

## **Increasing Water Levels on Uganda's Water Bodies Threatens Life and Infrastructure**

14<sup>th</sup> April 2020. It is a bright afternoon as Ugandans await the Presidential address on Covid 19 pandemic, most people kept watching televisions and a surprise befell them. The whole country runs in a blackout. No electricity." Power has been switched off right from Jinja at the electricity generation station", says the radio announcement.

Reason: Floating islands on Lake Victoria, water hyacinth and papyrus weeds clogged the out flow system of water from Lake Victoria through the turbines at Nalubaale dam on River Nile causing a nationwide power blackout. For many urban households that had stocked food in refrigerators, power outage meant food would rot to waste, many would have no electricity to light up their homes in the dark, those that preferred working from home due to the COVID 19 pandemic lock down would not be able to power their computers any more, while hospitals without generator and solar backup systems would have more emergency cases referred to bigger hospitals while factories would grind to a halt because there would be no power to move machines. A horror like scenario engulfed many.

No electricity, increasing water levels, no water transport due to high water levels, stern standard operating procedures of the COVID 19 pandemic lock down made many people grin at life. The floating islands seemed to have put a stop at the main power wheel that turns things around in Uganda.

Jinja is the mouth of Lake Victoria that pours water to the River Nile system. According to the National Environment Management Authority (NEMA Uganda), suddes and floating islands break into plots of about 4 to 12 acres and flow downstream towards the dam clogging the oldest power generation facility in Uganda since 1954.



*A submerged health facility in Ntoroko District along Lake Albert in Western Uganda*

According to Dr. Calist Tindimugaya from the Ministry of Water and Environment, water levels have been rising “The rise in the lake water levels began in October 2019 and significantly rose higher from 12.00 meters to 13.32 meters by 30th April 2020. The 1.32 meters rise was noticed in only 6 months but by September 2020, it had further risen to the height of 13.42.”.

Government of Uganda instituted a multi sectorial technical team from the Ministries of Agriculture Animal Industry and Fisheries, Uganda Peoples Defense Forces, ESKOM, Ministry of Water and Environment and Umeme to track the flow of the suds and flush them through Kira, Bujagali and Isimba power stations respectively.

An increase in the release of water from Lake Victoria through Jinja from a rate of 1000 cubic meters of water per second to a release of 2,200 cubic liters of water per second as a measure to get rid of too much water flowing from Lake Victoria.

### *How the atmosphere affects water levels in water bodies*

The warming of the climate system is unequivocal therefore when the atmosphere and oceans warm, the amounts of snow and ice diminish and sea level rise. The uptake of additional energy in the climate system is caused by the increase in the atmospheric concentration of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases (GHGs). CO<sub>2</sub> concentrations have increased by 40 percent since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions. It is thus extremely likely that human influence has been the dominant cause of the observed warming since the mid-twentieth century.

The ocean has absorbed 93% of this additional heat and sequestered 30 % of the emitted anthropogenic CO<sub>2</sub>. Over the period 1901 to 2010, global mean sea level also rose by 0.19 m. Aquatic systems that sustain fisheries and aquaculture are undergoing significant changes as a result of global warming and projections indicate that these changes will be accentuated in the future. A range of scenarios for atmospheric concentrations of GHGs are used to model and project future climates; most of these scenarios indicate that a large fraction of anthropogenic climate change is irreversible for centuries to come even after complete cessation of anthropogenic CO<sub>2</sub> emissions.

In many regions, climate change is affecting precipitation and melting of snow and ice, altering hydrological systems and affecting water resources in terms of quantity and quality. Projections show that rainfall is expected to increase in equatorial areas and decrease elsewhere. Temperature of water bodies is increasing across the globe, which results in more pronounced stratification of the water column, with more dramatic consequences for freshwater systems than for oceans because of their shallowness and lower buffering capacity.

Human activities including cutting down trees, cultivation along river banks and wetlands contribute a lot to breaking the soils that eventually when submerged in water break off and float.



