BIOMASS CONSUMPTION IN RURAL AREAS: THE VULNERABILITY AND RESILIENCE OF LOCAL COMMUNITIES IN THE FACE OF FOREST PROTECTION IN AND AROUND MABIRA FOREST RESERVE UGANDA

Paul Isolo Mukwaya
Assistant Lecturer
Department of Geography,
mukwaya@arts.mak.ac.ug

Makerere University P.O.BOX 7062
Kampala Uganda
www.makerere.ac.ug/geography

Issue – How can a continuous supply of biomass especially fuel wood be maintained while enhancing the environmental services of Mabira forest reserve?

LIVELIHOODS

ENVIRONMENT

Outline of presentation

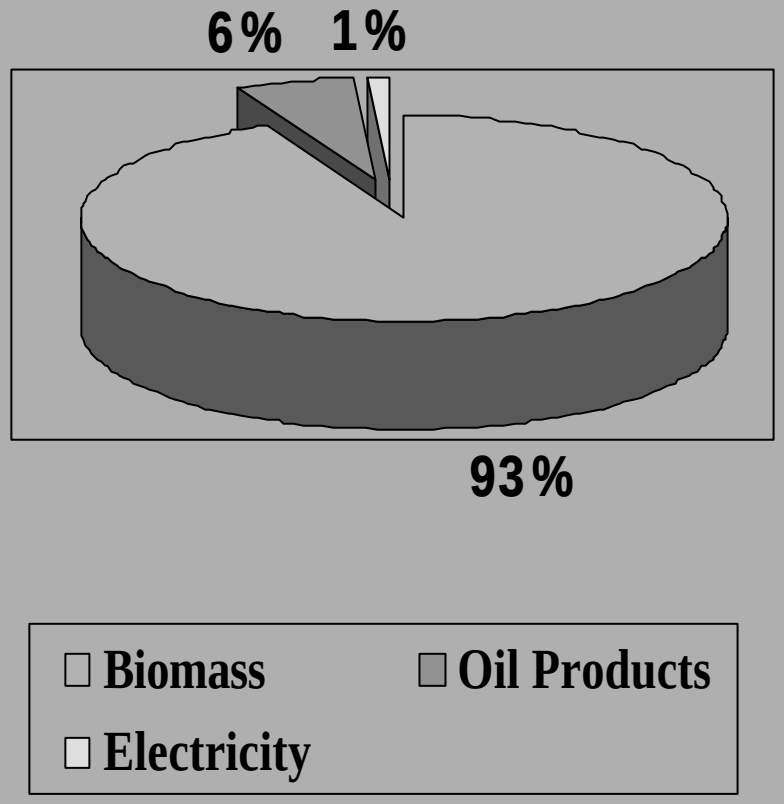
- Introduction
- Energy situation in Uganda
- Mabira forest reserve
- Tenure rights and access to fuel wood
- Fuel wood and Livelihoods
- Resilience of rural communities
- Energy governance and sector reforms
  - The Mabira Forest Management Plan
  - Other energy sector reforms/approaches
- Layers of energy provision governance
- Conclusion

Introduction

- Level of development also measured by type of energy consumed
- People desire the energy services that energy can enable
- Energy not explicit in the MDGs
- Maintaining access to reliable and affordable supplies of energy is a big challenge
- Little recognition of fuel wood shortages in many countries
- Main source of fuel wood are biodiversity reserves

Energy sector in Uganda

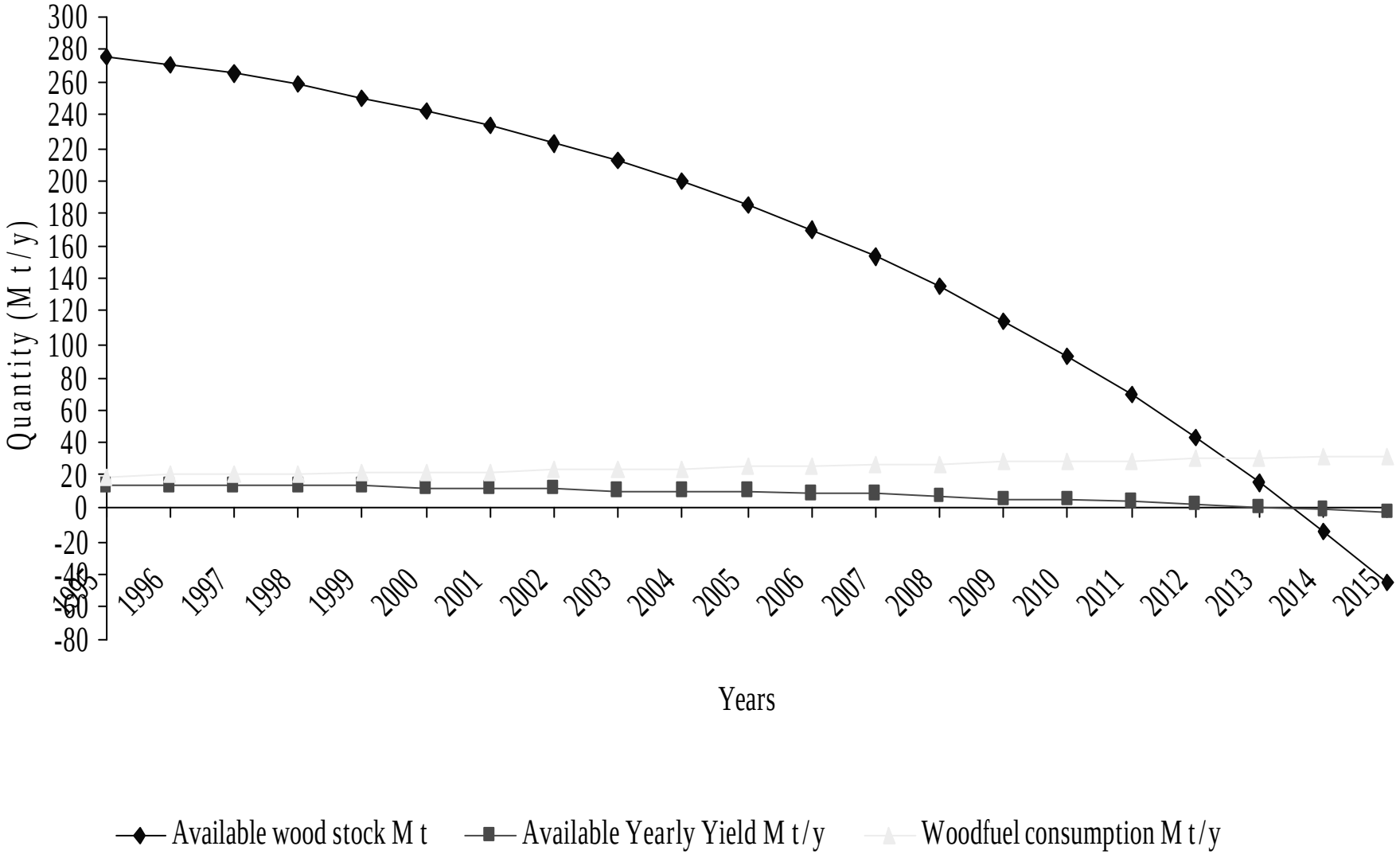
- Biomass represents 93% of the national energy balance
- Lowest per capita consumption of commercial energy in Africa
- Energy demand growing
- Oil products imported (100%)
- Renewable energies are abundant but not largely disseminated
- Electricity load shedding and low electrification rate 9% constrain the rural development



