

THE EFFECT OF DESTRUCTION OF KENYA WATER TOWERS AND RIVERS IN KENYA ON LAKE VICTORIA WATER LEVELS AND EAST AFRICA'S REGIONAL DEVELOPMENT.

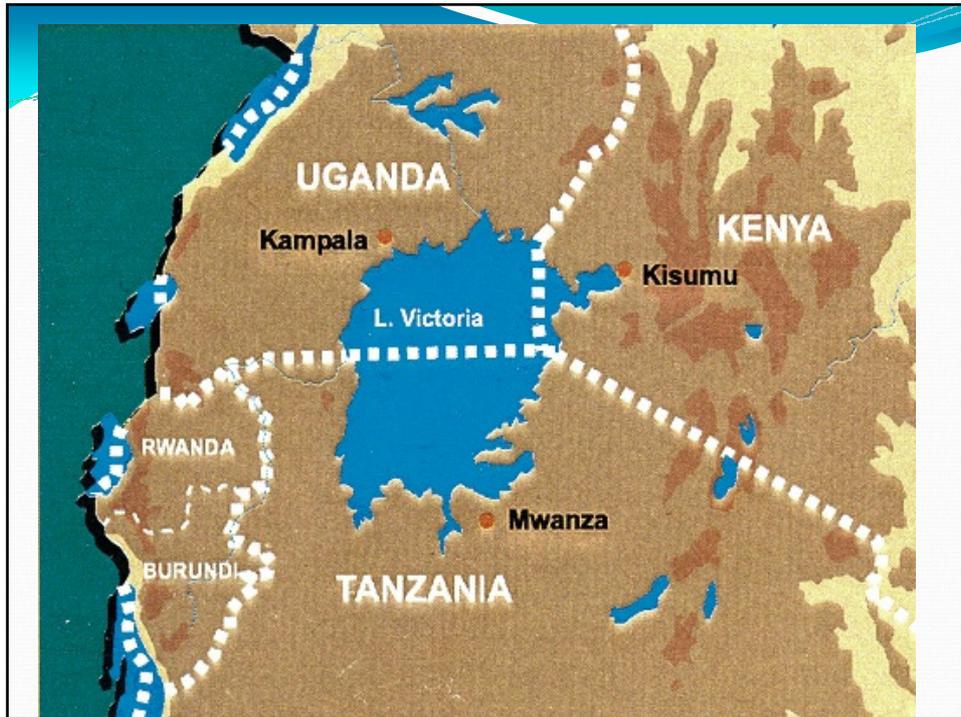
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Background

- It is the Second largest fresh water lake in the World and it is surrounded by three East African States: With 6% in Kenya; Tanzania 52% and Uganda 42%. It is Located at 0:21° North and 3:00° South of the Equator
- Lake Victoria has a total length of 3,440 kms and 240 kms wide from East to West and is 1,134 meters above sea level with maximum depth of 82m. Its surface area is 68,870 km², catchment area of 180,950 km²
- Generally shallow with maximum depth of 8 and mean depth of 40 meters






Average inflows and out flows of Lake Victoria

Type of flow	Flow (m ³ /s)	Percentage (%)
Inflows		
Rain over Lake	3,631	82
Basin Discharge	778	18
Out flows		
Evaporation from lake	-3,300	76
Nile River	- 1,046	24
Balance	+33	



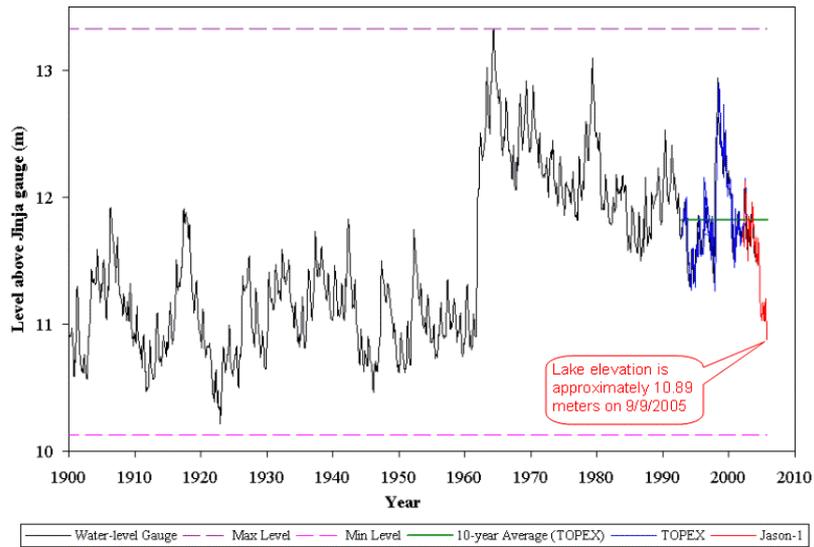
Sources of Lake Victoria from Kenyan water towers

- Sondu Miriu river
- Yala river
- Nzoia river
- Mara River
- Kuja river





Historical Water Level Elevations for Lake Victoria



Data Source:
 Historical water level gauge data from Jinja, Uganda (near Lake Victoria's outlet)
 Satellite radar altimeter data from USDS/NASA/UMD at:
http://www.pecad.fas.usda.gov/cropexplorer/global_reservoir/



U.S. Department of Agricultural (USDA)
 Foreign Agricultural Service (FAS)
 Production Estimates & Crop
 Assessment Division (PECAD)



Impacts and effects

- Changes in water budget are respectively accompanied by water level fluctuation and promote thermal structures which result in nutrient and food web dynamics.
- Studies have proved that there is a positive correlation between water level and fish landings (Williams, 1972) The abundant fish catches are highly correlated with rainfall and lake levels.
- The records show that the catches reduced to between 60% and 70% during the current reduction of water level in Nyanza Gulf.



