AAMP Briefing Packet 1.2.a.
Spatial Tools for Food Policy Analysis

(i) mapping market sheds
(ii) GIS concepts and mapping tools
(iii) raster files
(iv) shape files
(i) mapping market sheds
Deficit markets
Surplus food production zones
Market Sheds in ESA
Maize market flows cut across national borders

**Surplus Zones**
- Northern Mozambique
- Southern Tanzania
- Eastern Uganda
- South Africa

**Deficit Markets They Serve**
- Malawi
- Malawi, DRC
- Kenya
- Zimbabwe, S. Mozambique, Malawi, Kenya
Southern Mozambique Maize Market Shed
Discussion Question:
What do we need to map?

• Production:
(ii) GIS concepts and tools: two types of spatial data

• Rasters

• Shapefiles
Rasters

- Grid (digital) data
- Each pixel in the grid has a value
- Examples: rainfall, population
Rasters

- Grid (digital) data
- Each pixel in the grid has a value
- Examples: rainfall, population
Rainfall raster

Zambia Rainfall Gradients
Shape files: three types

• Points: cities, school locations
• Lines: roads, river
• Polygons: districts, lakes
Shape files: Points
Shape files: lines
Shape files: lines
Shape files: polygons
Shape files: polygons
Pop Quiz: Raster or Shape?

- Rainfall
- Districts
- Elevation
- Length of growing period
- Country boundaries
(iii) Raster File: Population
Raster File: Travel Times

- Travel time to market town: what affects travel time?
- Distance
- Road quality
- Frequency of transport
Africa Roads
Africa Impedance Raster
Travel Time Raster

• Select target (cities of specific size)
• Use impedance raster to compute time required travel from each pixel to the target (nearest city of a given size)
Travel time to cities of 20K

Regional Travel Times to 20k City Size (hours)
Travel time to cities of 100K

Regional Travel Times to 100k City Size (hours)
Travel time to cities of 500K

Regional Travel Times to 500k City Size (hours)

acc_500k
<VALUE>
- \( \leq 2 \)
- \( >2 \) and \( \leq 8 \)
- \( >8 \) and \( \leq 12 \)
- \( >12 \) and \( \leq 24 \)
- \( >24 \)
Discussion questions

• For what sorts of analysis might raster data be useful?
(iv) shape files: mapping food staple zones

- Maize production
- Cassava production
- Define maize belt, cassava belt, and dual staple zones
- Surplus and deficit districts
Shape files: polygons
Maize production
Dual staple zones

Regional Food Staple Zones

Percent of HH Growing Cassava & Maize
- Cassava Mixed (C>75%, M 25%-50%)
- Dual Mixed (C > 50%, M > 50%)
- Maize Mixed (C 25%-50%, M > 50%)
- Maize Belt (C < 25%, M > 75%)
Dual staple zones

Regional Food Staple Zones

Percent of HH Growing Cassava & Maize
- Cassava Mixed (C>75%, M 25%-50%)
- Dual Mixed (C > 50%, M > 50%)
- Maize Mixed (C 25%-50%, M > 50%)
- Maize Belt (C < 25%, M > 75%)
Net Maize Surplus, by District

Zamiba Maize District Net Position Kgs 2004 by Staple Production Zone

Table 48
Net Cassava Surplus by District

Zamibia Cassava
District Net Position
Kgs
2004
by Staple Production Zone

Table 43
Final Examination

- What is a raster?
- What is a shapefile?
- Propose a specific spatial food policy question from your home country.
- Specify what types of GIS data you would need to conduct such an investigation?