



SIO-MALABA-MALAKISI RIVER BASIN ,KENYA/UGANDA

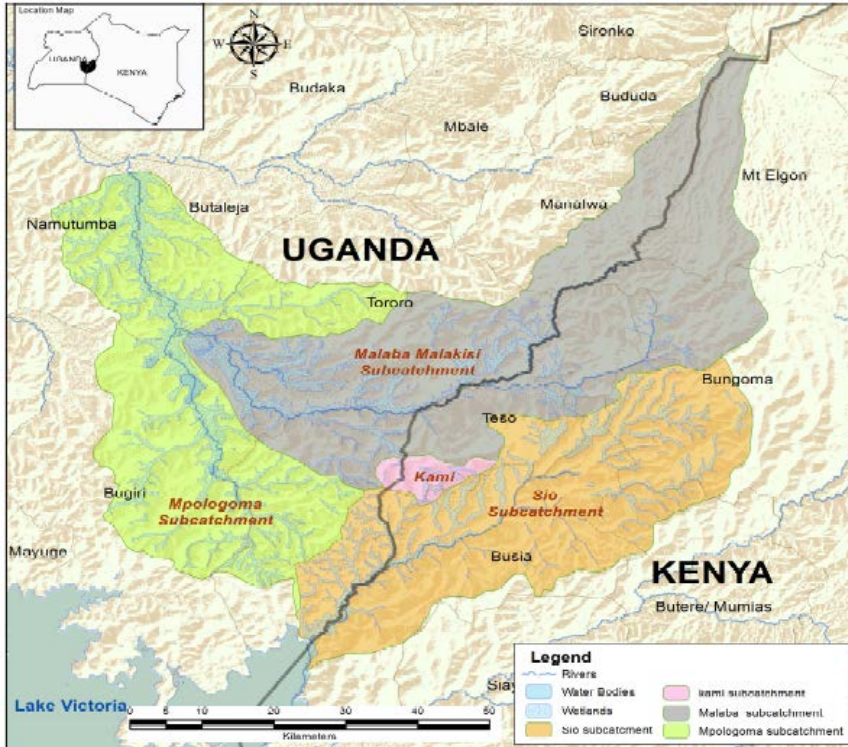
Basin Characteristics and Issues



Cosmus Muli



SMM Basin characteristics and issues



- Shared by Kenya/Uganda
- Population - 4 Million
- Malaba-Malakisi Catchment – 3782 km² (Mt. Elgon-Lwakhakha / Malakisi-Malaba/Manafwa-Mpologoma-L.Kyoga);
- Sio Catchment – 1448km² [Bungoma /Walatsi /Sio-Lake Victoria].
- Subsistence farming
- Poverty stress, population pressure, degradation of land and water resources

Project Districts

Kenya – Bungoma , Kakamega & Busia counties

Uganda – Bududa, Bugiri, Busia, Butaleja, Manafwa, Namutumba, Mbale, Pallisa and Tororo.

SMM Basin characteristics and issues

General climatology of the SMM basin

- The climate can be categorized as humid and sub-humid. The temperature, wind, rainfall and evaporation are modulated by the movement of the Intertropical Convergence Zone (ITCZ) with local modifications by the presence of Lake Victoria and topography of the area.
- Mean maximum temperature is about 27.5°C around low lying areas and about 5°C around the slopes of Mt. Elgon
- The climate on Mount Elgon is Montane with mean annual temperatures varying from less than 10°C at over 3,050 m elevation to 15°C at 2000 m elevation.

