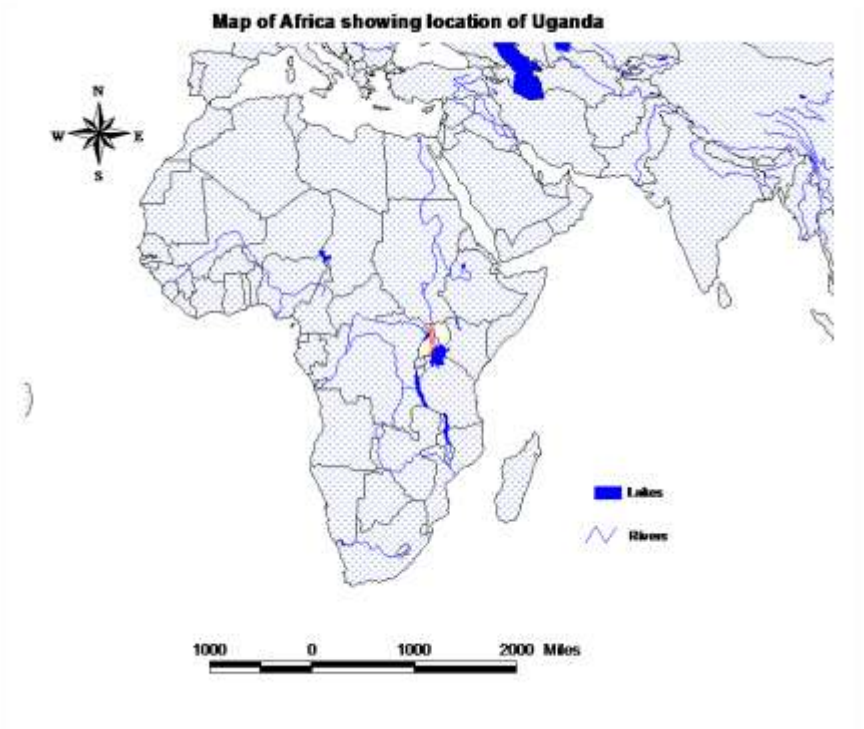
Using spatial analysis to explore synergies between REDD+ and NSBAPs; Uganda's experience



Richard Kapere

Introduction

National Biodiversity Strategy and Action Plan (NBSAP)

- Uganda is still in the process to develop her NBSAP 2, the first one having expired in 2012
- Consultations have been held both nationally and with the CBD secretariat and comments are being incorporated.
- The document is expected to be ready by December 2014 after presentation to Cabinet

REDD+ Strategy

- Uganda REDD Preparedness Proposal (R-PP) was approved and has been funded for implementation and the process has started.
- The proposal preparation process involved Consultations with Stakeholders and selected studies were done.
- Some of the following outputs are envisaged at the end of the R-PP implementation period (REDD+ Strategy):

➢ Strategies and actions for addressing the drivers of deforestation and forest degradation

➢ A National forest reference emissions level and future scenario.

➢ A National Monitoring system for Measuring, Reporting and Verifying effects of REDD-Plus Strategy options on GHG emissions and other multiple benefits.

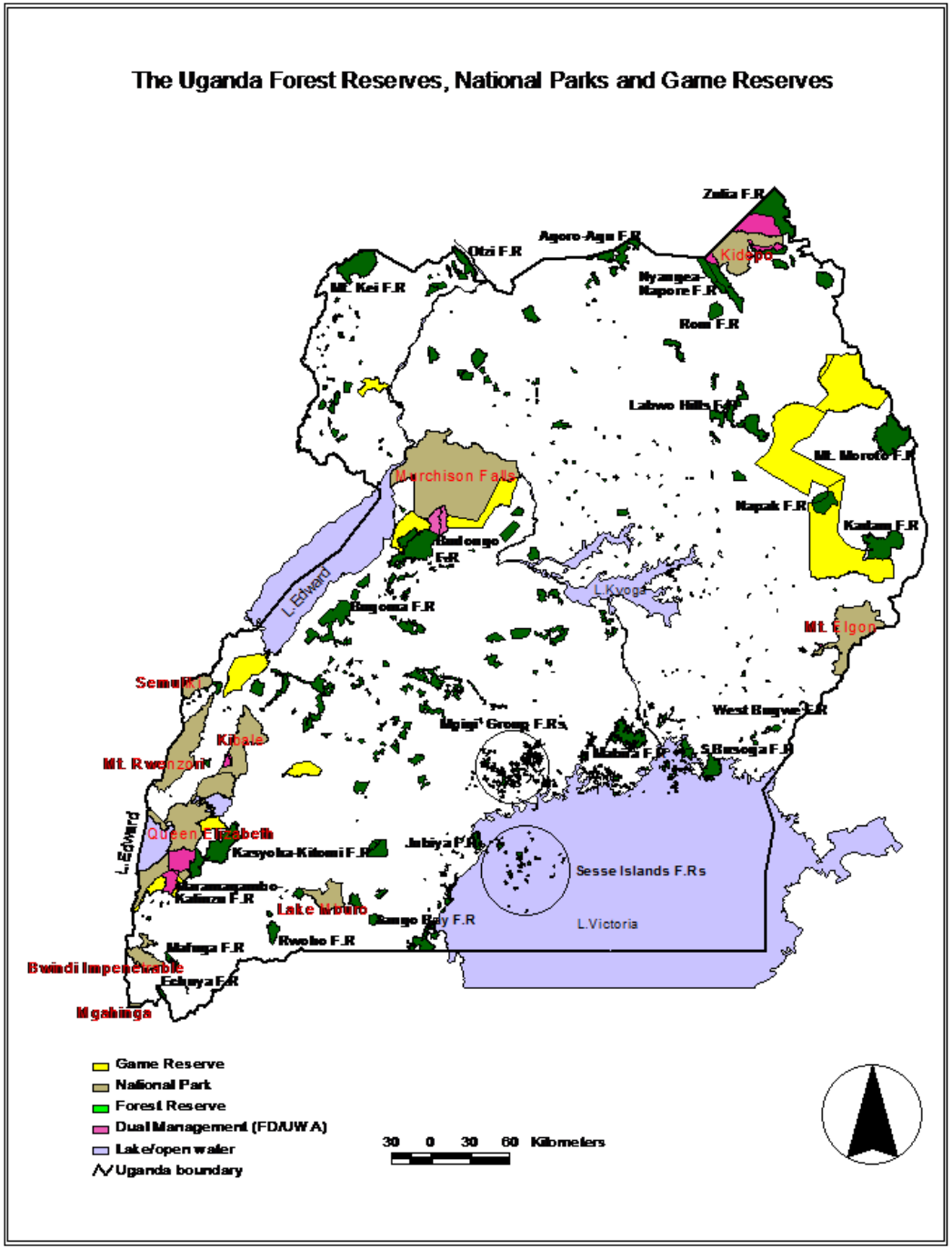
➢ Information/database on forestry resources (status, trends, deforestation, degradation, Governance, etc..)

