

# Shared Water Ecosystems in context of the changing climate; The Current Condition, Challenges, and Policy Options



POLICY BRIEF | SIAYA COUNTY



budgetary allocation and associated challenges and gaps will promote sustainable management of this precious resource.

## Methodology

This study adopted a mixed methodology comprising of literature reviews of secondary data, and primary data collection through Key Informant Interviews and Focus Group Discussions.

## Findings

### a. Shared water resources in Siaya County

Surface water resources in the county include rivers, streams and lakes while the underground waters are those drawn through boreholes and shallow wells. Key among these are rivers, lakes, streams, springs, swamps, wetlands, dams and pans, underground aquifers as well as rainfall. The rivers include Nzoia, Yala, Sio, Hwirow, Uludhi, Nyamonye, Wuoroya, Sese, Dhenge and Seme Awach while the lakes are Victoria, Kanyaboli, Sare and Namboyo. River Nzoia is a 257 km long river rising from Cherangani Hills in Trans Nzoia County and flowing into Lake Victoria near the town of Port Victoria. The river is the second biggest river in Kenya by discharge, with a discharge of 118 m<sup>3</sup>/s or about 3,721 million cubic meters annually. On the other hand, River Yala is a 219km long river rising from Nandi Escarpment in Nandi County and flowing into Lake Victoria through the Yala Swamp. The river joins the Nzoia River forming the Yala Swamp. The wetlands include Yala swamp, Kalenjuk, River Sio wetland while the springs include Odino springs, Kadedo, Kowino, Kajuok, Kagilo, Lwero and Komoro. Some of the streams include Ndate, Arongo, Mawira Sianda, Nyasanda, Lwala, Nyanga, Agwata, Kawere, Nyabenge, Lwanda, Nyandiek, Odhuro, Nyanyo, Opindo Nyandori, Muhuru, Busonga, Kochilo and Wuoroya.

### b. Condition of shared water ecosystems in Siaya County

#### i. Direct and indirect pollution

The study established that water resources in Siaya are facing significant pollution. For example, River Yala experiences high turbidity before it gets to the swamp. The river is exposed to different polluting agents from both artificial and natural activities. The study revealed that among human activities that pollute the river is poor fishing methods such as use of poison to kill fish for ease of catching them. There is rampant trend of households along the natural water bodies discharging their domestic wastes such as human defecation and disposing bodies of dead animals into them. Chemical pollution from agricultural activities such as use of inorganic fertilizer, pesticides, herbicides and fungicides also contribute

## Executive Summary

Water is key to our survival, especially in this triple planetary crisis of climate change, pollution and biodiversity loss. The current climate situation makes sustainable water resource management and conservation even more critical. Water is both a National and County Government function according to the constitution of Kenya. Siaya County enjoys water supply from major natural sources including rivers Yala and Nzoia, and Lake Victoria. To name a few, pollution, riparian encroachment, inadequate forest cover and limited financial resources are some to the challenges facing sustainable water management in the County. A study conducted by Econews Africa examines the state of utilisation, management and conservation of shared water ecosystems in the County. It further identifies the gaps and challenges, and proposes possible policy responses.

## Introduction

Water is essential in counties' capacity to respond to climate change. This study was sanctioned to generate knowledge on the state of shared water ecosystem management in Siaya County, and expose gaps and challenges hindering sustainable water management and conservation in the County. The study's findings and recommendations are essential in equipping decision-makers with evidence-based policy options to enhance sustainable shared water ecosystem management in Siaya County. Understanding the water conditions, governance,

greatly towards river pollution. The study established that there is industrial discharge into R. Yala from the sugar factories located at its upstream. Such factories (Mumias and West sugar companies) empty their industrial waste and effluent into the River. Moreover, the study revealed that River Yala and Nzoia have over time faced pollution from dead human bodies thrown in the rivers.

### ii. Encroachment of the riparian areas

There is significant human activity in the buffer areas of the rivers and streams. These are mainly economic activities such as land tilling, clearing the riparian forest species, grazing, among others. This has accelerated siltation, sometime changing the flow and course of some streams. The study further noted that riparian encroachment being accelerated by planting of Eucalyptus trees in riparian land thus draining the water.

### iii. Effects of Mining

Mining activities have also deteriorated the condition of water resources - mainly rivers and streams. There is unregulated sand mining in River Yala and Nzoia as well as rampant gold mining in the rivers and streams. Some miners dispose various litter and materials such as clothes and plastics into the water bodies.

### iv. Fluctuating water levels

Rivers Yala and Nzoia have satisfactory water levels but they are prone to fluctuations depending on rainfall intensity. These rivers can sufficiently sustain water supply and agricultural activities, as long as there is continuous feeding from upstream. However, these rivers flood during heavy rains, leading to displacement of people, and interference with food systems. Further, the

study found that about 10 irrigation schemes had been submerged due to rising sea levels of Siaya County 's lakes.

## c. Conflicts emanating from shared water resources

The study identified a number of water resource conflicts in the County. Firstly, there is the conflict between residents and the government which arises from riparian land encroachment.

