

## INTRODUCTION

The aim of this study is to determine whether Akwa Ibom State is food secure or not using a Geographical Information System [GIS] based approach.

Akwa Ibom State is located between Latitude 4° 25'N and 5° 30'N and Longitude 7° 30'E and 8° 30'E. The State is rich in crude oil, gas, solid minerals and climatic conditions that favour two farming seasons among other things.



Source: Akwa Ibom State Surveys, 1997.  
 Figure 1. Location of Akwa Ibom State, Nigeria

## CONCEPTUAL FRAMEWORK

According to [GECAF 2005], food security is the state achieved when food systems operate such that 'all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life'. Food security diminishes when food systems are stressed. The components of food system with their main elements are as follows:

- Food availability-production, distribution, exchange
- Food access-affordability, allocation, preference
- Food utilization-nutritional value, social value, food safety

The focus of this study is food availability/production. This is because, if food is not available/produced, we cannot talk of distribution, exchange and all the elements associated with food access and food utilization.

## MATERIALS AND METHODS

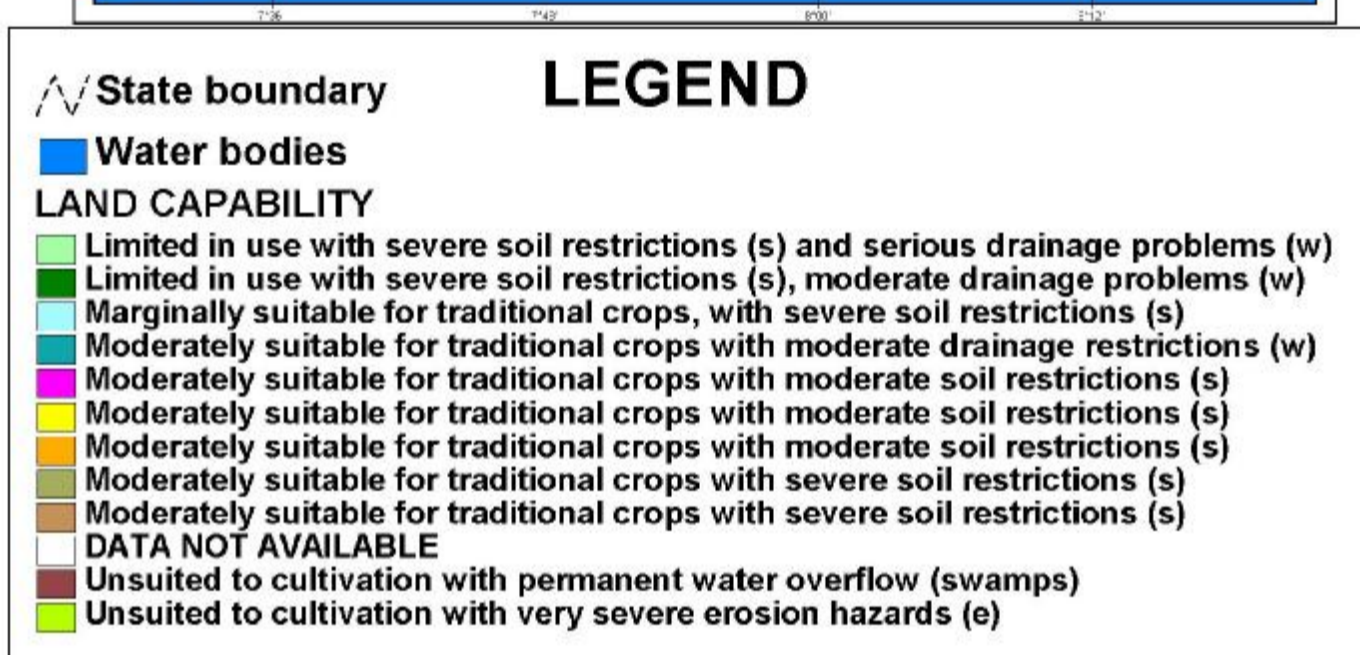
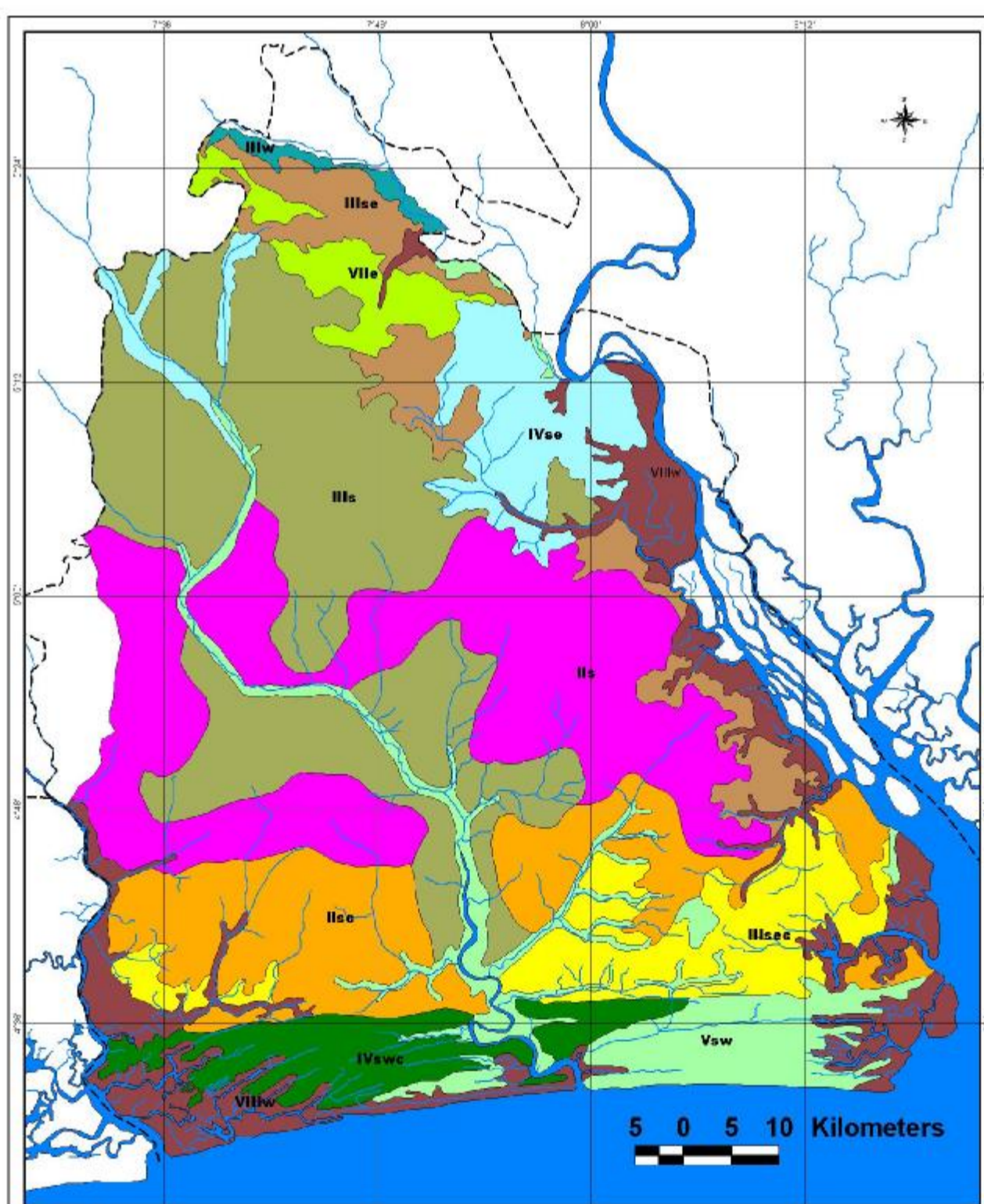
In the 1980s, the Cross River Basin Development Authority [CRBDA] surveyed the South Eastern region where Akwa Ibom State is located to explore agricultural potential. This resulted in maps that are important in development planning. These maps were procured, scanned, geo-referenced and digitised to create a digital database using ILWIS 3.3 and ArcView 3.2a software packages. To assess the impact of urbanization, supervised classification was carried out to produce land cover maps for different time periods using Landsat TM satellite image [Lillesand and Kieffer 1994]. Maps used in this study are the outputs of the digital database.

