

Eyeing into the Tanzania's Miombo woodlands: status, threats, and conservation initiatives

Alfan Rija* & Lawrence Mbwambo¹

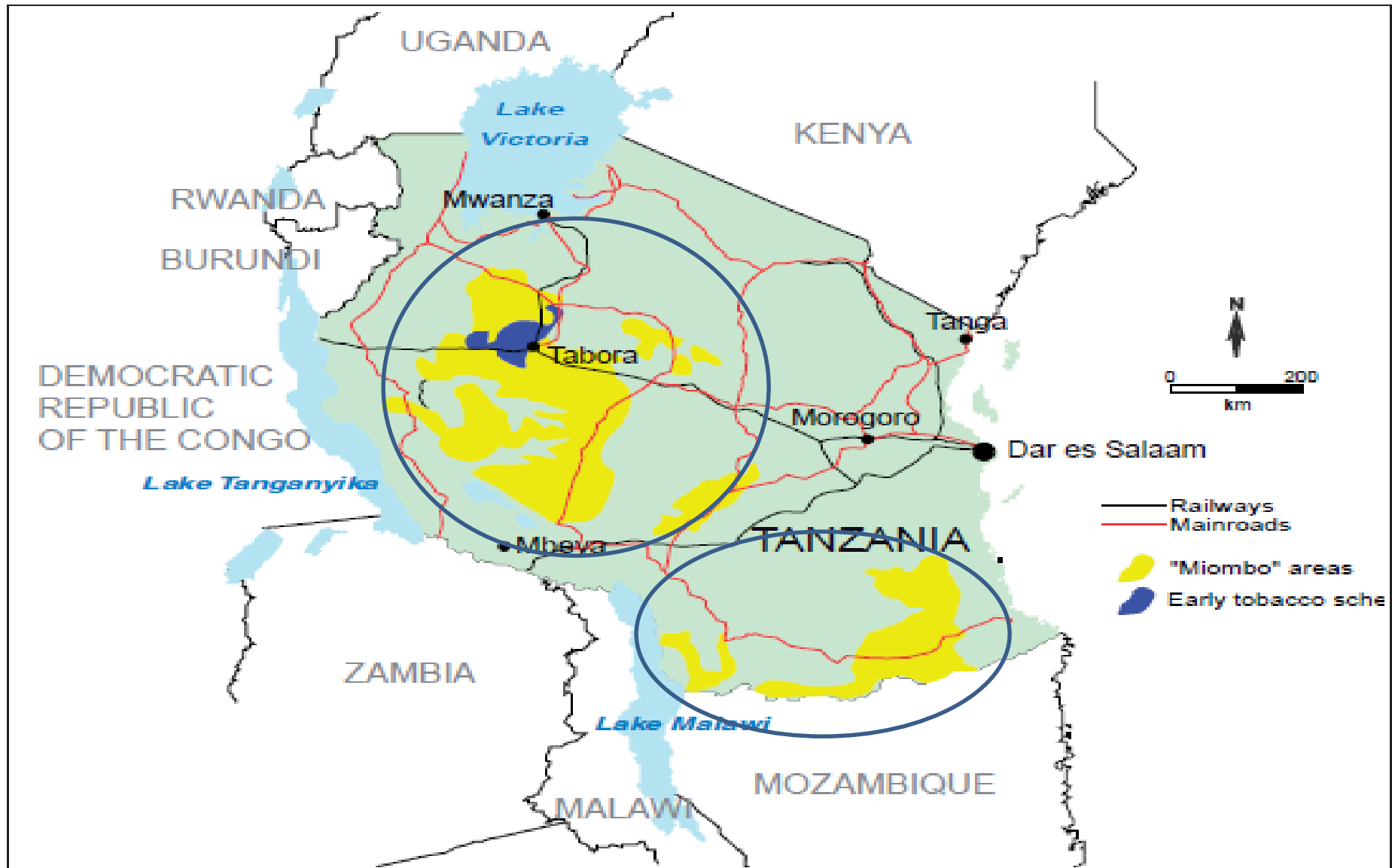
*Sokoine University of Agriculture; ¹Tanzania Forest Research Institute

Presented at the *Miombo Network* Meeting (23-25 July 2013), Maputo- Mozambique

Talk outline

- 1. Current status of miombo woodlands**
- 2. Threats & drivers**
- 3. National Mitigation measures and conservation initiatives**
- 4. Local & international support in Tanzania**
- 5. Science & Earth Observation needs**

Tanzania's miombo: major tracts



1. Status: Size, distribution, ecotype

- **Size:** 33.4 mil ha Forests (90% -Miombo cover)
- **Distribution:**
Central, southern & Western
- **Ecotype:**
 - i) Wet miombo forests
 - ii) Dry miombo forests