Secondly, there is an issue of individuals who have claim ownership to the land on the buffer areas and deterring others from accessing the water points. For example, in an FGD conducted at the upstream of River Yala, one of the discussant pointed out that *"People with the land along the riparian zone have cultivated all the available space that leads to the river without leaving the access road for the other people to use while going to fetch water.....creating disputes."*

Thirdly, there is conflict between the community and the county and national governments over water resources. An example is an ongoing court case between some residents along the midstream of River Nzoia in the county and national government. The standoff started when the government concluded a deal to acquire their land and use it for dam construction without proper participation and compensation.

Finally, there are also many boundary related conflicts between individuals bordering the rivers and streams. This conflict occurs majorly in the aftermath of floods which makes identification of the plot boundaries difficult. This has catalyzed land disputes and grabbing.



Figure 1: Sand mining at Usonga in River Nzoia

#### d. Best Practises in water usage and conservation in the County

The study identified some best practices used in the County in bid to promote sustainable management and conservation of water. They include;

- Manual irrigation
- Controlled fishing at Yala swamp and at the lakes
- Drip and Canal irrigation in agricultural plots
- Mulching to promote soil moisture conservation
- Increased rooftop rain water harvesting
- Controlled sand mining
- Designated water drinking points for livestock
- Construction and use of Water pans and dams
- Demarcating riparian lands and planting trees along river banks
- Construction of gabions and contours to control erosion
- Digging terraces to absorb washed away soils and prevent them from getting into the rivers
- Planting drought resistance crops which do not require irrigation
- Use of Several boreholes and wells as alternatives water sources to reduce the stress on the other sources.

#### e. Weaknesses in water resource governance, water allocation and administration procedures

Lack of a county and sector-specific legislation on water resource governance is one of main challenges facing water resource governance in the County. The Siaya County Water and Sanitation Bill of 2018 makes provisions on regulation, conservation, management and protection of the county's water resources. However, without enactment, these remain mere aspirations.

Further, there is lack of clarity on whether Siaya County has any cooperation arrangement with rivers Yala and Nzoia's upstream counties on the sustainable management of the rivers. There is also ambiguity on the extent of the mandate of County and national institutions with regards to water storage and irrigation.

Additionally, the county does not have a policy on the management of community owned/managed water schemes. There is also a lack of monitoring systems on the functionality of rural water supply.

In terms of allocation, although the county has made considerable strides towards water supply using water tanks, there are community concerns that water points are not central, and that some people have to walk long distances to access these water points. The study also established that there is slow response to water leaks and pipe bursts.

#### f. Policy and institutional frameworks

##### The Water Act, 2016

This is Kenya's principal law on water resource governance and management. It requires County governments to appoint Water Service Providers to serve as licensed water operators. It also establishes regional water works development agencies which have a significant impact on water resource management at the counties.

##### Siaya County Water and Sanitation Bill, 2018

The County does not have a sectoral law dedicated to water resources as the Bill is yet to be enacted into law.

The Bill confers upon the Executive Committee Member the mandate to formulate a water policy for the county, and to formulate cross-sectoral coordination plans with departments in the county and in the national government.

The Bill creates a Siaya County Water and Sanitation Services Board whose mandate would include provision and management of water and sanitation services, development of county water infrastructure, ensuring adequate water supply, managing works for water conservation, and developing infrastructure for storm water control. The Board will also be the body in charge of licensing the County's water service providers.

The Bill further provides for the development, restoration and protection of riparian buffers, and pollution control.

##### Siaya County Spatial Plan (2018-2028)

The Siaya County Spatial recognises the County as environmentally fragile, and places emphasis on environmental and natural resource conservation, and integration of climate change and environmental issues in planning. The plan proposes that the County develops a Water Resources Development Strategy to aid in the attainment of the 2030 sustainable development goals. It also proposes creation of buffers to protect underground and surface water sources.

##### Siaya Bondo Water and Sanitation Company

This is the County's Water Service Provider and is in charge of water and sanitation services in the County. It is a limited company established under the Companies Act.

##### Lake Victoria South Water Works Development Agency

This is a key institution in the County's water sector, being one of the 9 regional water work development agencies created under Kenya's Water Act of 2016. The Agency is in charge of developing and maintaining sustainable water and sanitation infrastructure with the region. The Agency has a Service Provision Agreement with SIBOWASCO.

#### g. Budgetary allocation

Water ecosystems and resources are financed under the Water, Irrigation, Environment and Natural Resources sector.

To understand budgetary allocation to the sector, the study examined the County's fiscal strategy papers between the FY 2016/17 and FY 2020/21. The analysis showed a fairly stable budget allocation trend, with no steep declines or increases. However, in some of the FYs analysed, the actual budget allocated was less than the estimated budget, as shown in *figure 2*.

Primary data indicated that this was because the part of the estimated budget was diverted to other priority areas in the County .

