



RESEARCH PROGRAM ON
Water, Land and
Ecosystems



META
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Flood-Based Livelihoods
Network Foundation



Geospatial assessment of potential flood-based livelihood zones of Kenya



Taking Stock of a Decade – long Evidence based Experiences of Flood based Livelihoods Systems in Africa and Asia

FBL Symposium: Voi Wildlife Lodge 3-8 March 2019

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Outline

- Introduction
- Objectives of the study
- Methodology
- Results: National and County examples
- Conclusions and Recommendations

Introduction

- The IFAD and EU, through the Africa to Asia project is keen on supporting investments in FBLS.
- In April 2018, ICRAF in consultation with Kenya Ministry of Agriculture, Fisheries, Livestock and Irrigation commissioned a consultant to undertake mapping of FBLS in the country.
- The study is a building block for component 4: “Support to investment programmes and policy development” in the Africa to Asia project
- The project aims at developing at least three proposals covering 50,000 ha of FBLS area in Kenya

Objectives of the Study

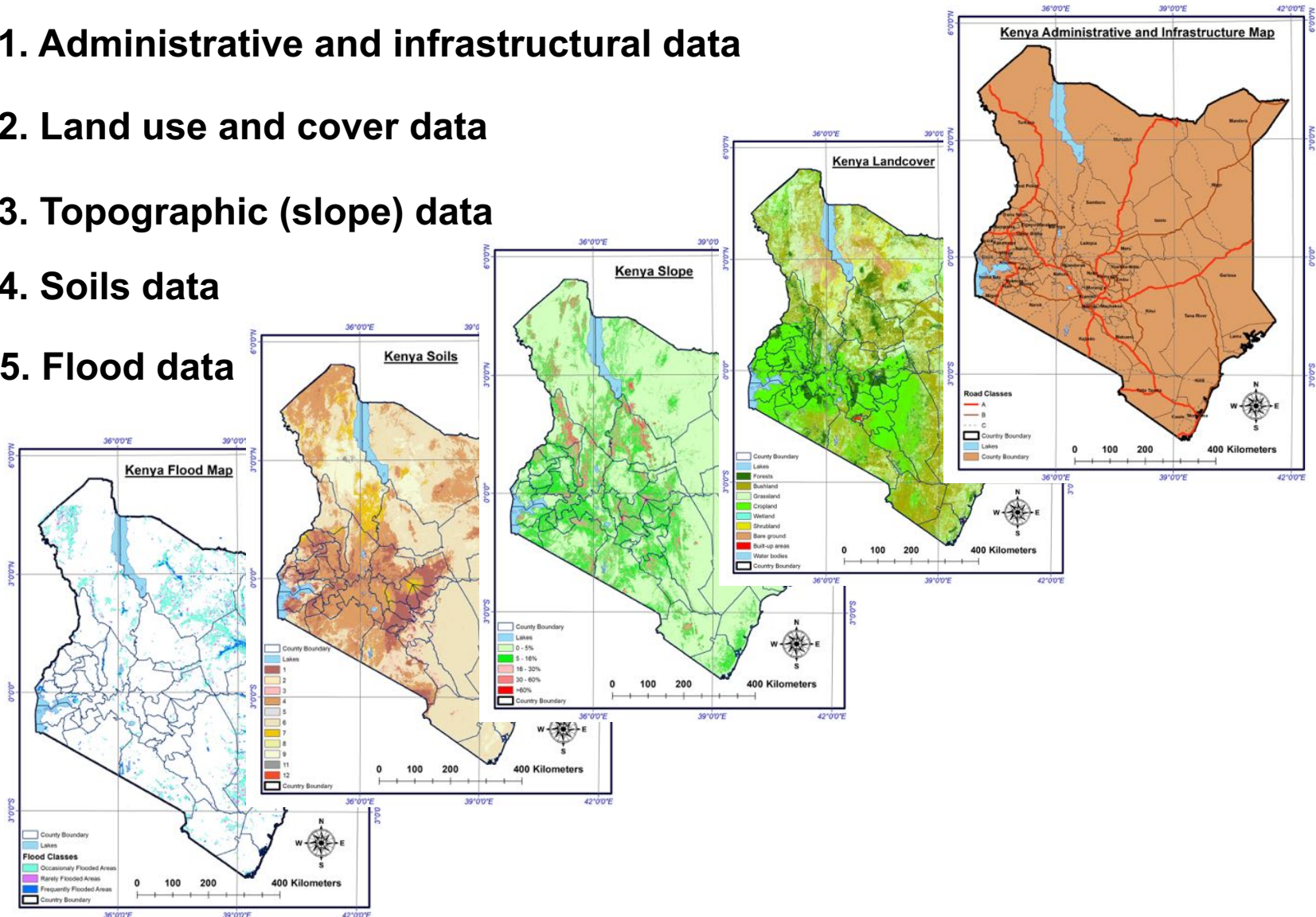
- To develop a GIS database and tool for mapping flood based livelihood systems (FBLS) in Kenya.
- To conduct geospatial mapping of FBLS in Kenya and identify potential sites for investments.
- To generate national and county level thematic maps to guide in formulation of the policies, strategies and projects aimed at improving livelihoods
- To produce proposals for implementation on 50,000 Ha.