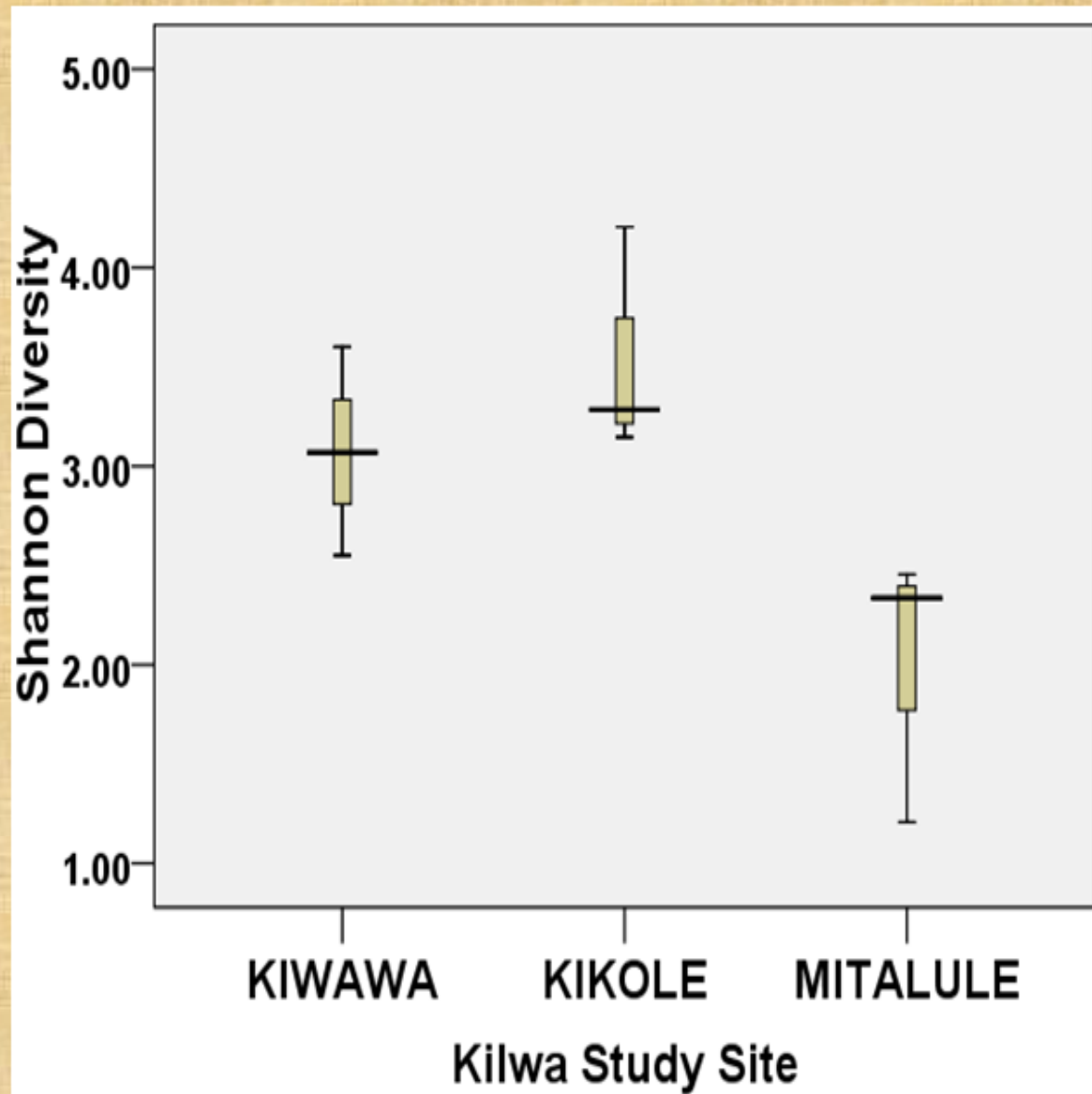
1. Status: Land Use Land Cover

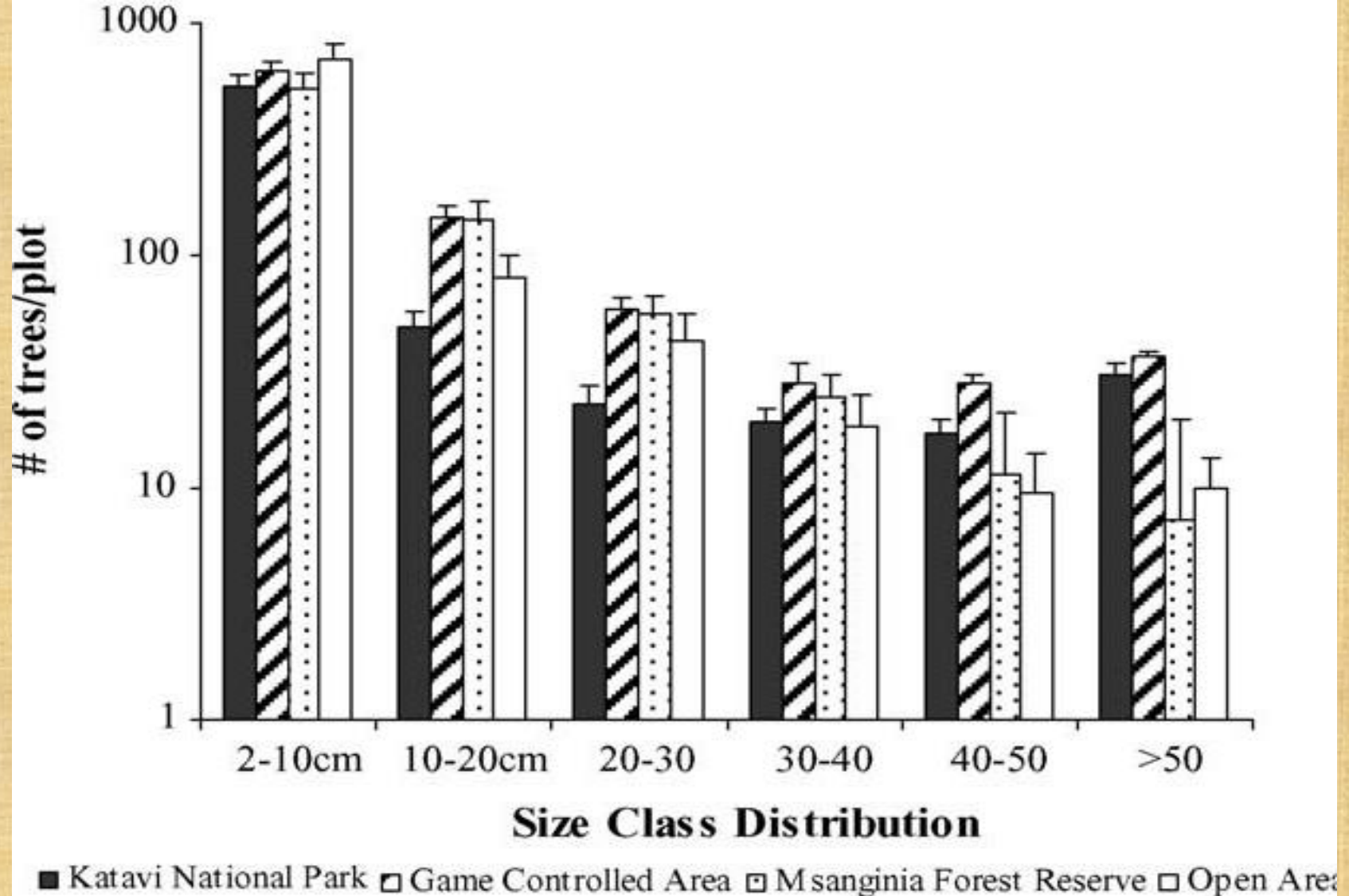
- Forests.....4%
 - Woodland.....51%
 - Bushland.....7%
 - Grassland.....9%
 - Cultivated land.....25%
 - Other lands.....4%
- ❖ **Woodlands cover over half of land area and accounts for 75% of wood volume.**

1. Status: Stand structure & species diversity

- **Woodland stand:** mostly secondary
 - 54% of Miombo under General Land (URT, 2001)