Biomass energy flows at national level (1995)

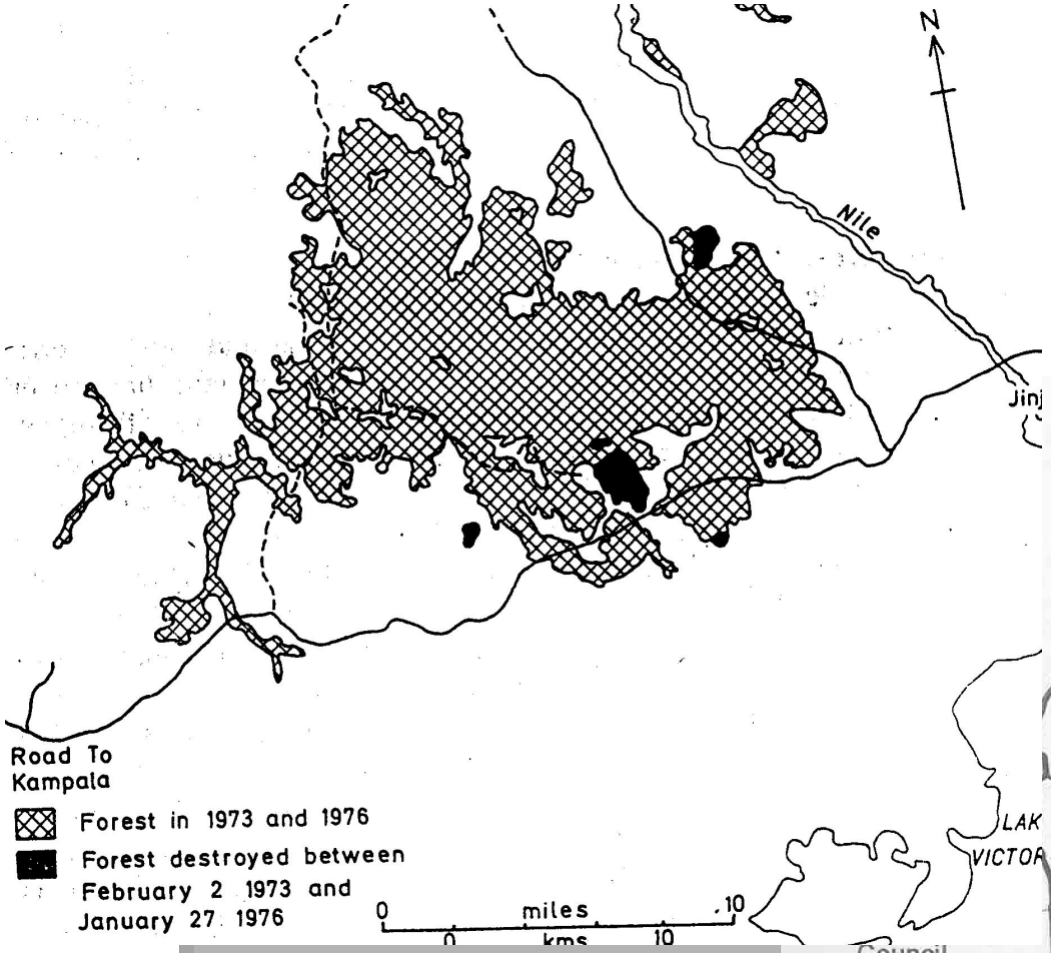
	Category	Flow (,000 t/year)
Supply	Trees above ground	14460.1
	Dung (dry volatile solids)	236.2
	Crop residues	1733.5
	Total biomass supply	16429.8
Consumption	Charcoal	3118
	Fuel wood (household)	13447
	Fuel wood (commercial)	1907
	Fuel wood (industrial)	913
	Total fuel wood consumption	19385
	Residue consumption	850
	Total biomass consumption	20235
Balance	Supply - consumption	-3805.2