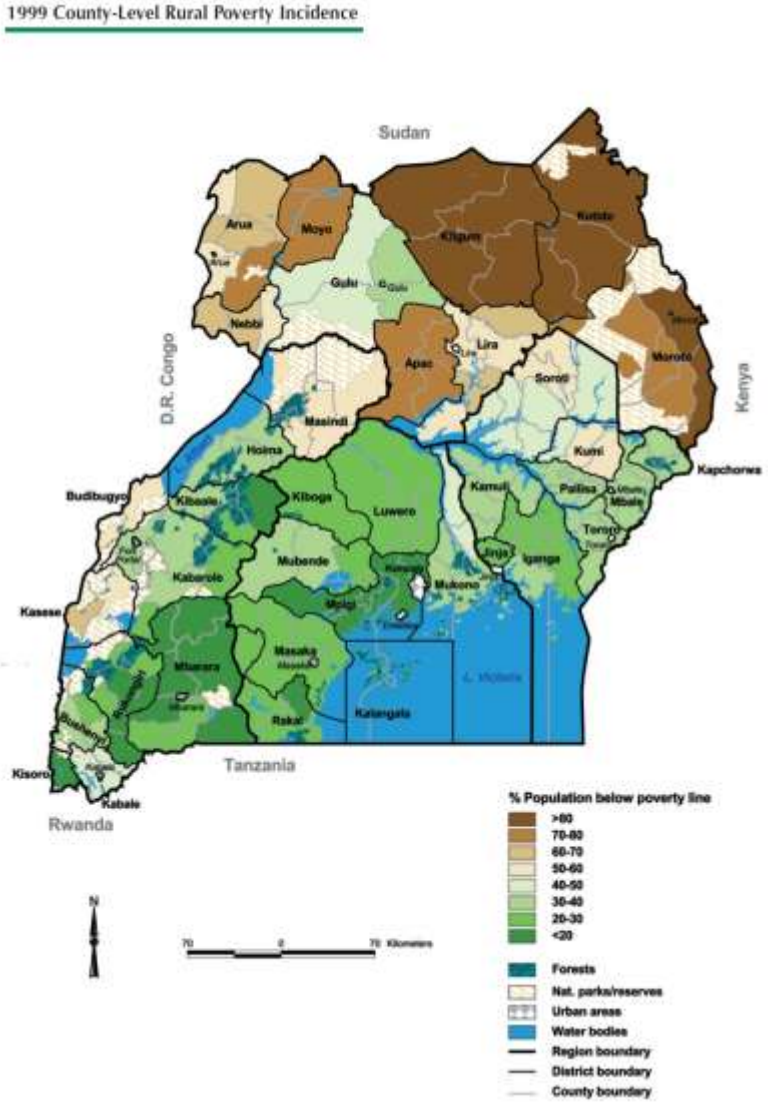
➢ Potential emissions reduction activities and sites.

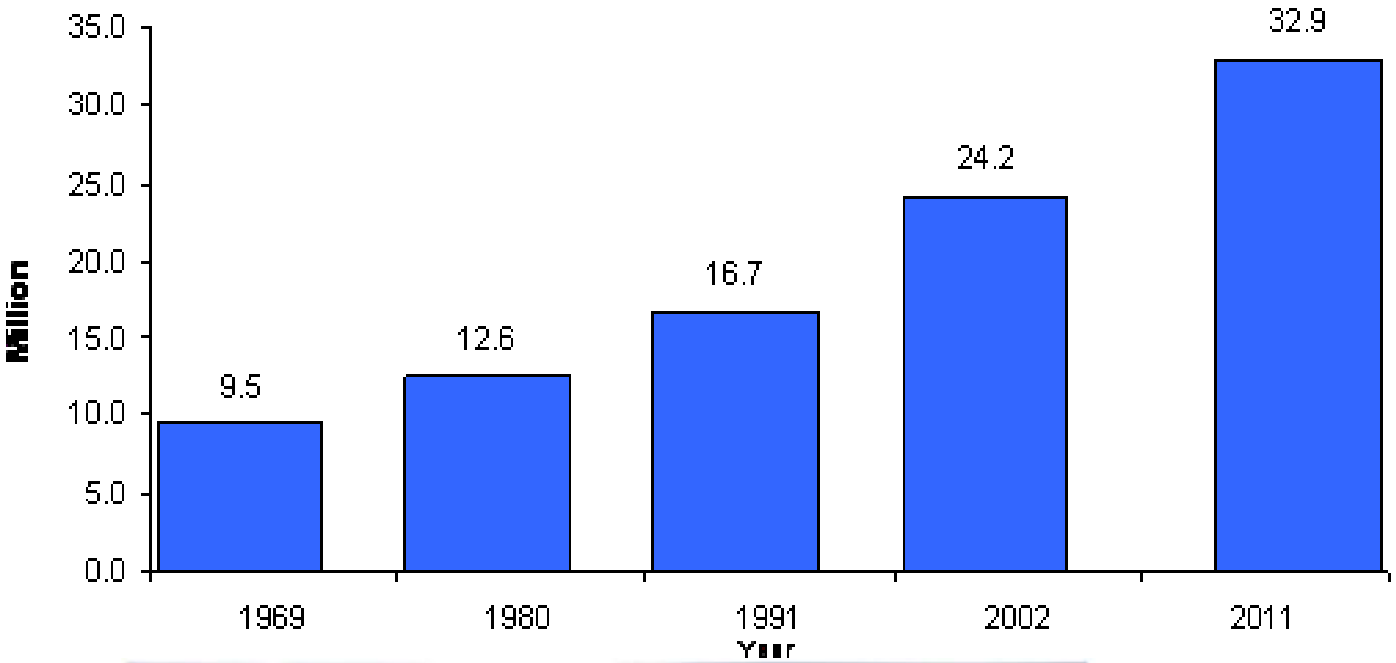
- REDD+ Strategy options are likely to be adopted by end of 2016 or early 2017
- Only interim guidance on implementation on demonstration and or Sub national activities related to REDD+ has been developed.