## FOOD AVAILABILITY

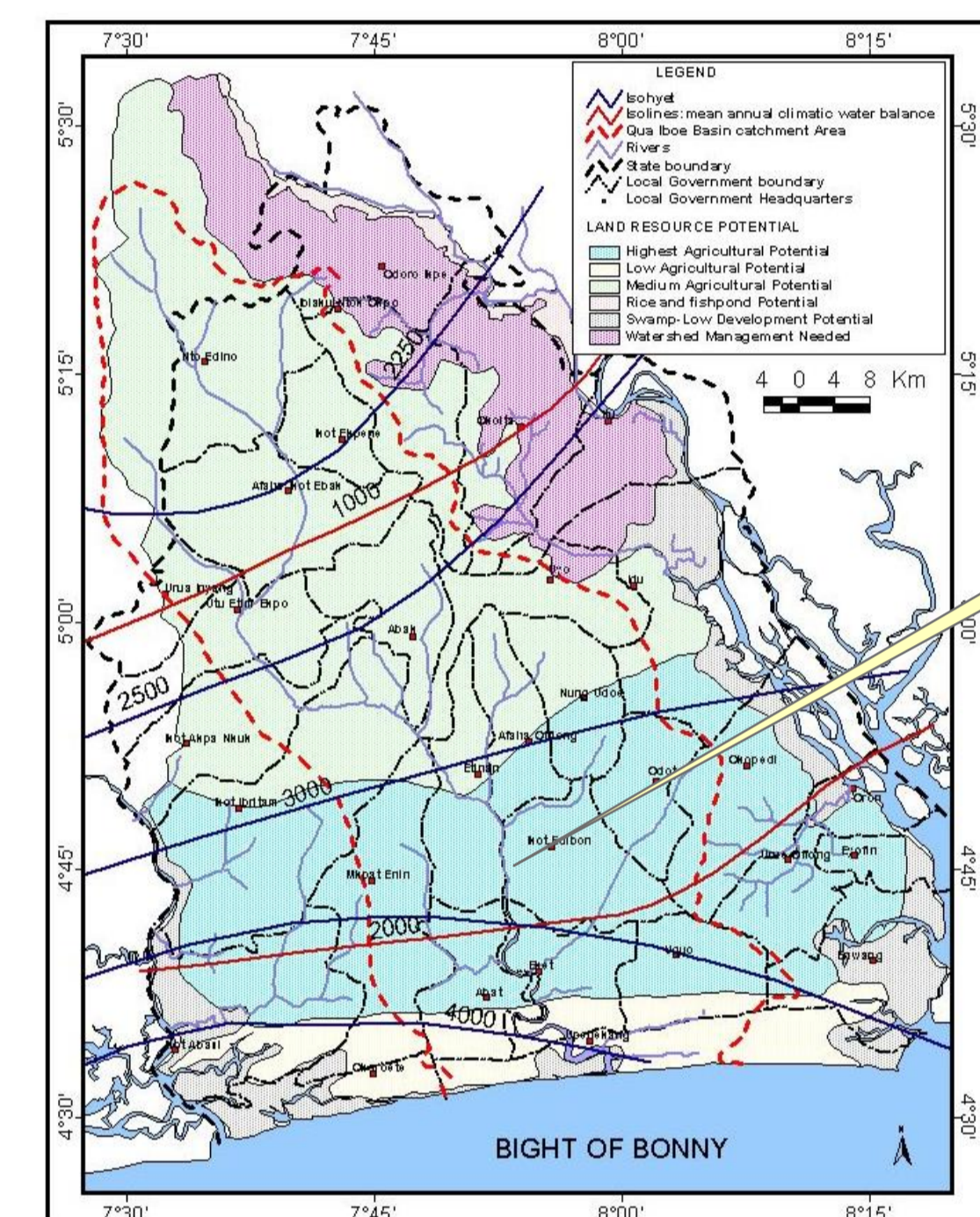
Figure 2 shows details of Akwa Ibom State land capability. It reveals that, most of Akwa Ibom land is moderately suitable for traditional crops because of low water holding capacity and low capacity of the soil colloids to hold nutrients [CRBDA 1982]. The implication of the foregoing is that, to ensure food production/security, there is need for fertilizer application and irrigation. A recent market survey however reveals that, the bulk of food items consumed in the area [namely rice, beans, garri, yam, plantain, onion, pepper, tomato, cow meat, goat etc] are brought in from other states in the country [Ekpenyong 2000]. This is why the State can be said to be food secure.

