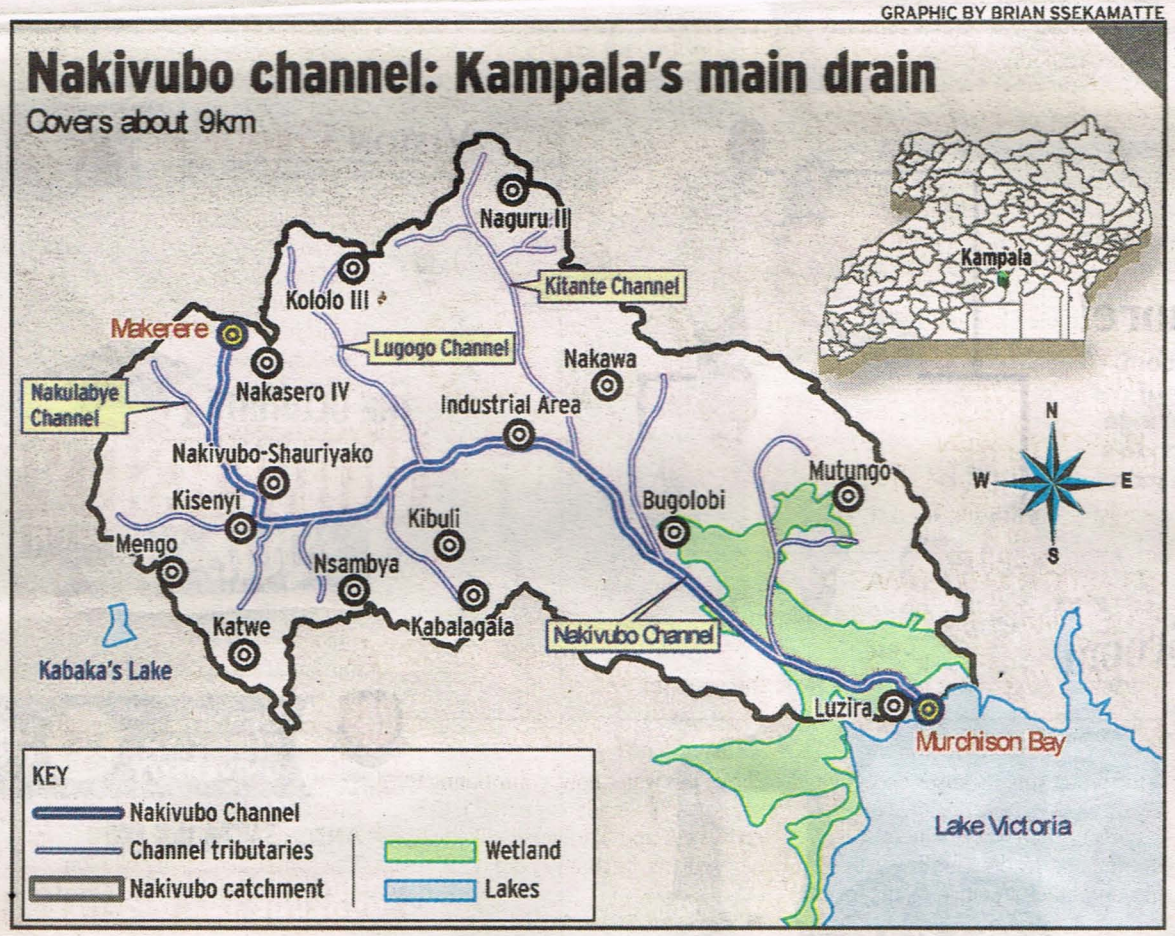
ENCROACHMENT ON NAKIVUBO CHANNEL

SERIES

Lake Victoria is the world's largest tropical freshwater lake and a lifeline for millions in three countries that share it – Uganda, Kenya and Tanzania. These countries depend on Lake Victoria for fishing, transportation, water supply, agriculture and hydroelectric power. It's also a critical resource for biodiversity and supports millions of people living around its basin. However, an investigation by *Weekend Vision* has revealed that the future of the lake is worrying as, pollution, illegal fishing and human activity are choking its waters, destroying breeding grounds and depleting fish stocks. It is for these reasons and more that Ugandans will vote for leaders who will save Lake Victoria in the upcoming general elections. This investigation looks at the crisis and what should be done to save the lake before it's too late, **writes Herbert Musoke.**