 - occur mostly in Western & Southern regions
- **Data on species diversity:** patchy (and varies widely), mostly non-existing
- ❖ **Biodiversity conservation studies have not been a priority in the Miombo**

1. Status:
Species
diversity
influenced by
Forest
Management
regime
(Madoffe et al.
2012)





Stand structure across different Protection regime in Katavi ecosystem (Banda et al. 2006)

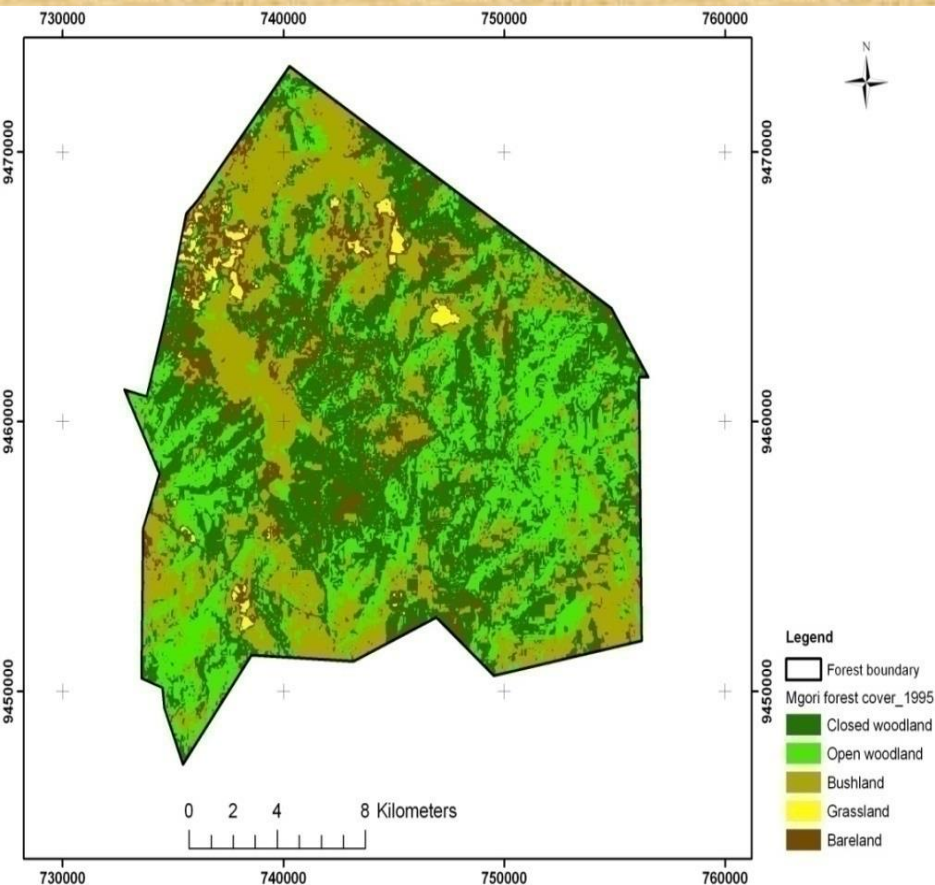
2. Drivers of Miombo Land cover dynamics