Methodology

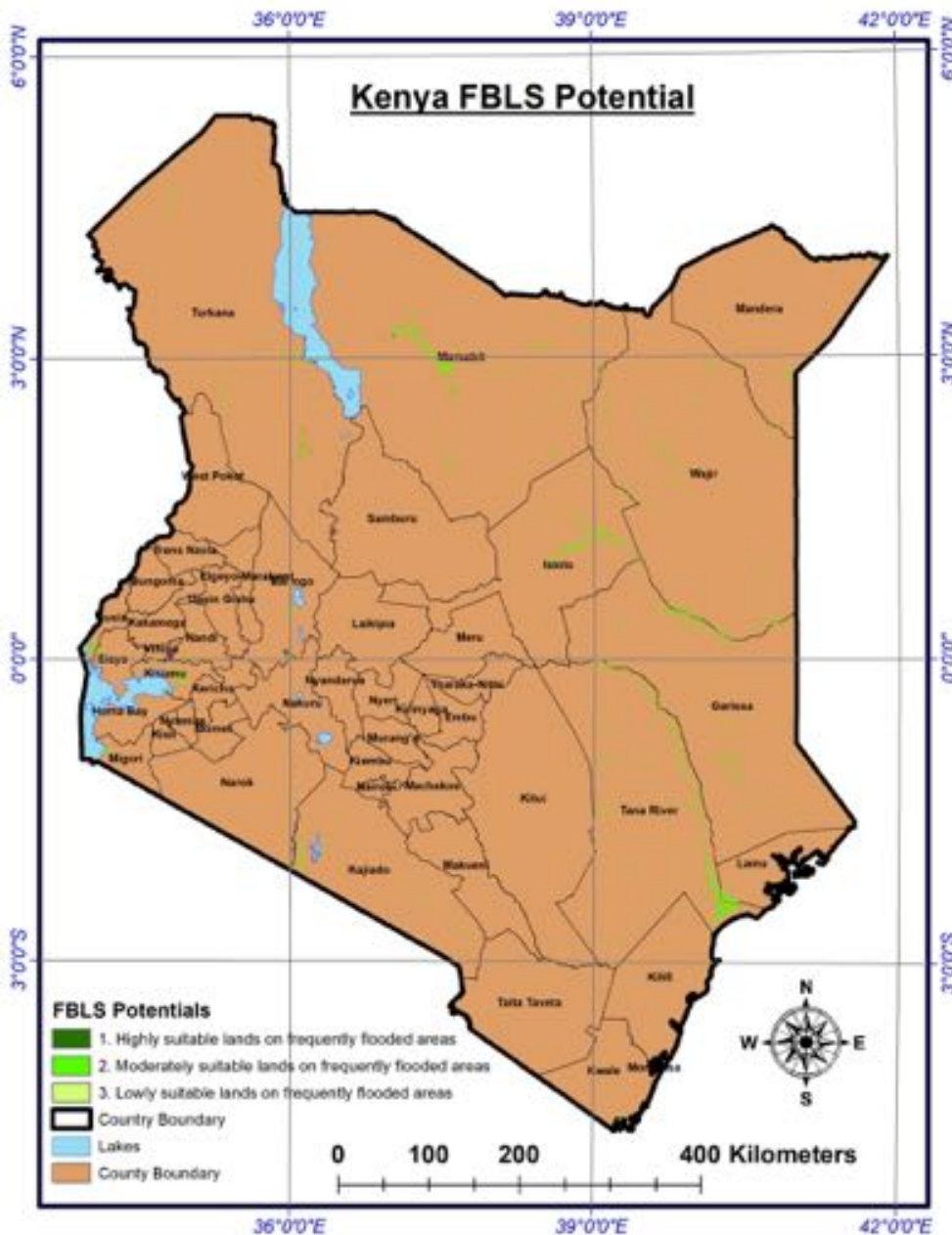
- Literature review
- Interviews with experts
- GIS mapping of biophysical attributes
 - Slope suitability - 0 – 5% slope
 - Soil suitability mapping – Based on soil textural water holding capacity
 - Landcover – Classes that can be converted into FBLS
 - Flood potential – Sites that frequently get flooded
- Validation using Google Earth Professional and field visits

