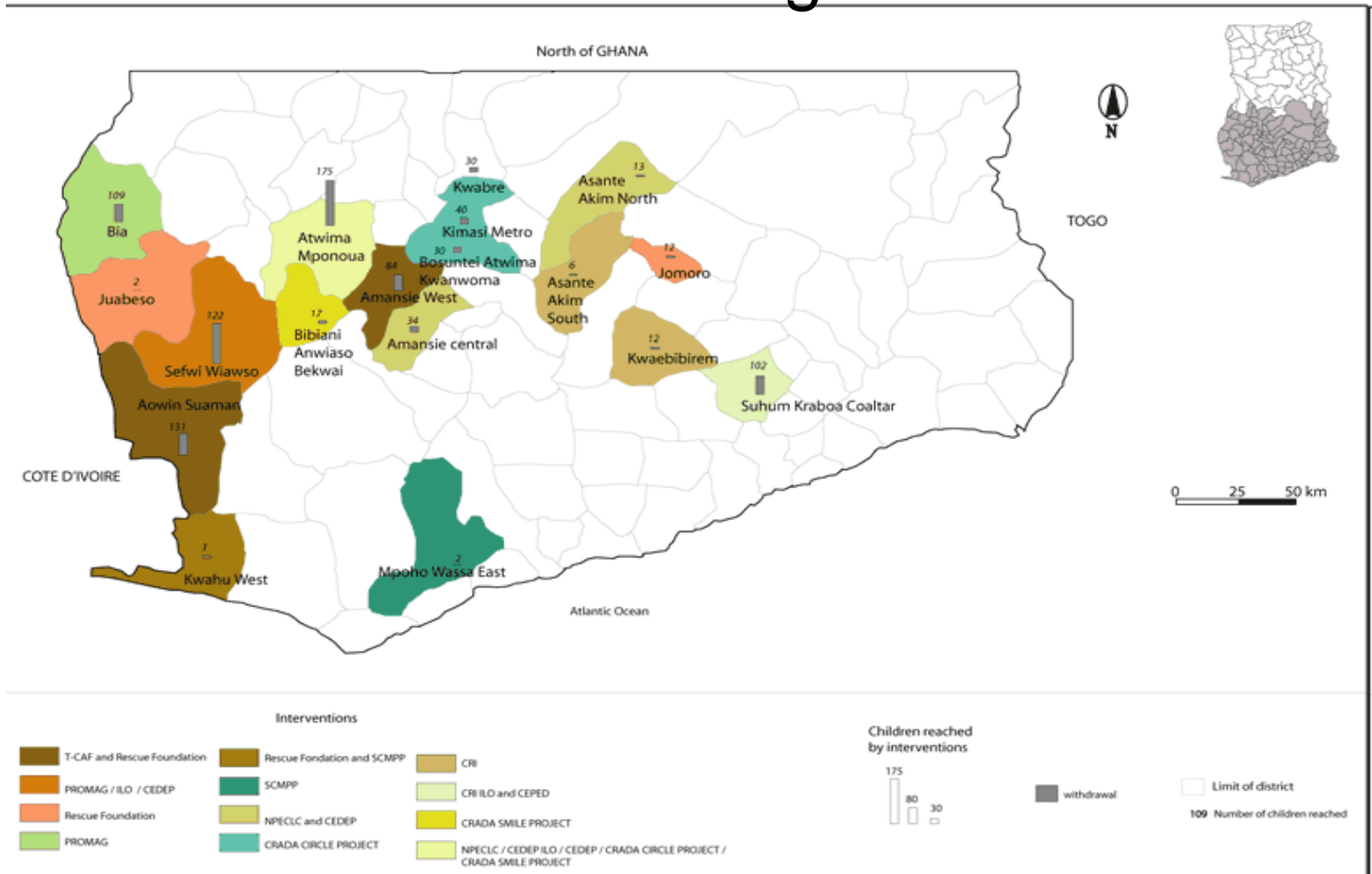
# Examples of the Reach of Intervention Programs in the Cocoa Sector as Shown by GIS Imaging



