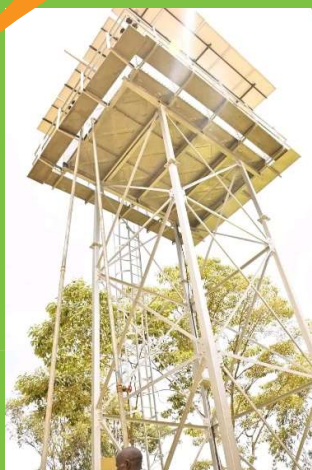




COUNTY GOVERNMENT OF NANDI

REVISED NANDI COUNTY WATER AND SANITATION STRATEGY AND INVESTMENT PLAN

2025 - 2030



LIST OF ABBREVIATIONS AND ACRONYMS

Acronym	Meaning
ADPs	Annual Development Plans
CBOs	Community-Based Organizations
CEREB	Central Region Economic Bloc
CIDP	County Integrated Development Plan
CWSSIP	County Water and Sanitation Strategy and Investments Plan
GoK	Government of Kenya
IWRM	Integrated Water Resource Management
KANAWASCO	Kapsabet Nandi Water and Sanitation Company
TAWASCO	Tachasis Water and Sanitation Company
KNBS	Kenya National Bureau of Statistics
KSH	Kenya Shillings
MDG	Millennium Development Goals
MHM	Menstrual Hygiene Management
NAWASIP	National Water and Sanitation Investment Program
NGOs	Non-Governmental Organizations
NRW	Non-Revenue Water
NWMP	National Water Master Plan
PBB	Program-Based Budgets
PPPs	Public-Private Partnerships
SDG	Sustainable Development Goal
SDGs	Sustainable Development Goals
SDMs	Service Delivery Models
USD	United States Dollar
WASH	Water, Sanitation, and Hygiene
WASREB	Water Service Regulatory Board
WRA	Water Resource Authority
WRM	Water Resources Management
WRUAs	Water Resources User Association
WSP	Water Service Provider
WSS	Water and Sanitation Services

FORWARD

Foreword from the Governor

Access to clean Water and adequate Sanitation is not just a basic human right it is the foundation upon which we build healthy communities, prosperous economies, and sustainable development. In recognition of this, our administration has prioritized the development of a comprehensive Water, Sanitation, and Strategic Investment Plan that will guide our actions over the coming years.

This plan reflects our deep commitment to ensuring that every citizen, regardless of location or background, has access to safe drinking water and dignified sanitation services. It is the product of inclusive consultation, evidence-based analysis, and a clear-eyed assessment of the challenges and opportunities that lie ahead.

By aligning our infrastructure goals with strategic investments, we are not only addressing immediate needs but also laying the groundwork for long-term resilience in the face of climate change, population growth, and urbanization. The strategies outlined herein will help us strengthen institutions, enhance service delivery, and foster partnerships that drive innovation and accountability.

I extend my heartfelt gratitude to all our partners government agencies, development organizations, civil society, and local communities whose collaboration has shaped this important document. Let this plan serve as both a roadmap and a call to action as we work together to secure a cleaner, healthier, and more sustainable future for all.

Let us move forward, united in purpose and steadfast in our resolve.



H.E. Stephen K. Sang, EGH
Governor, Nandi County

PREFACE

Water and sanitation are central to human dignity, public health, economic development, and environmental sustainability. As the County Executive Committee Member responsible for Water and Sanitation, I am honoured to present this Water, Sanitation, and Strategic Investment Plan a blueprint that articulates our county's vision, goals, and actionable strategies to improve water access and sanitation services for all residents.

This plan is both timely and necessary. It responds to growing demand for safe water and sanitation amidst challenges such as climate change, rapid population growth, urbanization, and aging infrastructure. It is anchored in data-driven planning, community engagement, and a commitment to inclusive service delivery that leaves no one behind.

Through this plan, we aim to strengthen our institutional capacity, mobilize strategic investments, promote innovation, and build resilience in the water and sanitation sector. It outlines key priorities including infrastructure development, governance reforms, sustainable financing mechanisms, and capacity building.

The development of this plan has been a collaborative effort involving sector experts, local communities, stakeholders, and development partners. I extend my sincere appreciation to all those who contributed their time, expertise, and insights during the planning process.

We recognize that water and sanitation are cross-cutting issues that require coordinated action across all levels of government and society. As such, this plan is not just a technical document it is a living commitment to improving the well-being and quality of life of our people.

I invite all stakeholders to join us in implementing this plan and transforming our shared vision into reality



Hon. Hillary Kiptanui Serem.

CECM Lands, Physical Planning, Housing, Environment, Water, Natural Resources and Climate Change

County Government of Nandi

ACKNOWLEDGEMENTS

The successful development of the Nandi County Water and Strategic Investment Plan is the result of extensive collaboration, dedication, and commitment from a wide range of stakeholders. As the Chief Officer for Water and Sanitation, I wish to express my sincere gratitude to all those who played a role in shaping this vital document.

First and foremost, I acknowledge the visionary leadership and unwavering support of the Governor and the County Executive Committee Member for Water and Sanitation. Their guidance provided the strategic direction necessary to steer this process forward.

Special appreciation goes to the technical teams within the Department of Water and Sanitation for their tireless efforts in data collection, analysis, and stakeholder engagement. Your professionalism and expertise were instrumental in ensuring the plan is both practical and evidence-based.

We are particularly grateful to our development partners and sector stakeholders whose technical and financial support made this initiative possible. Your contributions greatly enriched the planning process and helped align the plan with both national and international water and sanitation goals.

To the communities of Nandi County, your participation in public forums, focus groups, and surveys was invaluable. Your voices helped shape a plan that reflects real needs and aspirations on the ground.

Finally, we thank all the consultants, researchers, and facilitators who offered their time and insights to ensure this plan is not only comprehensive but also actionable.

This plan is a collective achievement, and its success in implementation will depend on the continued collaboration of all stakeholders. Together, we are laying the foundation for a future where every resident of Nandi County has access to safe, reliable, and sustainable water and sanitation services.



Jonah Kipruto Biwott,
Chief Officer, Lands, Physical Planning, Housing, Environment, Water, Natural
Resources and Climate Change
County Government of Nandi

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1. COUNTY SOCIO-ECONOMIC AND POLITICAL CONTEXT

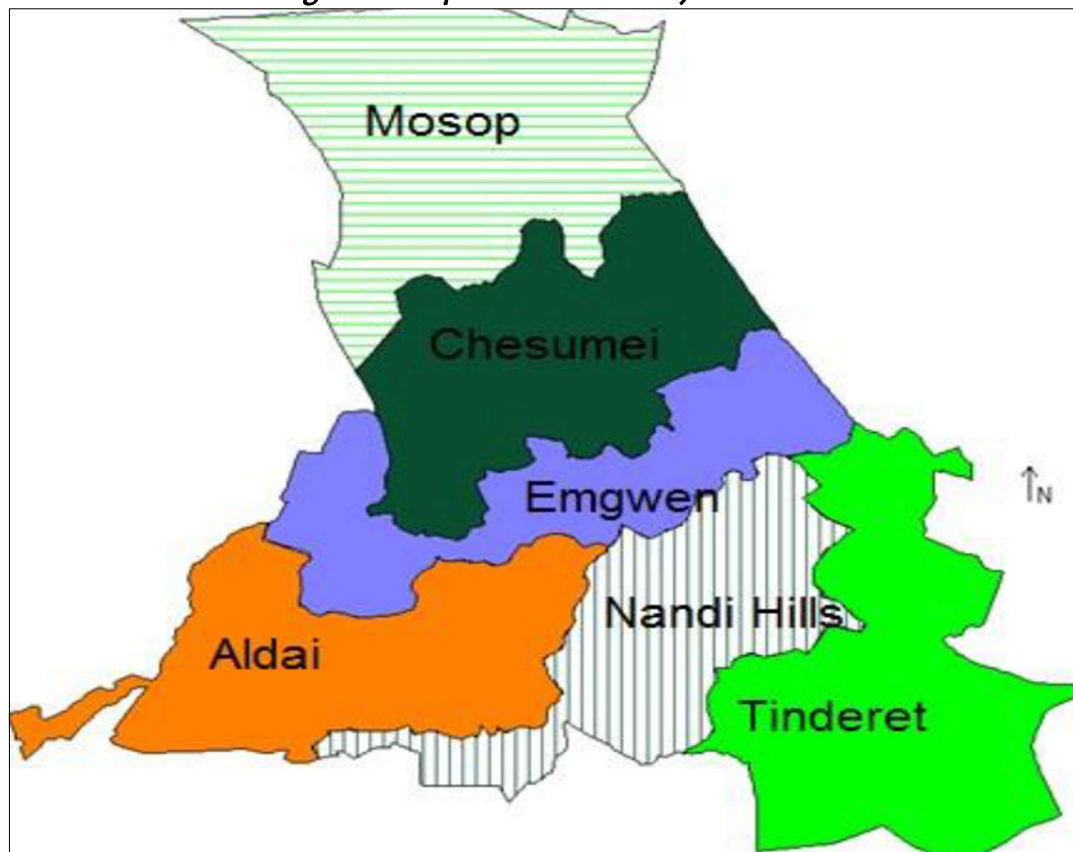
1.1. Socio-Political and Administrative Background

1.1.1. Nandi county geographic Location, demographic, and economic context

1.1.1.1. Location

Nandi County is located in the North Rift region of Kenya. It borders with Uasin Gishu to the north and northeast, Kericho to the southeast, Kakamega to the west, Kisumu to the south, and Vihiga to the southwest. Covering about 2,849 square kilometers according to the 2019 census, Nandi County's geographical coordinates are 0°34' North and 0°11' South latitude, and 34°45' East and 35°25' East longitude. The county is characterized by its beautiful landscape of rolling hills, valleys, rivers, and extensive tea farms. Kapsabet is the administrative center and main urban and commercial hub. Other significant towns include Mosoriot, Maraba, Ollessos, Kaptumo, Kobujoi, Kaiboi, Kapiyet, and Nandi Hills.

Figure 1: Map of Nandi County Location



Source: LabFlow Kenya, 2022

1.1.1.2. Climatic Conditions

Nandi County generally experiences a moderate to warm climate throughout the year, without extreme cold or hot conditions. The county receives a significant amount of rainfall, averaging between 1200mm and 2000mm annually. The long rains typically start in early March and extend until the end of June, while the short rains occur from around October to November. Areas such as Kobujoi and Tindinyo in Aldai Sub-County, Kaptumo in Nandi South, Nandi Hills, and Kapsabet tend to receive the highest amounts of rainfall. In contrast, the eastern and northeastern parts of the county generally experience the lowest rainfall. Temperatures in Nandi County range from a mean annual minimum of about 12°C to a mean annual maximum of approximately 23°C. See Table 18 in appendix 1 for detailed monthly climate averages for Nandi County.

1.1.1.3. Ecological Conditions

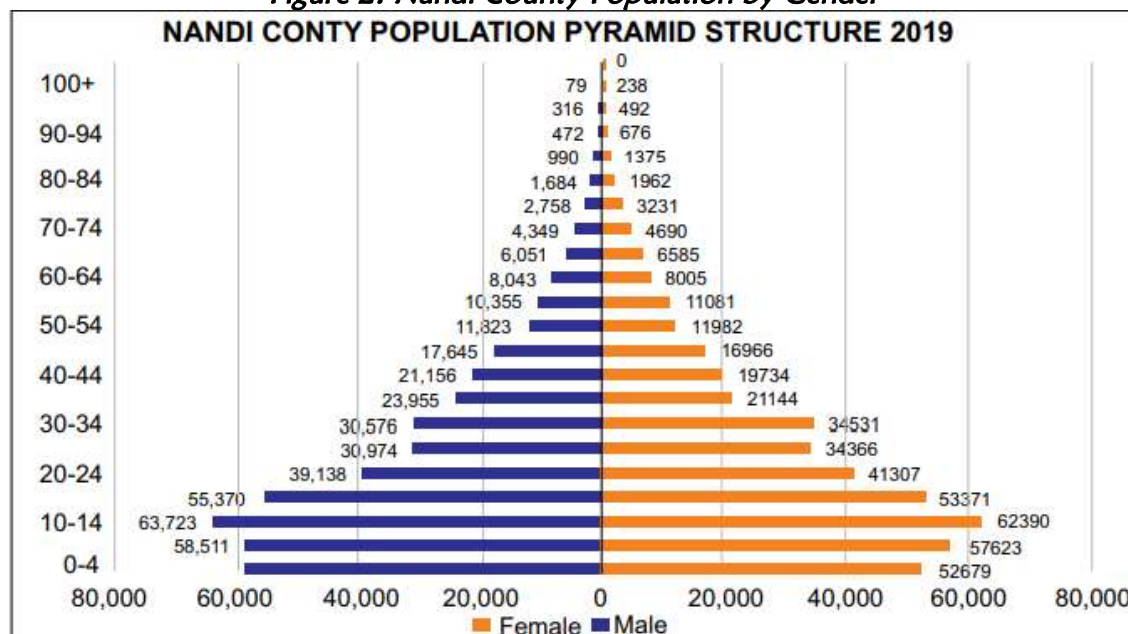
Agricultural activity in the County depends on rainfall and altitude amongst other factors. 12 per cent of its total land area comprises forests. They include Tinderet, Serengonik, Kapchorua Nandi South, Kimondi and Nandi North Forest which is an extension of the tropical Kakamega Forest. The total area covered by forests is estimated to be 61,316.9 Ha. It is characterised by high rainfall and diverse species of trees. The forests comprise mixed indigenous hardwoods and exotic plantations at Kimondi and Serengonik forests measuring besides the 2,635.8 Ha. The total boundary length of forest in the County is about 363.8km. The medium potential areas are covered by shrubs and bushes and are mainly found on the eastern plateau parts and portions lying below the scarp on the Nyando plains.