Building the GIS biophysical database

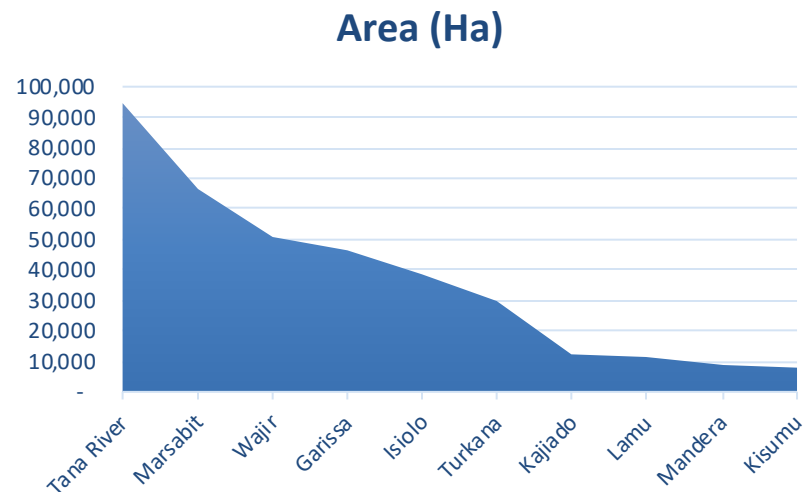
1. Administrative and infrastructural data
2. Land use and cover data
3. Topographic (slope) data
4. Soils data
5. Flood data



RESULTS: National FBLS Potential



FBLS Suitability Class	Area (Ha)
1. Highly suitable lands on frequently flooded areas	6,530.04
2. Moderately suitable lands on frequently flooded areas	406,422.54
3. Lowly suitable lands on frequently flooded areas	372.51
Total	413,325.09