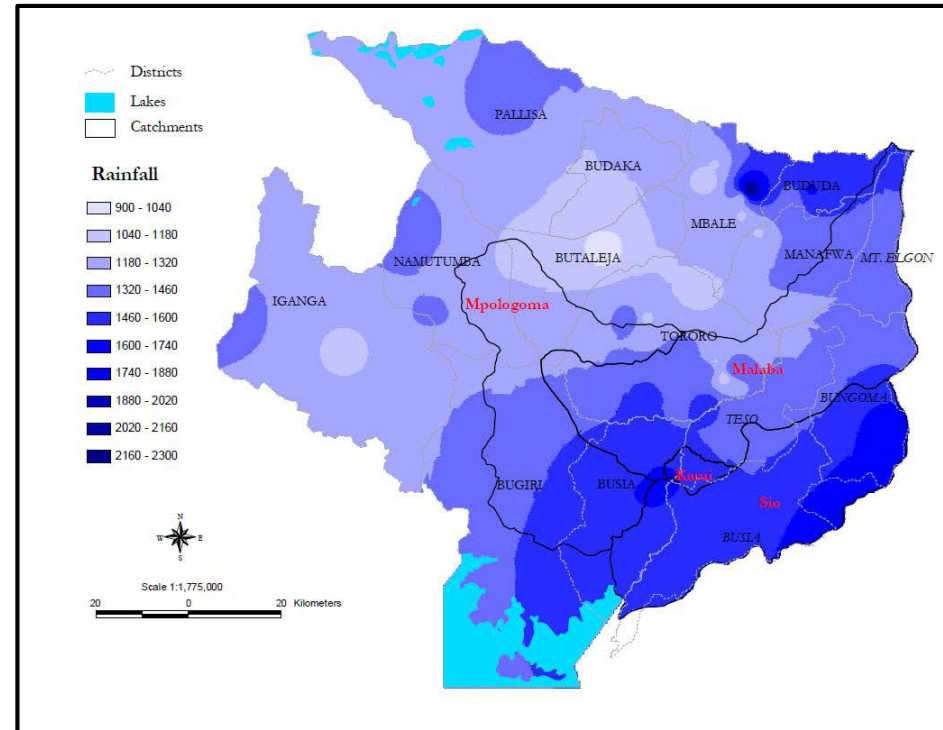
SMM Basin characteristics cont'

Evaporation

- Evaporation: av. 125mm; Max 175mm
- Maximum evaporation occurs in the dry months of January and December with limited variation within the year.
- Winds over the SMM catchment closely follow the pattern of the apparent movement of the sun across the equator through the Inter-Tropical Convergence Zone (ITCZ).

SMM Basin characteristics cont

- Along the shoreline- Busia in Uganda and Kenya, average annual rainfall ranges between 1,460 mm to 1,600 mm.
- Elevated areas around Mt. Elgon have average annual rainfalls of over 1,800 mm, while the valleys in Iganga and Butaleja receive lesser amounts ranging from 900 – 1,180 mm
- In the mountainous terrain, rainfall is of the orographic type where the windward side experiences heavy precipitation while lower lying areas tend to be drier.



SMM Basin characteristics cont'

Hydrology in the SMM basin

- The basin comprises of two major rivers; Sio, and Lwakhakha-Malaba-Malakisi.
- The rivers are trans-boundary in nature, with the headwaters of the Lwakhakha-Malaba-Malakisi being in Mt. Elgon while the headwaters of the Sio River lie south-west of Bungoma Town .
- The Sio River flows southwards discharging into Lake Victoria, while the Lwakhakha and Malakisi) merge to form Malaba, joins Mpologoma River – as it discharge into Lake Kyoga.
- Mean annual runoff , Sio: 10.3 m³/s; Malaba-Malakisi 17.0 m³/s
- The catchment is dominated by Mt. Elgon, with its highest peak at an elevation of 4,320 m amsl., while the lowest points are; Lake Victoria at 1 132 m , and Lake Kyoga at 950 .



SMM Basin characteristics cont'

Population

- The catchment area has a population of about 4 million people .
- Population density in most parts of the catchment is high, ranging from 150 to 600 persons/ (km²);
- Highest population densities exist in the northern Districts in the basin of both Kenya and Uganda (Mt Elgon) i.e. Bungoma West and South, Teso North, Bududa and Manafwa. Bungoma South which includes Bungoma town has the highest density of 613 persons/km²
- Population growth rate ranges from 2%–5%.
- Population growth is exerting pressure on the catchment natural resources-encroachment of gazetted forests and wetlands for additional agricultural land. unsustainable land use practices and mismanagement of water resources.

SMM Basin characteristics and issues

Land Use and Cover

- The main land use in the catchment is rain-fed subsistence agriculture. Virtually the basin outside the Mount Elgon forest area is divided into agricultural and grassland, fallow land, and isolated woodlots.
- Mount Elgon forest together with Busitema forest reserve in Busia district is the only substantial remaining natural forest.
- The highest areas of Mt. Elgon are covered by moorland and heather. Numerous small private woodlots are also widespread within the basin.
- Land use changes in the SMM basin and notably in the catchments of the Mt Elgon ecosystem have adversely changed the river hydrological flow regimes.
- This calls for concrete actions that will offset the poor land and WRM practices which are holding back productive activities and the performance of existing water infrastructure facilities.