Available wood stock in Uganda

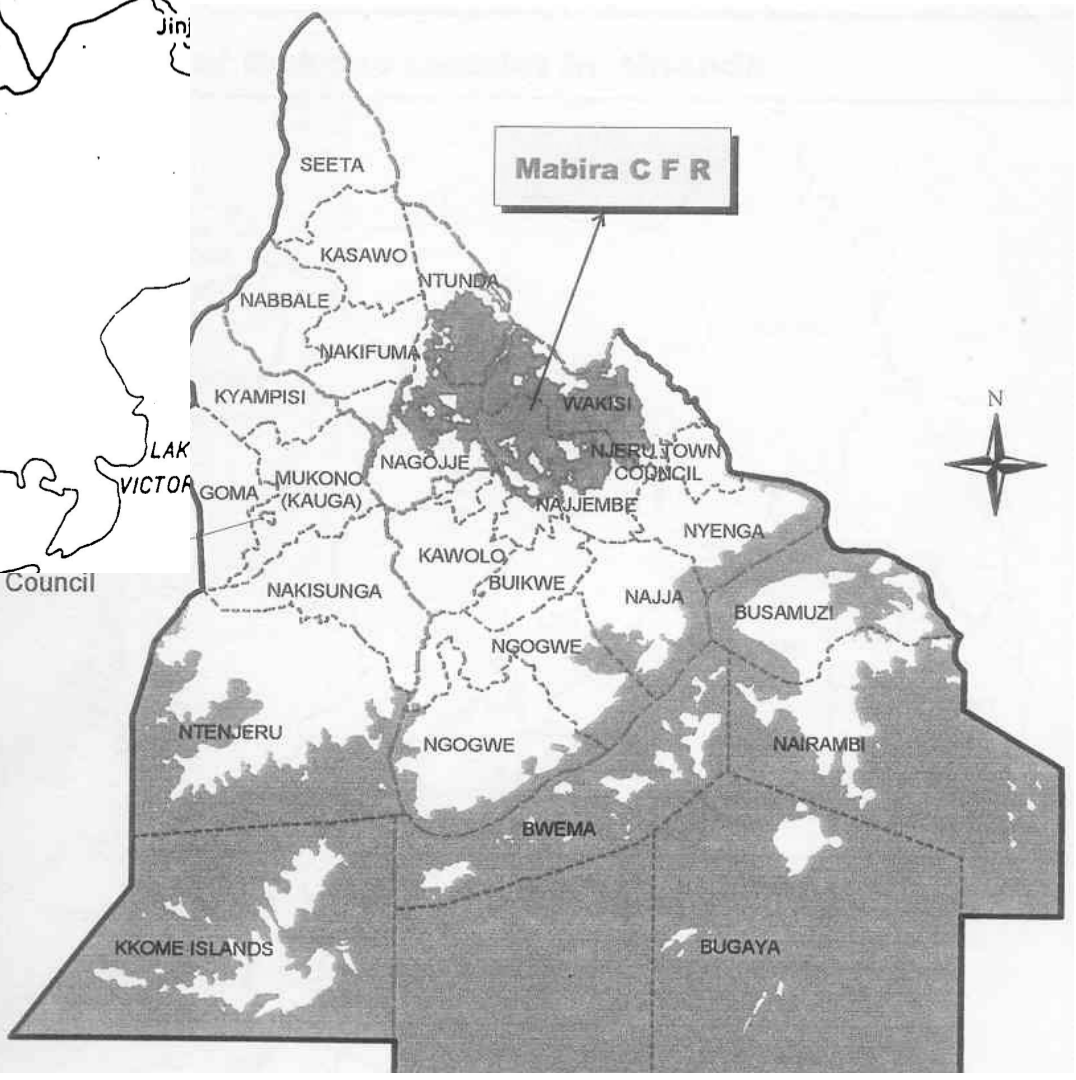


Mabira forest reserve

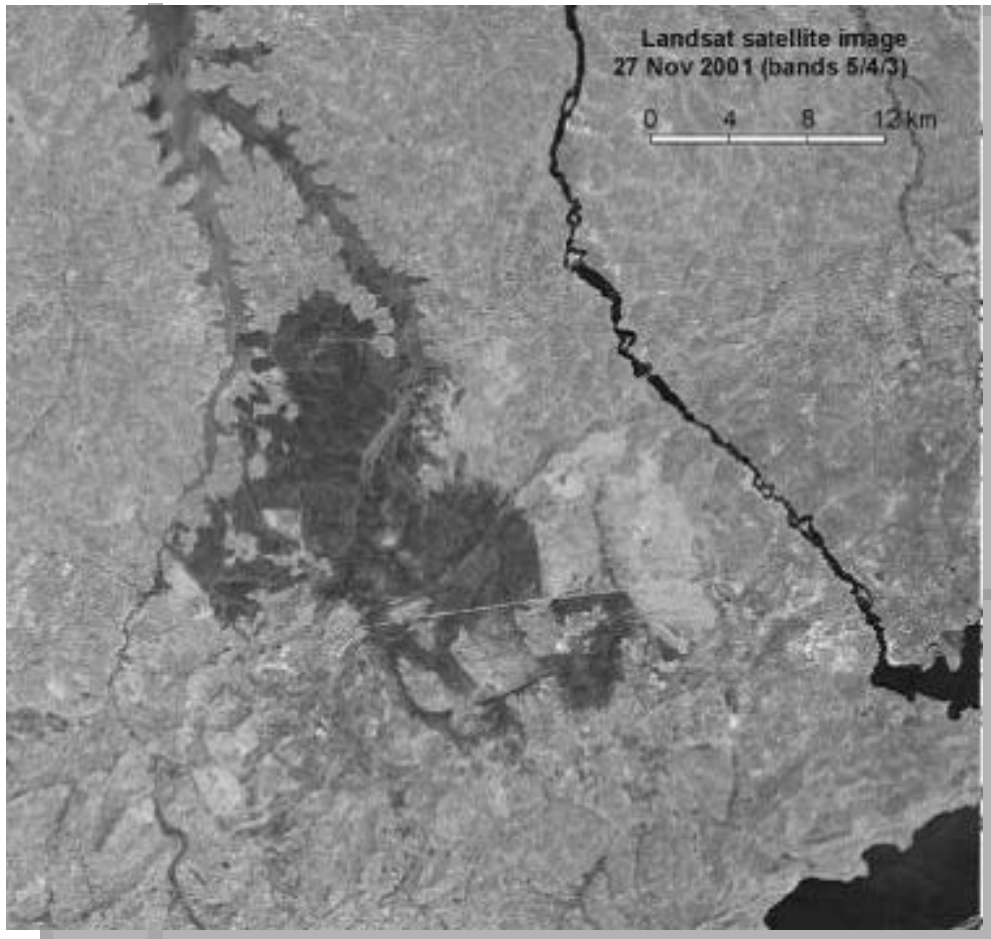
2002



1976



Mabira contd.



- Surrounded by four counties in South Central Uganda
- 17,314 households (2002)
- Gazetted as forest reserve in 1932
- Total area – 30.310 hectares (306 km sq.) with boundary length of 298 km
- Subjected to multiple sources of stress
- Descriptive study largely looked at 337 households randomly selected from the 6 parishes * 3 enclave communities and 3 around the reserve

Tenure regimes and access to fuel wood

	Management regime	Fuel wood access rights