Furthermore, because of differences in soils, vegetation and relief in various parts of the study area, the area has been divided into land resource development zones [figure 3].

Figure 3 shows that, the southern part has the highest agricultural potential. The area to the north is a medium potential zone. It is obvious from the foregoing that, land for agriculture is very limited. Unfortunately, this is being threatened by urbanization and poverty.



Source: CRBDA 1982  
 Figure 2. Akwa Ibom State: Land Capability



Source: CRBDA 1982  
 Figure 3. Akwa Ibom State: Land Resource Development Potentials

## IMPACT OF URBANIZATION

Figures 4 and 5 are land use/land cover maps of the southern part of Akwa Ibom State, where the area with high agricultural potential is located. The maps reveal the impact of urbanization in the area. For example, Uyo, the sit of Government grew in size from 125.595ha in 1984 to 242.262ha in 2003.

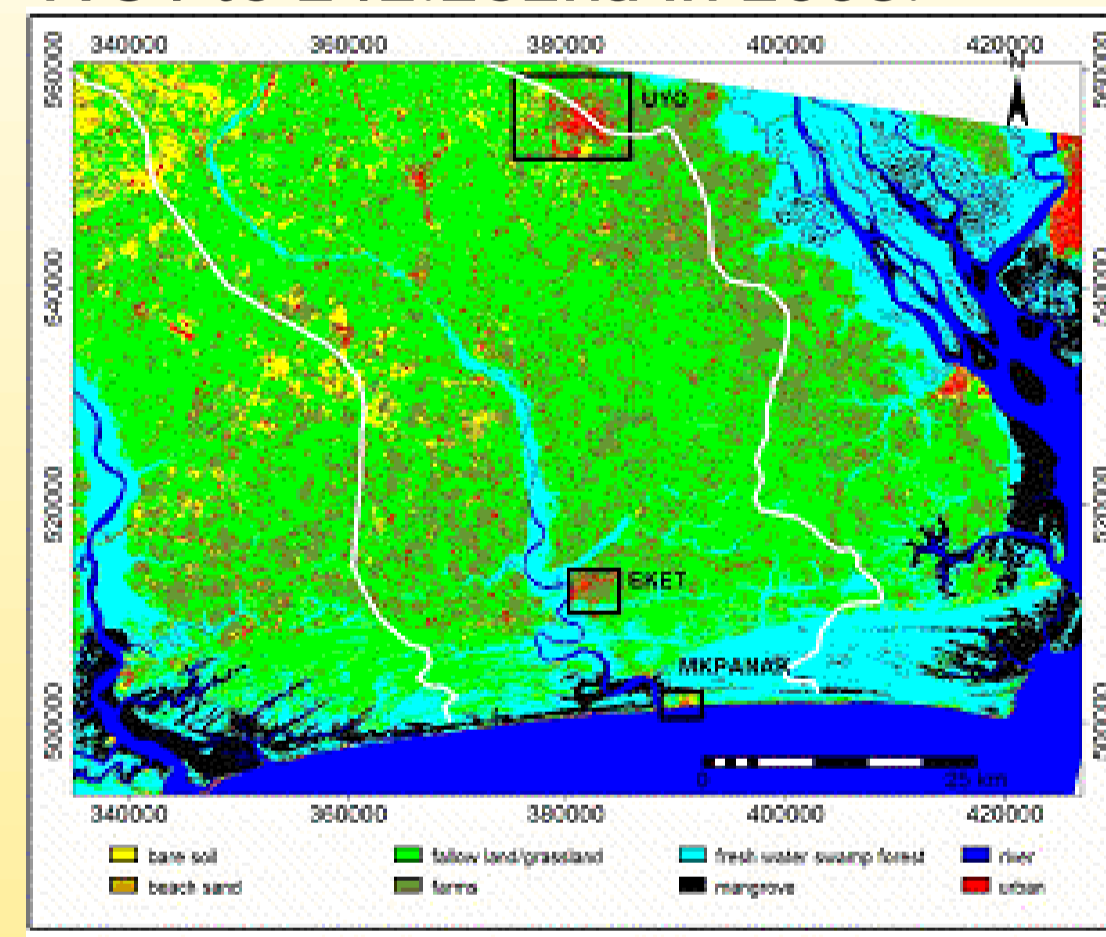


Fig. 4. Land Cover of Southern part of Akwa Ibom State as at 1984

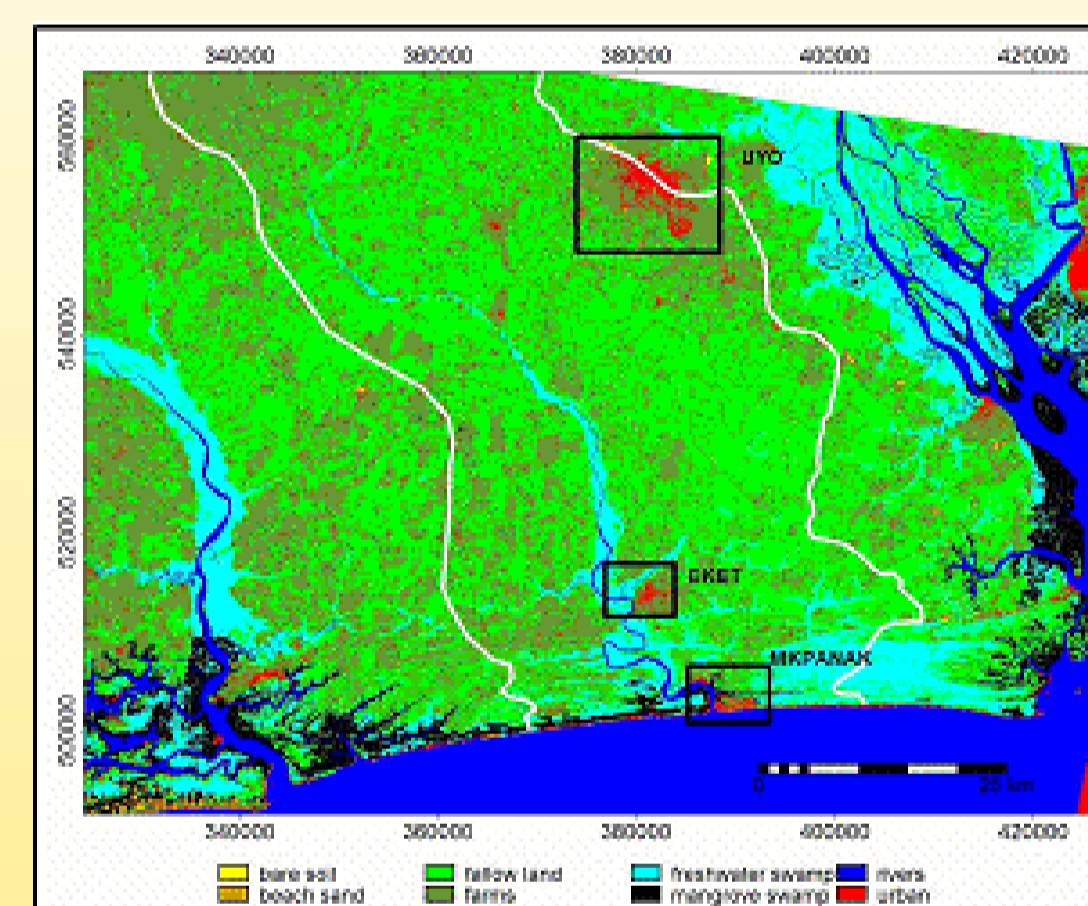
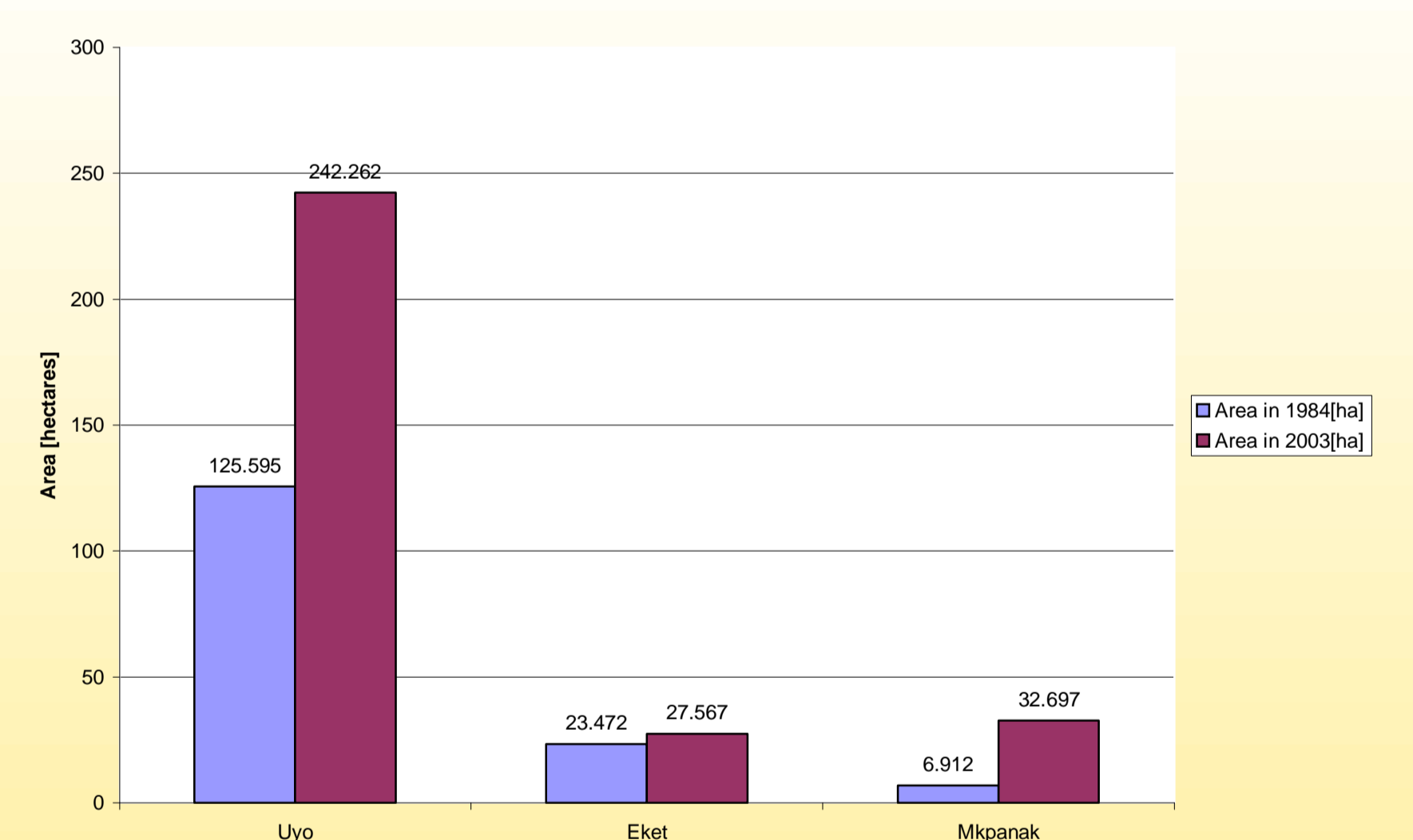