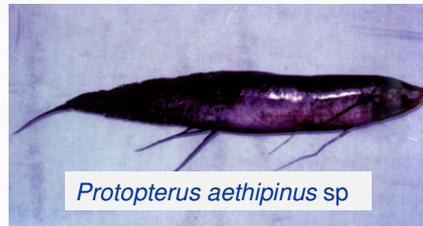
Labeo victorians sp



Schilbe mystus sp



Barbus altrialis sp



Protopterus aethiopus sp

Most affected species

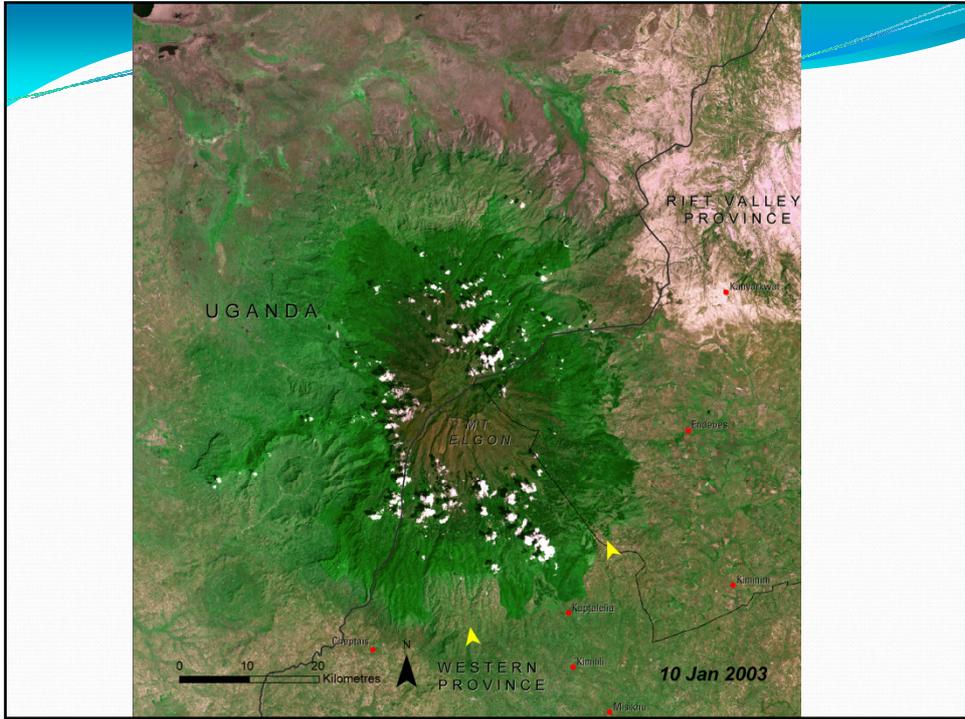
Reduced water level menace to landing



Further challenges

- Changes in water levels are due to climatic changes and human activities in the catchment.
- Increased pressure on land for agricultural use due to population pressure in the country
- Increased demand for water related usage for socio-economic development across the region. Kenya is exploring to move from rain fed agriculture to irrigation to help it maintain its food







Further challenges

- basket afloat. Tanzania is also exploring the same avenue for food security. Energy needs in the three East African countries is heavily pegged on water with Kenya having recently commissioned the Sondu Miriu power plant by damming the Sondu River one the major feeders of Lake Victoria. On the other hand Uganda also has constructed a second dam “ Bujagali falls dam” second to Jinja to expand its power grid.
- Shrinking job opportunities coupled with erratic weather patterns are pushing the locals to view the lake as the prime source of livelihood towers and Lake Victoria at East African region level
- Mobilization of resources to conserve the water



Recommendations

- Reduction of excessive use of river water for irrigation and industrial use.
- Supporting off grid renewable energy alternatives like solar and wind.
- Lake Victoria water levels are extremely sensitive to moderate changes in rainfall. There is urgent need for better management of the rain catchment areas in the basin. For instance through control of deforestation activities.
- Since a number of endemic cichlid flock (e.g. Haplochromines) have disappeared or are threatened with extinction; it is recommended that some gene bank should be kept in small water bodies close to the lake for future restocking.





Recommendations

- Reduce overloading of our rivers as the only source for hydro-power generation. We could Ocean Thermal Energy Conversion Technique (OTEC). The study should be conducted at Mbita causeway for possible building of flying bridge and construction power generating turbines for power
- Application of satellite in monitoring of Lake Victoria water level. The most authentic technique is the use of satellite ultimately named GRACE (Gravity Recovery and Climate Experiment).
- Monitoring of water level is done only at Jinja in Uganda. There should be a monitoring system developed for Kenya, Uganda and Tanzania. We should not only rely on Foreign Agricultural Service (FAS), a Global Reservoir Monitor, to inform us about the level of our lake.



Recommendations

- Communities can also be involved in measuring river water levels and even lakes. River water gauges can be manned by trained community volunteers.
- We should also be alert enough to worry about the stability of the rocks at bottom of the lake. The lake's seismic data should be generated to assist us predict its future stability. Although it has not been proved, the stability at the bottom can also lower the water level has it happened in Lake Tanganyika.
- EIA should be done to all major projects to be implemented in the Lake Victoria basin. The EIA should be discussed and accepted by all East African Countries before implementation begins