Pre colonial period	Communal and open access basis	Fuel wood collection was free for all
Colonial period (1898 – 1961)	✍Network of forest reserves was created ✍No involvement of local communities ✍Attention paid to forestry for industrial purposes	✍Access rights were transferred to industrial, commercial and the urban sector ✍Dislocation of local people from land
Post independence period (1962 – 1971)	✍Centralization of forest reserves ✍Strong command and control regime	✍Maximization of timber resources ✍Alienation of local people

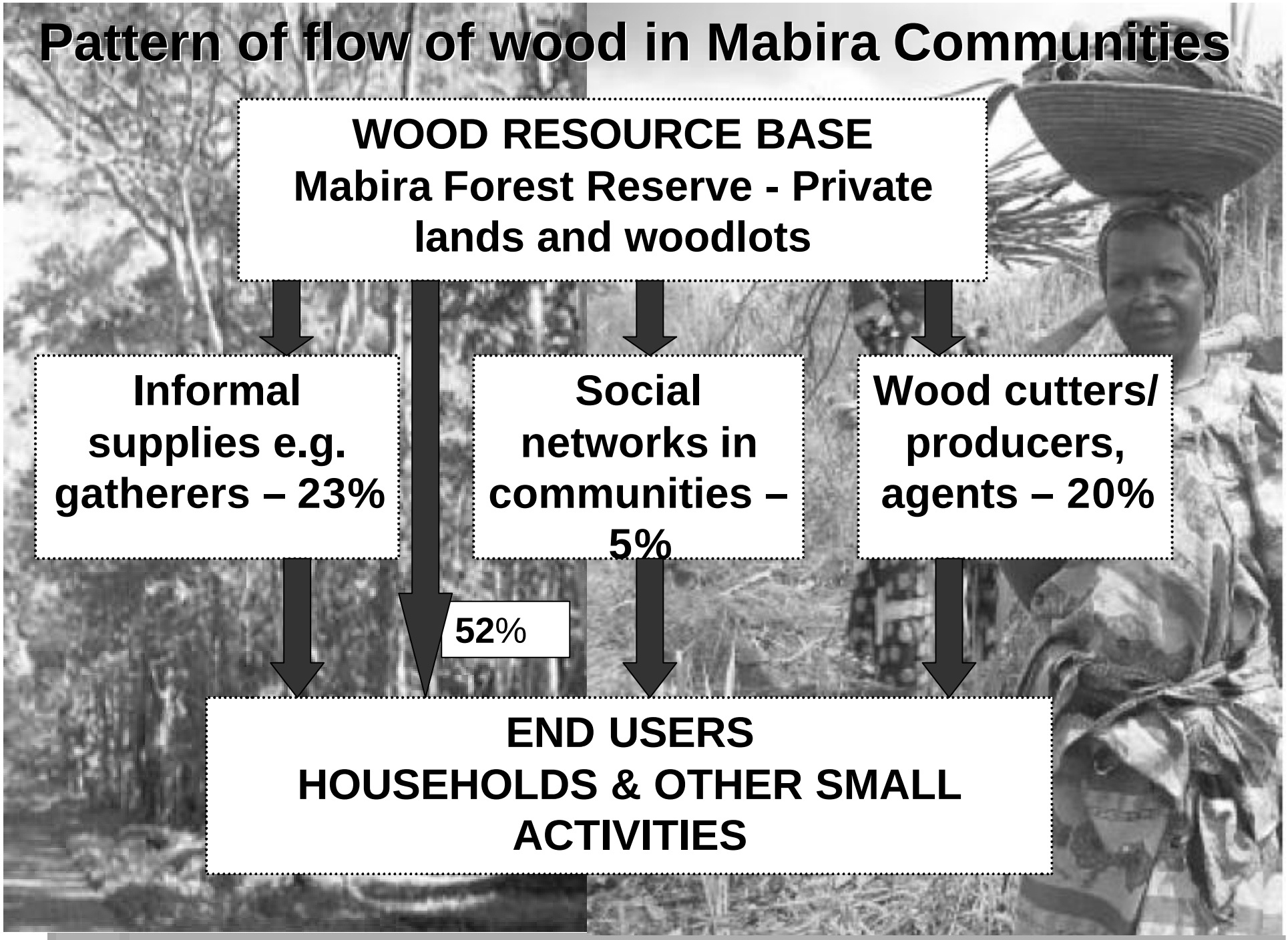
Regimes contd.

