

Regional High Level Policy Dialogue on L.Victoria at NEMA Offices Kampala, 7th June, 2023



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UGANDA

The EfD-MAK Centre



Established in 2018 at the EfD Global Hub's annual meeting in Hanoi, Vietnam

Launched on 29th August 2019 at Makerere University by the Vice Chancellor



Theme: Changes in Lake Victoria's hydrology, water quality, and livelihoods

Introduction:

- The Lake Victoria Basin (LVB) is a critical transboundary natural resource, underpinning the economy and livelihoods of the population.
- It acts as a waste repository and provides, food, energy, irrigation, drinking water, tourism and transportation to the economy.

Introduction...

- Being the source of the White Nile, the lake also supports the livelihoods of Egypt, Sudan and South Sudan and is the primary modulator of the region's climate.
- Despite its importance, the LVB has undergone intense environmental degradation for decades, resulting in significant ecological and economic challenges.

Introduction...

- Rapid population growth, agricultural expansion, urbanization, and industrialization have mounted extreme pressure on the lake and its basin's ecosystems.
- This has led to the degradation of lands, and the loss of wetlands and forests



Picture: Human activities and Degradation

Introduction...

- Insufficient monitoring and weak enforcement of regulations on illegal- and over-fishing activities have reduced fish stocks, which threaten crucial livelihoods and food security.
- Climate change has also affected the basin as temperatures have consistently increased between 0.1°C and 2.5°C, based on historical data from 1920 to 2013.

Introduction...

- The LVB and its inhabitants are vulnerable to the increasing effects of climate shocks, which would likely exacerbate its environmental problems.
- Water levels in the Lake are influenced by direct rainfall over the lake, runoff from the basin, evaporation from the Lake, and outflows into the Nile, the latter of which is currently controlled by more than one hydropower dam.

Introduction...

- Fish stocks are threatened by climate change due to warmer waters and pollution induced changes in water quality.
- Increased rainfall increases erosion due to the farming close to the shores and pollution, directly impact the lake's water quality.
- Changing temperatures introduce disease vectors into new areas and increase the risk of malaria and other vector-borne diseases for the basin's human population.

Lake Victoria's hydrology and pollution: Implications for water quality and biodiversity

- **HYDROLOGY: CASE OF FLOODS ON LAKE VICTORIA IN UGANDA**
- - During the period of late January 2020, fears of Lake Victoria bursting its banks started to be felt which later was followed by damaging of several landing sites and settlements as a results of floods.
 - This led to disasters that left almost half a million people homeless and property worth billions of money had been lost in Uganda, Kenya and Tanzania.

Hydrology: Case of Floods on Lake Victoria in Uganda...

- **The 3 Possible causes of the 2020 Floods:**
- **Climate change.**
 - From August 2019 to June 2020, Lake Victoria basin experienced an intensive and prolonged rainfall season caused by the Indian Ocean Dipole (Indian Nino) attributed to climate change.
 - This caused rise in water levels of major water bodies and floods in various parts within the basin.
 - The Lake Victoria water level rise started on 1st October, 2019 and by 30th April, 2020, it had reached a record 13.32m.

Climate change in Uganda...

- It was a sudden rise of 1.32m attained in just 6 months. (MWE Uganda, 2020).
- According to Eskom, Lake Victoria water levels had reached 13.42m by May 7th, 2020 irrespective of letting out a record volume of 2400m³/s at Nalubaale dam.
- With the only outflows being evaporation and through River Nile at Jinja, Lake Victoria water carrying capacity of 2424km³ was tested to the limits, hence the lake bursting its shores.

The water spilling at 2,400 m³/sec for both Nalubaale and Kiira HPS. Lake Victoria levels recorded 13.42m surpassing the highest recorded lake level of 13.41m on 12/05/1964 (Eskom Limited Photo, 07/05/2020).