1.1.1.4. Administrative and Political Structure

For administrative purposes, Nandi County is divided into six sub-counties—Aldai, Chesumei, Emgwen, Mosop, Nandi Hills, and Tinderet which correspond to its parliamentary constituencies. These sub-counties are further broken down into 30 wards to facilitate local governance and service provision (Nandi County Government, 2019). See Table 19 in appendix 2 for detailed administrative units by sub-county

1.1.1.5. Population and Demography

The county's inter-censal growth rate is 1.6 per cent compared to the national growth rate of 2.3 per cent. Figure 2 shows Nandi County Population pyramid structure. Kapsabet town, the County's largest urban centre and the County's headquarters, has a population of 44,395 persons. Of this, 22,201 are male while 22,194 are female. Kapsabet population is projected to grow to 49,609 by the year 2027. Nandi Hills, Mosoriot and Baraton are highly growing urban centres in Nandi expected to grow to 8,974, 5,492 and 2,281 persons respectively (see Table 20).

Figure 2: Nandi County Population by Gender

Source: Nandi County CIDP 2023-2027

As indicated in Figure 2, there is a disproportionately higher concentration of the population between the ages of 0-9 years (31.7 percent) which explains the high population growth rate.

According to the Kenya Population and Housing Census (KPHC) 2019, the population of Nandi County was 885,711 constituting 441,259 males, 444,430 females and 22 intersex persons in 2019. It was projected that the population would grow to 936,183 consisting of 459,490 males and 476,693 females. Aldai is the most populous constituency with a population of 182,606 consisting 89,260 males and 93,347 females followed by Mosop constituency with a total population of 175,650 by 2022. Tinderet is projected to have the least population of 122,503 persons 61,323 being males and 61,180 being females. At the end of the plan period in 2027, the total population of Nandi is expected to have risen to 1,010,916 people from 885,711 in 2022.

The most populous age cohort is the dependent age of less than 15 years which accounts for 34.6% of the total projected population in 2022 and is expected to drop slightly to 32.1% by end of 2027. Population above 65 years' accounts for 3.78% and 3.81% of the projected population in 2022 and 2027 respectively. The workforce (19-54 years) is projected to increase from 576,619 in 2022, 620,432 in 2025 and 647,981 in 2027. The projected increase is, however, relatively low in the year 2027 compared to that of 2025.

The population projection by ward is presented in Table 19 in appendix 3. The trend could be attributed to the declining fertility rate (see Table 20 in appendix 3). Table 21 in appendix 3 shows the distribution of the various natures of disabilities in the County by sex.

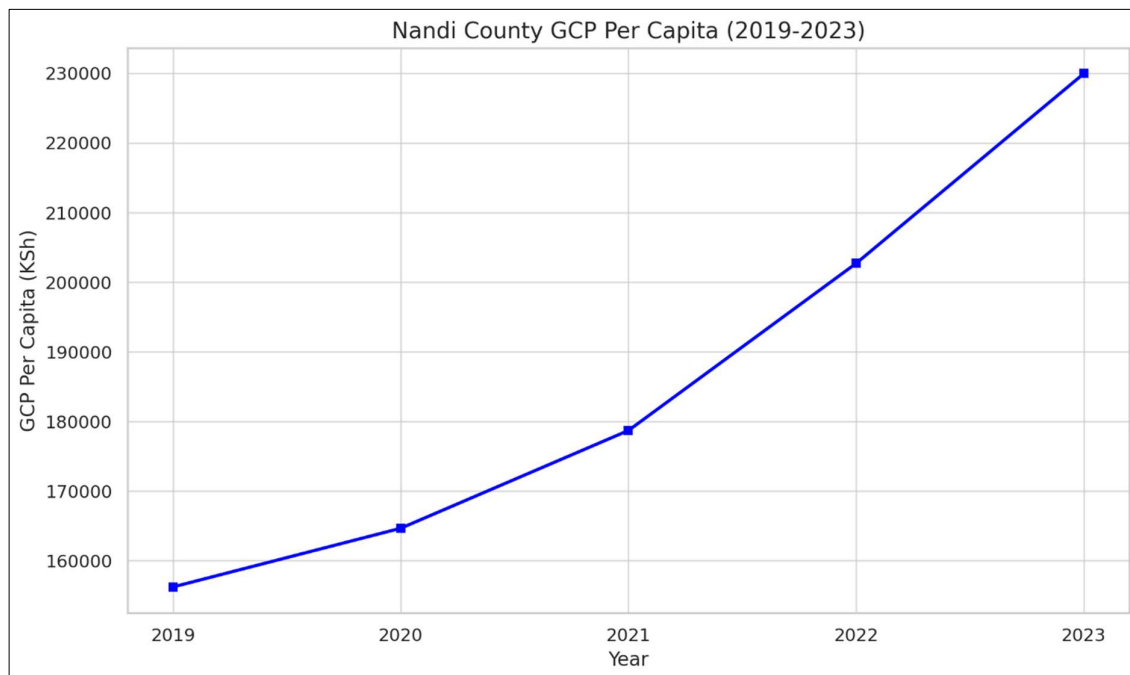
1.1.1.6. Nandi County economic growth.

a. County's Gross County Product

According to the KNBS Gross County Product 2024, Nandi County generated a Gross County Product of Ksh 218.8 billion, ranking it 19th in economic output among Kenya's counties. Agriculture is the main economic driver, with tea, maize, coffee, and sugarcane being important for both residents' earnings and the county's income. The county also saw its total revenue grow from Ksh 4.07 billion to Ksh 6.65 billion between the 2013/14 and 2020/21 financial years, representing an average yearly increase of about 9%. This financial growth has been largely supported by funds from the national government. (KIPPRA, 2022).

b. GCP Per Capita

Despite the impressive overall GCP growth, Nandi County's per capita income remains below the national average. In 2023, the county's GCP per capita stood at KSh 229,972, compared to the national average of KSh 293,229. Nandi ranked 18th out of Kenya's 47 counties, indicating room for improvement in income distribution and wealth creation per individual. Since 2019, there has been a steady increase in per capita income—from KSh 156,224 in 2019 to KSh 229,972 in 2023—yet the gap with counties such as Nairobi (KSh 802,344) underscores the need for policies that promote inclusive growth and industrial diversification to uplift individual economic well-being.



c. GCP Growth Rate (2019–2023)

Nandi County recorded an average annual GCP growth rate of 3.9% between 2019 and 2023, which falls short of the national average of 4.6%. However, the county posted a strong performance in 2023 with a growth rate of 6.8%, largely driven by gains in the agricultural and manufacturing sectors. Agriculture alone contributed 55.8% of the county's Gross Value Added (GVA) in 2023, highlighting the sector's dominance. Manufacturing accounted for 7.6%, while services contributed 25.4%. Secondary activities such as construction and utilities made up 11.2%. This sectoral breakdown illustrates both the county's economic potential and its vulnerability to agricultural shocks, suggesting a need for greater economic diversification.

In 2022, Nandi County's water and sanitation sector contributed 6.4% to the Gross County Product (GCP). The sector's contribution to Nandi's GCP in 2021 was 8.0%, and 8.6% for the financial year ended 30 June 2022.

d. Urbanization Rate

Nandi County had a projected population of 951,460 in 2023, with approximately 20% living in urban areas. The main urban centers include Kapsabet and Nandi Hills, which serve as administrative and commercial hubs. According to the 2019 census, the county had a population density of 310 persons per square kilometer, indicating moderate settlement concentration. Urbanization remains modest but is gradually increasing, driven by infrastructure development, educational institutions, and local commerce. Nevertheless, rural dominance persists, and urban planning must be prioritized to accommodate population growth, boost job creation, and attract investment into non-agricultural sectors.

1.1.2. Governance structures in water and sanitation Services

1.1.2.1 Responsibilities of county government institutions and leadership in water and sanitation services

In Kenya, water and sanitation services are primarily a devolved function under the 2010 Constitution, placing responsibility on county governments. In Nandi County, this governance is spearheaded by the Governor, who offers political leadership, strategic direction, and resource mobilization for water and sanitation initiatives. The County Executive Committee Member (CECM) for Lands, Physical Planning, Housing, Water, Environment, Natural Resources, Climate Change develops and implements policies, while the Chief Officer for Lands, Physical Planning, Housing, Water, Environment, Natural Resources, Climate Change manages departmental operations, budgeting, and staffing. The County Assembly, particularly through the Water and Environment

Committee, legislates and provides oversight to ensure transparency and accountability. Service delivery in urban areas is led by Nandi Water and Sanitation Company (NAWASCO), while rural water management relies on community-based organizations, Water Resource Users Associations (WRUAs), and public-private partnerships. The county supports infrastructure development, environmental protection, and public education on water management, working closely with national agencies like the Ministry of Water, WRA, and NEMA, alongside donor organizations for regulatory compliance and climate resilience (Nandi County Government, 2023).

1.1.2.2. Coordination between County, National Government agencies, private sector and other stakeholders

Significant institutions comprise the Department of Lands, Physical Planning, Housing, Water, Environment, Natural Resources, Climate Change, which integrates climate adaptation into projects, and the County Climate Change Unit (CCCU), which rallies climate finance and coordinates local responses. Collaboration with NGOs, private sector associates, and national programs such as Kenya Smart Agriculture Project (KCSAP) and Financing Locally-Led Climate Action (FLLoCA) strengthens service delivery and climate resilience through innovations like solar-powered boreholes and rainwater harvesting systems. Women leaders and groups play a vital role in shaping inclusive water policies and managing local initiatives, while private sector involvement through CSR, PPPs, and donor partnerships aids infrastructure expansion. Despite challenges like funding constraints and institutional overlaps, Nandi County leverages joint planning, stakeholder forums, and digital tools for integrated, community-driven solutions in the water and sanitation sector (Nandi County Government, 2023).

1.1.3. key environmental, socio-political factors affecting water and sanitation service delivery

1.1.3.1 Environmental factors affecting water and sanitation service delivery

Climate change in Nandi County has led to unpredictable rainfall patterns and decreased water levels, making water access more challenging and costly. Wetland encroachment, particularly in Kibirong and King'wal, has degraded ecosystems and reduced water quality. The county's environmental landscape, characterized by hills and high rainfall, is ideal for agriculture but poses challenges for infrastructure development, especially roads and drainage systems. Areas like Nandi Hills and Tinderet often face road inaccessibility during the rainy season due to poor drainage and steep terrain. Intensive farming and logging in Chepkunyuk and Kobujoi have resulted in soil erosion, deforestation, and land degradation, negatively affecting water sources such as River Kipkaren and River Yala, while also increasing land management costs. In Kapsabet town, inadequate infrastructure such as limited sewerage systems and poor waste management further hinders sanitation services. Despite the county's abundant rainfall and rivers, poor infrastructure has led to uneven water distribution,

limiting access to clean water in regions like Kaptumo and Songhor. Communities in Aldai, Mosop and Chesumei are particularly affected by erratic rains and prolonged dry spells caused by climate change, which threaten agricultural productivity, food security, and place additional pressure on health and social services (Nandi County Government, 2023).

1.1.3.2. Socio-political factors affecting water and sanitation service delivery

The county's political landscape impacts service delivery, with devolved governance structures heavily influencing the effectiveness of projects (World Bank, 2020). Delays in national government budget disbursement often hinder timely implementation of initiatives. Elected leaders prioritize sectors based on their focus, such as road infrastructure over healthcare. Corruption and mismanagement of funds have further eroded public trust and disrupted service efficiency. Strong intergovernmental relations are essential for effective service provision, as coordination between the county and national governments can significantly enhance service delivery.

Socially, rapid population growth is increasing the demand for essential services such as education, healthcare, and clean water (United Nations, 2023). Education levels, including literacy and attainment, influence public engagement in governance and the effective use of services like family planning and agricultural programs (World Bank, 2022). Cultural beliefs and traditional practices, including the preference for herbal remedies over modern medicine and resistance to development projects, shape behaviour and gender roles (UNESCO, 2021; WHO, 2020). Active community participation in planning and monitoring services is critical to ensure that development initiatives are relevant, efficient, and sustainable (UNDP, 2023).