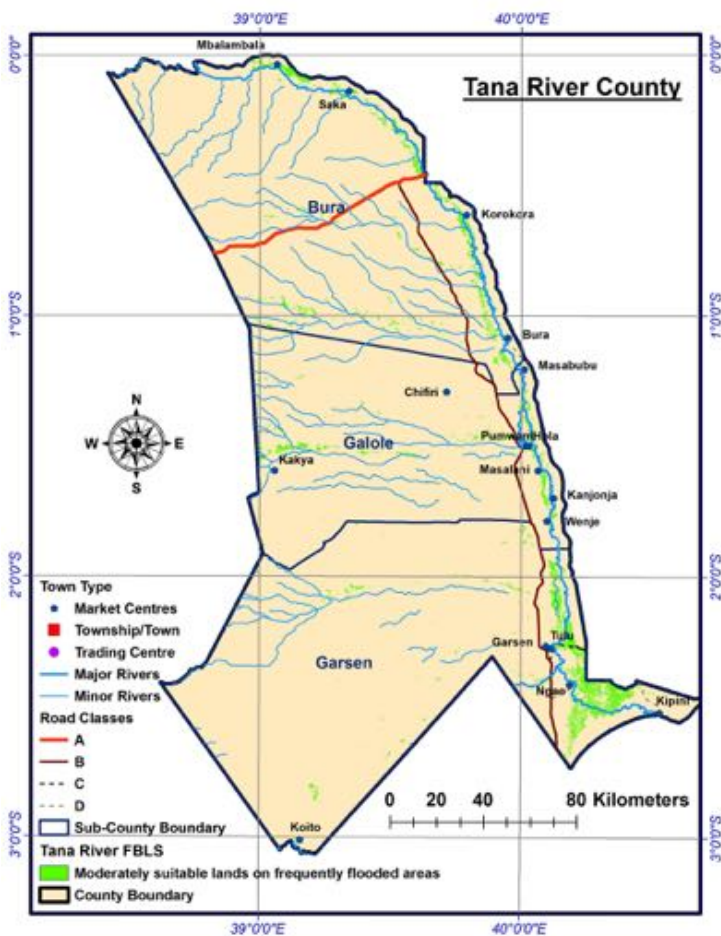


County	Area (Ha)
Tana River	94,616
Marsabit	66,406
Wajir	50,911
Garissa	46,185
Isiolo	38,878
Turkana	29,664
Kajiado	12,020
Lamu	11,687
Mandera	9,006
Kisumu	8,200
Total	367,574

Top 10 Counties account for 89% of the FBLS Potential

25 other Counties range 130 – 4700 Ha or Ave. 1145 Ha

Tana River County



Tana River	Area (Ha)	Investment cost SSI USD
Bura		
Moderately suitable lands on frequently flooded areas Galole	31,451	141,527,655
Moderately suitable lands on frequently flooded areas Garsen	17,076	76,841,460
Moderately suitable lands on frequently flooded areas	46,089	207,402,120
Total Area	94,616	425,771,235



Bura Irrigation and Settlement Project

Commercial? No

Type of project Irrigation Project (6,700 ha)

Products Mainly cotton and maize

Location Tana River County

Founder National Irrigation Board

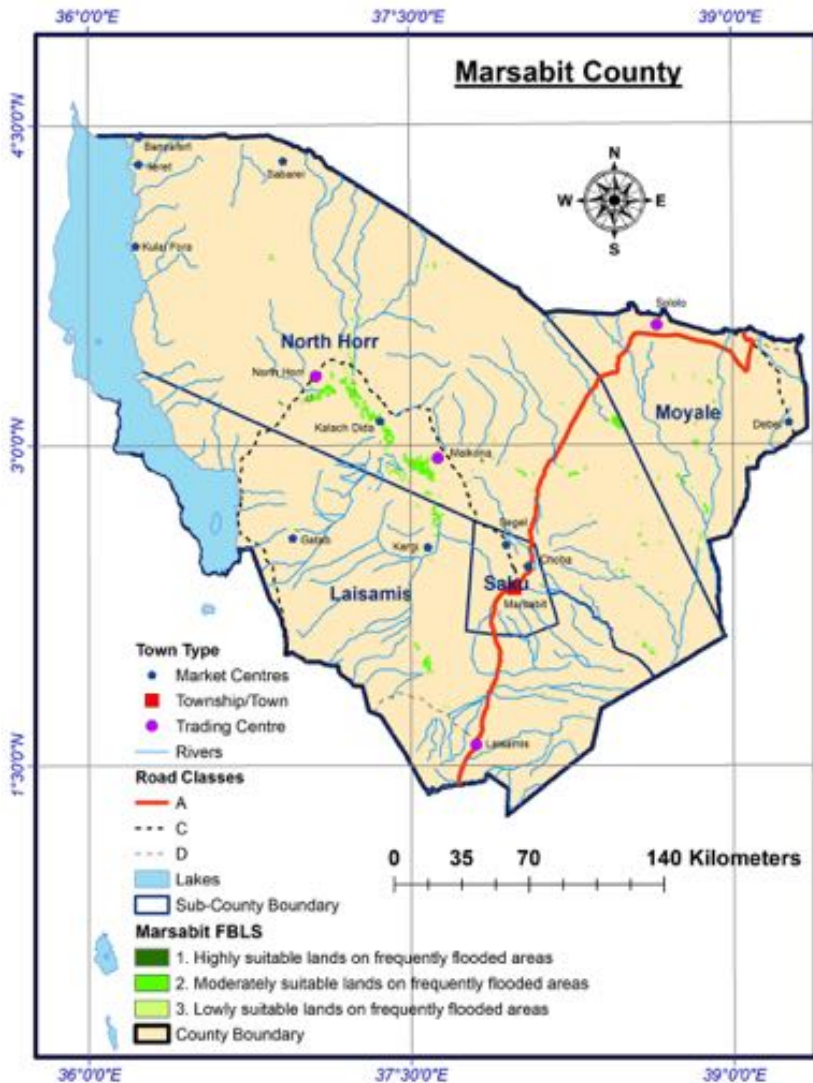
Country Kenya

Budget 766 million Kshs (development cost in 1977)