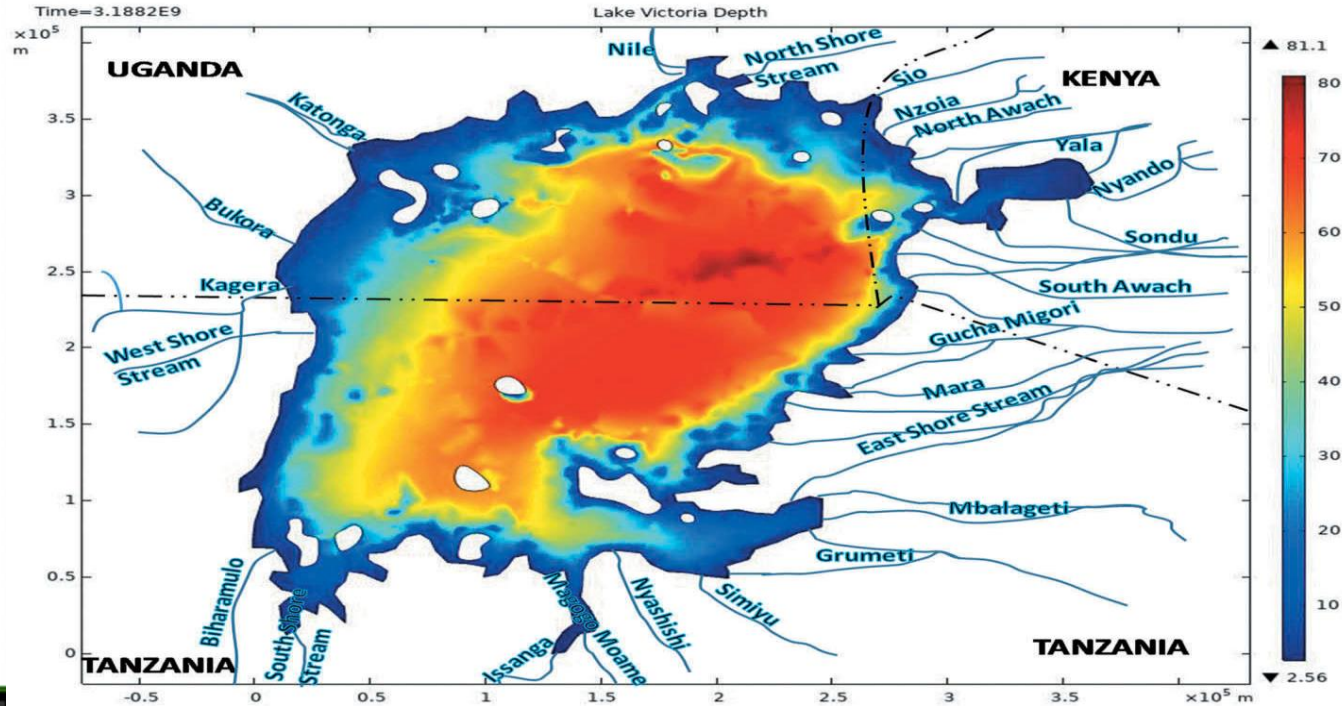
The 3 Possible causes of the 2020 Floods in Uganda:...

- **Lack of Regional Consensus on a Well-coordinated Policy of regulating Lake Victoria inflow and outflow.**
 - With approximately 23 major rivers, several minor rivers, drainage channels and a large catchment area, Lake Victoria main outlet is at Nalubaale dam in Jinja Uganda.
 - According to the East African Council of Ministers in May 2020, Uganda has been violating Regional Treaties of maintaining natural outflow volumes and refused to implement a Policy ordered in 2012 by EAC member states.

The 3 Possible causes of the 2020 Floods Uganda:...

- Whenever more water is needed to meet growing power demands, Eskom Uganda allows more water to flow out of Lake Victoria.
- Whenever rain falls heavily, Nalubaale has sufficient water, hence little water released in comparison to the lake inflow and as a result, lake water levels rise.

Map of the Lake Victoria with catchment areas showing lake depth, inflows, outflow, and surrounding countries.



The 3 Possible causes of the 2020 Floods in Uganda:...

- **Lake Sedimentation due to Catchment degradation and Buffer zone encroachment.**
 - The high loads of nutrients and sediments being transported into water bodies are a manifestation of degradation in the catchments of Lake Victoria basin (MoWE, 2018).
 - There has been progressive degradation of the catchment area through farming, deforestation, overgrazing, settlements and other income generating activities (Thuita et al., 2006).
 - This results in soil erosion and high sediments transport and other pollutants to the lake ecosystem due to the removal of buffering effect of the wetlands' macrophytes.

- Lake Sedimentation due to Catchment degradation and Buffer zone encroachment.



Pollution of the lake in Uganda

- In recent decades, some of the rivers and streams serving the lake and its near-shore areas have become particularly polluted by partially treated municipal waste, industrial effluents, urban surface contaminated runoff, and raw sanitary effluent from settlements.
- Most lake nutrients originate from organic and inorganic waste for intensive agricultural activities, municipality sewage, and livestock.

Pollution of the lake in Uganda ...

- Malfunctioning sewage plants discharge inadequately treated sewage into rivers and only to be discharged into the lake (Christopher et al., 2014).
- The agricultural and chemical industries discharge pollutants directly into the lake (Christopher et al., 2014).

Pollution of the lake in Uganda

- In Uganda, heavy metals originating from urban settlements and remote inland areas were identified.
- Food processing, textile, leather, paper production, and metallurgy industries in Jinja as well as pollution from Murchison Bay we observed to affect the near shore areas of Uganda's side of the Lake (Kabenge, Wang, and Li, 2016).

Pollution of the lake...