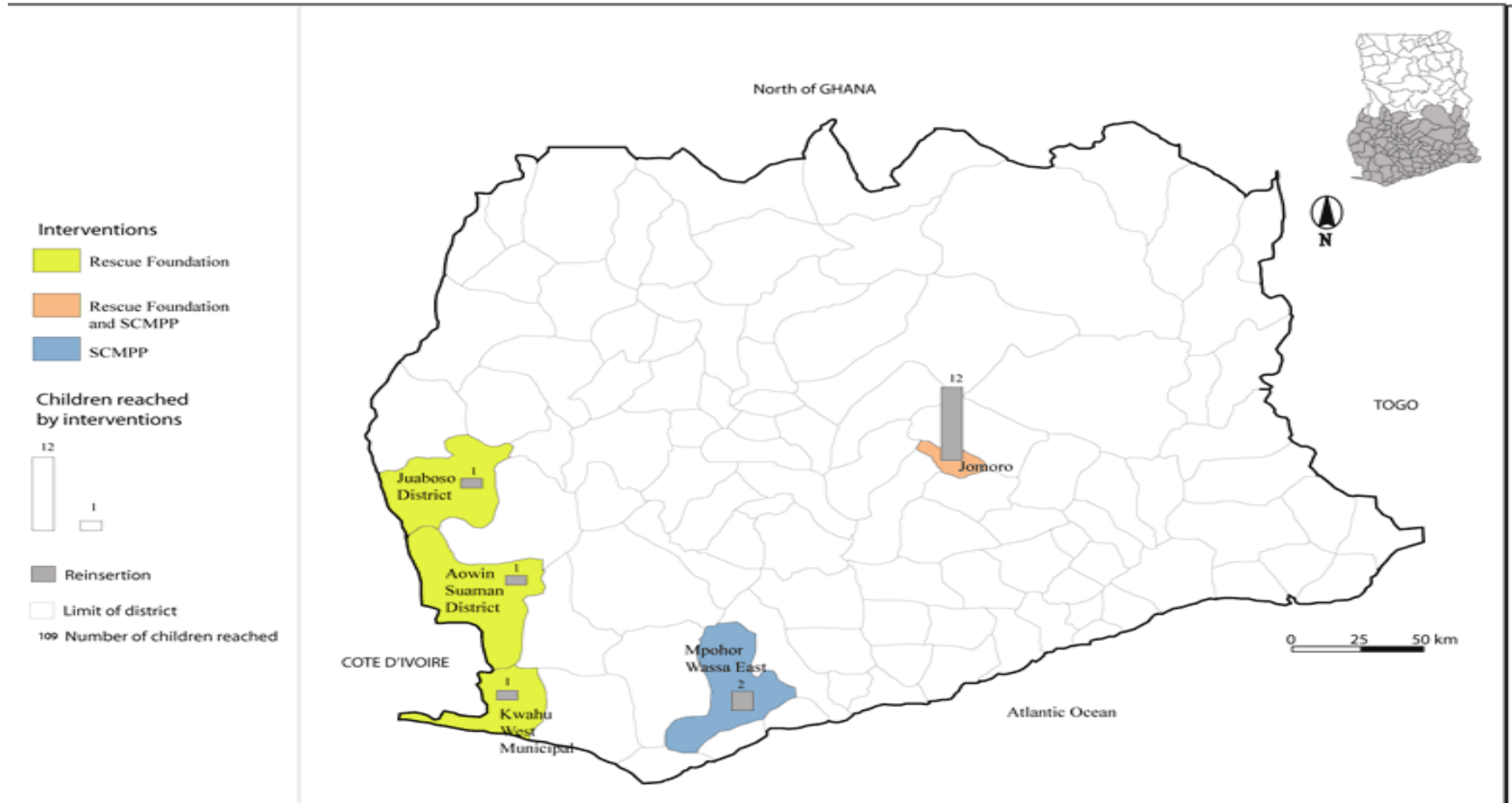
# Rehabilitation Programs



# Withdrawal Programs

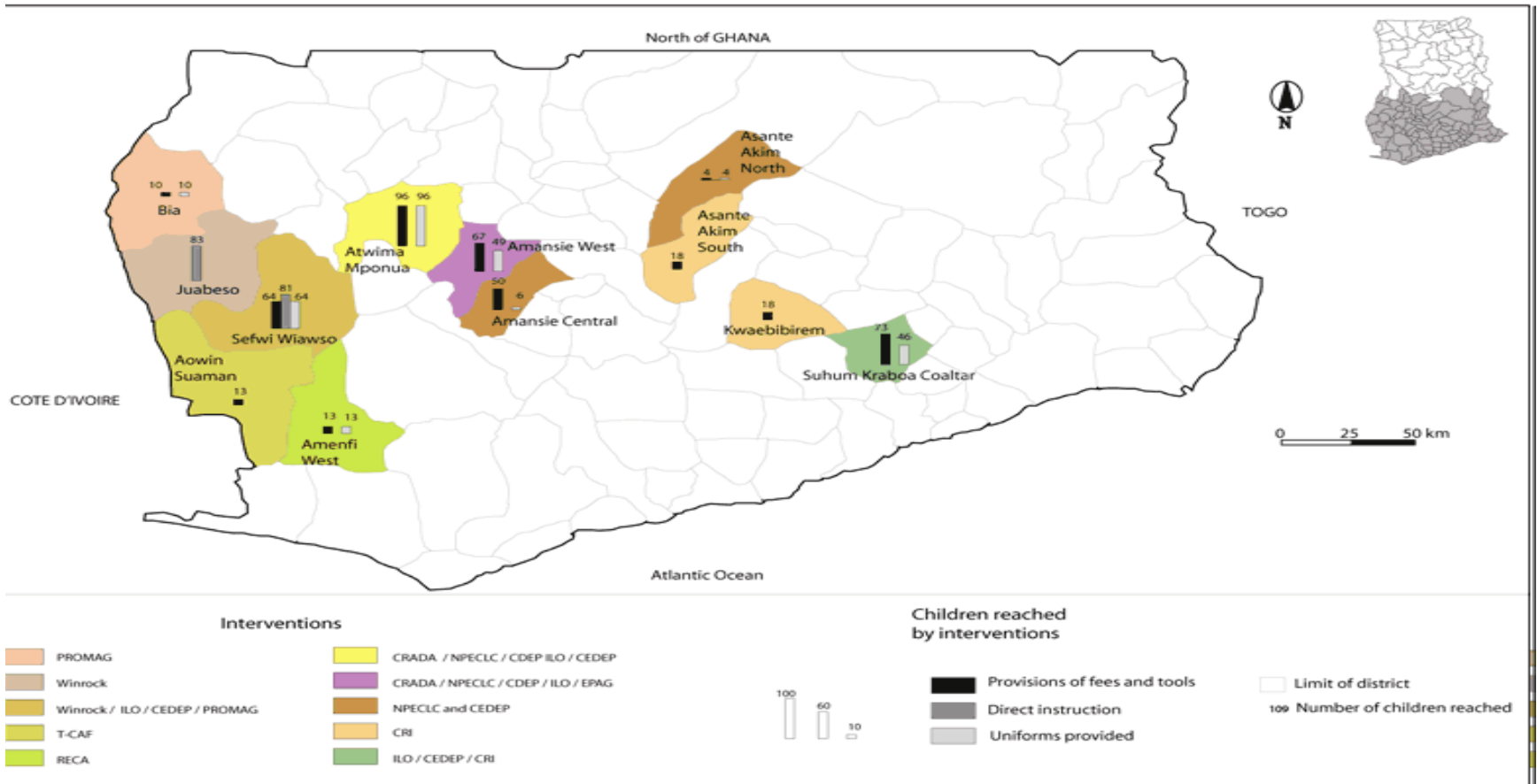


# Reinsertion Programs





# Vocational Programs



# Data Collection and GIS

Cluster Sampling—Population Clusters  
Shown by GIS Imaging



# Tulane Knowledge Database

Awhere  
Review of Prototype  
Overview of Final Product

# Tulane Database Prototype