A KCCA worker trying to open a blocked Nakivubo drainage channel after a heavy downpour

GRAPHIC BY BRIAN SSEKAMATTE



Nakivubo Channel and Lake Victoria share an umbilical cord. It is not surprising that plans to redevelop the Channel have drawn an outcry as experts warn that the city could be courting disaster. The nine-kilometre drainage artery, which doubles as Kampala's cheapest wastewater treatment system, is set to be covered, which critics say could trigger floods, worsen pollution and cripple Lake Victoria's ecosystem.

The warning comes against a backdrop of persistent misuse of the city's drainage network. In April, 26-year-old Ronald Katende, was arrested after being recorded dumping garbage into a drainage channel during a heavy downpour. He pleaded guilty to throwing waste in a non-designated place, contrary to Section 97(4) of the National Environment Act. Katende's case is not isolated; he represents hundreds of Kampala residents who routinely dump waste into channels, which eventually ends up in Lake Victoria.

Much of Lake Victoria's pollution, especially during the rainy season, originates from Kampala's catchment area, spanning about 27 square kilometres, according to Naomi Karekaho, the head of communications at the National Environment Management Authority (NEMA).

Reports from Kampala Capital City Authority (KCCA) reveal that the city generates 2,000 tonnes of garbage daily, yet only half of this is safely disposed of. The rest is scattered in communities, eventually finding its way into drainage systems.

"The biggest percentage is brought by Nakivubo channel. It collects waste from the entire catchment and drains it into Lake Victoria," Karekaho explains.

NAKIVUBO CHANNEL: KAMPALA'S MAIN DRAIN

Stretching approximately 9km from Makerere Hill to Murchison Bay in Lake Victoria, Nakivubo channel snakes through slums, such as Makerere-Kivulu and Kisenyi, bustling markets, such as Kisekka and St Balikuddembe, as well as industrial zones. It is the city's primary drainage system, fed by secondary channels including Nakamiro, Katanga, Nsooba, Kiyanja, Kawaala, Kiwunya and Kinawataka.

Before reaching the lake, the channel passes through Nakivubo wetland, which originally was approximately 5.29-6.0 square kilometres.

However, according to a paper on spatio-temporal analysis of encroachment on wetlands; a case study of Nakivubo wetland, 62% of the wetland was lost between 2002 and 2014, mainly through human activities of cultivating yams and sugarcane, as well as settlement, compromising its natural filtration capacity.

Nakivubo channel is an open sewer. It carries untreated sewage, human waste from slums, industrial

SNUFFING LIFE OUT OF LAKE VICTORIA

chemicals, heavy metals and solid waste, including plastics, into Lake Victoria.

Figures from the National Water and Sewerage Corporation show that only 10% of Kampala's population is connected to the main sewer grid. Of this, 46% of sewage is untreated, ending up in channels like Nakivubo.

Dickson Katende, a fisherman at Luzira, Portbell landing site, showing the smelly green algae on the lake in April

THE POLLUTION IN NAKIVUBO CHANNEL

The deputy executive director of the Advocates Coalition for Development and Environment (ACODE), Onesmus Mugyenyi, says Nakivubo channel is a sewage tank for Kampala dwellers.

"It's no longer a drainage channel, it is a sewage channel carrying rain-flood water from the city and household waste, a reflection of chaotic urbanisation as very few households are connected to the main national sewage system," he says.