1.1.3.3. Community engagement and stakeholders' participation

In Nandi County, community engagement plays a critical role in the development of water and sanitation services. The county has introduced several initiatives, including the Open Data Desk and Open Contracting Portal, to promote transparency and citizen involvement in governance. Residents actively contribute to the County Fiscal Strategy Paper (CFSP), influencing budget decisions, and tools like a toll-free call center and the Nandi Chatbot have made it easier for citizens to share feedback and access information (Nandi County Government, 2023).

Community empowerment is also a focus, with initiatives like the community scorecard process enabling locals to monitor and evaluate services. However, despite these advances, challenges persist in achieving widespread public involvement. Many community members remain unaware of their role in development, leading to low participation in initiatives.

The lack of sufficient community engagement has hindered the sustainability of some projects, as evidenced by the challenges in Tinderet Constituency. For instance, in Tinderet, Chelambut water supply project initiated by the county government stalled due to minimal community involvement in the planning and decision-making processes. Residents were not adequately informed or consulted, resulting in poor ownership and maintenance of the infrastructure, which eventually led to its breakdown and abandonment.

Water and sanitation issues in Nandi County impact genders differently, with women and girls shouldering a disproportionate burden due to traditional roles in water collection and caregiving. Women and girls often spend several hours each day collecting water, which exposes them to health and safety risks, including physical harm and harassment. Inadequate sanitation facilities, especially for menstruation and maternal care, also affect women's well-being and contribute to school absenteeism. Despite their central role in household water management, women are often excluded from decision-making processes related to water services (UN Women, 2021; WHO & UNICEF, 2023).

1.1.3.4. Gender specific water and sanitation

i. Gender Roles in Water Use, Management, and Access in Nandi County

Water access, use and governance in Nandi County are deeply shaped by entrenched gender roles. The household survey and water resource mapping undertaken in the county reveals that women and girls shoulder the bulk of responsibilities when it comes to obtaining water for use as homes. Additionally, they are also responsible for hygiene management and caregiving in homes. This gendered division of labor which has been normalized results in significant physical, emotional and time-consuming burden especially in areas with poor infrastructure, limited year-round supply of clean and readily available water and unsafe or unprotected water sources.

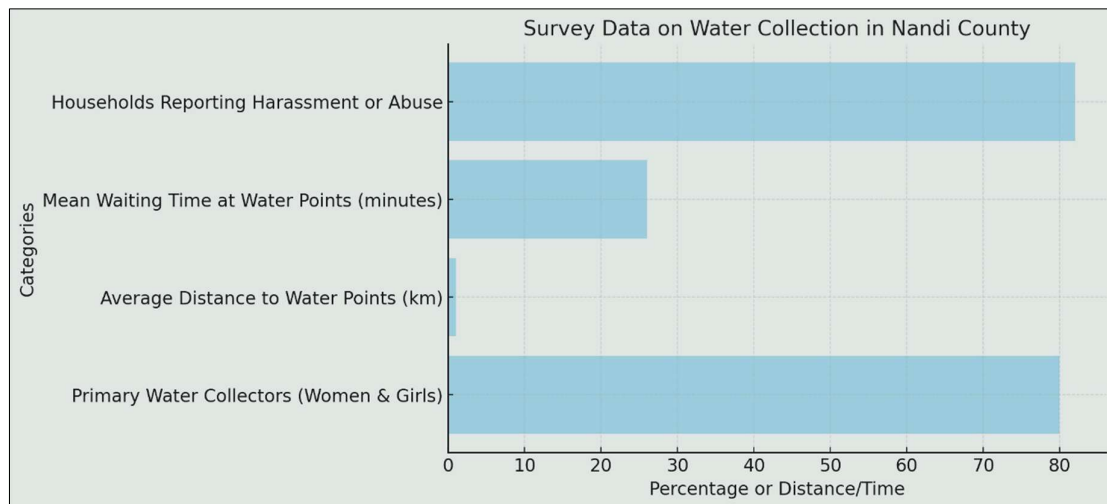
ii. Differential Roles in Water Collection from the Survey Findings

Household survey data conducted in Nandi County in April 2025 indicates that in over 80% of households, women and girls are the primary water collectors. On average, they walk nearly 1 kilometer to fetch water with distances extending up to 2.5 kilometers in some wards such as Kapkangani and Kaptel-Kamoiywo. Compounding this is a mean waiting time of 26 minutes at water points.

These time-intensive tasks reduce women and girls' availability for education, income-generating activities and their community roles such as those on leadership. Additionally, the physical strain and psychological toll are significant with women and girls frequently exposed to gender-based violence (GBV) especially during early morning and late evening water collection trips.

Notably, 82 of the households reported experiences of harassment or abuse while accessing water and interviews across several wards highlighted domestic tensions and violence exacerbated by water scarcity.

See Table 27 in appendix 4 for detailed Gender Inclusion and Mainstreaming Insights from survey findings.



The findings highlight a significant gender gap in water governance, where women, despite being primary users and managers, have limited decision-making power due to systemic barriers like cultural norms and lack of education. However, the strong interest shown by women in leadership roles indicates untapped potential that could be harnessed through targeted training and support. Poor water infrastructure, with most households lacking piped water, exposes communities to health risks, disproportionately affecting women as caregivers. Additionally, inadequate water access and sanitation facilities hinder girls' school attendance, especially during menstruation, reinforcing gender-based inequalities in education.

Strategic Interventions for Gender-Responsive Water Management

In light of the findings from the household survey it is important that all future water investments in Nandi County adopt or rather include a gender-sensitive and inclusive approach. The following strategic interventions are proposed to foster gender-responsive water management and address the unique challenges faced by women and girls in accessing water. Some of the proposed measures include:

- **Infrastructure Planning:** Prioritize the siting of water points closer to households in remote and underserved wards informed by gender-disaggregated data on water collection patterns. Install lighting at communal water points to reduce the risk of GBV.
- **Governance and Participation:** Enforce gender quotas in Water User Associations (WUAs) and community water committees. Develop and

implement leadership and technical capacity-building programs specifically for women, with flexible scheduling to accommodate caregiving responsibilities.

- **Technology and Innovation:** Expand investments in climate-resilient infrastructure, including protected springs, rainwater harvesting systems and solar-powered pumps to ensure year-round water access and reduce dry-season stress. Explore mobile water service technologies like *mWater*, that reduce time burdens on women and girls.
- **Behavior Change and Social Norms:** Launching of household-level behavioral change campaigns targeting men and boys to promote equitable sharing of water collection and hygiene tasks. Integrate gender-awareness modules into community WASH training and school-based hygiene education programs.
- **Monitoring and Accountability:** Incorporate gender-specific indicators into water project monitoring frameworks. Ensure that community feedback mechanisms are accessible and responsive to women's concerns especially those regarding safety and service reliability.

Water access and governance in Nandi County are not solely technical challenges—they are deeply interwoven with gender dynamics. Addressing the unequal burdens borne by women and girls, and promoting their full and equal participation in water governance, is critical for achieving sustainable and inclusive water service delivery. Mainstreaming gender in all stages—from planning to implementation and monitoring—not only uplifts women but strengthens the resilience and well-being of entire communities.

1.1.4. Legal and policy frameworks governing water and sanitation at the county level

1.1.4.1 Relevant laws, policies, regulations, standards, guidelines, and strategies guiding water and sanitation service delivery.

Nandi County aligns its water and sanitation strategies with key national frameworks, including the Constitution of Kenya (2010), Kenya Vision 2030, the Water Act (2016), and the National Water and Sanitation Strategy. Furthermore, the County's efforts are consistent with international frameworks such as the Sustainable Development Goals (SDGs) and the African Union Agenda 2063, demonstrating its commitment to sustainable development and improved quality of life for all residents.

Table 1: Legal and Policy Frameworks

Framework	Relevance
Sustainable Development Goals (Goal 6)	It focuses on ensuring universal access to water and sanitation while promoting sustainable water resource management. It plays a key role in supporting global health, economic development, and environmental sustainability. SDG 6 targets the provision of safe drinking water and equitable sanitation, especially for vulnerable populations such as women and girls. It also emphasizes Integrated Water Resource

Framework	Relevance
	Management (IWRM), ecosystem protection, and international cooperation. Additionally, it promotes local participation in the management of water and sanitation systems. In Nandi County, SDG 6 guides interventions in addressing Water, Sanitation, and Hygiene (WASH) challenges. Through alignment with this goal, the county supports Kenya’s broader agenda to achieve sustainable development and improve residents’ well-being.
African Union Agenda 2063	The African Union Agenda 2063 is a long-term strategy for transforming Africa into a prosperous, integrated, and peaceful continent. It prioritizes the continent’s natural resources, cultural diversity, and human capital, underpinned by good governance and the rule of law. With regard to WASH, Agenda 2063 mirrors the aspirations of SDG 6—universal access to clean water and sanitation. It emphasizes water resource protection and regional cooperation to address scarcity. Aligning Nandi County’s WASH policies with Agenda 2063 strengthens the county’s service delivery systems and supports inclusive and sustainable development.
The Constitution of Kenya, 2010	The Constitution of Kenya, 2010 affirms the right of every citizen to accessible and adequate water and sanitation. These constitutional provisions obligate both national and county governments to deliver sustainable and equitable WASH services. The County Water and Sanitation Strategic Investment Plan (CWSSIP) for Nandi is designed in accordance with these principles.
National Water Act, 2016 (Amended 2024)	The Water Act of 2016, as amended in 2024, offers a comprehensive legal framework for the management and regulation of water resources. It empowers devolved units to take an active role in ensuring water and sanitation access through sustainable institutions. Key institutions under this Act include: - Water Resources Authority (WRA) - National Irrigation Authority - Water Works Development Agencies (WWDAs) - Water Services Regulatory Board (WASREB) - National Water Harvesting and Storage Authority (NWHSA) - Water Sector Trust Fund (WSTF) - Water Tribunal - Public-Private Partnerships (PPPs)

Framework	Relevance
	- Licensing of Water Works Development Agencies: The Water Act upholds Article 43 of the Constitution and guides both national and county governments in: - Expanding water supply coverage - Improving sanitation in schools and health centers - Promoting Community-Led Total Sanitation (CLTS) - Enhancing the capacity of WASH service providers To promote transparency and local ownership, the CWSSIP encourages community engagement in planning and implementing WASH projects.
National Water and Sanitation Investment Plan (NAWASIP)	The National Water and Sanitation Investment Plan (NAWASIP) is a strategic response to Kenya's WASH challenges. It complements national efforts such as Vision 2030 and international goals like the SDGs. NAWASIP Objectives: - Expand Access: Deliver equitable access to clean, safe water. - Improve Sanitation: Develop modern infrastructure to boost hygiene and public health. - Promote Sustainability: Encourage conservation, recycling, and efficient water use. - Strengthen Institutions: Build institutional capacity for efficient service delivery. The Nandi County CWSSIP aligns with NAWASIP through: - Investments in water infrastructure to improve access - Sanitation programs including hygiene promotion and latrine construction - Adoption of sustainable practices like rainwater harvesting and watershed protection - Strengthening collaborations with national and county agencies
Lake Victoria North Water Works Development Agency (LVNWWDA) Strategic Plan 2023–2027	The Lake Victoria North Water Works Development Agency (LVNWWDA), which serves Nandi County (Nandi County is one of the key counties located within LVNWWDA) outlines its goals for water and sewerage services in its 2023–2027 Strategic Plan. The plan provides guidance for expanding infrastructure, managing water sustainably, and improving stakeholder engagement. Nandi County benefits from LVNWWDA's technical expertise and investments in water systems, helping to address water scarcity,

Framework	Relevance
	sanitation gaps, and climate-related challenges in a coordinated manner. The strategic plan positions the agency as a vital partner in achieving the county's WASH goals.

1.1.4.2. M&E reporting, data and information management frameworks at county level

Comprehensive Monitoring and Evaluation (M&E) and data management systems, including the County Integrated Monitoring and Evaluation System (CIMES) and the electronic County Monitoring and Evaluation System (e-CMES), support transparency and informed decision-making. The establishment of a Data Desk in partnership with the Open Institute and a performance management framework further enhance governance and service delivery in line with national and international commitments.

1.2. Water in the County Economy

1.2.1. Integration of water sector development with the county's economic growth strategies

Water is critical for Nandi County's economic planning, particularly in its predominantly agricultural sector, where it supports crop irrigation and livestock rearing, enhancing food security and household income. It is also vital for domestic use, sanitation, and public health, contributing to human capital development. The County Integrated Development Plan (CIDP) prioritizes sustainable water management and infrastructure expansion to improve quality of life and promote economic growth. Access to clean water also empowers women and children by reducing time spent on water collection, allowing for more engagement in education and economic activities. (Nandi County Government, 2023).

Water is essential for agriculture, industry, and services in Nandi County. Agriculture, the main economic activity, relies on water for crops like tea, maize, and sugarcane, and for livestock. Industrial growth in agro-processing, such as tea and dairy, depends on effective water resource management. The services sector, including education, health, and tourism, also benefits significantly from reliable water access.