(i) Household energy : Charcoal, firewood

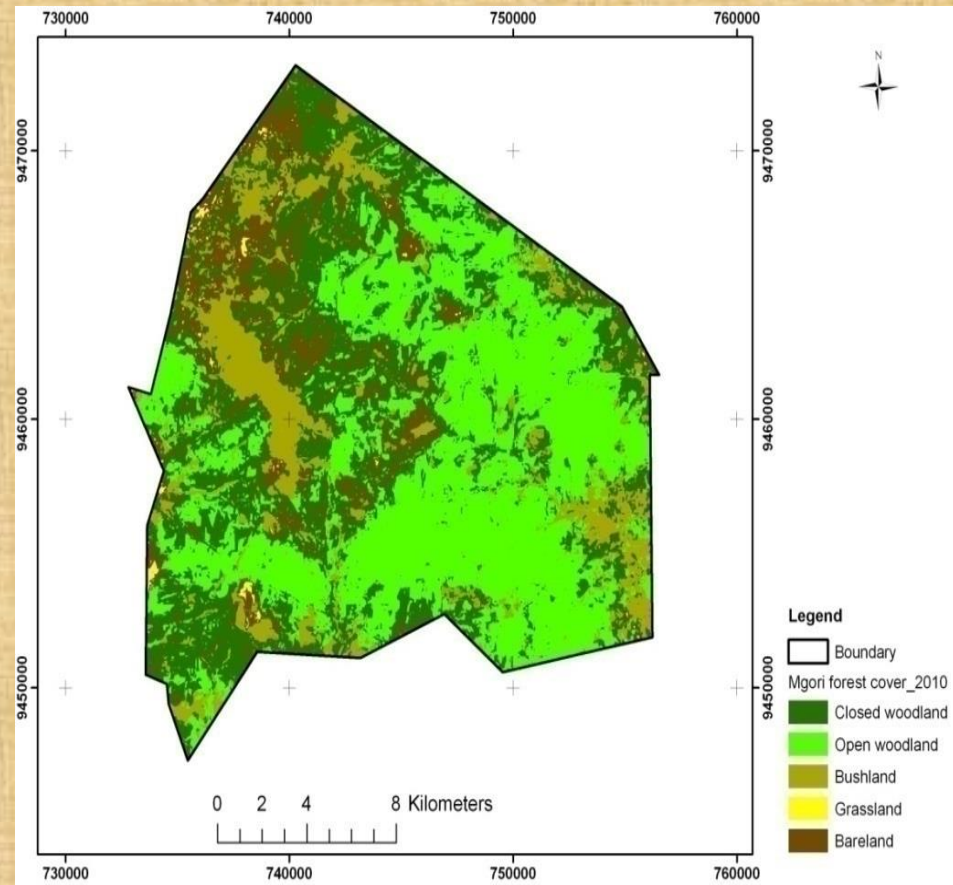


Land cover change due to charcoal, timber, pole & subst. farming (Mbwambo, 2012)