Use of Spatial analysis in the two processes above to determine biodiversity threats hence decision making

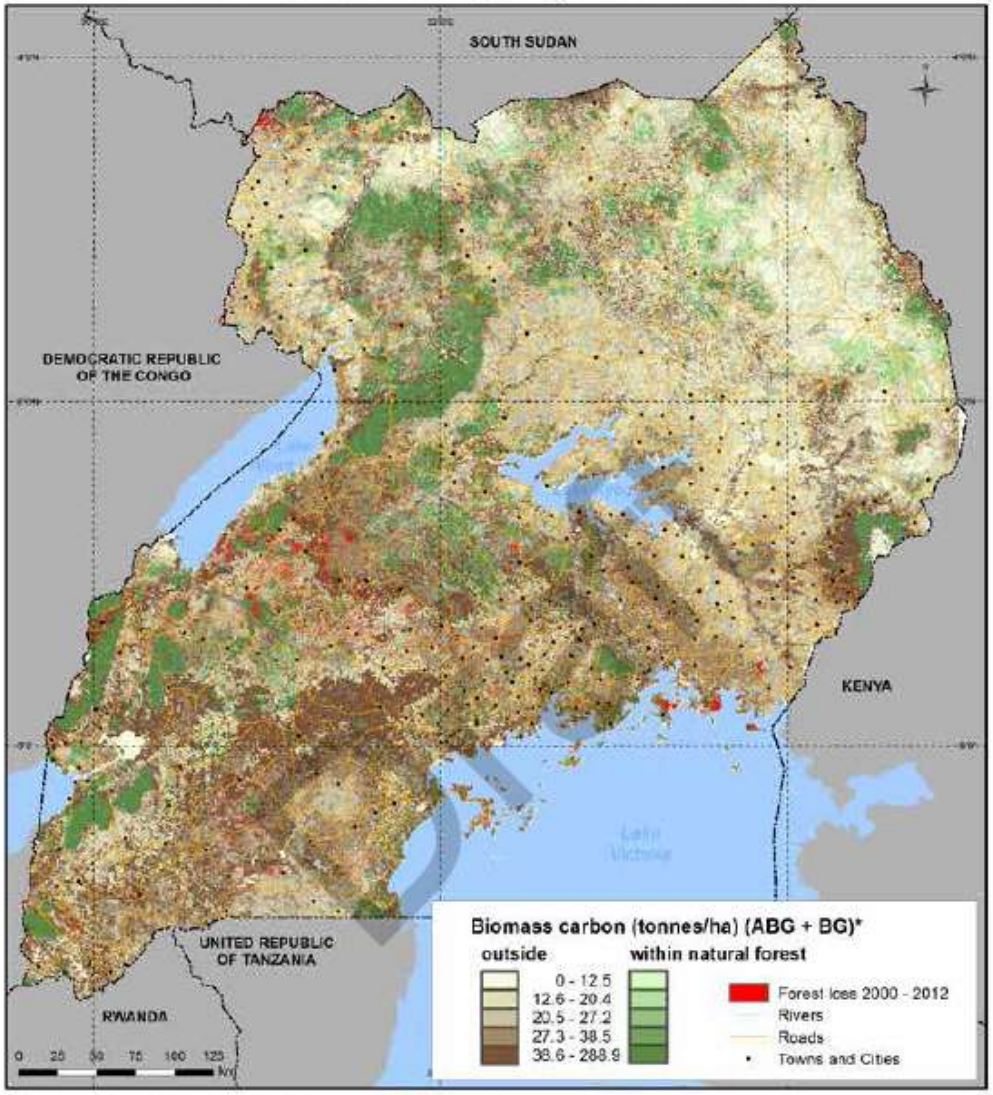
- **Vegetation/biomass maps in relation to demographic and poverty maps**
  - Vegetation/PA maps of Uganda
  - Poverty situation maps
  - Population trend maps
  - Repetitive Land cultivation (scarcity) maps
  - *Carbon stocks and pressures*


The Uganda Forest Reserves, National Parks and Game Reserves
Zulia F.R
Agoro-Agu F.R
Otzi F.R
Kidepo
Mt. Kei F.R
Nyangea-Napore F.R
Rom F.R
Labwo Hills F.R
Mt. Moroto F.R
Murchison Falls
Napak F.R
Kadam F.R
Budongo F.R
L.Edward
L.Kyoga
Bugoma F.R
Mt. Elgon
Semuliki
West Bugwe F.R
Mpigi Group F.Rs
Kibale
Mt. Rwenzori
Mabira F.R
S.Busoga F.R
Queen Elizabeth
Kasyoka-Kitomi F.R
Jubiya P.R
Sesse Islands F.Rs
Kalinzu F.R
Lake Mburo
Rwoho F.R
L.Victoria
Mafuga F.R
Bwindi Impenetrable
Echuya F.R
Mgahinga
Game Reserve
National Park
Forest Reserve
Dual Management (FD/UWA)
Lake/open water
Uganda boundary
30 0 30 60 Kilometers


1999 County-Level Rural Poverty Incidence
Sudan
D.R. Congo
Kenya
Tanzania
Rwanda
Arua
Moyo
Kitgum
Kotido
Gulu
Nebbi
Lira
Apac
Soroti
Moroto
Masindi
Hoima
Kumi
Kapchorwa
Budibugyo
Kibaale
Kiboga
Luwero
Kamuli
Pallisa
Mbale
Tororo
Kabarole
Mubende
Iganga
Mukono
Kasese
Mpigi
Mbarara
Masaka
Rakai
Kalangala
Kisoro
Kabale
% Population below poverty line
>80
70-80
60-70
50-60
40-50
30-40
20-30
<20
Forests
Nat. parks/reserves
Urban areas
Water bodies
Region boundary
District boundary
County boundary
N
70 0 70 Kilometers