Military dictatorship period (1972 – 1985)	✍No effective management of forests ✍Political and economic instabilities ✍Forests were severely encroached on and destroyed	✍Encroachers moved into the forest reserve ✍No sustainable management of forest reserves ✍Government war on poverty gave permits for local people to enter the forest
Decentralization period (1987 – to date)	✍Movement from centralization to decentralization back to centralization ✍Removal of encroachers ✍Pursuit of collaborative management with local communities	✍Regaining control of forests involved removal of forest encroachers ✍Involvement of local communities ✍Collaborative management techniques unclear

Stakeholder perceptions of Mabira forest

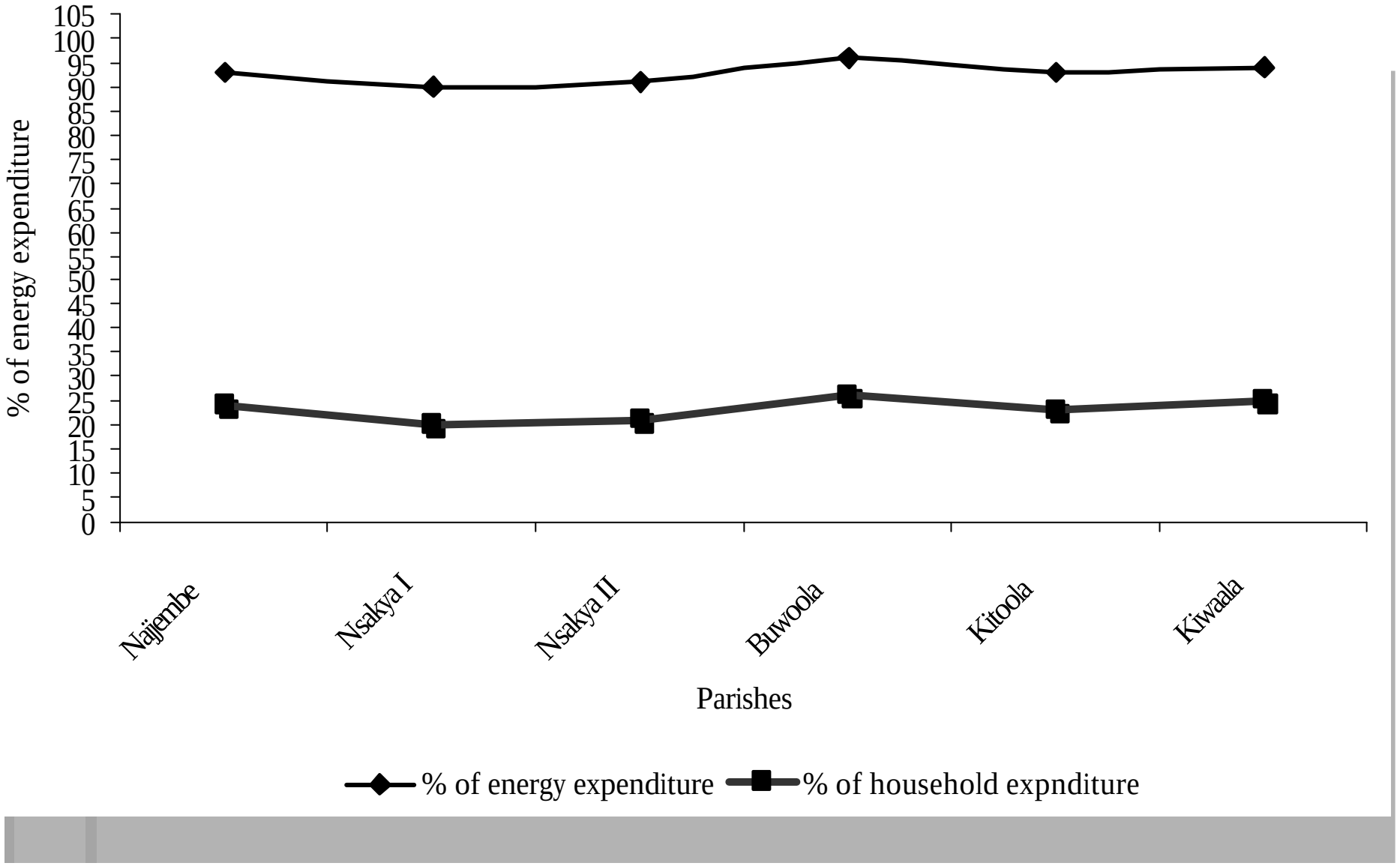
Dimensions of discordance	Private sector	Government	Household /Community
Concept of Mabira Forest	Commodity (mine)	Mine in public interest	Heritage (ours)
Objective	Timber, sport, recreation, scenery	Nature – ecotourism	Livelihood
Construct	Away	Away	Home
Spatial characteristic	Absentee	Absentee	Resident

Pattern of flow of wood in Mabira Communities



Fuel /power	Technology	Fuel end uses %			
		Cooking	Lighting	Entertainment	Other activities[1]
Fuel wood	3 stones	76	4.2	--	38
	Improved stoves	08	--	--	--
Charcoal	Stoves	17	--	--	22
Electricity	Cookers	--	--	--	--
	Bulbs	--	13	--	--
	Others	--	--	15	--
Solar energy	Cookers	--	--	--	--
Gas	LPG stoves	--	--	--	--
Wax	Candles	--	9.3	--	--
Pressure	Pressure lamps	--	02	--	--
Paraffin	Wick - Candles	--	59	--	26
	Lanterns	--	08	--	15
	Stoves	04		--	--
Batteries (cells)	Torches	--	01	--	--
	Others	--		85	--
Others – saw dust, dung & straw, stalks weeds/leaves		04	04	--	--
Total	% Total	100	100	100	100
	N	323	332	280	210
	Missing	14	05	57	167