Nandi County has implemented water conservation initiatives, including solar-powered water systems like the Sigot Solar Water Project. Investments in solar infrastructure across sub-counties aim to improve water access and energy efficiency. Collaboration with the FAO on a Wetland Management Plan addresses environmental threats, and community involvement through WRUAs promotes sustainable livelihoods. Partnerships with neighbouring counties focus on integrated water resource management.

1.2.2. Key economic activities dependent on water (e.g., agriculture, industry, tourism)

In Nandi County, the availability and use of water across key economic sectors namely; agriculture, industry, and domestic services are fundamental to the region's development trajectory. Agriculture, which forms the economic backbone of the county, consumes the largest share of water resources, with tea and dairy production being especially water-dependent. This reliance is evident in infrastructure such as irrigation systems, livestock watering points, and agro-processing facilities, all of which are vital to sustaining agricultural output. Although smaller in scale, the industrial sector similarly depends on water for various processes, including cooling and production within tea factories and emerging agro-based enterprises. Additionally, access to domestic water plays a crucial role in supporting economic productivity, influencing labor efficiency, public health, and household time management. When water supply is inadequate or unreliable, it negatively impacts agricultural yields, hampers industrial activities, and diminishes socio-economic resilience. Therefore, securing adequate water for these sectors is imperative for maintaining productivity and supporting the long-term economic ambitions of Nandi County (Nandi County Integrated Development Plan, 2023; Ministry of Water and Sanitation, 2022).

1.2.3. Constraints to economic growth due to water access, quality, and management challenges

In Nandi County, access to water remains a significant challenge, particularly in rural areas. While 37% of the urban population has access to improved water sources, the situation is considerably worse in rural areas, where only 15% of residents can access safe and reliable water. This disparity highlights the urban-rural divide in infrastructure development and service delivery, with rural communities facing more pronounced hardships related to water scarcity, reliance on unsafe sources, and long travel distances to fetch water. The low overall access rates underscore the urgent need for targeted interventions to enhance water supply systems, especially in underserved rural regions. (Nandi County water department})

The economic growth is significantly hindered by systemic challenges in water service delivery, each requiring targeted interventions. One major issue is deteriorating infrastructure, such as aging and corroded pipes in areas like Kapsabet and Ndalat that frequently burst, and the absence of pipeline networks and storage tanks in rural areas like Kibiyet. To address this, comprehensive investment is needed to modernize and expand water infrastructure. This includes replacing old pipes, installing new pipelines in underserved regions, and constructing adequate storage facilities to ensure a consistent water supply, especially during dry seasons.

Inefficient water management is another critical concern, particularly in Kaptumo and Tinderet, where the lack of modern metering systems and the prevalence of illegal connections result in significant water losses. These challenges can be mitigated through the adoption of smart metering technologies, enhanced legal enforcement to reduce

non-revenue water, and capacity-building programs for local operators to improve water distribution and prevent losses (Nandi County Water Report, 2025).

Regulatory and institutional shortcomings further impede progress, with weak coordination between the County Water Department and service providers like the Nandi Water and Sewerage Company, as well as limited support for community water projects in areas such as Chepkumia. These issues can be resolved through joint planning, regular performance reviews, and integrated data-sharing systems. Moreover, community water initiatives should receive technical assistance and be aligned with county strategies to enhance service cohesion.

Financial constraints present an additional barrier, characterized by insufficient investment in infrastructure and maintenance. Addressing this challenge requires exploring diverse funding sources, such as public-private partnerships, donor support, and community financing models. Establishing maintenance funds and providing incentives for private sector engagement would further support sustainable water service delivery.

Seasonal water scarcity, especially during prolonged dry periods, severely impacts both agriculture and household supply. To counter this, the county should invest in climate-resilient solutions, including rainwater harvesting, small-scale dams, and water recycling initiatives. Expanding irrigation systems and promoting drought-resistant crops would also improve resilience. Environmental threats, such as contamination from agricultural runoff and inadequate sanitation infrastructure, reduce access to clean water and pose public health risks. Solutions include establishing buffer zones, promoting sustainable farming practices, upgrading sanitation systems, and enforcing waste management regulations.

Finally, inefficient distribution systems contribute to stark disparities in water access, particularly in rural and marginalized communities. These inequities can be addressed through targeted interventions such as mapping service gaps, decentralizing water systems, and actively involving communities in planning and decision-making. Community participation enhances accountability and fosters ownership and long-term sustainability in water service delivery (Nandi County Government, 2023).

1.2.4. Risks and opportunities related to water resource availability and climate variability

Nandi County's water resources are influenced by a combination of factors including the abundance and distribution of water sources and the increasing challenges posed by climate variability. While the county benefits from diverse water resources, it also faces significant risks from seasonal variations, climate change impacts and unsustainable practices. Effective water management strategies are crucial to capitalize on the opportunities and mitigate the risks to ensure water security for the county's population.

Table 28 in appendix 5 summarises climate risk assessment by water source type in Nandi County.

The interventions proposed in Table 29 in appendix 5 addresses key sectoral challenges in community water management, infrastructure development, water quality, environmental conservation and institutional support. The costing is informed by guidelines from the WASREB Tariff Guidelines, CIDP 2023–2027 and historical budgets from Nandi County’s Department of Water, Environment, Natural Resources & Climate Change.

1.2.5. Overview of planned and ongoing interventions aimed at enhancing water’s role in the economy

Nandi County has initiated several programs aimed at promoting water-based economic growth, with a strong focus on enhancing water accessibility, boosting agricultural output, and improving livelihoods. At the heart of these initiatives is the CIDP, which supports key projects such as irrigation systems, protection of water springs, and community-led water initiatives. These efforts are further bolstered by national programs like the National Agricultural and Rural Inclusive Growth Project (NARIGP) and the Kenya Climate Smart Agriculture Project (KCSAP), which have played a major role in advancing water harvesting, small-scale irrigation, and sustainable land use practices.

In addition, partnerships with government agencies and non-governmental organizations have facilitated the development of infrastructure such as water pans, boreholes, and gravity-fed water systems that serve both domestic and agricultural purposes. To promote climate-resilient, water-centered economic development, the county is also pursuing and planning sustainable strategies. These include expanding climate-smart irrigation, restoring degraded catchment areas, and encouraging rainwater harvesting at both household and institutional levels. Key measures like solar-powered water systems, construction of multi-purpose water reservoirs, and integration of agroforestry and watershed management are fundamental to these efforts. There is a strong focus on affordable, community-driven technologies such as sand dams, drip irrigation, and gravity systems, which not only help communities adapt to climate change but also serve as scalable models for other regions with similar needs.

Table 30 in appendix 6 summarises the key areas that are to benefit from the various interventions.

2. WATER, SANITATION, AND HYGIENE SERVICES COVERAGE STATUS

2.1. County Water Resources Endowment

Approximately 71% of the Earth's surface is covered by water, mainly sourced from two main categories: surface water and groundwater. Surface water comprises of rivers, lakes, and reservoirs, while groundwater is found beneath the Earth's surface, where it flows through and fills the spaces within rocks and soil.

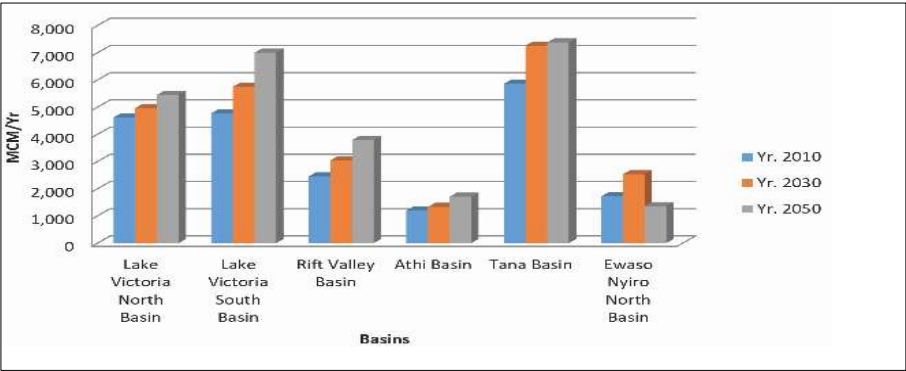
Nandi County experiences a moderate to warm climate year-round due to its highland elevation averaging 1,994 meters. Mean annual temperatures ranges from 12°C to 23°C, and the county receives substantial rainfall between 1,200mm and 2,000mm annually, supporting significant vegetation and agriculture. The bimodal rainfall pattern includes long rains from March to June and short rains from October to November, with areas like Kobujoi, Tindinyo, Kaptumo, Nandi Hills, and Kapsabet receiving the highest amounts (over 1,800mm). The eastern and northeastern parts of the county experience relatively lower rainfall.

2.1.1. Overview of available water sources (surface water, groundwater, rainfall)

Nandi County boasts a diverse array of water resources that play a crucial role in supporting its socio-economic activities, particularly in areas such as domestic water supply, irrigation, small-scale production, and water for institutions and healthcare facilities. Nandi County is endowed with both ground and surface water resources. Its major rivers consist of Kipkurere, Kibos, Kundos and Ainabng'etuny in Tinderet highlands, Yala, Kipkaren, Kimondi and Birei. The county also has numerous permanent springs scattered across all the sub-counties. Shallow wells are found especially in Nandi hills, Emgwen, Chesomei and Mosop sub-counties. Dams done during the Colonial era are also found in parts of Mosop and form major catchment areas for many streams. Nandi also has wetlands which are significant in contributing to the recharge of the underground water and the hydrological cycle. Protected wetlands include Kingwal, Kibirong, Kimondi, Mutwot, Kapkan`gony, Matambach and Birei swamps. The county falls within two catchment areas which are run independently namely the Lake Victoria North catchment area which covers half of the county's total land area and the Lake Victoria South Basin which covers the other half.

See Table 31 in appendix 7 for Water resources shared across counties, including water allocation criteria and agreements.

Diagram showing Trends of renewable water resources by Basin projected up to year 2050



Source: Kenya Natural Resources Atlas

Maps showing major rivers in Nandi County

Figure 3: River Kingwal and River Chebarbar (tributaries of river Yala)

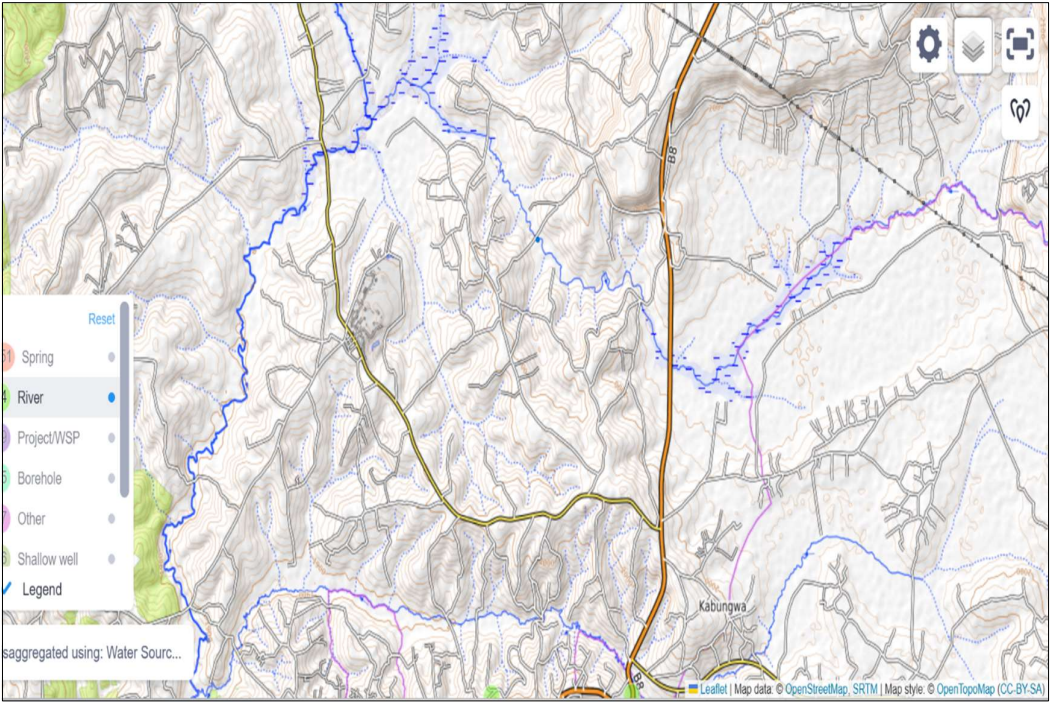


Figure 4: River Ainapngetuny and Kamasai (tributaries of River Nyando)