35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Million
9.5
12.6
16.7
24.2
32.9
1969
1980
1991
2002
2011

Natural forest is defined as 'Tropical High Forest' and 'Woodland'



* (ABG + BG) = Above ground + below ground biomass carbon

Sources:
Biomass Carbon: Saatchi, S et al. "Benchmark map of forest carbon stocks in tropical regions across three continents", PNAS, 108. 24 (2011): 9899-904. http://carbon.jpl.nasa.gov/
Forest Cover Loss: Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (15 November): 850–53. Data available on-line from: http://earthenginepartners.appspot.com/science-2013-global-forest.
Natural Forest: 'Tropical High Forest' from classes 3 and 4 and 'Woodland' from class 5 of the Generalised National Biomass study (NBS) dataset.

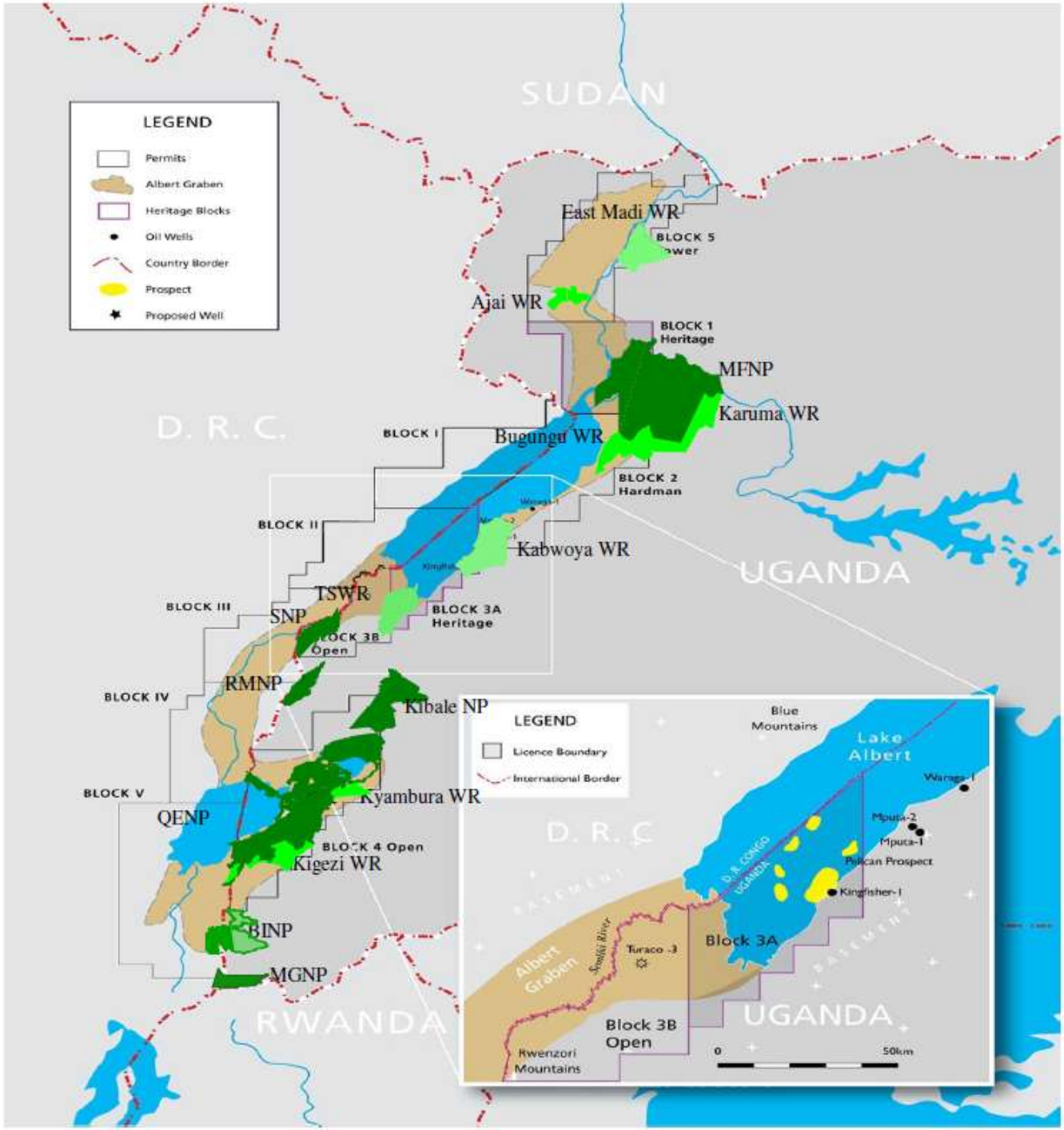
Use of Spatial analysis continued……

- **Land use maps in relation to Biodiversity hotspot areas**

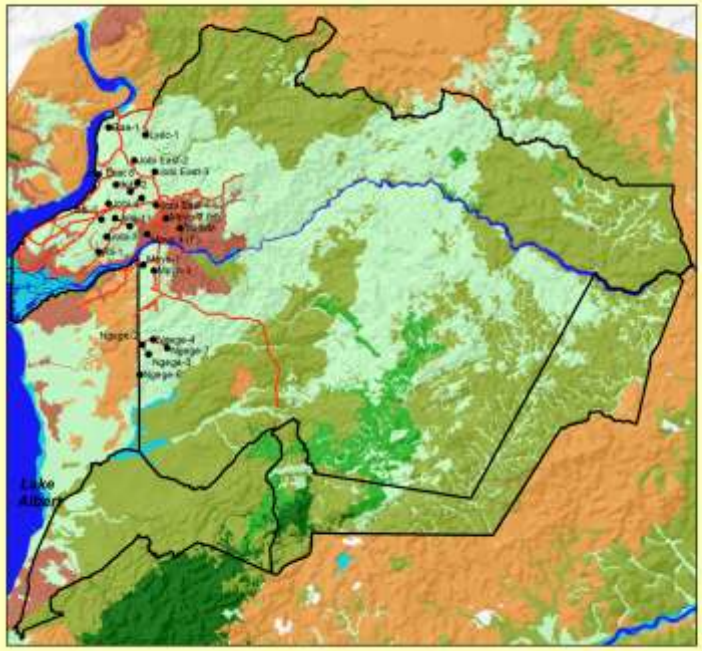
➢ Oil discoveries (oil-human activity interface and biodiversity)