Mugyenyi adds that Nakivubo channel primarily damages the lake by acting as the main conduit for untreated industrial waste, sewage, solid waste, (especially plastic and kaveera) and urban runoff. The main pollutants include:

■ **Fuels and oils**: In several garages and workshops along Nakivubo channel, such as Kiseka market, New Taxi Park, Namuwongo and others, mechanics drain waste oils and fuel in the channel. Also, along Nakivubo swamp, people have established washing bays, but use the channel as a dumping area for waste.

■ **Chemical contamination:** The channel transports heavy metals, such as zinc, copper, cadmium lead and pharmaceutical compounds from industrial and urban areas into the lake. These toxins accumulate in fish and plants, creating health risks through the food chain.

■ **Biological pollution:** Karekaho says it is a known practice in Kampala and the neighbouring communities through which the channel passes and the minor ones that feed into it that when it rains, dwellers open their latrines, causing high concentration of faecal coliforms, escherichia coli and hookworm eggs in the area. This is the reason for the continued outbreak of water-borne diseases, such as cholera and typhoid fever, especially during the rainy season.

■ **Eutrophication:** The high nutrient load from sewage and agricultural runoff causes excessive algal bloom, which depletes the water's oxygen levels when they decompose, leading to the death of fish and other aquatic organisms.

■ **Plastic and solid waste:** It is estimated that over 294 million micro-plastic particles are discharged into the lake daily from the channel due to the reckless actions of individuals who simply throw away plastic water and soda bottles, which end up in the channel. Such waste choke the water flow, contributing to silting and degradation of the lake's ecosystem and biodiversity like fish, amphibians, birds and plankton.

■ **Wetland degradation:** Encroachment has stripped Nakivubo Wetland of its natural filtration role, allowing pollutants to flow unchecked into the lake. This is not an isolated problem. It reflects a much bigger crisis -- the rapid disappearance of wetlands across Uganda.

A 2021 report to Parliament revealed that wetland cover dropped from 16% in 1994 to 9% by 2016, warning that at this pace, all wetlands could vanish by 2040.

This loss has direct consequences for Lake Victoria, which depends on wetlands such as Nakivubo to filter pollutants before they reach its waters. Without these natural buffers, untreated sewage, industrial chemicals and solid waste flow freely into Murchison Bay, the lake's critical inlet for Kampala's water supply.

Wetland destruction is "a critical environmental crisis," Elyse Nzohabonaye, an aquaculture officer at the Lake Victoria Fisheries Organisation, says. He explains the destruction of wetlands is turning natural filters into disaster zones and threatening fisheries and livelihoods.

KCCA spokesperson Daniel Muhumuza NuweAbine adds: "We have evicted encroachers from Lubigi and continue to protect other swamps, such as Kaliddubi, Kansanga and Kinawataka. But this fight isn't for NEMA alone; it's everyone's responsibility because the impact affects us all."

ENVIRONMENTAL AND HEALTH IMPACTS

The consequences of pollution in Nakivubo channel are severe. The channel contributes 75% of nitrogen and 85% of phosphorus discharged daily into Murchison Bay. These nutrients trigger eutrophication, where water becomes overly enriched with nutrients, primarily nitrogen and phosphorus, leading to excessive growth of algae and aquatic plants, causing algal bloom. These deplete oxygen levels, blocking sunlight, and also release toxins that directly poison fish, leading to mass die-offs and economic damage to fisheries.

Karekaho warns that pollution threatens public health and the economy. Blockages caused by algae forced the relocation of Kampala's water treatment plant from Luzira to Katosi in Mukono, which started from 2018 and was completed in 2021.

A study by Joseph Ssebwana Katende of Makerere University, 2021, published on the Makerere University website, found elevated levels of heavy metals, including lead, arsenic and cadmium in yams grown in Kampala wetlands. These metals are linked to the damage of organs, such as the liver and heart in humans and animals.