Expenditure on fuel wood



The resilience of Mabira communities

Forcings

- Poor collaborative management arrangements
- Inadequate rural electrification
- Low rate of diffusion of wood fuel technologies
- Increasing investment pressures and political maneuvers to change land use
- Increasing population
- Increasing commercialization of wood
- Unclear land allocation and tenure
- Low supply and high price of alternative energy

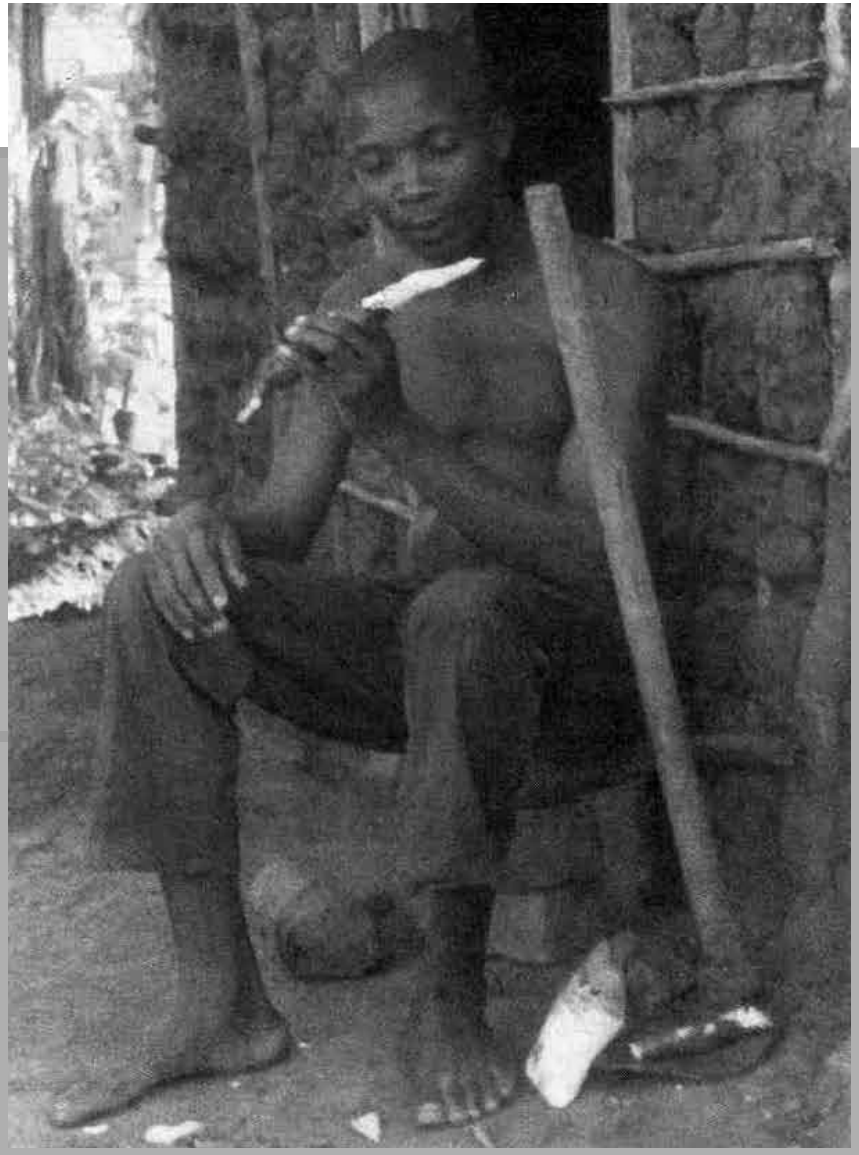
Livelihood outcomes

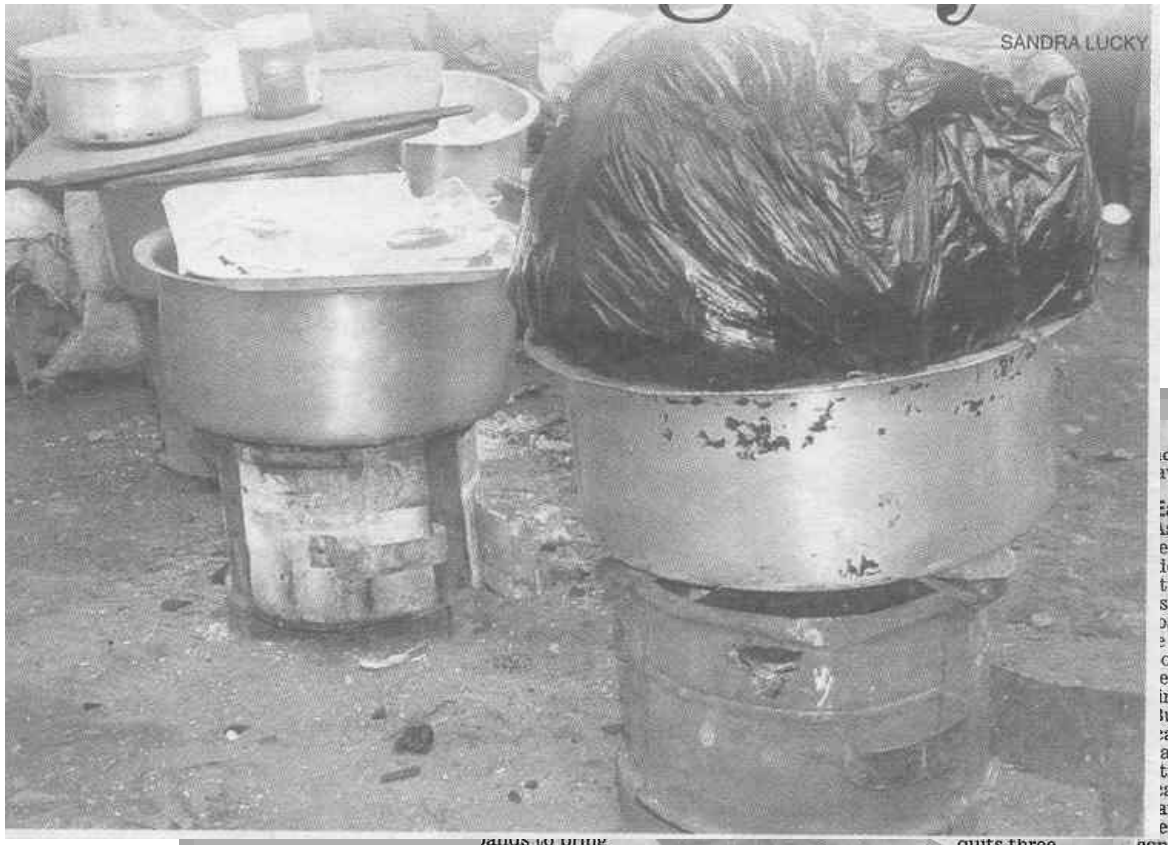
- Change in fuel wood collection substitution strategies