➢ The cattle corridor associated with charcoal production

➢ Agricultural production especially commercial agriculture-Tea, Tobacco, Sugar cane, Maize


LEGEND
Permits
Albert Graben
Heritage Blocks
Oil Wells
Country Border
Prospect
Proposed Well
SUDAN
D. R. C.
UGANDA
RWANDA
East Madi WR
BLOCK 5
Ajai WR
BLOCK 1
Heritage
MFNP
Karuma WR
BLOCK I
Bugungu WR
BLOCK 2
Hardman
BLOCK II
Kabwoya WR
TSWR
SNP
BLOCK III
BLOCK 3A
Heritage
BLOCK 3B
Open
RMNP
BLOCK IV
Kibale NP
Kyambura WR
BLOCK V
QENP
BLOCK 4 Open
Kigezi WR
BINP
MGNP
LEGEND
Licence Boundary
International Border
Blue
Mountains
Lake
Albert
Waraga-1
Mputa-2
Mputa-1
Pelican Prospect
Kingfisher-1
D. R. CONGO
UGANDA
Block 3A
Albert
Graben
Semliki River
Turaco -3
Block 3B
Open
Rwenzori
Mountains
0
50km

OIL INFRASTRUCTURE IN MURCHISON FALLS NATIONAL PARK

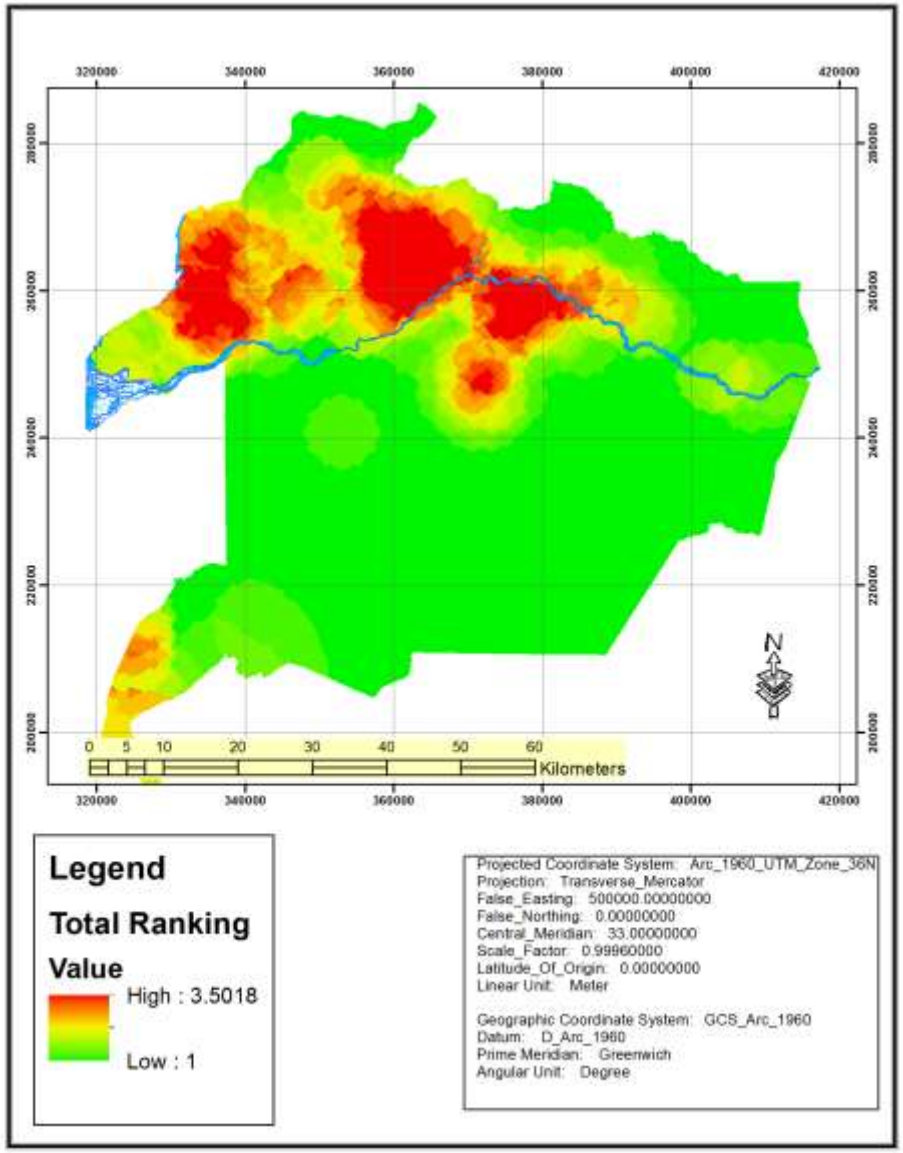


Oil Pads
mfpa_tarsimade
Oil access roads
mfca_parkarea_edited
Bushland
Colonizing Forest
Grassland
Open water
Subsistence farmland
Tropical High Forest, depleted
Tropical High Forest
Wetland
Woodland

Coordinate System: Arc 1960 UTM Zone 36
Projection: Transverse Mercator
Datum: Arc 1960
False Easting: 500,000.0000
False Northing: 0.0000
Central Meridian: 33.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

N

0 6 12 18 24 Kilometers



Legend

Total Ranking

Value

High : 3.5018

Low : 1

Projected Coordinate System: Arc_1960_UTM_Zone_36N
Projection: Transverse_Mercator
False_Easting: 500000.00000000
False_Northing: 0.00000000
Central_Meridian: 33.00000000
Scale_Factor: 0.99960000
Latitude_Of_Origin: 0.00000000
Linear Unit: Meter

Geographic Coordinate System: GCS_Arc_1960
Datum: D_Arc_1960
Prime Meridian: Greenwich
Angular Unit: Degree