Continued on page 10

Nakivubo channel main pollutants

FUELS AND OILS:
Workshops where mechanics repair motorcycles and cars, pour oils and fuels in the channel

Chemical contamination:
Heavy metals (zinc, copper, cadmium, lead) and pharmaceutical compounds

BIOLOGICAL POLLUTION:
Dwellers open their latrines causing high concentration faecal coliforms, Escherichia coli and hookworm eggs

EUTROPHICATION:
The high nutrient load from sewage and agricultural runoff

PLASTIC AND SOLID WASTE:
It is estimated that over **294 million** micro-plastic particles are discharged into the lake daily from the channel

REGIONAL IMPACT

A regional water quality sampling exercise on Lake Victoria jointly conducted by Kenya, Uganda and Tanzania in June, revealed that over 40 million people who depend on Lake Victoria for food, water, and livelihoods across the region were facing expanding disaster. The exercise assessed the extent and sources of pollution in the lake and examined the distribution and impact of invasive species, such as water hyacinths.

A total of over 44 sampling stations were covered across nine key locations: Mwanza, Bukoba, Entebbe, Jinja, Busia, Kisumu, Homa Bay, Musoma and Kirewe.

The initiative, led by the Lake Victoria Basin Commission (LVBC) and supported by GIZ under the EAC4Nature project, was successfully concluded on July 16. It aims to generate credible, science-based data to guide environmental conservation strategies and policy-making in the region, providing a detailed snapshot of Lake Victoria's chemical, physical and biological state to support a more informed and effective management of one of Africa's most vital freshwater ecosystems.

From page 10

POLLUTION OF NAKIVUBO CHANNEL THREATENING PUBLIC HEALTH

NAKIVUBO CHANNEL REDEVELOPMENT: A DOUBLE-EDGED SWORD

In August, businessman Hamis Kiggundu started the re-development of Nakivubo channel by widening and closing it. He said whereas the channel's width was six metres, redevelopment will widen it to 12 metres as the engineers projected that it will draw water for 50-70years. Nakivubo channel is Kampala's primary sewer artery, carrying stormwater, raw sewage and industrial waste from slums, pit latrines, and leaking pipes during rainstorms.

According to Eng. Dr Apollo Buregyeya, a lecturer in civil and environmental engineering at Makerere University, this mixture flows into Nakivubo swamp before reaching Lake Victoria.

For decades, the channel and its adjoining wetland have served as the city's most effective and cheapest wastewater treatment system. Papyrus zones naturally filter pollutants, removing up to 75% of nitrogen and over 80% of phosphorus, before water enters Murchison Bay, helping to reduce the risk of eutrophication.

Cities such as Nairobi in Kenya and Lagos in Nigeria learnt this lesson the hard way; sealing natural channels led to devastating flash floods and public health crises. Kampala risks facing the same dilemma. Uganda has already lost over 60% of Nakivubo's wetland vegetation in two decades. Each hectare lost reduces resilience to floods, disease and pollution.

"Every concrete slab poured without proper treatment is debt to the next generation," Buregyeya cautions. Mugyenyi says covering the channel could solve social challenges such as crime and aesthetics, but unless the underlying waste management issues are addressed, it will only create new risks. "If you close the channel without addressing the clogging, siltation, irresponsible dumping and disposal, definitely you will have new challenges emerge," he says.

Ronald Namugera, the registrar of Engineers Registration Board, allays fears on the designing of the channel. "When designing such facilities, we don't do so for today, we design for 50-100 years. Here, we look at the carrying capacity, the size of the channel and silt settlement areas," he says. The developers of the channel argue that redevelopment promises to mitigate flooding, improve sanitation and boost economic activity, potentially positioning Kampala as a smart city.

Nakivubo swamp under fresh invasion, with new structures continuously cropping up

What party manifestos say

■ **NRM's Promise on Environment and Natural Resource Management**

While highlighting the National Resistance Movement's (NRM) promise on environment and natural resource management in his Manifesto, President Yoweri Museveni said Uganda's prosperity and the well-being of its people are closely linked to the sustainable management of the country's abundant natural resources. As a nation blessed with forests, wetlands, vast water bodies and diverse ecosystems, Museveni noted that in order to maximise returns, there is need to grasp the importance of the environment and water usage.