- Change in type of fuel and its extraction
- Change in fuel using practices
- Enhancement of biomass supplies
- Change in cooking practices
- Increasing penetration of commercial markets

Increasing commercialization of wood

Eking a livelihood - women and children

Signs of inadequate fuel wood





Inefficient fuels – use of banana leaves

Traditional cooking charcoal stoves

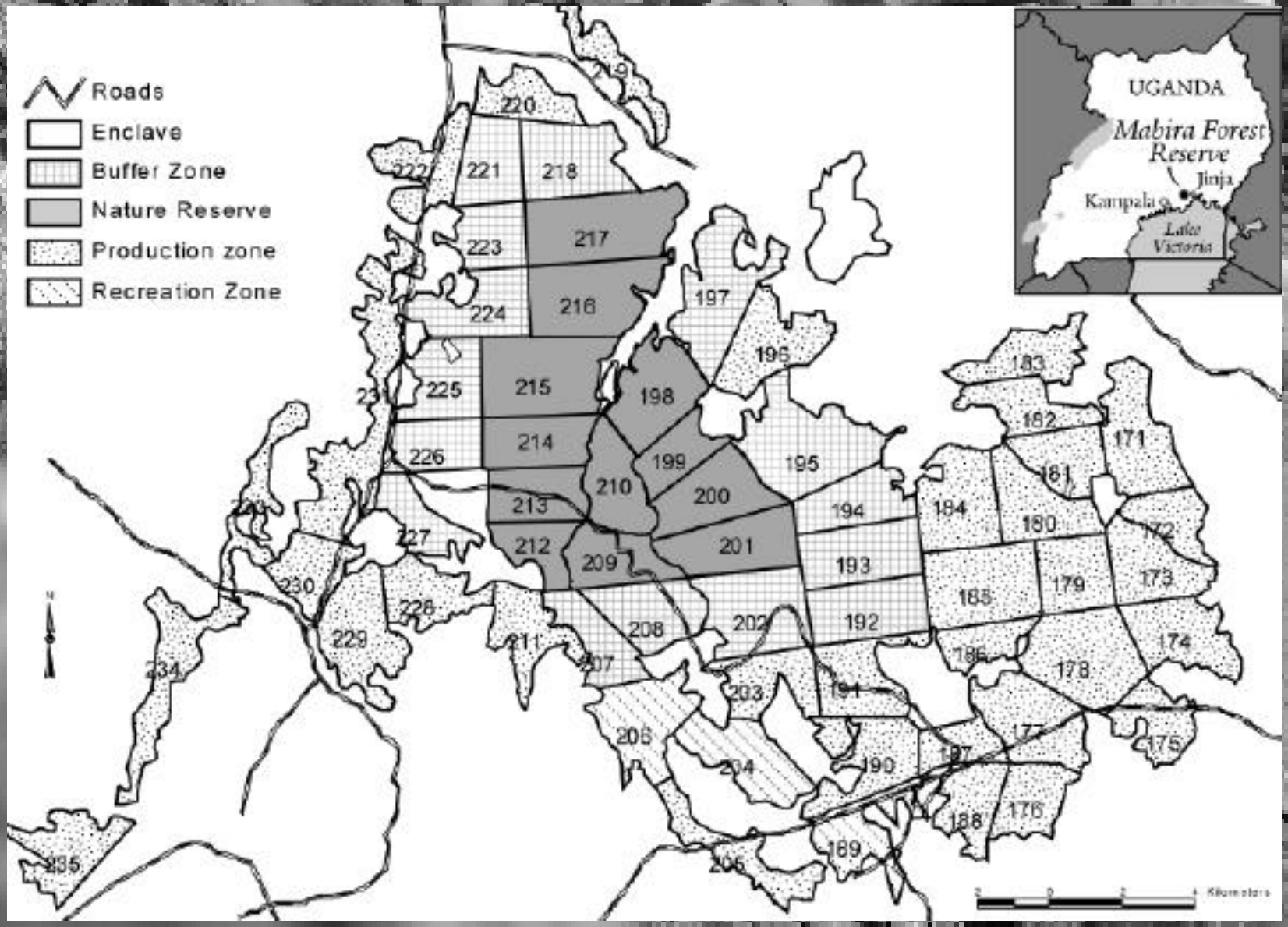
Lesson

"You can't tell a person that 'tonight you must eat your beans raw in order not to cut the tree next door'. That person will cut the tree and cook the beans."