Fig. 5. Land Cover of Southern part of Akwa Ibom State as at 2003

## CHANGES IN SIZE OF SOME TOWNS DUE TO URBANIZATION



A critical visual interpretation of the 1984 images of Uyo, Eket and Mkpansik reveals that, the settlements were surrounded by agricultural land. This implies that, the growth of the urban areas in 2003 have encroached on agricultural land. This is a threat to food production/sustainable agriculture/food security.

## FOOD ACCESS-AFFORDABILITY

Figure 6 shows the incidence of poverty in Akwa Ibom State. The data are those on incidence of poverty (headcount index), defined as the percentage of the population falling below the poverty line. The data was the result of a state-wide household survey in 2005 funded by Government. The household survey was carried out using measures/approaches recommended by World Bank (Ekpo and Uwatt 2005).

The study revealed that, about 57 percent of the people are living in poverty and cannot afford the basic needs of food, clothing and shelter. For this reason, the State is food insecure.

## IMPACT OF POVERTY-Deforestation/Loss Of Biodiversity

Figure 7 shows changes in the distribution of mangrove forest in Akwa Ibom State. It was produced by overlaying map showing the distribution of mangrove in 1982 on that for 2003. It reveals that, while the area of land covered by mangrove reduced in the south eastern part, new areas developed in the south western part. Details of these changes are shown in Figures 8.

The decline of mangrove in some part of Akwa Ibom State can be linked to poverty. A look at figures 6 and 7 reveal that, the area in the southeast part of the coastline where much of mangrove was lost as at the year 2003 corresponds with areas with high incidence of poverty. This implies that, there is some relation between mangrove forest deforestation and poverty in the area. This is not surprising because, in their struggle to survive, poor people in these areas have over the years been cutting down mangrove trees for sale as firewood.

The continuous decline of mangrove in many parts of the world has resulted in sedimentation problems and undermined the sustainable supply of fish stocks [Yeqiao et al. 2003]. Akwa Ibom State is not likely to be an exception.