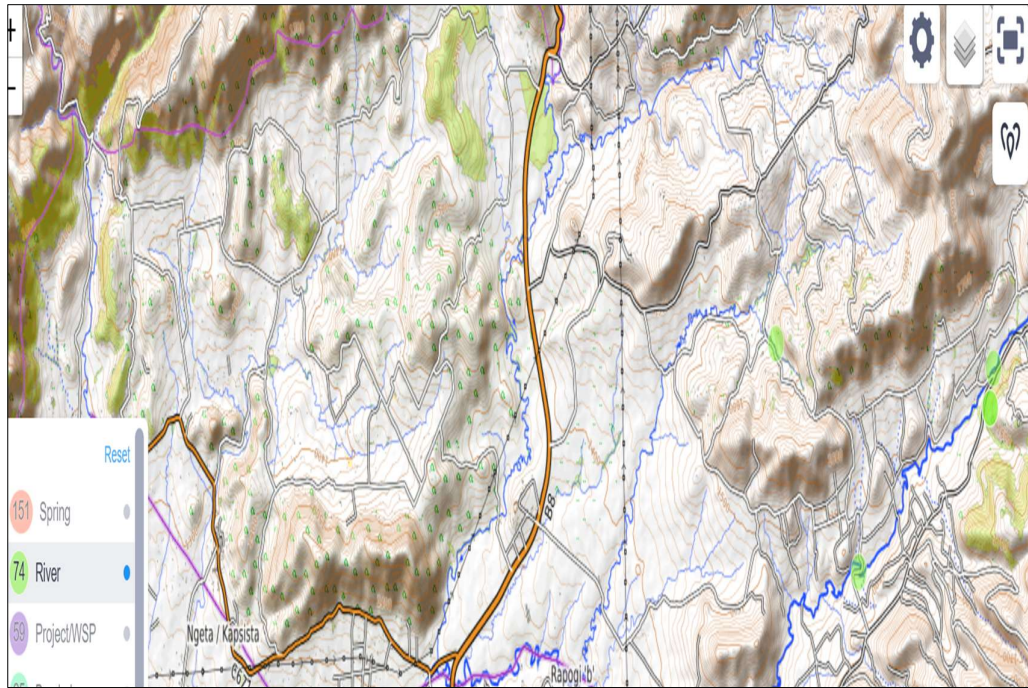
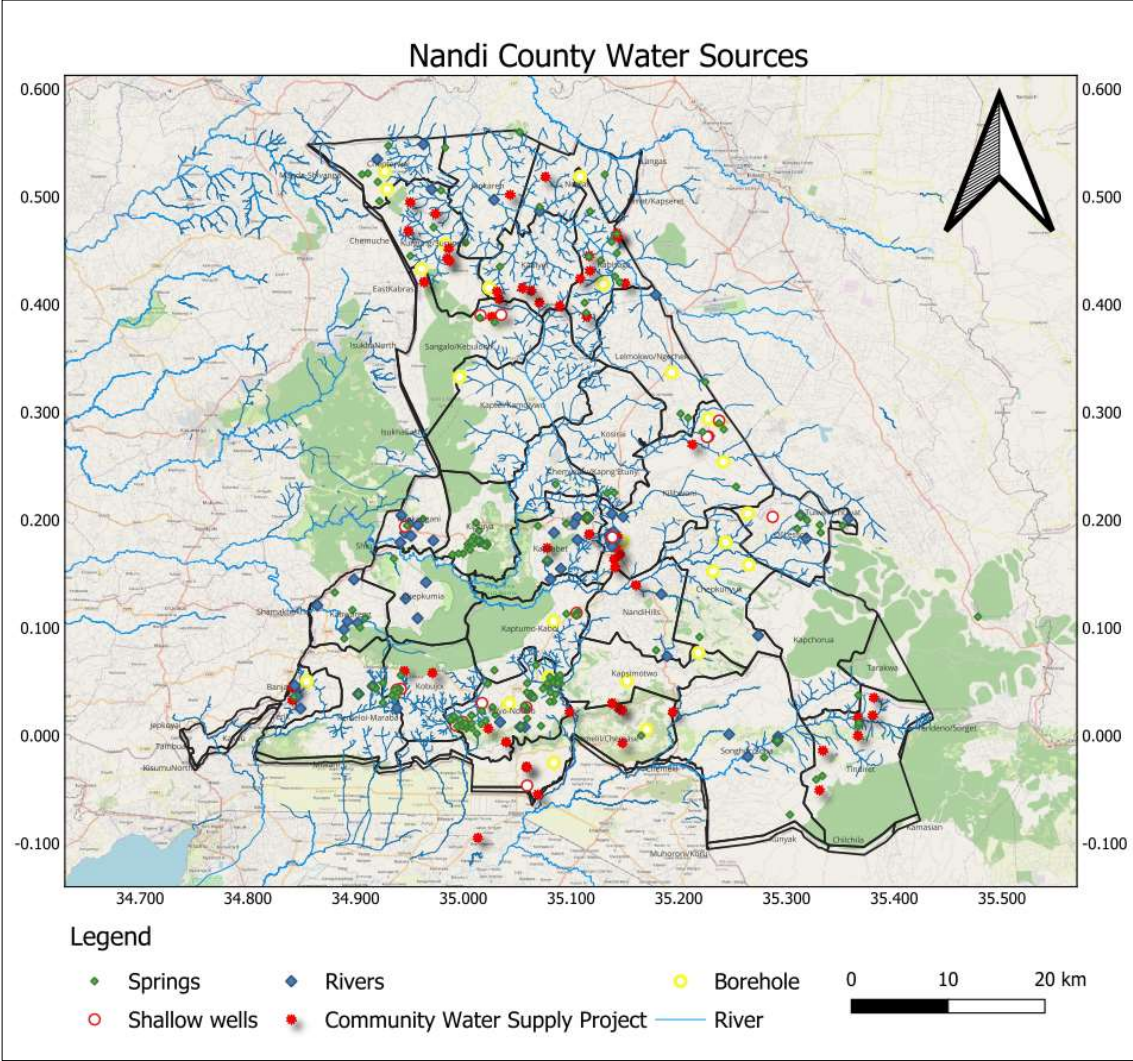


Figure 5: Spatial distribution of water resources across the county



2.1.1.1. Capacity of Water Resources in Nandi County

The water resources carrying capacity (WRCC) is an essential indicator for assessing the ability of water resources to support socioeconomic activities. Water resources carrying capacity (WRCC) is a comprehensive indicator used to quantify the ability of water resources to support human socioeconomic activities, which consider water quality and quantity, and socioeconomic indicators for integrated assessment. Furthermore, most of the studies on WRCC of subbasins evaluate each part as a stand-alone entity, failing to consider the connectivity of these regions, such as the relationship between the upstream and downstream within a basin. For a good water strategic plan, it is of importance to assess the capacity of the water resources to support the water demand and future sustainability of the growing water demand as the population grows.

The table 32 in appendix 8 provides an estimate of the existing surface water capacity across various sub- county catchment areas in Nandi County, calculated using the lowest aquifer discharge rate. It outlines the area in square kilometers (km²), the rivers within each drainage basin, and the estimated annual discharge in million cubic meters per year (MCM/Yr) for each catchment.

The total estimated groundwater discharge across all sub-counties is **216.0216** MCM/Yr, highlighting the variability in aquifer types and productivity across the region. This data underscores the importance of groundwater as a vital resource for the county's water supply and socio-economic activities. (Source: Africa Groundwater Atlas Country Hydrogeology Maps, 2021).

2.1.1.2. Assessment of current and projected water demand in Nandi County

In Nandi County, there are towns, institutions, Markets, small industries and human residences and informal settlements in urban areas, while rural areas comprise of small market centers. According to the water demand per capita manual (Ministry of Water and Irrigation Practice Manual for Water Supply Services in Kenya October 2005); a person living in rural area of the county water per capita demand is 40-60 liters/head/day while in urban areas of the county water per capita demand is 75 - 250 liters /head /day.

2.1.2. Seasonal variations and climate-related vulnerabilities affecting water supply

Risk/Event	Affected Source(s)	Hydrological Impact	Severity	Estimated Affected Households	Other Indicators
Prolonged Drought	Springs, shallow wells	Up to 70% decline in flow based on FDC Q90 values	High	15,000+	Sources drop below minimum

Risk/Event	Affected Source(s)	Hydrological Impact	Severity	Estimated Affected Households	Other Indicators
					abstraction rates
Flash Flooding	Surface intakes, rivers	Peak flows 10× base flows; increased turbidity and infrastructure damage	Medium–High	6,000–8,000	Requires frequent flushing, increased E. coli presence
Erratic Rainfall	Rainwater harvesting systems	Unpredictable roof runoff; <30% tank fill in some years	Medium	4,000	Reduced reliance on RWH in 3 out of 5 years
Seasonal Base Flow Drops	Gravity schemes fed by rivers/springs	Q80/Q90 values below system demand; intermittent service	Medium	10,000+	Rationing common; low pressure complaints

2.1.3. Water Resources Challenges in Nandi County

Nandi County faces a range of threats to its water resource both in terms of quality and long-term sustainability. These include pollution, siltation, land degradation, declining baseflows and increasing impacts from climate variability. These threats are interconnected often driven by poor land use practices, weak enforcement of environmental regulations and population pressures.

2.1.4.1 Key Threats to Water Quality and Sustainability

Nandi County, with its vast highland terrain and agricultural dominance, faces several threats to the quality and sustainability of its water resources:

1. Pollution of Surface and Groundwater Sources

Urban Wastewater Discharge

Urban centers like Kapsabet and Mosoriot lack adequate wastewater treatment infrastructure, leading to the direct discharge of untreated domestic and institutional effluents into the rivers. This has resulted in nutrient loading, degraded water quality and an increased risk of waterborne diseases such as cholera and typhoid among communities relying on the river. There is an urgent need for investment in wastewater treatment and sanitation infrastructure to safeguard public health and the environment (WSTF, 2021)¹.

Agrochemical Runoff:

Tea estates in Nandi Hills and maize farms in Aldai and Mosop rely heavily on synthetic fertilizers and pesticides. During rainy seasons, these chemicals are washed into nearby rivers

¹ WSTF. (2021). *Kapsabet Town Water Supply and Sanitation Situation Report*. Nairobi: Water Sector Trust Fund.

and shallow wells, leading to nitrate and pesticide contamination. This poses risks to human health, such as blue baby syndrome, and harms aquatic ecosystems. The situation highlights the need for sustainable agriculture and improved water management to protect water quality (KwTA, 2019)².

2. Siltation and Soil Erosion

Land-use changes have significantly increased siltation in rivers and wetlands.

Soil Erosion in Sloping Agricultural Zones

In Chemase, Kobujoi and parts of Tinderet cultivation on steep slopes without terracing leads to topsoil loss and river sedimentation. This reduces streamflow capacity and clogs water infrastructure (Ministry of Agriculture, Livestock and Fisheries [MoALF] & FAO, 2017)³.

Wetland Degradation:

Encroachment into wetlands like King'wal Swamp has diminished their filtering and flood-regulating functions. Illegal cultivation and livestock grazing accelerate sedimentation and loss of wetland vegetation (National Environment Management Authority [NEMA], 2019)⁴.

Decline in Baseflows and Seasonal Drying of Springs

Several springs in Kapkangani, Kapsabet, and Songhor-Soba wards have recorded reduced flow during dry seasons, driven by land degradation and over-abstraction. Riparian deforestation and loss of vegetation in recharge zones contribute to declining baseflows and increased seasonal water stress (Water Resources Management Authority [WRMA], 2020)⁵.

3. Land Use Change and Catchment Degradation

Forest Clearance:

Illegal logging and encroachment into protected forests in Nandi South and Tinderet have undermined natural infiltration processes and increased runoff, especially during peak rainfall seasons (Kenya Forest Service [KFS], 2020)⁶.

Riparian Encroachment:

Widespread farming along riverbanks has destroyed vegetative buffers, leading to direct runoff of sediment and chemicals into water bodies (WRMA, 2018)⁷.

4. Climate Change Impacts on Water Resources

Rainfall Variability:

There is a noticeable trend of delayed rains and increasingly erratic precipitation in Nandi,

² KwTA. (2019). *Nandi Hills Water Tower Status Report*. Nairobi: Kenya Water Towers Agency.

³ MoALF & FAO. (2017). *Nandi County Climate Risk Profile*. Nairobi: Ministry of Agriculture, Livestock and Fisheries and Food and Agriculture Organization of the United Nations.

⁴ NEMA. (2019). *Nandi County State of Environment Report*. Nairobi: National Environment Management Authority.

⁵ WRA. (2020). *Hydrological Assessment of Yala Catchment Sub-Basin*. Kisumu: Water Resources Management Authority.

⁶ KFS. (2020). *Forest Resource Assessment Report for Nandi County*. Nairobi: Kenya Forest Service.

⁷ WRA. (2018). *Riparian Zone Monitoring Report: Upper Yala Catchment*. Kisumu: Water Resources Management Authority.

affecting the reliability and volume of water sources. These shifts, often accompanied by shorter but more intense rainfall events, increase erosion and reduce groundwater recharge (Kenya Meteorological Department [KMD], 2020)⁸.