Prof. Mondo Kagonyera while launching Uganda's Human Development Report 2005 - Linking Environment to Development: a deliberate choice

Richard Kavuma (2005): Poverty threatens the environment in The Weekly Observer November 10 – 16, 2005 Pg 4

Mabira Forest Management Plan

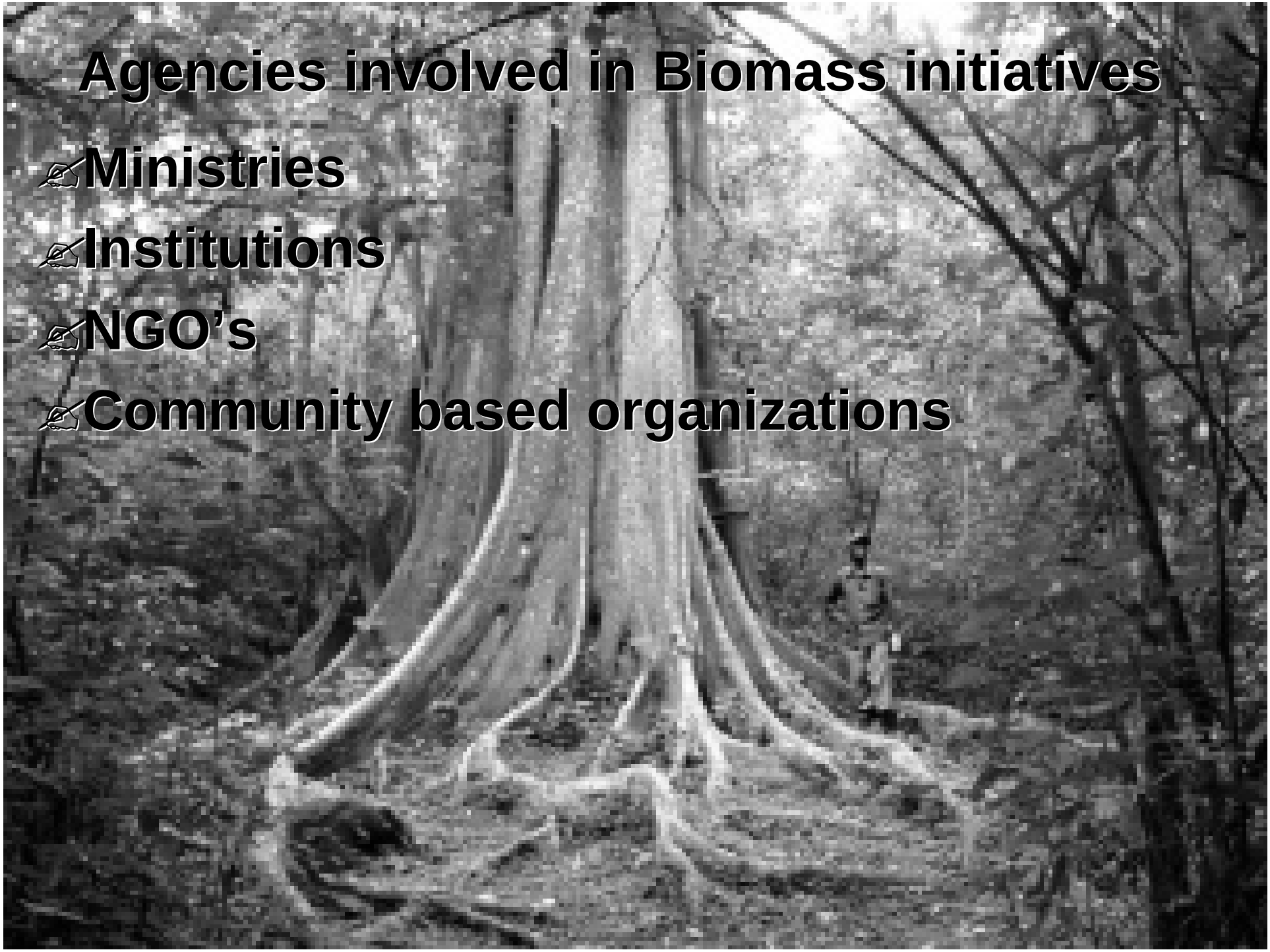


Cycles/management zones in the MFMP

- Conservation working circle
- Production working circle
- The community participation working circle – Enclave communities given 6 meters of land on the forest boundary to plant trees that would serve various purposes
- The recreation working circle
- The research working circle

Energy sector reforms

- Energy Policy
- Poverty Eradication Action Plan (PEAP)
- Power Sector Strategic Plan 1997, 1999
- Rural Electrification Strategy and Plan 2001
- Energy for Rural Transformation (ERT)
- Forest Policy and Forest Sector Umbrella Programme
- National Forestry and Tree Planting Bill



Agencies involved in Biomass initiatives

- Ministries
- Institutions
- NGO's
- Community based organizations

Community tree nurseries

Conclusion

- Sufficient supplies of fuel wood are indispensable for the livelihoods of the rural people
- Local communities have little control in managing the forest
- Cat and mouse game between the forest department and local communities
- Appropriate policies are necessary
- Closing forests does not help – just makes life harder for local communities
- Increase access to fuel wood – reducing demand, increase supply and increase the substitution of fuels with modern fuels

ASANTE SANA