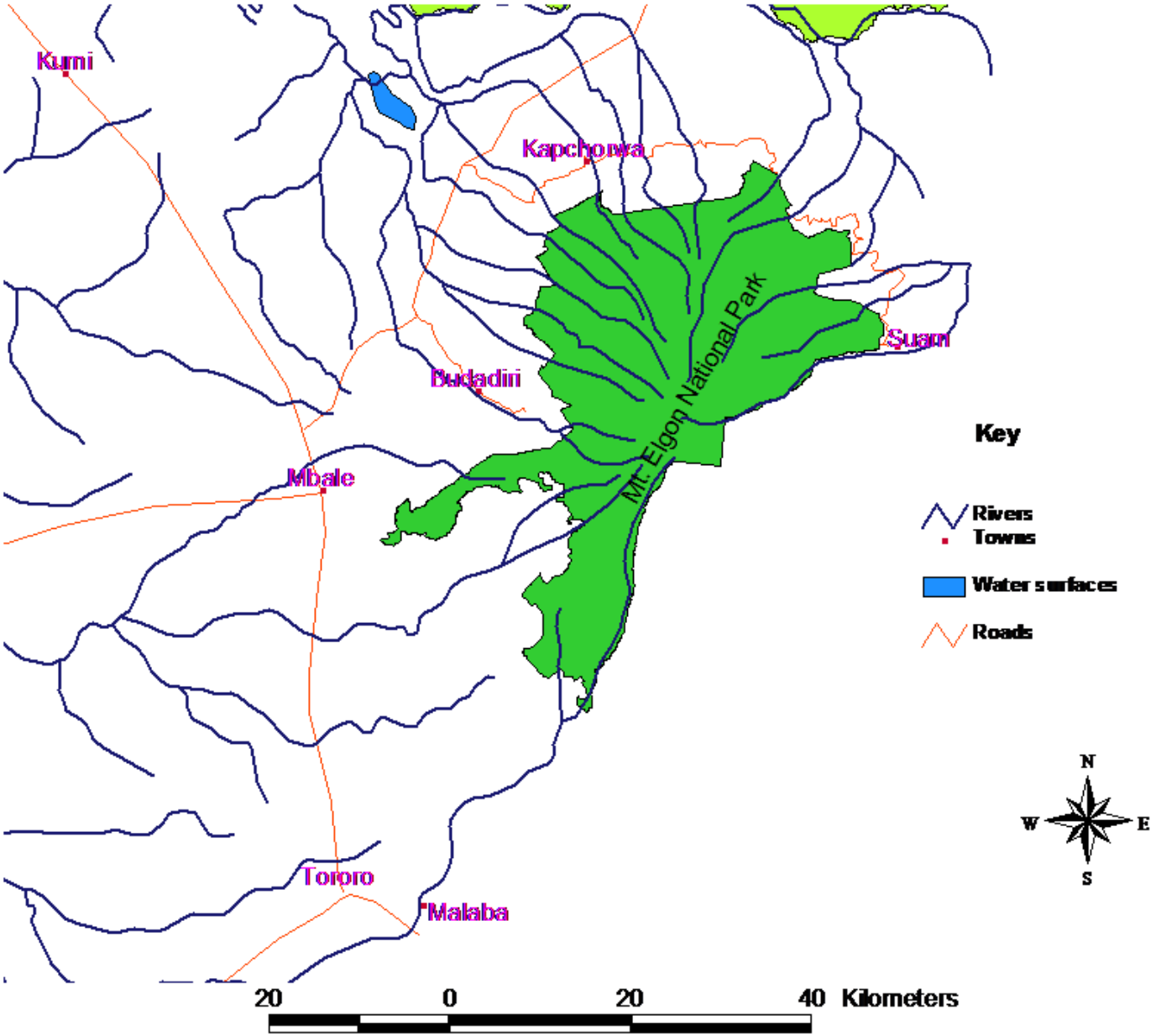
Use of Spatial analysis continued……..