Rising Temperatures and Evaporation:

Average temperatures in the Rift Valley have increased by about 0.4–0.6°C over the past three decades, raising evapotranspiration rates and further reducing water availability in surface storage and wetlands (Ministry of Environment [MoE] & UNDP, 2021)⁹.

Flash Floods and Prolonged Dry Spells:

Increased frequency of dry spells (e.g., 2019, 2022) and extreme weather events have triggered flood-related erosion and water infrastructure damage, particularly in vulnerable zones such as Kobujoi and Kabirirsang.

2.1.4.2 Strategies for Conservation and Sustainable Management

Nandi County faces a range of environmental risks including deforestation, water pollution, land degradation and biodiversity loss. To address these challenges, a combination of conservation strategies and sustainable management practices are being implemented, with a growing emphasis on nature-based solutions (NbS). Table 33 in appendix 9 outlines the key approaches currently in use, their implementation status, effectiveness, and recommended actions to enhance their impact.

2.1.4. Climate Change Variability in Nandi County

Climate variability marked by erratic rainfall, droughts, and floods has further stressed water systems, impacting both quality and reliability (World Bank, 2021)¹⁰. Conservation efforts, including tree planting, riparian restoration, and community-led watershed management, have shown potential. Nature-based solutions such as wetland restoration and agroforestry are scaling these interventions is challenged by limited financial and institutional capacity (NEMA, 2020). As climate risks intensify, sustained investment in integrated, nature-based water resource management is critical to ensure long-term water security.

2.1.4.1. Climate Change Impacts in Nandi County

Climate change has significantly impacted Nandi County, with rising temperatures being one of the most evident changes. Over the past 40 years, the annual mean temperature has increased by about 0.7°C, with projections indicating a further rise of 1.5°C by 2050 (KMD, 2020). This warming trend has strained agricultural activities, particularly tea farming and dairy production, by causing heat stress on crops and livestock (University of Nairobi, 2021)¹¹.

⁸ KMD. (2020). *County Climate Trend Data for Nandi County*. Nairobi: Kenya Meteorological Department.

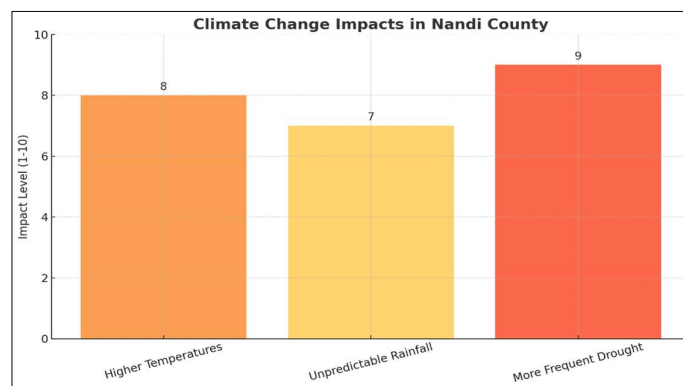
⁹ MoE & UNDP. (2021). *Kenya National Climate Change Risk Atlas*. Nairobi: Ministry of Environment and United Nations Development Programme.

¹⁰ World Bank. 2021. *Resilience in Urbanizing Areas: Addressing Climate Change Impacts on Water Resources in Kenya*. Washington, DC: World Bank.

¹¹ University of Nairobi. (2021). *Impact of Climate Change on Agriculture in the Rift Valley, Kenya*. Nairobi: University of Nairobi.

Rainfall patterns have also shifted, with a 5% reduction in total annual rainfall over the past two decades and increasing unpredictability. The long rains (March–May) have shortened and weakened, while the short rains (September–November) have become more erratic and intense, complicating planting and harvesting schedules (Kenya Climate Smart Agriculture Strategy, 2017). These changes have led to inconsistent yields, soil erosion, flooding, and reduced soil fertility, further threatening local livelihoods.

A report by NEMA on climate change in Kenya further discusses the reduced rainfall, affecting crop production and soil fertility (National Environmental Management Authority [NEMA], 2018)¹².



The drought periods in Nandi County have become more frequent and severe reducing water availability for both human consumption and agriculture. Rivers and streams that once provided reliable water sources now run dry for extended periods, forcing communities to rely more on groundwater. These water shortages affect agriculture, food security, and overall well-being, increasing the county's vulnerability to climate variability. The Kenya National Drought Management Authority (NDMA, 2021)¹³ and the International Livestock Research Institute (ILRI, 2020)¹⁴ highlight the growing frequency of droughts and reduced water flow in the region exacerbating the challenges faced by local communities.

2.1.4.2. Climate Hazards in Nandi County

Nandi County faces a range of climate hazards that significantly threaten the availability, quality and reliability of water and sanitation services. These climate hazards include *prolonged droughts, seasonal floods, irregular rainfall patterns, rising temperatures* and *localized landslides* especially in steep terrain areas. In recent years, the county has increasingly experienced erratic rainfall with the long rains becoming shorter and less predictable. Drought periods which previously occurred every 5–7 years are now more frequent adversely impacting both surface and groundwater recharge. Localized flooding during peak rainy seasons has led to latrine overflows and contamination of

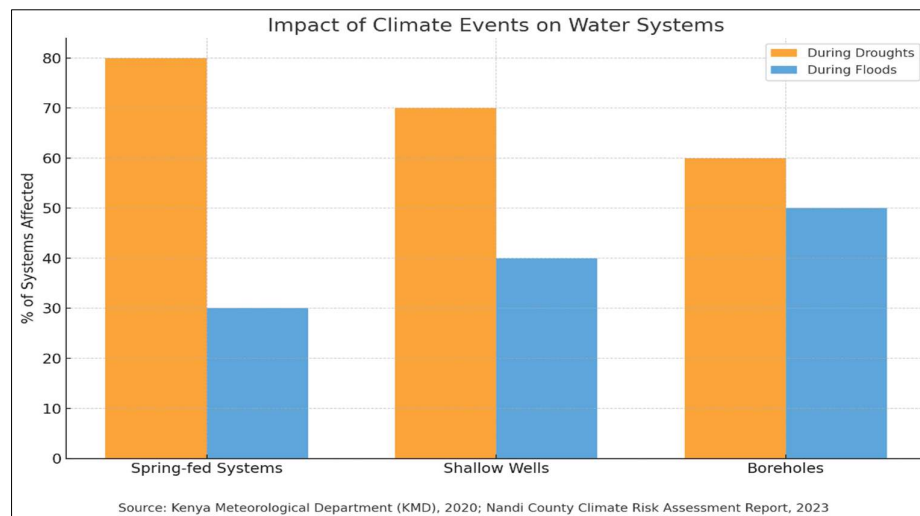
¹² National Environmental Management Authority (NEMA). (2018). *National Climate Change Action Plan, 2018-2022*. Nairobi: Government of Kenya.

¹³ National Drought Management Authority (NDMA). (2021). *Drought Monitoring in Kenya*. Nairobi: Government of Kenya.

¹⁴ International Livestock Research Institute (ILRI). (2020). *Climate change and livelihoods in East Africa*. Retrieved from <https://www.ilri.org/>

shallow wells, further compromising water quality and public health¹⁵. Table 34 in appendix 10 shows Key Climate Hazards Experienced in Nandi County.

Historical meteorological data from KMD, indicates increasingly erratic rainfall patterns in Nandi County, with shifts in the onset and cessation of rains disrupting water supply planning and affecting small-scale systems like spring-fed sources and shallow wells. Coupled with rising temperatures—up by 0.3–1.2°C since 1985 (IPCC, 2021; KMD, 2020)—these changes have intensified evapotranspiration, reduced river and reservoir levels, and increased water demand during dry periods, worsening water scarcity.



The *Nandi County Participatory Climate Risk Assessment Report (2023)* identifies water scarcity particularly during prolonged droughts and the collapsing of latrines due to flooding as key climate risks affecting health and sanitation. The report highlights the issue of borehole drying in Kapsabet, Tindiret and Nandi Hills locations bringing about water shortage challenges as well as increased water contamination and infrastructure damage during floods. Women and children face heightened vulnerability who are often tasked with fetching water from increasingly distant and unsafe sources during dry periods.

¹⁵ Ministry of Agriculture, Livestock and Fisheries (Kenya) and CIAT (International Center for Tropical Agriculture). 2016. *Kenya Climate Risk Profile: Nandi County*. Nairobi, Kenya: Ministry of Agriculture, Livestock and Fisheries and CIAT. Available at: <https://cgspace.cgiar.org/handle/10568/82564>.

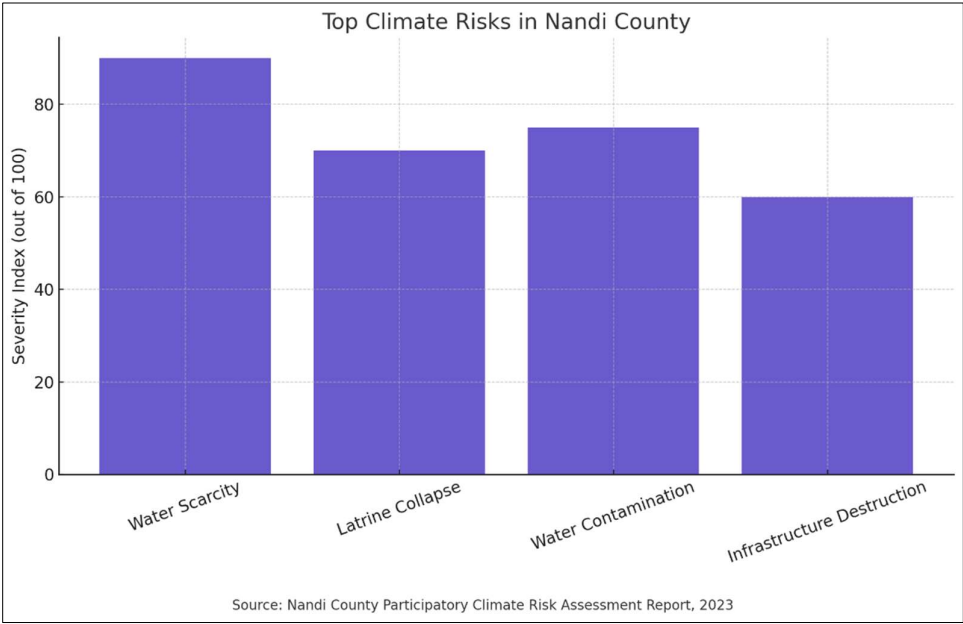
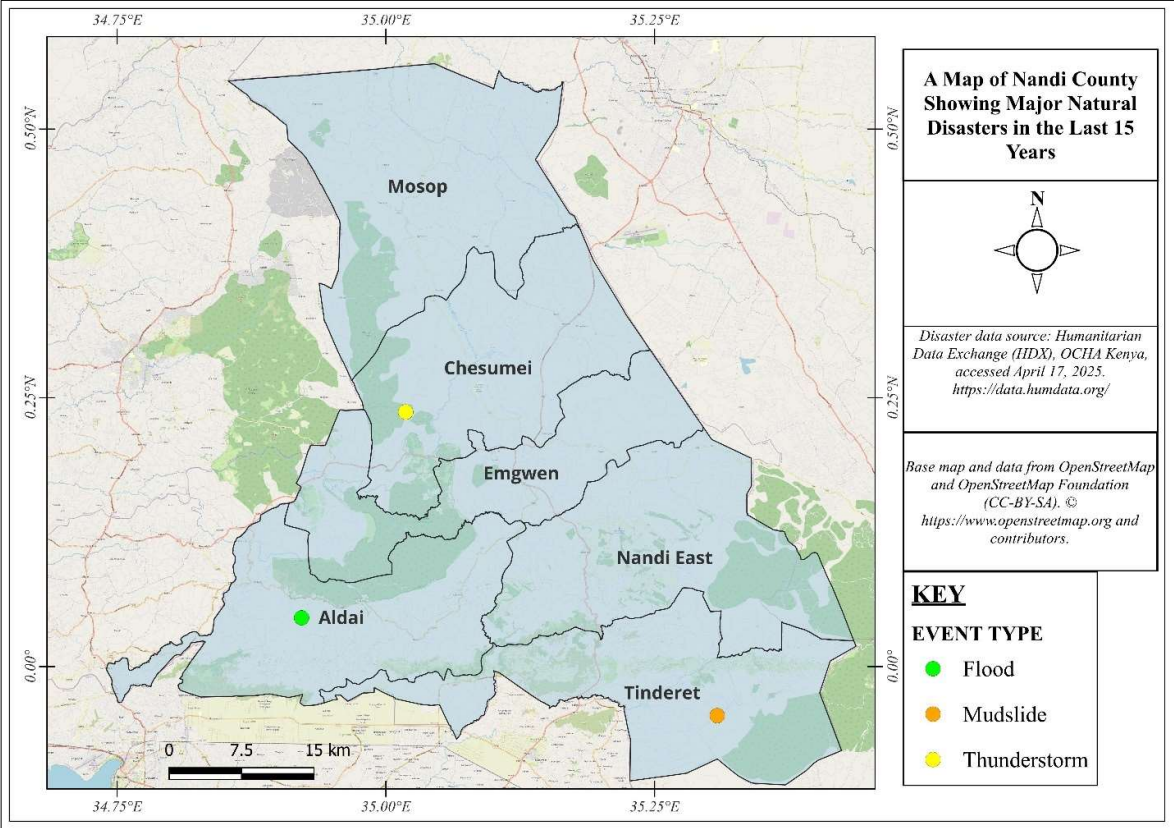


Figure 6: Nandi County Disaster Map



2.1.4.3. Impacts of Climate Variability on WASH Infrastructure and Water Availability in Nandi County

The Nandi County CIDP 2023–2027 and Draft Water Master Plan (2022)¹⁶ reports that over 350 functional boreholes and 60 gravity-fed pipeline schemes across the county. GIS data indicates that many boreholes in the Mosop and Aldai sub-counties are in semi-arid zones, making them prone to seasonal water stress.