*Houses submerged due to rise in water levels on Lake Victoria*



*Emily Arayo (Writer) left stands with victims of increased water levels at Kikondo Landing Site in Buikwe district - Uganda*

### *What causes the floating islands and suds to move down stream*

The prolonged heavy rains across East African region from 2019 to 2020 has led to an increase in the Water levels leading to flooding in most areas as well as dislodging of fragile land close to water bodies. This is further propounded by environmental degradation by cutting down trees, massive cultivation leading to soil erosion and faster flowing velocity of water to water bodies without due filtration processes. "Wetlands have been destroyed, so water gushes straight to the Lake, without any slow

processes of filtering. Apart from the huge water volumes entering the Lake, the silt is equally huge", says Kato Musoke a Fisherman at Masese landing Site in Jinja .

Shoreline communities will face the brunt of this incidence more if there are continued rains from October to December. Low lying areas in Kenya, Tanzania and Uganda will lose infrastructure such as houses, transport facilities for docking and bridges, beach facilities, markets will be swept off.

Kisima Island in Jinja is affected by increased water levels and residents of this Island have been forced to flee. At Masese and Rippon landing sites in Jinja, residents have vacated the shoreline areas to avoid drowning and disease spread. At least 500 families were displaced around the Ugandan shores of Lake Victoria.

On a broader side of the climatic changes and weather patterns affecting East Africa as a region, the positive Indian Ocean Dipole (IOD) that caused warmer Sea temperatures in the western Indian Ocean region causes a higher than average rainfall and flooding in East Africa. It is recorded that the 2019 IOD has been the most extreme event in the past 40 years. The 2015 Paris Climate Agreement recognizes the need for effective and progressive responses to the urgent threat of climate change, through mitigation and adaptation measures, while taking into account the particular vulnerabilities of food production systems.

### *Lake Victoria, Lake Kyoga, Lake Albert and the River Nile System*

Lake Victoria received an increase of 13.42 cubic liters of water in as short a time as one year. This water moves down stream to Lake Kyoga through River Nile, through Lake Albert and to the Albert Nile as it flows out of Uganda to Sudan and Egypt paving its path to the Mediterranean Sea.

"An increase in water levels in Lake Victoria means an increase in water level downstream", says Akiteng Rose an Environmentalist from Soroti district one of the communities of Lake Kyoga. The rise in water levels has affected recreational areas, home steads, social places, farm lands and transport on water bodies. Ntoroko district on the shores of Lake Albert has been hit by the rising waters and most landing sites are submerged. Kaiso landing site in Hoima district has lost most of its infrastructure to the flooded lake shoreline.

It is projected that by 2050 humans will face the challenge of having to provide food and livelihoods to a population likely to exceed nine billion people. This challenge is well reflected in the United Nations Agenda 2030 for Sustainable Development, a global commitment to end poverty and hunger and to ensure that economic, social and technological progress occurs in harmony with nature, through the sustainable management of natural resources.

An additional consideration to the above challenge is that it will have to be met at a time when the effects of climate change will be increasingly prominent. The two cannot

be separated and, indeed, the 2015 Paris Climate Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) explicitly recognizes the fundamental priority of safeguarding food security and ending hunger when taking climate action. One of the novelties of the Paris Climate Agreement is the inclusion of a long-term adaptation goal - to increase the ability to adapt to the adverse impacts of climate change and foster climate resilience in a manner that does not threaten food production alongside the goal for mitigation. It also notes that the level of adaptation needed will be determined by the success of mitigation activities. T

Immediate effects of increasing water levels are displacement of communities close to the water body, rise in water borne diseases such as diarrhoea, cholera and skin diseases. However, later effects include reduction in phytoplankton production which is a process at the base of the marine food web, controlling the energy and food available to higher tropic levels and ultimately to fish. Changes in breeding sites for fish and changes in colour of water affect fish breeding and spawning because the waters are not clear for the female fish to find their mates.



*Communities have lost life and infrastructure due to increasing water levels on Lakes*

*Article by Emily Arayo Arineitwe from Uganda Coalition for Sustainable Development (UCSD)*

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Take climate action.**

A row of logos for various organizations, including the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Environment Programme (UNEP), the African Union, the African Development Bank (AfDB), the African Union Commission (AUC), the African Union Commission (AUC), the African Union Commission (AUC), and Sustainable Energy.

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