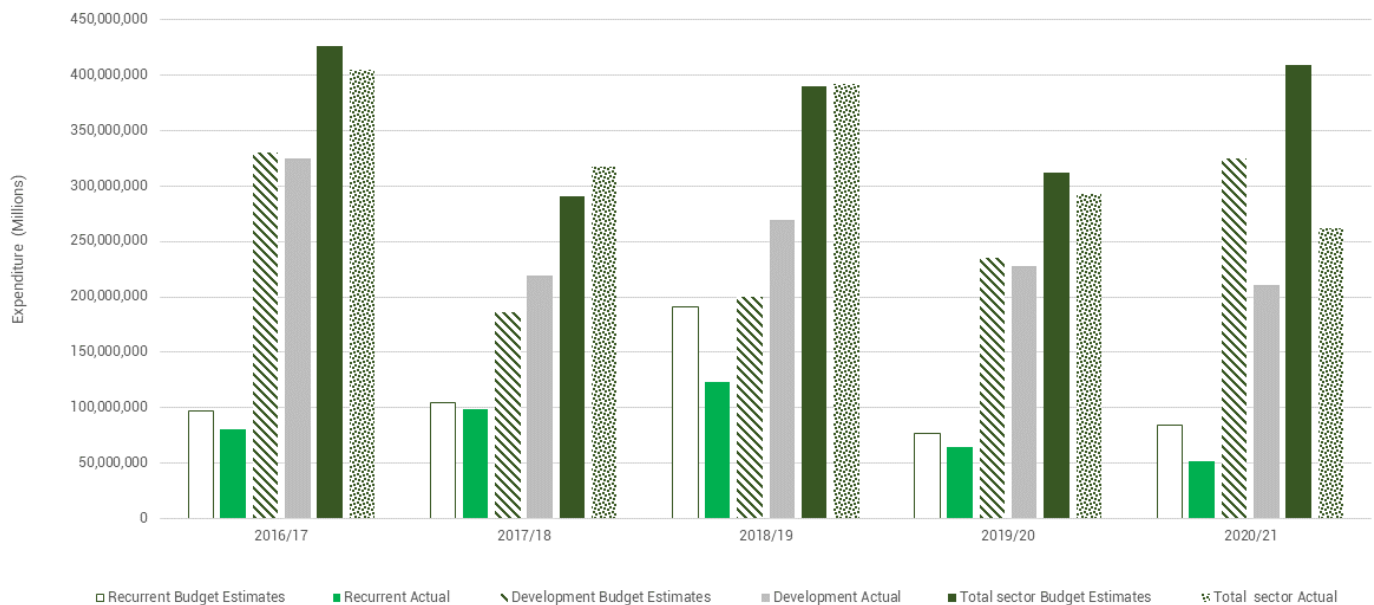


Figure 2: An Analysis of Expenditure on Water, Sanitation and Natural Resource (KES Millions) | Data Source: Siaya County Fiscal Strategy Papers, 2016-2021

### h. The disjuncture between indigenous and modern practices in water resource management and conservation

The study established that indigenous methods promoted sustainable utilisation and conservation of water resources in the County. These practices included:

- Planting of indigenous trees such as neem trees in riparian land
- Construction of terraces to prevent eroded soils from getting into rivers
- Riparian areas with biggest indigenous trees were used as cultural and spiritual grounds, hence highly respected and protected
- The community elders took leadership of ensuring respect and protection over shared water ecosystems such as rivers and streams
- Community practiced pure organic farming devoid of any harmful chemicals

### Policy Recommendations to the County Government

#### a. Sustainable water resource management

- Promote the planting of indigenous trees like Neem, as opposed to eucalyptus trees in order to conserve water and raise groundwater levels
- Promote and incentivise organic farming to reduce pollution from agricultural chemicals
- Introduce initiatives promoting protection of riparian areas of the rivers and streams as well as restoration of groundwater recharge or catchment areas
- Promote and encourage water reuse and recycling
- Construct more dams
- Develop and enforce strict solid waste management measures to address river pollution from human and industrial activities
- Encourage construction of deep pit latrines

- Construct dykes along the major rivers to avoid flooding during heavy rains
- To prioritise and encourage reforestation to maintain water catchment areas.

#### b. Budgetary allocation

- Resource mobilisation to increase funding for the sector's projects.
- Leverage on public private partnerships to encourage private sector investment in the sector.

#### c. Policy and institutional framework

- In collaboration with the Senate fast-track the enactment of the County Resource Development Bill of 2021.
- Accelerate the enactment of the Siaya County Water and Sanitation Bill in order to actualise the proposed law's objectives on water resource conservation.
- Come up with cooperation initiatives to ensure cross-County sustainable management and conservation of rivers Yala and Nzoia.
- Clearly define the extent of County institutions' mandate in water resource management and conservation.
- Put in place a framework on the management of community managed water schemes
- Integrate business and human rights approach in the water sector given the heavy presence of private sector/corporations running the affairs.
- Develop a Water Resources Development Strategy as proposed in the County's Spatial Plan.

#### **d. Indigenous knowledge**

- Embrace and incorporate indigenous and traditional water management and conservation knowledge into its policies, strategies and programmes.
- Assist communities to develop water resources management plans for their rivers and streams
- Enhance community participation in water resource management and conservation, so as to leverage on the community's indigenous knowledge.
- Leverage on water resource User Associations in promoting community-led water resource management and conservation