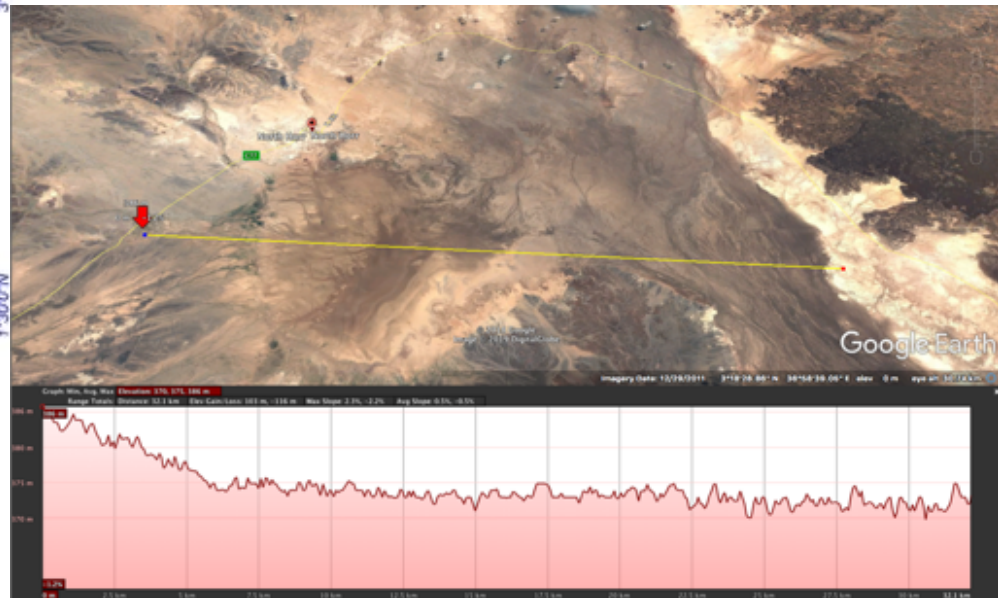
Status Operational under National Irrigation Board

KES 766 Million development cost for 6700 ha or KES 114,000 (USD 2850) per Ha in 1977.

Marsabit County



Marsabit	Area (Ha)	Investment cost SSI USD
Laisamis		
Highly suitable lands on frequently flooded areas	175.0	787,320
Moderately suitable lands on frequently flooded areas	8,823.2	39,704,175
Lowly suitable lands on frequently flooded areas	0.3	1,215
Moyale		
Highly suitable lands on frequently flooded areas	16.6	74,520
Moderately suitable lands on frequently flooded areas	6,729.7	30,283,470
North Horr		
Highly suitable lands on frequently flooded areas	1,635.1	7,358,040
Moderately suitable lands on frequently flooded areas	49,001.8	220,507,920
Saku		
Moderately suitable lands on frequently flooded areas	24.2	108,945
Total Area	66,406	298,825,605