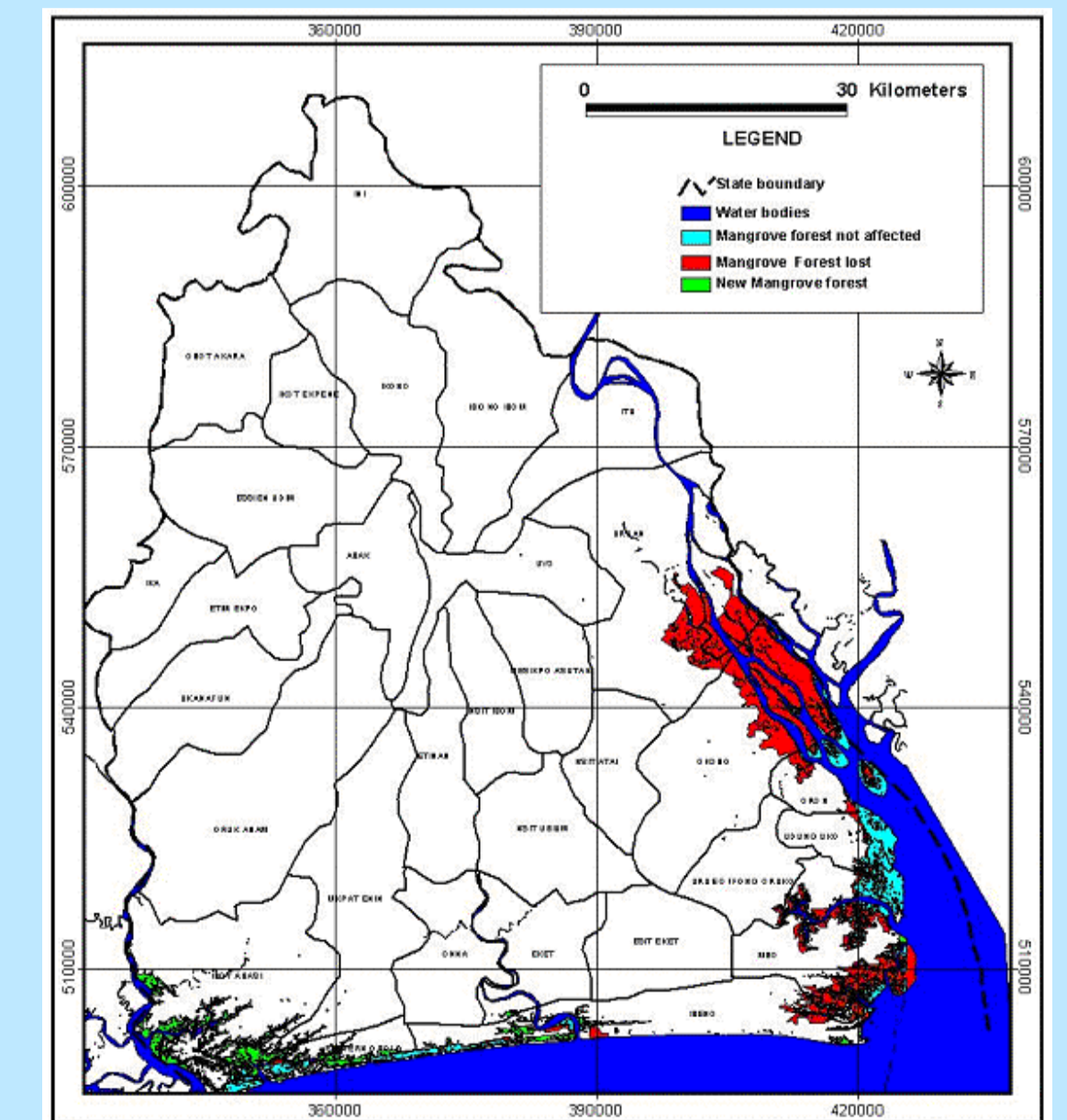


Figure 7: Changes in the Distribution of Mangrove Forest [1982-2003]

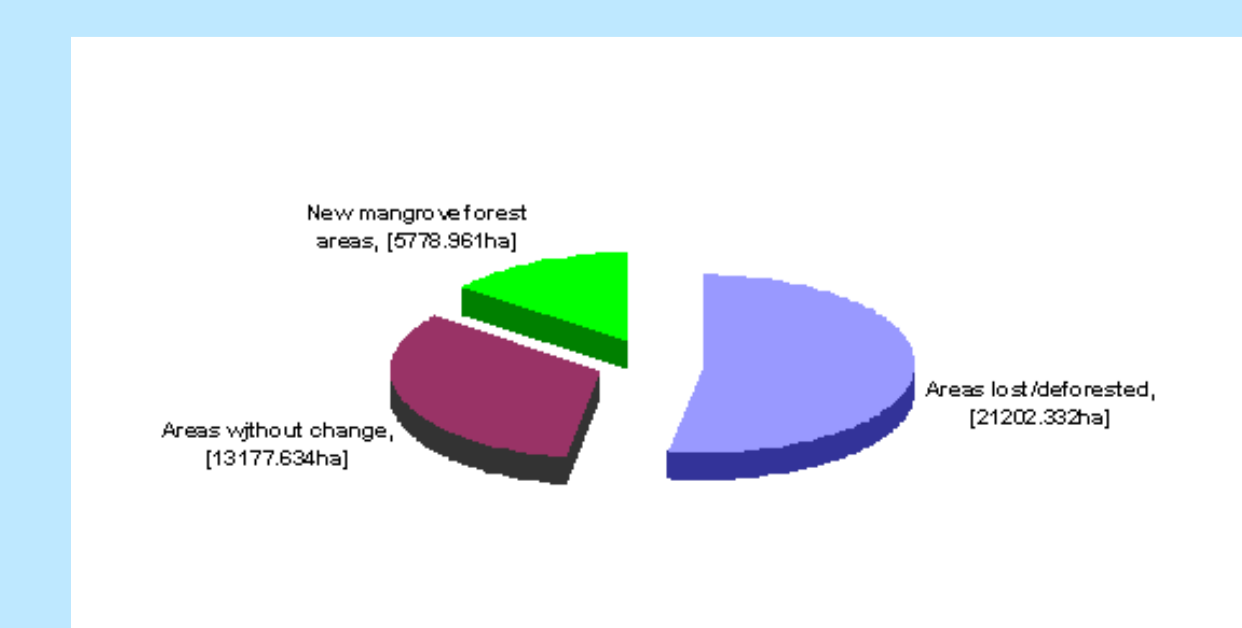


Figure 8: Chart showing Changes in the Distribution of Mangrove Forest [1982-2003]

## CONCLUSION

This study shows that Akwa Ibom State is not food secure because of the incidence of poverty. Very high-resolution poverty maps are required to accurately target the poor.

This study also shows that it is also possible to monitor and control urban growth/expansion, deforestation and by extension loss of biodiversity among other things using a map based approach. Map is a tool that should be placed at the disposal of those in government to guide/enhance policy/decision making and above all good governance.

The only constraint that needs to be addressed urgently is that of map (spatial data) usability. All the available map data covering the study area though usable are outdated. This means that the real threat to food security assessment is the lack of current and accurate map data.

## RECOMMENDATIONS

- There is need for high-resolution poverty maps to effectively target the poor and enhance access to food, shelter and water.
- There is need for Land use/Land cover Change Early Warning System to monitor impact of urbanization among other things.
- There is also the need to address the usability of existing spatial data to enhance food security assessment the world over.

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