This Climate Change Vulnerability Assessment combines both secondary data sourced from county-level documents (such as the County Integrated Development Plan [CIDP] and previous WASH infrastructure reports) and primary data collected through structured questionnaires administered via the Kobo Collect tool. The survey was conducted across all six sub-counties of Nandi County in March 2025, targeting 240 respondents from diverse stakeholder groups, including community members, school administrators, health facility staff, and water user committee representatives.

The survey aimed to capture local-level experiences and perceptions of climate variability, water security and assist functionality of WASH infrastructure. Secondary data, such as information on infrastructure locations and historical climate data (rainfall patterns, temperature changes), were cross-referenced to provide a broader context and validate primary findings. The primary data collected focused on issues such as water access, the condition of WASH infrastructure, climate-related disruptions, and community coping strategies.

2.1.4.4. Exposure of WASH Infrastructure and Water Resources

The findings from both secondary and primary data sources reveal key vulnerabilities related to WASH infrastructure across the county.

From the CIDP and County reports), it is evident that Nandi County has an extensive network of boreholes, pipelines, latrines, and water storage facilities but many of these facilities are located in flood-prone and erosion-prone areas. For instance, several key boreholes in Aldai, Mosop, and Tindiret sub-counties have been noted to struggle with seasonal water yield reductions, especially during dry periods.

The water resources mapping survey data indicates that:

- 57% of borehole users in Aldai and Mosop reported seasonal reduction in water yield, with some boreholes drying up for extended periods during the dry season. This corresponds with secondary data indicating declining water levels in the area.
- 32% of respondents reported that their primary water source dries up for more than one month annually, which highlights the increasing vulnerability of water sources to droughts.
- 41% of surveyed schools reported that their latrine blocks have been affected by seasonal flooding in the past two years, further emphasizing the vulnerability of sanitation infrastructure to climate extremes such as floods.

¹⁶ Nandi County Government. 2022. *Nandi County Water Master Plan*. Nandi County Government.

These findings highlight that while some WASH infrastructures are well-established, its exposure to climate hazards—particularly that to droughts and flooding—poses a significant challenge to water access and sanitation in Nandi County.

2.1.4.5. Climate Risk Analysis

Both secondary data and primary survey results indicate that climate-related risks are a major concern in Nandi County, particularly in terms of water access and WASH infrastructure resilience.

Secondary data, such as historical climate records, suggests that Nandi County has experienced a shift in rainfall patterns over the past decade, with prolonged dry spells followed by intense rainfall events, leading to erratic water availability.

The primary survey data highlights specific local concerns that:

- 68% of health facilities reported disruptions in water access due to prolonged dry spells, which have direct implications for hygiene and healthcare delivery. Secondary data supports this, showing that healthcare facilities are often located in areas where groundwater resources are less reliable during dry seasons.
- Responses from communities in Chepkumia and Sangalo highlighted that drought and erratic rainfall are perceived as the two most pressing climate risks, consistently cited as factors that impact both the quantity and quality of available water. Secondary data from weather patterns corroborates these concerns, showing a clear trend toward more frequent and intense dry spells in the region.

This combination of secondary climate data and primary community feedback provides a comprehensive understanding of the local climate risks and their direct impact on WASH infrastructure and water resources.

2.2. Water Supply Services Coverage and Gaps

The assessment of water and sanitation survey was undertaken as a critical component of the broader situational analysis aimed at understanding the current status, distribution, reliability, and functionality of existing WASH infrastructure within Nandi County. Primary data was collected through field surveys, household interviews, GPS mapping, and consultations with key stakeholders including community water management committees and local authorities.

2.2.1. Status of water supply infrastructure (urban vs. rural)

Safely managed water in schools will contribute to the Government of Kenya's goal of quality education and training to achieve the Kenya Vision 2030 and is a prerequisite to a number of provisions in the Constitution of 2010. The safety, reliability and sufficiency of drinking water, sanitation and hygiene has an impact on the development of children and their learning (Jasper et al., 2012; Garn et al., 2013).

The National Education Sector Strategic Plan (Ministry of Education, 2018:39) recognizes these issues as part of the holistic learning and development of a child where the “availability of clean water, promotion of hand washing and proper sanitation at

the primary schools positively impact on the health of a child, deterring waterborne diseases.

As part of the Kenya Water, Sanitation, and Hygiene (K-WASH) Program supported by the World Bank, Nandi County undertook a school-wide WASH survey to inform the Countywide Water and Sanitation Strategy and Investment Plan (CWSSIP). This survey assessed access, infrastructure, quality, and management of water, sanitation, and hygiene services in schools. The findings below guide targeted donor investment and county planning.

Dataset coverage: 612 schools were surveyed across wards.

Survey tool sections included:

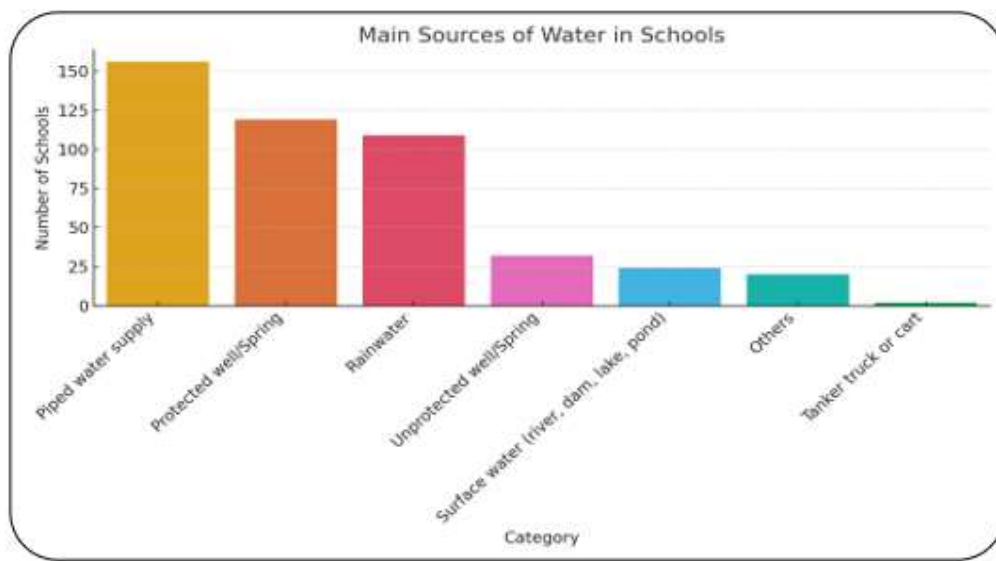
Water Infrastructure

- Sanitation Facilities
- Hygiene Services
- MHM Support
- Waste Management
- Energy and Lighting
- Physical & Safety Risks

Appendix 11 shows sample images of school water infrastructure (source, distribution, and storage).

2.2.2. Percentage of the population with access to improved water services

Main water sources: Piped water (32%, 196 schools), boreholes (26%, 159 schools), rainwater harvesting (14%, 86 schools), unprotected springs/wells (9%, 55 schools), and others. Unreliable sources, including surface water and vendors, still serve a significant share of schools.



Reliability: Only 57% (349 schools) reported year-round availability of water from their main source. Approximately 28% (171 schools) experience seasonal water shortages affecting daily school operations.

Proximity: 38% (233 schools) have on-site water access. However, 42% (257 schools) rely on sources located up to 500m away, and 20% (122 schools) depend on sources over 500m, presenting a burden on pupils and staff.

Water quality concerns: Less than one-fifth (approximately 18%, 110 schools) treat drinking water. Several schools reported concerns over taste, color, and possible contamination due to nearby sanitation infrastructure.

Recommendations:

- Invest in piped and rainwater harvesting systems in schools experiencing seasonal water shortages.
- Prioritize the provision of on-site water sources to reduce collection burden and ensure availability during school hours.
- Support treatment solutions such as filtration or chlorination to address water quality concerns.
- Incorporate water safety planning and storage improvement in WASH infrastructure projects.

2.2.2. Service delivery challenges and Climate Impact (e.g. non-revenue water, maintenance issues)

In Nandi County, Small Water and Wastewater Services and Sanitation Improvement Projects (SWWSSIPs) play a vital role in bridging the gap in access to clean water and improved sanitation, particularly in rural and peri-urban areas. However, the effective delivery of these services faces multiple challenges, many of which are being exacerbated by the growing impacts of climate change.

One of the key service delivery challenges is the limited capacity and coverage of SWWSSIPs. Many systems operate below optimal efficiency due to aging infrastructure, inadequate maintenance, and limited technical expertise at the local level. Financial constraints further limit the ability to expand coverage, upgrade existing systems, or invest in climate-resilient infrastructure. As a result, many communities continue to rely on unprotected water sources, which are highly vulnerable to contamination and seasonal variability.

Climate change compounds these service delivery issues. Erratic rainfall patterns and prolonged dry spells have led to frequent water shortages, reducing the reliability of water supply from boreholes, springs, and gravity-fed systems that many SWWSSIPs depend on. During drought periods, water sources dry up or yield insufficient volumes

to meet demand, leading to rationing, long queues, and increased burden on women and children who are primarily responsible for water collection.

In contrast, heavy rainfall events and flooding during the rainy seasons damage water infrastructure, particularly in low-lying or poorly drained areas. Latrines and septic systems often overflow during floods, contaminating nearby water sources and posing serious public health risks. The situation is worsened by inadequate drainage and a lack of proper waste and sludge management systems, especially in informal settlements and market centers.

Moreover, deforestation and degradation of water catchments within the county—driven by agricultural expansion, settlement, and logging—have weakened the natural ecosystems that support water availability. This environmental degradation not only affects water quantity but also increases sedimentation in water storage and treatment facilities, reducing their lifespan and increasing maintenance costs.

The challenges are further amplified by weak institutional coordination and limited community participation in the planning and management of SWWSSIPs. Many projects lack sustainable financing mechanisms and are highly dependent on donor funding, which is often short-term. There is also a gap in integrating climate risk assessments into project design and implementation, leaving systems exposed to future climate shocks.

In summary, service delivery for SWWSSIPs in Nandi County is under strain due to a combination of infrastructural, financial, institutional, and environmental challenges. The impacts of climate change—through droughts, floods, and ecosystem degradation—magnify these vulnerabilities, threatening the sustainability of water and sanitation services. Addressing these challenges will require coordinated efforts to strengthen local capacity, secure sustainable funding, incorporate climate adaptation measures, and enhance community engagement in the management of water and sanitation systems.

2.3. Sanitation Services Coverage and Gaps

2.3.1. Status of household sanitation access (sewered vs. non-sewered options)

A household survey was undertaken as a foundational activity to inform the development of the **CWSSIP**. Its core objective was to generate empirical insights into the current status of water supply, sanitation, and hygiene (WASH) services across all wards of Nandi County. The survey specifically focused on evaluating household-level access, infrastructure conditions, service reliability, hygiene practices, and exposure to environmental and social vulnerabilities.

This survey provides critical evidence to support informed planning, priority setting, investment decisions, and policy interventions that align with Kenya's national water sector goals and the Sustainable Development Goals (SDG 6).

Survey Design and Scope

The survey employed a structured and standardized questionnaire developed with reference to national WASH assessment tools and aligned with global indicators recommended by the WHO/UNICEF Joint Monitoring Programme (JMP). The tool captured a comprehensive range of information across the following thematic areas:

- Household demographics and socioeconomic indicators
- Water sources, reliability, distance, and cost
- Sanitation systems and management practices
- Hygiene behavior and facilities
- Solid waste disposal methods
- Energy sources and lighting
- Vulnerability, gender safety, and climate-related risks

Each household was geo-tagged, and enumerators were deployed across all sub-counties in both urban and rural settings. The wards included high-density urban zones (e.g., Kapsabet, Nandi Hills) and rural and remote areas to ensure spatial representativeness.

Sample Size and Geographic Coverage

A total of **779 households** were successfully interviewed, covering all the 30 wards of Nandi County. The sample distribution ensured proportional representation from different ecological zones, settlement types, and socioeconomic categories.