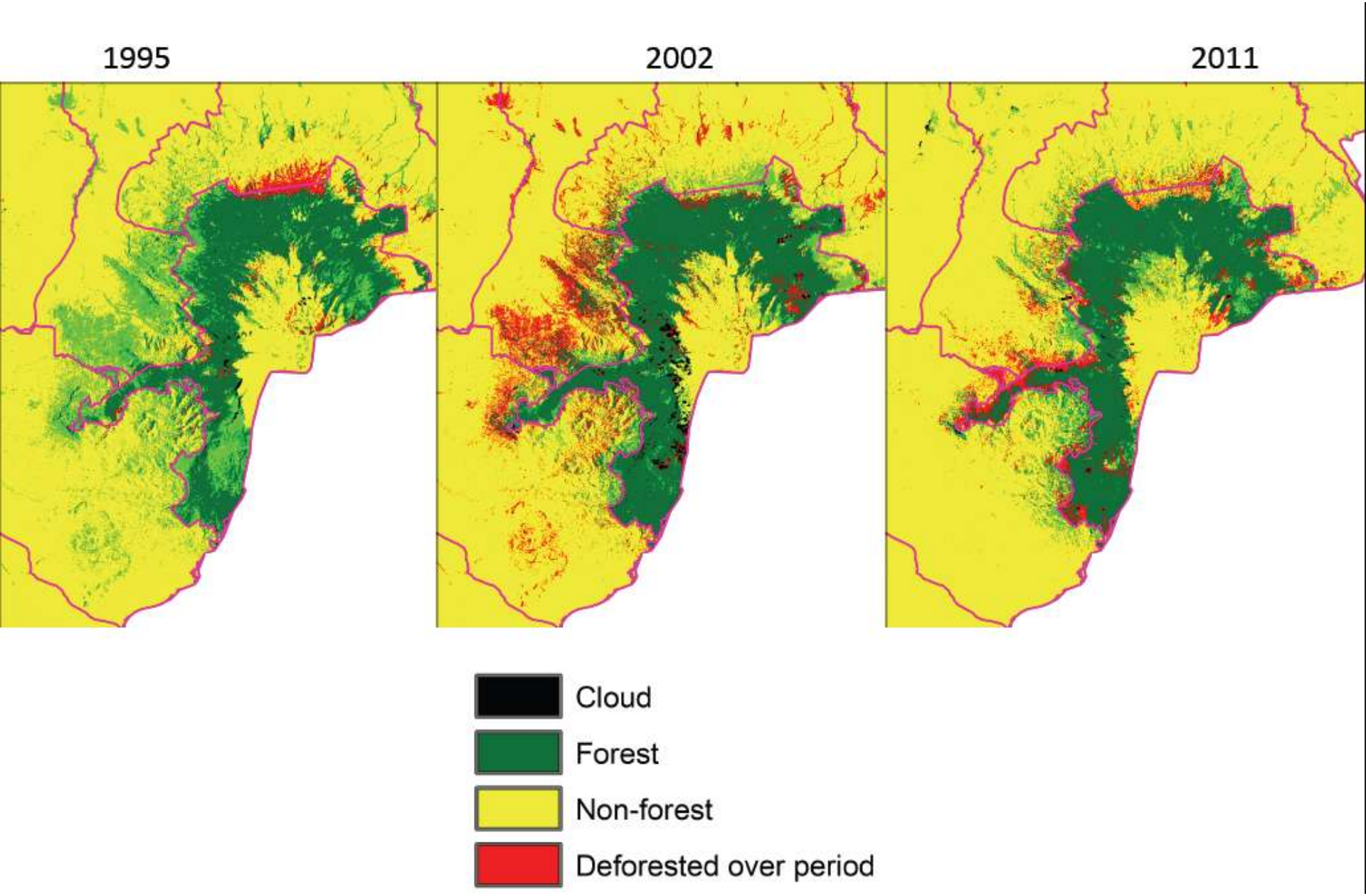
- **Hydrological maps**

➢ Hydropower and thermal power developments in relation to the Decisions to manage catchments

➢ Mining in biodiversity hot spots and population influx

Mt. Elgon Watershed



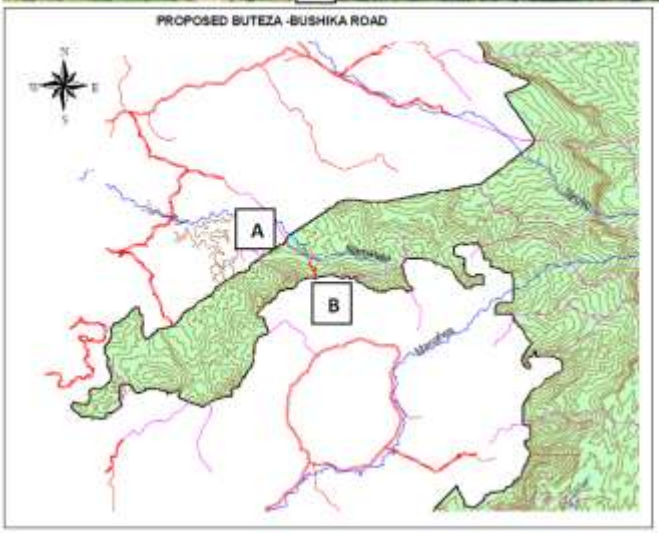

1995
2002
2011
Cloud
Forest
Non-forest
Deforested over period

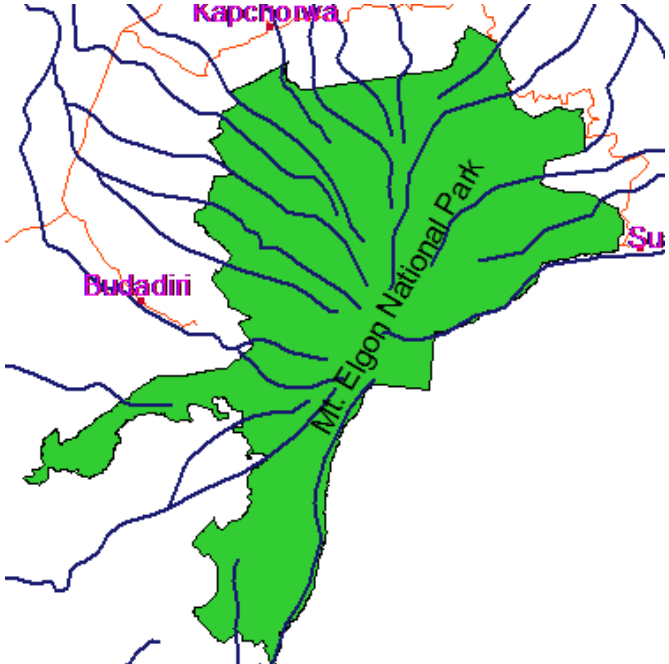
Use of Spatial analysis continued…….

- **Shapes of protected areas at gazettment**

➢ Roads for community-connectivity; markets, Health services, Politics in relation to loss of biodiversity