SMM Basin characteristics and issues

Land Tenure and Ownership

- The average land holding per household within the SMM basin is 2.8 acres
- In Uganda, land ownership, management and control is regulated by the Land Act 1998, which recognizes customary, freehold and leasehold tenure type of land ownership.
- Kenya similarly has a wide range of land tenure including: leasehold freehold/ancestral or customary, and landlord/tenancy tenure. Customary tenure cuts across all the ethnic groups (Bagisu, Samia, Banyole, Basoga, Bagweri and Jopadhola in Uganda and Bukusu, Samia, Iteso in Kenya).
- Due to population pressure, farm sizes have considerably diminished, fragmentation into small units- <1.0 Ha - un economical for agricultural production. Encroachment of protected areas (wetlands , river banks), Urbanization etc

SMM Basin characteristics cont

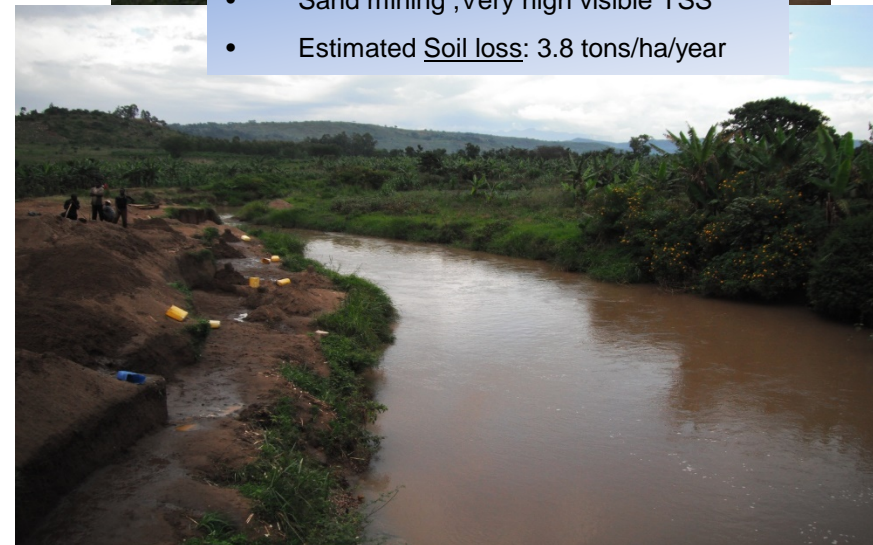
Water related issues

- The basin faces constraints primarily from deteriorating water quality/ water scarcity in parts of the catchments.
- Degradation of water resources and the widespread poverty of the inhabitants are linked.
- The key water related issues in the SMM catchment include low safe water and sanitation coverage, inadequate awareness of water resources related issues, water pollution (surface water / groundwater), deforestation, flooding, drainage of wetlands, excessive soil erosion, cultivation along riverbanks