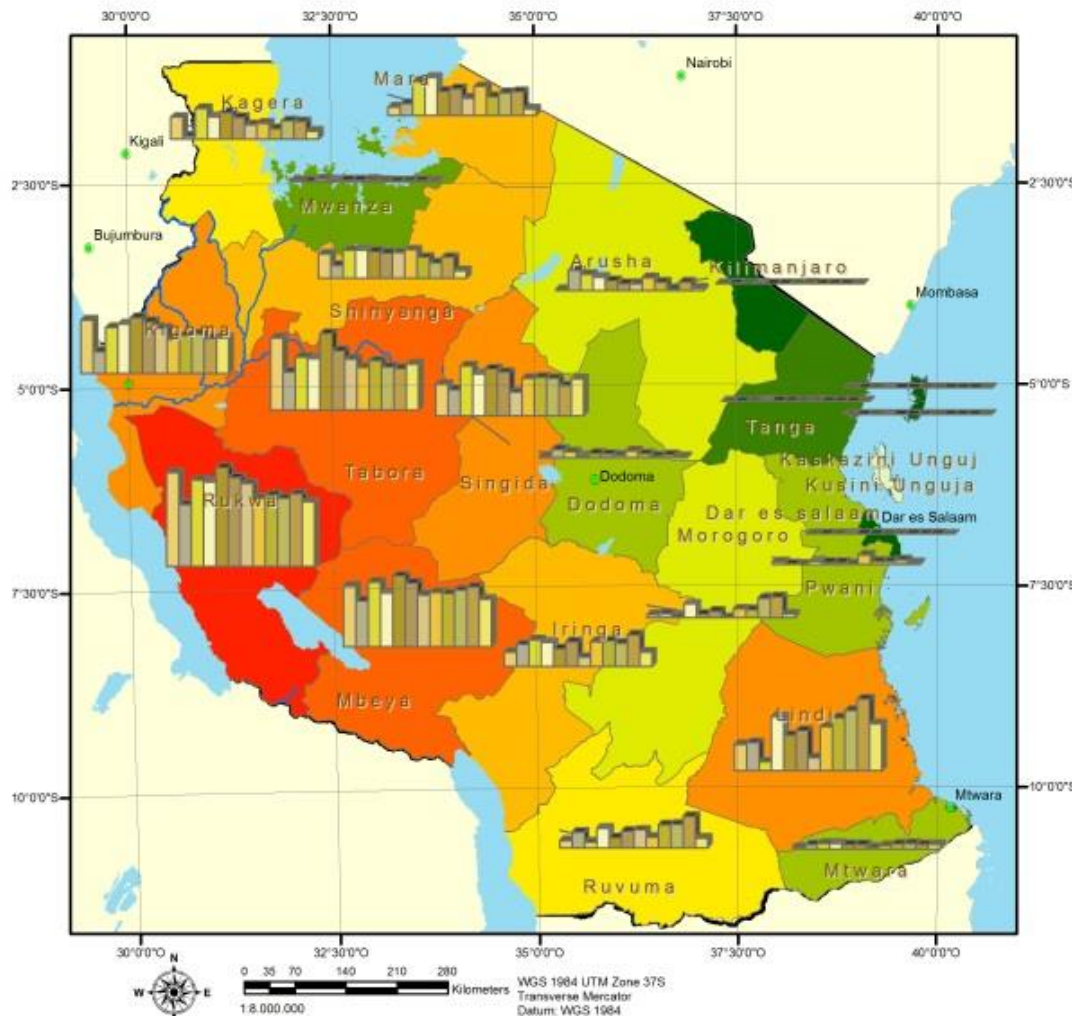
Mgori Village For Reser 1995



Mgori Village For Reser 2010



Threats/drivers: (ii) Forest fires consistent



Burned Areas by Region (ha)

Mean area burned (ha), 2000-2011



THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF NATURAL RESOURCES
AND TOURISM
TANZANIA FOREST SERVICES (TFS)

environmental affairs
Department
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

giz
German Development
Cooperation

GIZ Trilateral Cooperation Fire Management

Analysis based on MODIS burned area product (MCD45) courtesy of NASA
and the University of Maryland (<http://modis-fire.umd.edu>)
GIS data courtesy of Tanzania Forest Service, Africover data by FAO
Data processing, GIS analysis and cartography by ZEBRIS GbR, www.zebbris.com