A
B


PROPOSED BUTEZA -BUSHIKA ROAD
A
B

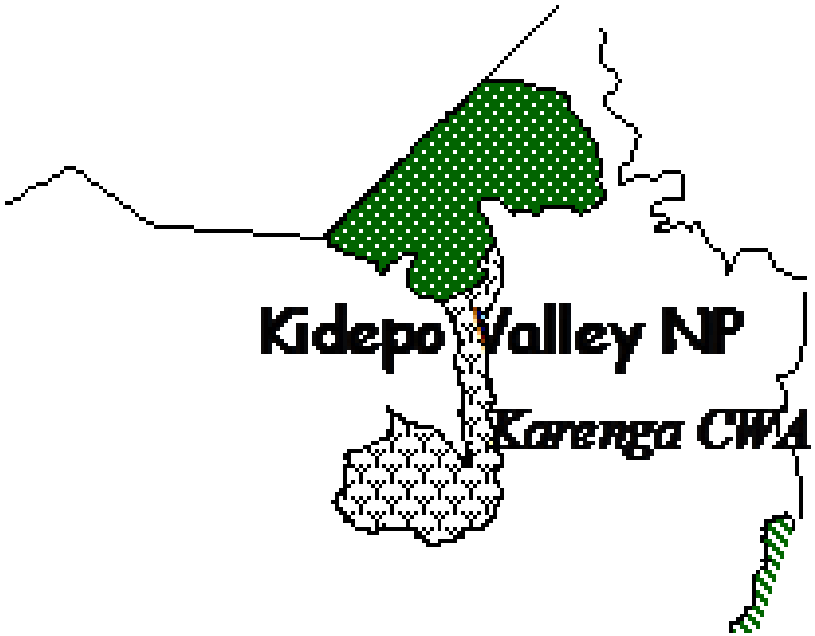

Kapchorwa
Budadiri
Mt. Elgon National Park

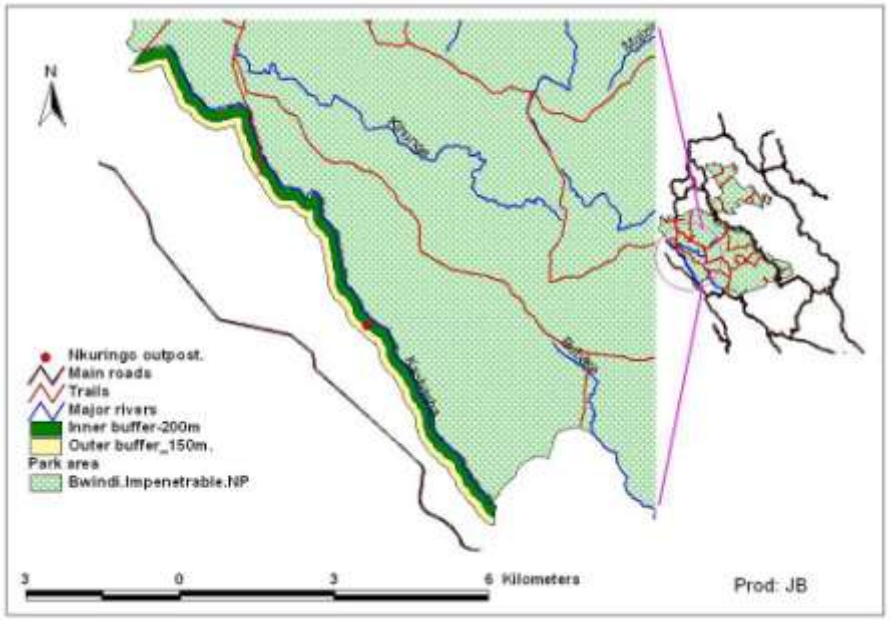
Some of the Nationally appropriate actions influenced by the awareness capability of spatial information in uganda

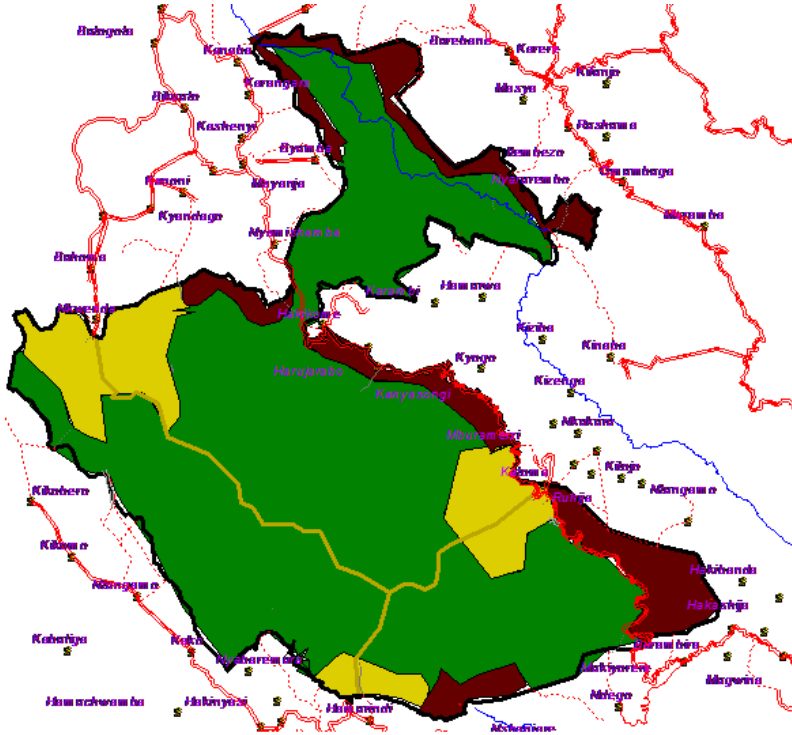
- Prioritization of Biodiversity management within the on-going development of the National Development Plan 2015/16 to 2019/20 (**Nature-based Tourism**)
- ➢ Put in place and implement measures that restore and preserve the integrity of ecosystems that provide critical wildlife habitats and host endangered species
- ➢ Create buffer areas and corridors to conserve Protected Areas from encroachment.
- On-going process to develop National Standards for Forest certification under e.g. the FSC standards
- ➢ Influence markets of forest products
- ➢ Influence Government procurements of forest products

Some of the Nationally appropriate actions continued.....

- Management of Invasive and Exotic species
- ➢ Invasive management Plan being developed
- Forest restoration
- ➢ Farm Income enhancement project-National project to supply tree seedlings
- ➢ Tree planting in degraded areas within Kibale National Park-FACE the Future project
- Management of biodiversity/wildlife corridors and buffer zones
- ➢ Management Plans of Karenga Community Wildlife Reserve and Nkuringo Buffer zone being developed


Kidepo Valley NP
Karenga CWA


N
Nkuringo outpost.
Main roads
Trails
Major rivers
Inner buffer-200m
Outer buffer_150m.
Park area
Bwindi.Impenetrable.NP
3
0
3
6 Kilometers
Prod: JB



Conclusion

Spatial analysis has the potential (some of it already used) to help Uganda come up with the following National Targets in the draft NBSAP2 which are related to REDD+ Strategy study outputs proposed above and REDD+ related Aichi targets:

- ✓ By 2020, at least 17% of the protected areas in Uganda are conserved through effectively and equitably managed, ecologically representative and well-connected systems for socio-economic benefit of the population (Aichi 11)
- ✓ By 2020, Wetland ecosystems providing essential services are being sustainably managed, and where necessary restored, taking into account environmental, economic and social needs (Aichi 11)
- ✓ By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification (Aichi 15)
- ✓ By 2017, Uganda's biodiversity is reasonably protected from natural disasters (Aichi 5)

Conserving for Generations