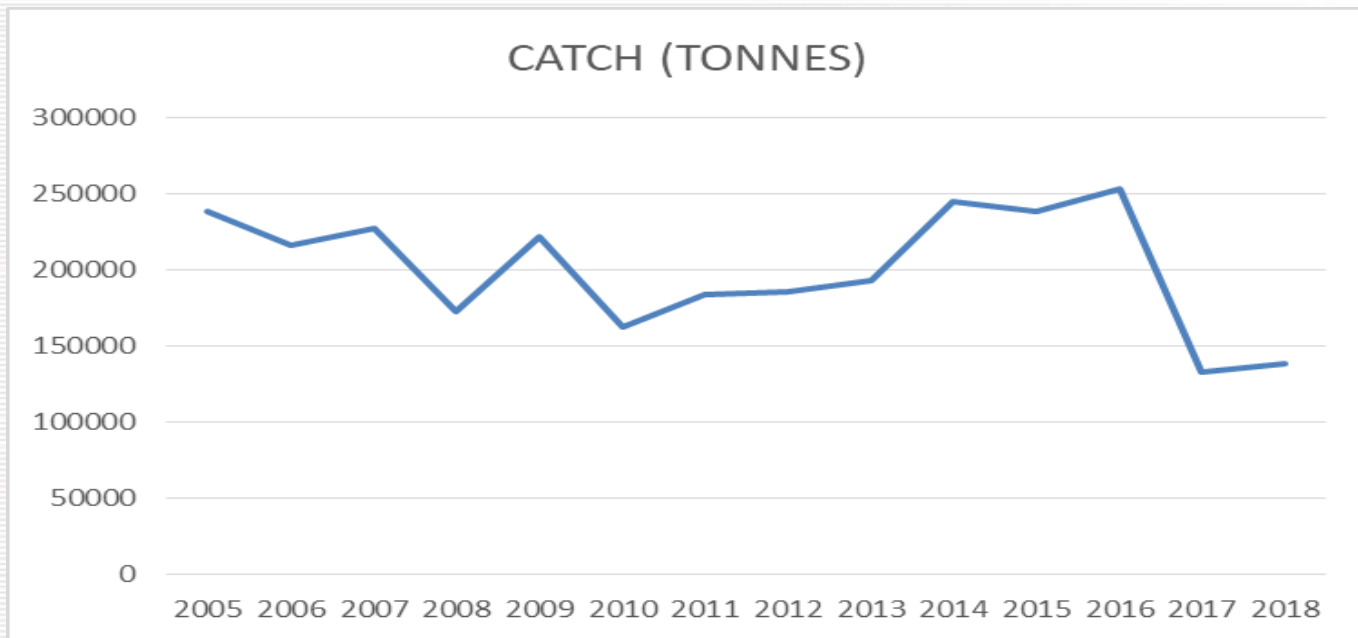
Sections of the lake covered by the water hyacinth. Nutrient enrichment of the Lake partly accounts for this.



Livelihood/Socio-economic Impacts of Changes in Lake Victoria Eco-system.

- **Declining fish biomass, catch and exports.**
 - Over years, the role of pollution on fish catch has always been underestimated. There is some evidence however, to suggest that the limnological characteristics of Lake Victoria affect the recruitment and survival of fish in the lake.

- Declining fish biomass, catch and exports.



Livelihood/Socio-economic Impacts of Changes in Lake Victoria Eco-system...

- **Infrastructure**

- Hydropower Generation.

- the rising water levels has caused dislodgement of papyrus mats from encroached shorelines which has caused fleets of large floating islands progressing towards the Owen Falls dam. An incidence happened when one of the floating islands chocked the turbines at the dam causing a National power blackout on 14th April, 2020.

Papyrus mats floating



- **Water Transport.**

- Transport on the lake for Islands' dwellers, traders and social workers got paralyzed after most of the docking points for Ships, ferries and boats got submerged below the new water levels after the raging floods





Submerged docking area for MV Ssese and MV Pearl Ferries which transport passengers and goods between Kalangala and Masaka Districts

- **Reduced business activity along the landing sites, poverty and unemployment plus high crime risks.**
 - Records from NaFFIRI showed that the Nile perch has declined from an average of 1.2 million tons between 1999 and 2007, to about 0.8 million in 2013.
 - The declining stocks of high value species affected fisheries activities and by 2017, over 13 fish processing factories had been kicked out of business due to the declining catch. As a result, hundreds of Ugandans were left jobless.
 - The declining stocks have therefore led to a drop in fishermen's' and traders' incomes. Furthermore, the 2020 rising water levels submerged most of the landing sites making livelihoods hard to sustain.

- **Health and gender related issues.**
 - The highest percentage of men have been fishermen and fish traders plus other small scale business owners, therefore the current situation has not spared them from the financial hardships of providing for their families.
 - However, most women too are low income earners depending on small businesses such as food kiosks, bars, market stalls, salons while others are house wives who depend solely on their husbands.



A woman carrying a jerrycan of water wades through garbage on shores of Lake Victoria in Bukakata, Masaka



A boy wades through a flooded lakeside market as the Lake burst through its shoreline (David Luganda, AFMC/NECJOGHA, May 12, 2020).

Questions for Policy Debate

- The current problems may threaten Lake Victoria basin for centuries if not well addressed at present. For example, all the major lakeside cities in Uganda, Kenya and Tanzania could lose access to Lake Victoria in as little as 100 years.
- So now, three basic questions must guide today's dialogue.
 - What is the environmental problem/issue at hand and its extent?
 - What are the possible causes?
 - What are the appealing sustainable solutions for the root cause, problem itself and possible after effects?