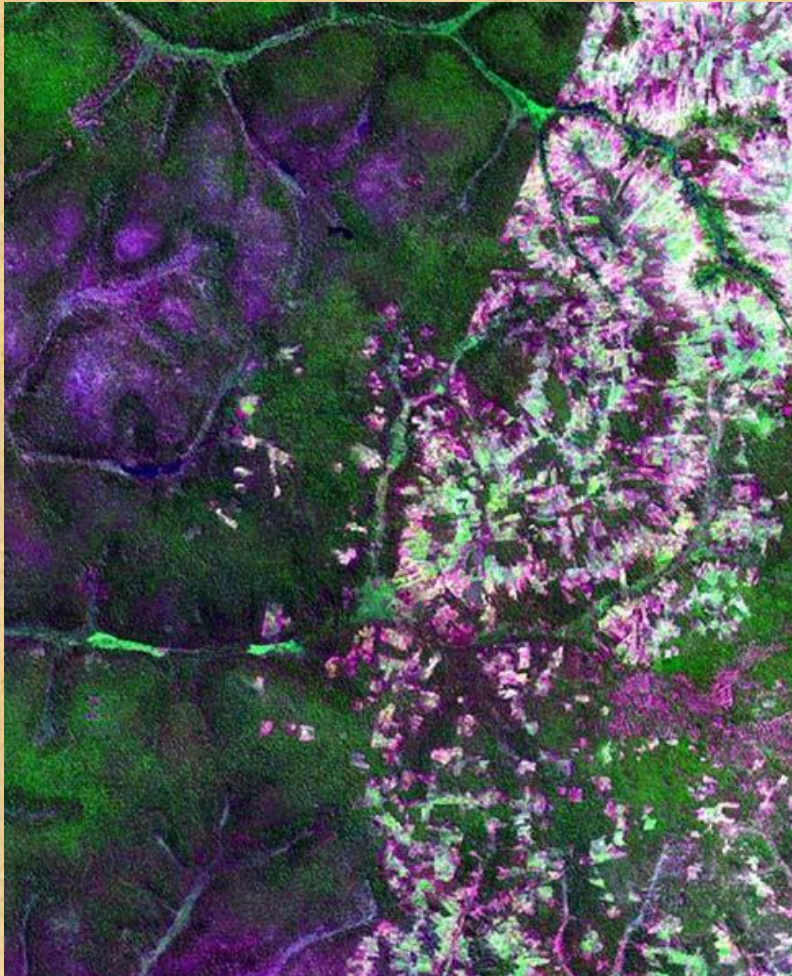


Threats/drivers: (iii) Overgrazing & Shifting cultivation



Miombo woodland Land cover change: Deforestation + overgrazing

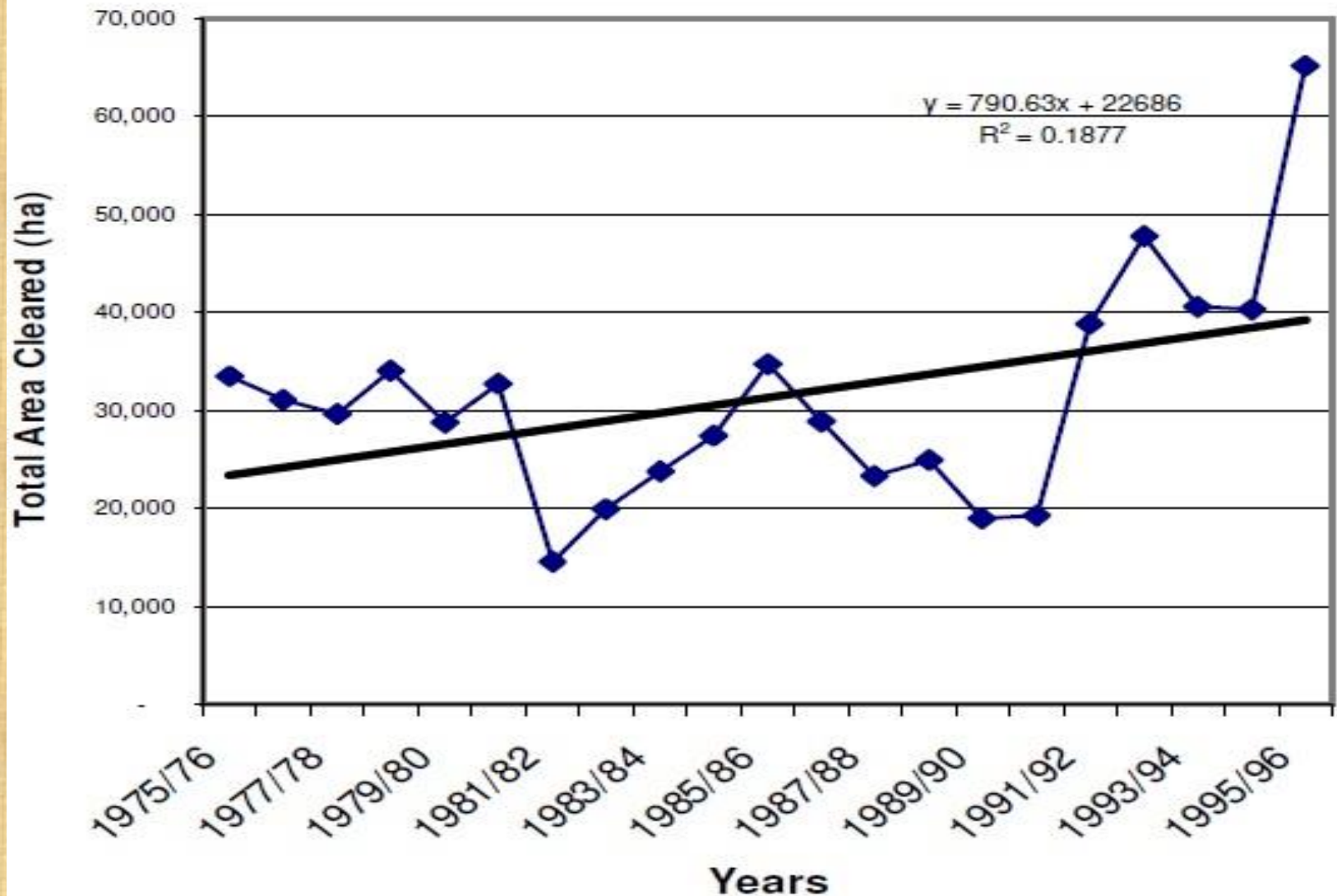
Shinyanga region May 2000



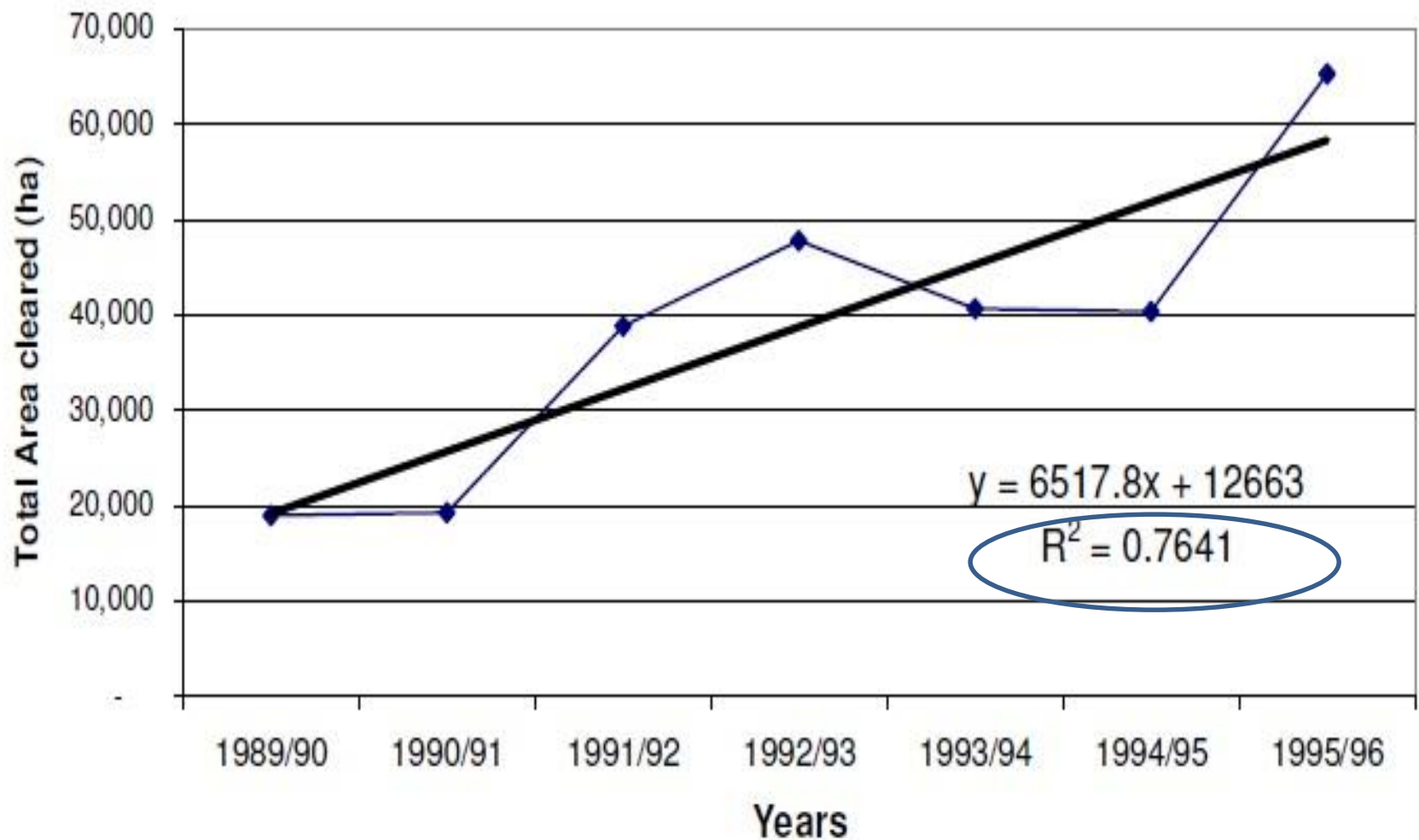
Shinyanga region June 2009



Threat: (iv) Tobacco farming leads Miombo deforestation



Miombo forest degradation increased over time in Tabora region (Yanda, 2010)



Miombo deforestation and regeneration ability (Yanda, 2010)

Table 1. Matrix on land use/cover changes in part of Tabora region.

Between 1984 and 1995	Cultivation		Natural vegetation		Settlements		Water bodies	
	Km ²	%	Km ²	%	Km ²	%	Km ²	%
Cultivation	16,236.3	13.5	5,678.8	4.7	13.1	0.0	9.9	0.0
Natural vegetation	9,322.5	7.8	86,033.6	71.7			219.4	0.2
Settlements	19.8	0.0	5.4	0.0	7.9	0.0		0.0
Water bodies	11.6	0.0	33.2	0.0			372.9	0.3
Between 1995 and 2000	Cultivation		Natural Vegetation		Settlements		Water bodies	
	Km ²	%	Km ²	%	Km ²	%	Km ²	%
Cultivation	19,038.7	15.9	13,471.8	11.2	13.8	0.0	6.6	0.0
Natural vegetation	2,822.7	2.4	82,062.5	68.4	1.5	0.0	132.1	0.1
Settlements	60.3	0.1	1.4	0.0	17.9	0.0		0.0
Water bodies	6.9	0.0	33.9	0.0		0.0	278.9	0.2