In terms of dealing with this aspect, he said NRM's development trajectory depends on its stewardship of this invaluable heritage.

"The NRM continues to invest in the provision of clean water, sanitation, and hygiene (WASH), as well as protection of our environment. Our target is for every Ugandan to have access to water, sanitation and hygiene," he noted.

Currently, seven in every 10 households have access to clean water, and within a walkable distance of not more than 500 meters, according to Museveni. He says over the last five years, significant strides have been made in managing our natural resources.

"We have increased the country's forest cover to 13% from 9.5% in 2015, and a crackdown on illegal encroachment and unsustainable practices has led to the restoration of crucial buffer zones around major water bodies," the Manifesto notes. Museveni adds: "We promise that NRM will strengthen regulation and enforcement against the degradation of our environment, including protection of our water bodies, develop and upgrade 479 high-yielding production wells with solar packages, drill 5,000 sustainable hand-powered boreholes and install 2,060 environmentally friendly and sustainable solar-powered boreholes to increase safe water coverage in the country."

■ **NUP's Promise on Environment**

In National Unity Platform's (NUP) Manifesto priority seven, candidate Robert Kyagulanyi, while highlighting the issue of safeguard cultural and environmental heritage, noted that if elected into office, his government will protect culturally significant sites, forests, wetlands and biodiversity hotspots from commercial exploitation.

"We will ensure displaced communities retain access to cultural, spiritual and natural resources," he noted.

GOVERNMENT EFFORT

Recognising the urgency, Prime Minister Rt. Hon. Robinah Nabbanja recently directed Kampala Capital City Authority executive director Sharifah Buzeki, in collaboration with the Solicitor General, to draft a law for managing garbage at household level.

"We want a permanent solution to garbage management, starting with Kampala," Nabbanja said. "Much of Uganda's waste is organic, making it easy to convert into fertiliser and other useful products."

Environmental experts agree that garbage management alone isn't enough. Karekaho calls for a multi-pronged approach that includes catchment-based interventions, which is a holistic strategy to manage environmental issues within the lake's boundary involving collaboration between government, businesses, communities and landowners, for benefits, such as flood reduction, improving water quality and ecosystem health.

In addition, experts want a strict waste management strategy that is comprehensive and highly regulated to handle waste, prioritising waste prevention, resource recovery and rigorous enforcement of environmental laws to protect public health and the environment, as well as enforcement of environmental regulations.

"Pollution of Nakivubo Channel doesn't just threaten Lake Victoria's ecosystem; it endangers Kampala's water supply and the health and livelihoods of communities living around the channel."

This investigation was done in partnership with the African Centre for Media Excellence

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WHAT OTHERS SAY

Anita Ainomugisha, a senior environment assessment officer at NEMA: The authority is undertaking impact assessment for major projects in sensitive waterside and aquatic areas along Lake Victoria and other projects, such as Kingfisher Project located on the shores of Lake Albert, Isimba Hydro Power Plant and on River Nile in Kamuli, among others.

Dr Wassie Anteneh, a senior blue economy and fisheries expert, agriculture and environment division at IGAD: The growing challenge of plastic pollution of Lake Victoria should be tackled with a national and regional prevention strategy. Are these plastics going after single-use? Obviously, they go to the watershed. We are not reprocessing as such. The plastic pollution prevention strategy will strongly encourage a circular economy. We strongly encourage the implementation of a source-to-sea management system.

Gracious Aguta, a conservationist working with the water and environment ministry in Lira: There are many factories near Lake Victoria, which are degrading the lake through filth discharge. These people should be stop discharging directly into the lake. They should construct the pits where these residues are first recycled before entering the lake.

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