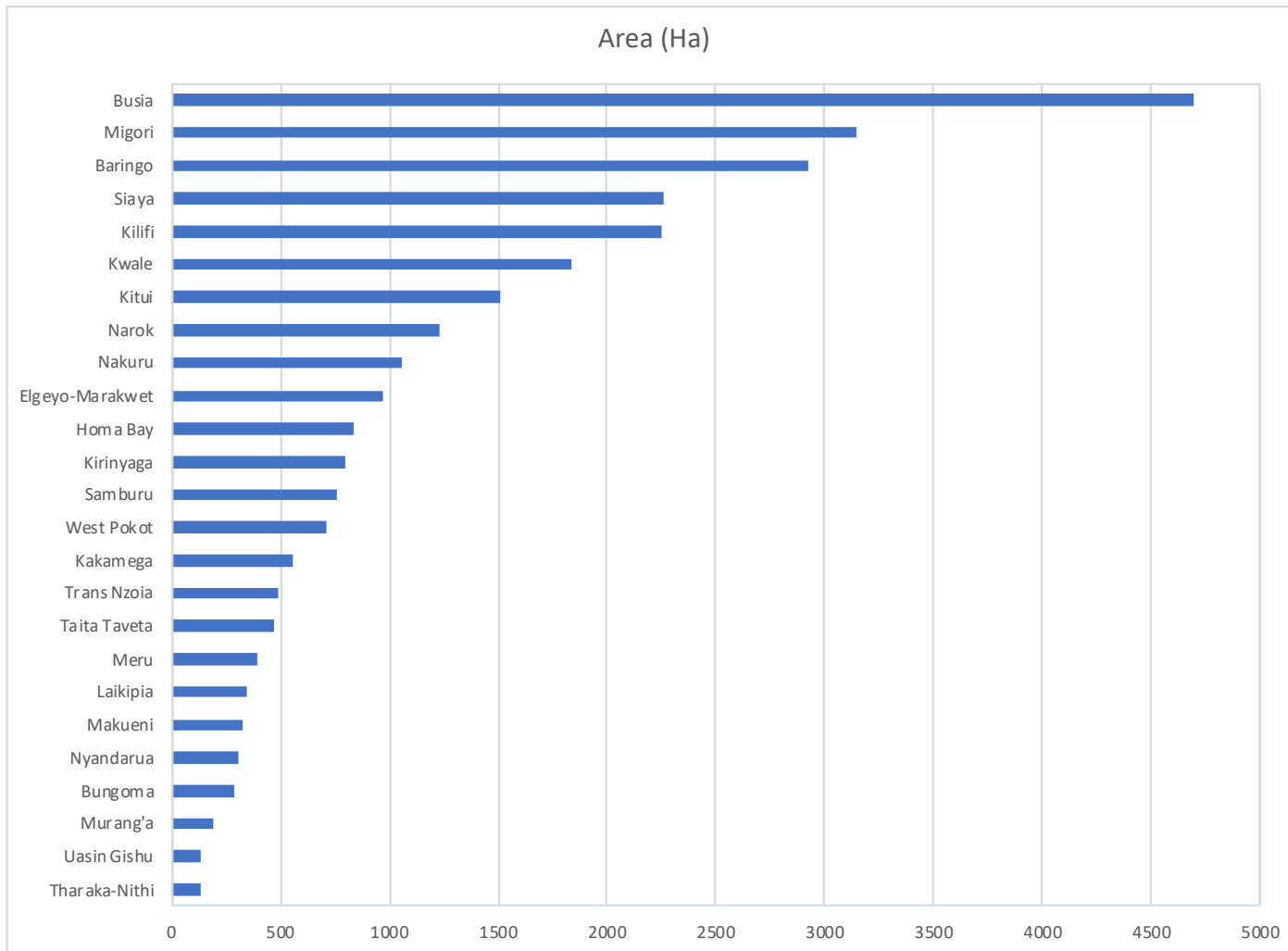
Kajiado County

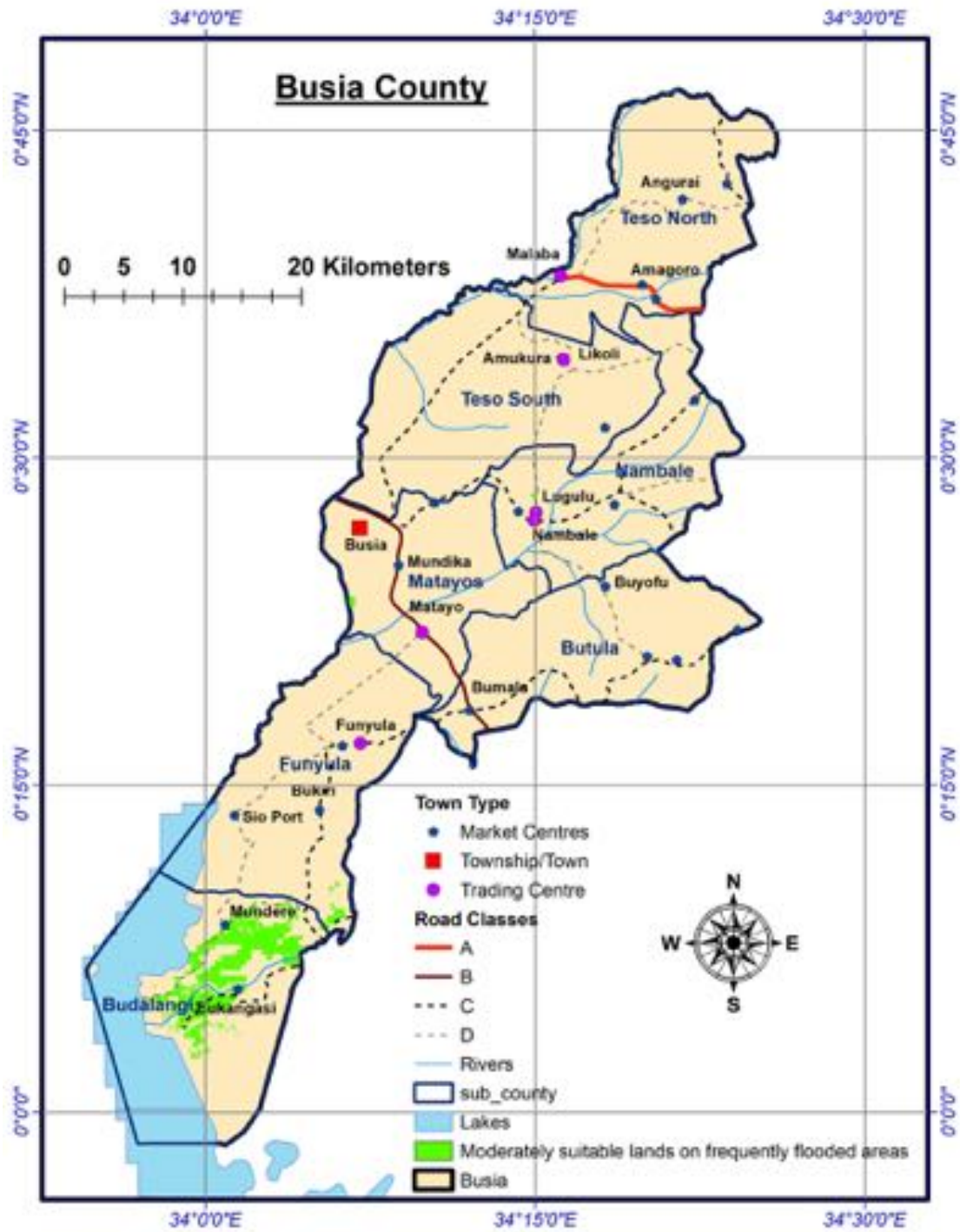


Graph: Min, Avg, Max Elevation: 1119, 1247, 1515 m
Range Totals: Distance: 64.7 km Elev Gain/Loss: 305 m, -672 m Max Slope: 6.5%, -6.5% Avg Slope: 0.8%, -1.1%



Other Counties with Potential for FBLS





Siaya County

- Moderately suitable lands on frequently flooded areas
- County Boundary
- Market Centres
- Township/Town
- Trading Centre
- Rivers
- Road Classes
 - B
 - C
 - D
- Lakes
- Sub-County Boundary



8/9/2018 1:17 pm

Surya's Number 845

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Google Earth

2001

Imagery Date: 8/9/2017 0°00'11.98" S 34°09'42.40" E elev 0 m eye alt 4.80 km

Conclusions and recommendations

- Potential for FBLS in Kenya is close to 400,000 ha
- Ninety percent of this potential lies in 10 out of 35 counties with potential for FBLS
- Tana River County leads with 94,616 ha and from 1977, GoK via NIB invested 776 Million KES to develop 6700 ha (7% of potential) at Bura irrigation scheme.
- Assuming the potential is fully developed for smallholder schemes , GoK would need 1.65 Billion USD for investment.
- Feasibility studies should be conducted at priority sites for piloting PPP investments in FBLS

Conclusions and recommendations

- Strengthen FBLS network – Kenya Chapter
- Create partnerships – PPP in FBLS
- Research: Monitor hydrology of floods
- Document wisdom from existing FBLS practice
- Enhance capacity: Curriculum for BSc., MSc. PhD.
- Youth empowerment through job creation in FBLS



THANK YOU

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