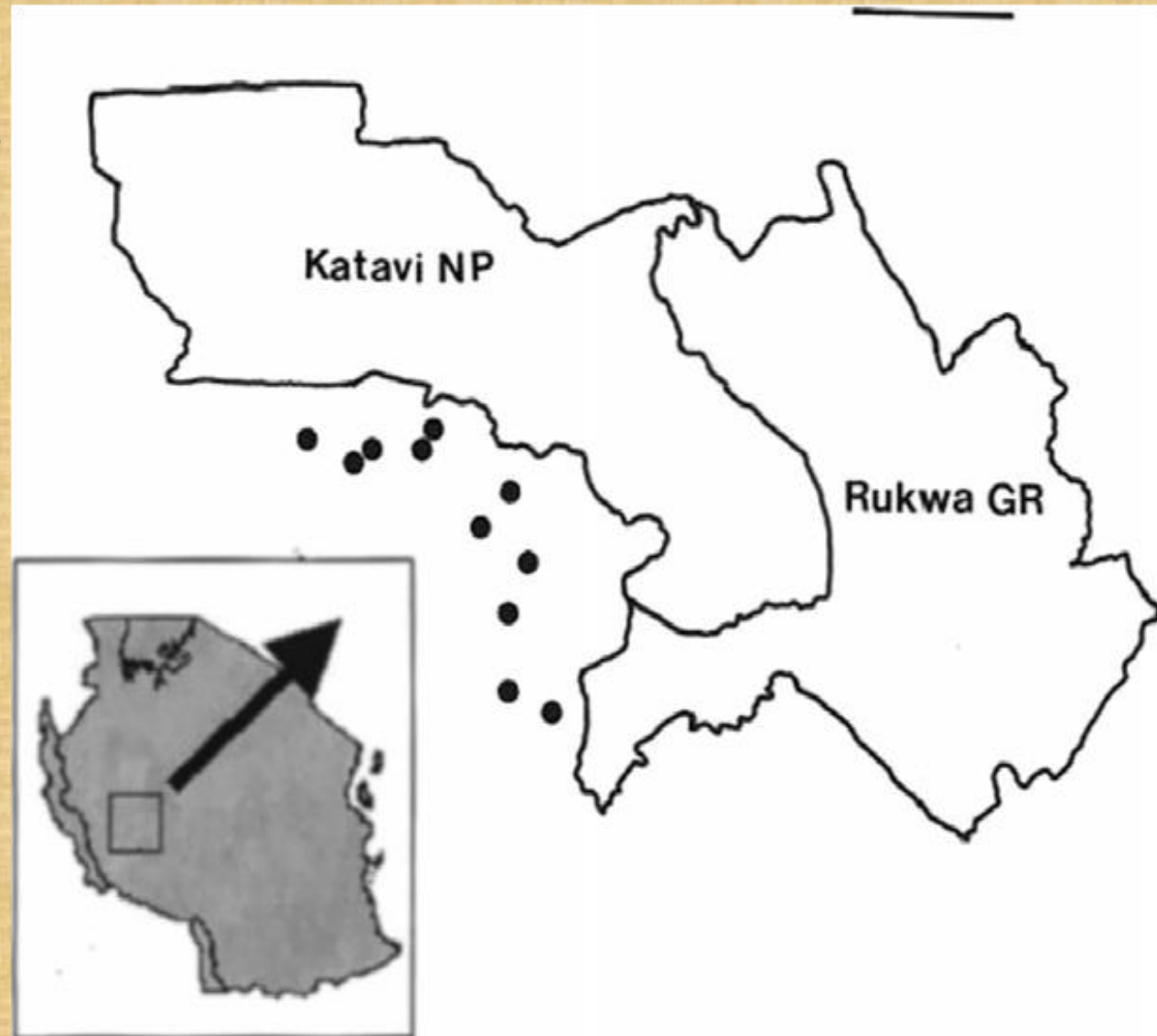
Source: LandSat images interpretation and field verification.

V. Over extraction of forest and wildlife resources across Miombo woodlands



Poaching affects miombo forest structure and functions?

Most populations of all herbivores declined in some portions of the country (e.g. Burigi-Biharamulo, Katavi, Greater Ruaha).



Stoner et al. 2006, Martin & Caro, 2012

3.National Mitigation Measures

(i) Participatory Forest Management Programs

- PFM practiced in 2,323 villages (4. 12mil ha)

(ii) REDD+ program started in 2007 but several activities were on ground before

(iii) Climate Change Impact, Adaptation & Mitigation (CCIAM) program... based at SUA

(iv) NAFORMA program.....Forest inventory & map forests nationwide to provide status for carbon potential for the REDD initiatives

4. Support from local & international

- **Local NGOs** e.g. Tanzania Forest Conservation Group(TFCG), assist enhance assimilation of REDD+ activities in local communities
- **Village Governments** (Local authorities)
- **PFM**.....DANIDA, FINLAND, WB
- **REDD+ initiatives** supported by government of Norway
- **FAO-Fin supported** initiation of National Forest Monitoring & Assessment (NAFORMA) , 2009
- **Tanzania-South Africa Fire Management** Coordination Project- helps to address problems of forest fires

5. Science & Earth Observation Needs

- Capacity building in GIS & Remote Sensing especially in Training and Research Institutes
 - Training
 - Infrastructure (Labs, equipments)

Finally

- **We suggest that this meeting deliberate on the future of MN based on lessons learnt from the previous initiative**
- Carry out collaborative monitoring of Miombo forests across the region
- Share Geo-info data on land cover change
- Raise governments' awareness on LCC for sound policies towards conservation of miombo forests
- Build capacity within and among national and regional institutions to integrate land cover data into decision making processes, etc

Recommendation

- **Need for integrated Land productivity Improvement program (e.g. introduce fast growing trees, fertilizer trees, drought resistant crops**
- **Land use land cover science help solve environmental and socio-economic drivers of ecosystem change**

**Together, we can save the
miombo!**

Thank you for listening