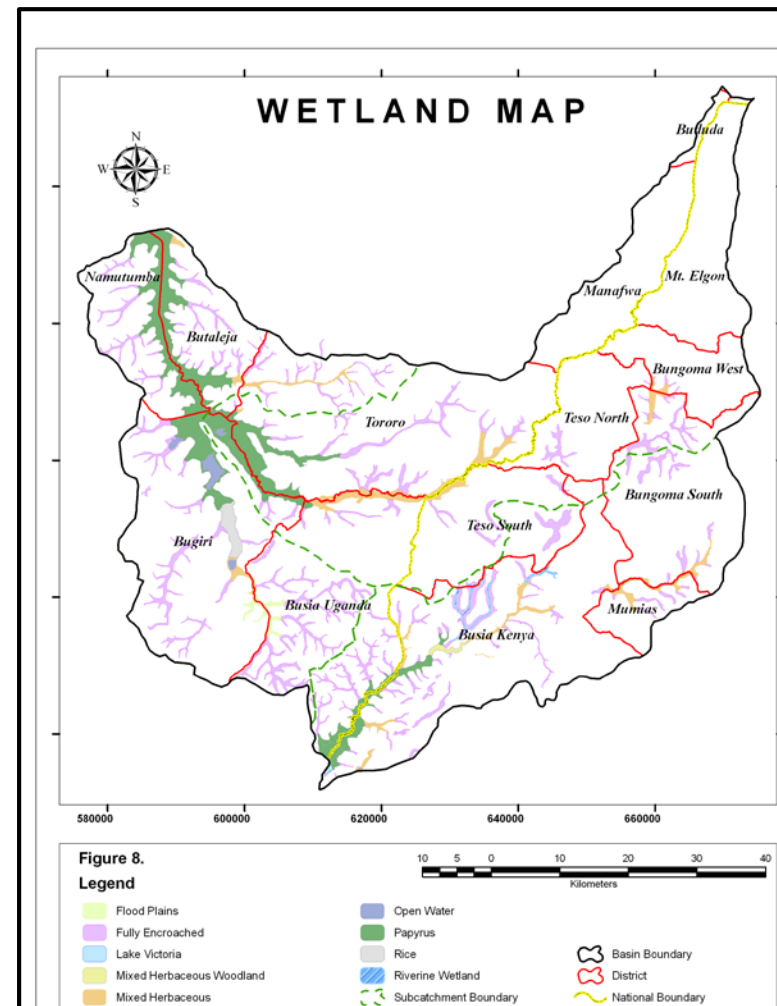
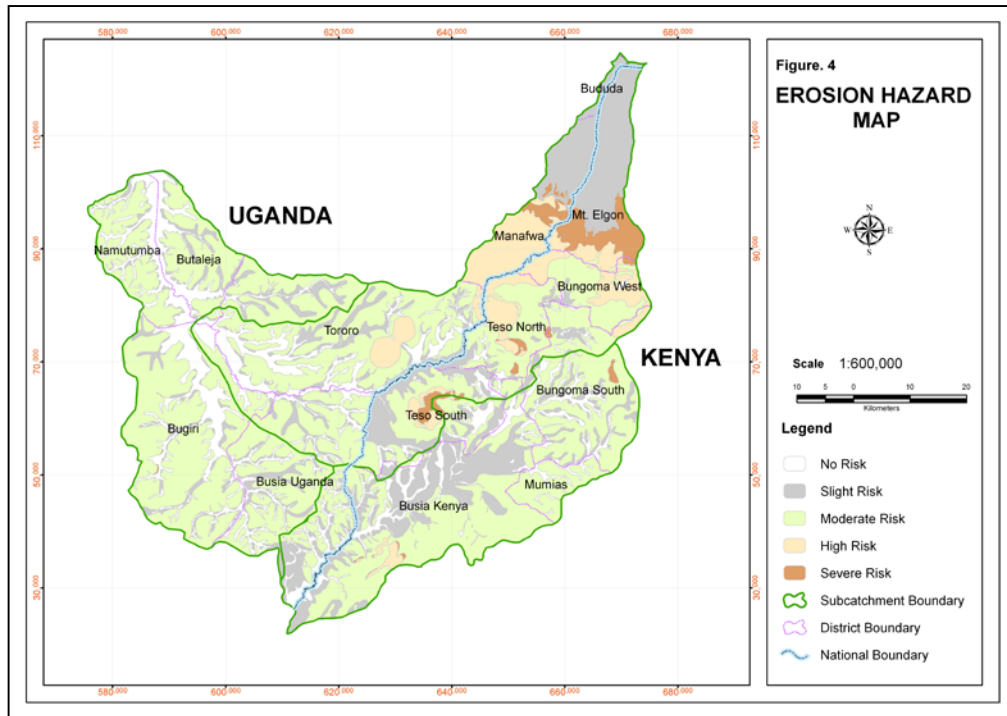
Sio River Downstream the Bridge Busia – Kisumu Road



- Sand mining ,Very high visible TSS
- Estimated Soil loss: 3.8 tons/ha/year



Degraded areas



In appropriate Waste Disposal and Solid Waste Management



SMM Basin characteristics cont'

Socio-economic issues

- The poverty levels are high ranging from 30% to 66%, with many of the rural population struggling to meet their basic needs (shelter, food, water, health and education).
- Close to 80% of the basin population lives in rural areas where food security and social well-being directly depend on the rivers and on the existing water resources.
- The main economic activities within the SMM basin include **agricultural & , Livestock production, fishing and aquaculture, commercial activities**
- Main Water users include -Irrigation, livestock ,fishermen , domestic water users
- Water related diseases are the most common causes of illness and deaths among the rural poor communities. cholera & dysentery are among the major killer diseases of young children,
- Gender inequality is one of the major causes of persistent poverty since women lack access to and control over resources and thus adversely impacts their productivity

SMM Basin characteristics cont'

Conflict Related Issues

- Potential for Conflicts over equitable access to land and water (land issues)
- The issues are being addressed through joint management of the shared sub catchments but also through National government diplomatic engagements



THANK YOU!