This sample size provides sufficient power for county-level inference and analysis of both macro (e.g., infrastructure gaps) and micro (e.g., intra-household behavior) dimensions of WASH services. GPS coordinates recorded from each household allow for spatial mapping and clustering of vulnerabilities, service coverage, and infrastructure needs.

Demographic Characteristics of Respondents

Analysis of household composition shows the following:

- Average household size: 5.2 individuals, aligning with national rural averages (Kenya National Bureau of Statistics, 2022).
- Elderly residents (70+ years): Present in 29% of surveyed households, indicating a need for age-friendly sanitation access.
- Persons with disabilities: Approximately 13% of households report having at least one member living with a disability, underscoring the importance of inclusive and accessible WASH infrastructure.
- Primary sources of income: Agriculture, small-scale trade, and informal employment dominate, especially in rural wards, which may influence affordability and willingness to pay for services.

Household Sanitation System Use by Area

Table 2 provides a comparative summary of the percentage of households using various types of sanitation systems across urban and rural areas in Nandi County. The figures underscore a pronounced divide in the quality of sanitation services between these regions. Urban areas demonstrate widespread use of improved sanitation facilities, reflecting stronger infrastructure and access. In contrast, rural areas continue to contend with significant reliance on unimproved and unhygienic sanitation practices, indicating persistent service delivery gaps and a pressing need for targeted interventions.

Table 2: Household Sanitation System Use by Area

Sanitation System	Urban (%)	Rural (%)
Pit latrine with slab	82.9	69.3
Pit latrine without slab	16.2	23.7
VIP latrine	11.1	2.6
Sewer-connected flush toilet	5.1	1.5
Septic tank system	3.4	0.6
Composting/Ecosan toilet	0.0	1.7
Bucket toilet	0.0	0.6
Open defecation	0.0	1.1

Urban areas recorded much higher coverage of improved sanitation systems, with 82.9% of households using pit latrines with slabs, 11.1% using VIP latrines, and 8.5% having access to flush-based systems (5.1% sewer-connected and 3.4% septic tanks). Notably, there were zero instances of open defecation or the use of bucket toilets reported in urban areas, which points to effective enforcement, better infrastructure, and possibly higher awareness levels. Urban sanitation conditions, therefore, reflect a relatively successful effort in maintaining hygienic, safe, and dignified sanitation services.

In contrast, rural wards show significant service gaps. While 69.3% of rural households use pit latrines with slabs, which meets the threshold of improved sanitation, the remaining portion includes a troubling 23.7% still relying on pit latrines without slabs. These unimproved facilities pose public health risks, particularly during the rainy season when they can lead to environmental contamination. Furthermore, 1.1% of rural households still practice open defecation, and 0.6% continue to use bucket toilets—both of which are considered unsafe and undignified sanitation practices. Access to flush-based systems remains rare in rural areas, with only 1.5% of households connected to sewers and 0.6% using septic tanks.

These findings point to an inequitable distribution of sanitation services across Nandi County. Although rural residents constitute the majority of the population, they are disproportionately represented in households with unimproved or unsafe sanitation. The implications of these gaps are far-reaching. Poor sanitation is directly linked to the spread of diarrheal diseases, soil and water contamination, and increased exposure to gender-based violence, particularly for women and girls who often manage household sanitation needs in isolated environments.

Nearly one in four rural households still lacks access to improved sanitation, which could be addressed through the promotion and subsidization of VIP latrines, provision of sanitation marketing services, and the scaling of locally appropriate innovations such as composting toilets. Second, urban areas should shift toward long-term sanitation

solutions by expanding sewer infrastructure and formalizing fecal sludge management systems, particularly as urbanization intensifies.

Behavior change communication (BCC) also needs to be intensified, particularly in rural settings where open defecation persists. Sanitation messages should be culturally tailored, community-led, and reinforced through schools and health units. At the same time, monitoring and evaluation mechanisms must be strengthened to identify underserved populations and track progress toward universal access goals.

Equity must remain central to all interventions. Special focus should be placed on vulnerable populations—such as female-headed households, elderly residents, and persons with disabilities—who may face compounded barriers to accessing safe sanitation.

2.3.2. Coverage of public and shared sanitation facilities, including market centers and informal settlements

The household survey reveals that **43% of respondents rely on shared sanitation facilities**, with a significant concentration of such dependency in high-density wards including Kapsabet, Nandi Hills, Chemundu/Kapngetuny, and Kilibwoni. These findings mirror urban trends observed in similar counties where fast urbanization has outpaced sanitation infrastructure development.

Key Observations:

- **Shared by 2–3 households:** 24%
- **Shared by 4 or more households:** 12%
- **Not shared (private):** 57%

While sharing may be culturally accepted in some settings, it does not meet the threshold for “safely managed sanitation” as per the WHO/UNICEF JMP standards. Public sanitation infrastructure—defined as facilities located in **markets, transport hubs, and communal areas**—was found to be **grossly inadequate**, often limited to dilapidated pit latrines or vandalized blocks lacking water, lighting, and privacy measures.

Most **market centers lack formally designated and managed public toilets**, leading to:

- Open defecation in nearby bushes
- Illegal discharge into storm drains
- Use of bucket toilets or flying toilets (plastic bags), especially during night hours

Infrastructure Gaps and Investment Needs

1. Coverage Gaps:

- Market centers (e.g., Kapsabet, Nandi Hills) and peri-urban settlements lack sufficient public sanitation blocks.
- Informal settlements have poorly constructed latrines without handwashing points, ventilation, or lighting.

2. Design Limitations:

- Existing facilities are poorly ventilated, **not gender-segregated**, and lack **inclusive features** for persons with disabilities.
- Absence of **handwashing stations** and safe water supply inside toilet blocks undermines hygiene promotion.

3. Spatial Misalignment:

- Most public toilet structures are situated far from the busiest points (e.g., markets or boda-boda stages), discouraging use.
- Informal settlements such as those near tea estates and peri-urban outskirts are **not served by sewer networks** and rely on makeshift latrines with high risk of environmental contamination.

4. Environmental Risks:

- Soak pits serving many public and shared latrines have **overflowed** during rainy seasons due to poor drainage and rising water tables.
- Some blocks are situated within **30–50 meters of water sources**, contravening NEMA and WHO minimum setback requirements.

Investment Needs:

To meet the sanitation demand in Nandi County, it is estimated that at least:

- **New public toilet blocks** should be constructed in market centers and strategic communal areas. This should include gender-segregated public toilets and disability-friendly and child-safe facilities.
- All existing structures must be **retrofitted** with handwashing stations, water supply, lighting, and ramps
- Investment in **onsite fecal sludge containment and regular desludging contracts** is urgently needed to support non-sewered areas

Operation and Maintenance (O&M) Modalities

Sanitation service sustainability hinges on the functionality and cleanliness of shared and public facilities. The assessment revealed a **fragmented and under-resourced O&M system**:

Management Models Currently in Use:

- **Informal caretaker arrangements:** Some market toilets are managed by youth or women's groups, who collect user fees but lack adequate training or budget for repairs.
- **County-run toilets:** Where present, these suffer from bureaucratic delays in procurement of cleaning materials and irregular staff deployment.
- **Neglected facilities:** Several blocks have no clear ownership or have been vandalized due to lack of surveillance and accountability.

Challenges Identified:

- **Inconsistent cleaning schedules:** Some blocks are cleaned once per week or only during market days
- **No maintenance fund:** Revenue collected is often insufficient or mismanaged; no ring-fenced budgets for maintenance exist at ward level
- **Limited community engagement:** Users report dissatisfaction with cleanliness, security, and lack of supplies (e.g., soap, toilet paper)

Recommendations for Sustainable O&M:

1. **Adopt Public-Private Partnerships (PPPs):** Engage community-based organizations and micro-enterprises in running pay-per-use public toilets under performance contracts.
2. **Establish a Sanitation Fund:** Each ward should allocate budget lines for minor repairs, cleaning materials, and staff stipends.
3. **Introduce digital maintenance tracking:** A simple reporting and monitoring system can flag urgent repairs and enhance accountability.
4. **Incentivize performance through contracts:** Tie caretaker performance to cleanliness scores based on periodic audits.

2.3.3. Sanitation challenges, including waste management, hygiene practices, and cultural barriers

Sanitation service delivery in Nandi County faces a complex mix of behavioral, infrastructural, environmental, and cultural challenges. While there have been improvements in access to basic sanitation, data from the household survey reveals that progress is **uneven and fragile**, particularly in low-income rural areas, informal settlements, and high-density peri-urban centers. Understanding the **underlying constraints** is critical for developing sustainable and inclusive sanitation solutions.

1. Behavioral, Cultural, and Logistical Constraints

1.1. Hygiene Behavior and Facility Use

The survey found that **only 28%** of households consistently practice handwashing with soap at critical times such as after defecation and before meals. A further **53% of households lack access to soap** at their handwashing stations, and **over 400 households (53%) do not have dedicated handwashing facilities** at all.

This mirrors national trends. According to the Kenya Demographic and Health Survey (KDHS, 2022), rural areas continue to lag in hygiene behavior despite having access to water sources. Poor hand hygiene increases the risk of diarrheal diseases, cholera outbreaks, and respiratory infections, especially in children under five.

Several behavioral drivers are at play:

- **Low risk perception:** Many households underestimate the link between poor hygiene and disease.
- **Habitual practices:** Cultural reliance on water-only handwashing without soap is common.

- **Infrequent hygiene promotion:** Only 21% of respondents reported any ongoing hygiene campaigns in their community.

1.2. Cultural Barriers to Sanitation Uptake

The uptake of improved toilets remains constrained by deep-rooted cultural beliefs and generational habits, particularly among rural communities. Common barriers include:

- **Taboos** around constructing or sharing a latrine with in-laws or opposite-sex family members
- Beliefs that **children's feces are harmless**, resulting in unsafe disposal
- Preference for open defecation in bushes, especially by herders, elderly men, or laborers in tea estates

These cultural norms, often passed down generationally, reduce the adoption of latrine use, particularly in remote settlements.

1.3. Logistical and Financial Barriers

Aside from behavior, **logistical limitations** play a central role:

- **Lack of space** in densely populated informal areas makes latrine construction difficult
- **High cost** of constructing improved toilets or emptying latrines discourages investment by households
- **Low technical capacity** among local artisans to build safe, ventilated, and durable latrines
- **Weak enforcement** of building codes and sanitation ordinances in both rural and peri-urban zones

Only 6.3% of households reported accessing **professional fecal sludge services**, with the majority relying on unsafe manual practices or not emptying at all.

2. Climate Change Impacts on Sanitation Infrastructure

Climate change poses **increasing threats** to sanitation systems in Nandi County, particularly those relying on traditional pit latrines and shallow septic systems.

2.1. Flooding and Rising Water Tables

The survey and field observations identified frequent flooding in several wards (e.g., parts of Tinderet, Kilibwoni, and Lelmokwo/Ngechek), which has led to:

- Collapse of pit latrines
- Overflow of soak pits and septic tanks
- Infiltration of fecal sludge into water bodies during rainy seasons

These challenges compromise both **environmental safety and public health**, particularly in areas near water sources or wetlands. Poorly located latrines pose a contamination risk for rivers and shallow wells, exacerbating the spread of waterborne diseases.

2.2. Heat and Drought Conditions

On the opposite spectrum, prolonged dry spells:

- Increase **latrine abandonment** due to difficulty accessing water for flushing
- Exacerbate **hand hygiene neglect** when water is rationed for cooking or livestock

This underscores the importance of **climate-resilient sanitation designs** that function effectively under both flood and drought conditions.

3. Strategic Recommendations for Improving Sanitation Uptake

To overcome these challenges, Nandi County must pursue **multi-dimensional and context-specific strategies** that address both supply and demand constraints, including social norms, affordability, technical design, and governance.

3.1. Behavior Change Communication (BCC) and Hygiene Promotion

- **Intensify hygiene promotion** through Community Health Volunteers (CHVs), local radio, schools, and religious groups.
- Adopt **positive deviance approaches** to showcase model households and sanitation champions within communities.
- Leverage local leadership to **shift taboos and encourage inclusive sanitation adoption** (e.g., inter-generational discussions on sanitation).

3.2. Subsidized Sanitation and Microfinancing Models

- Pilot **targeted sanitation subsidies** for low-income and vulnerable households, especially in informal settlements and flood-prone areas.
- Establish linkages with **microfinance institutions (MFIs)** to offer low-interest sanitation loans for latrine construction and upgrades.
- Support **sanitation entrepreneurs** to deliver affordable pit latrine construction, retrofitting, and emptying services.

3.3. Technical Innovations and Climate Resilience

- Promote **elevated toilet designs** or flood-proof latrines in high water table zones.
- Encourage adoption of **ecological sanitation (ecosan) systems**, composting toilets, or simplified sewerage in informal areas.
- Use **GIS mapping** to identify and monitor climate-vulnerable sanitation hotspots and prioritize interventions accordingly.

3.4. Strengthen Enforcement and Service Regulation

- Enforce existing county bylaws on sanitation in rental dwellings, schools, and marketplaces.

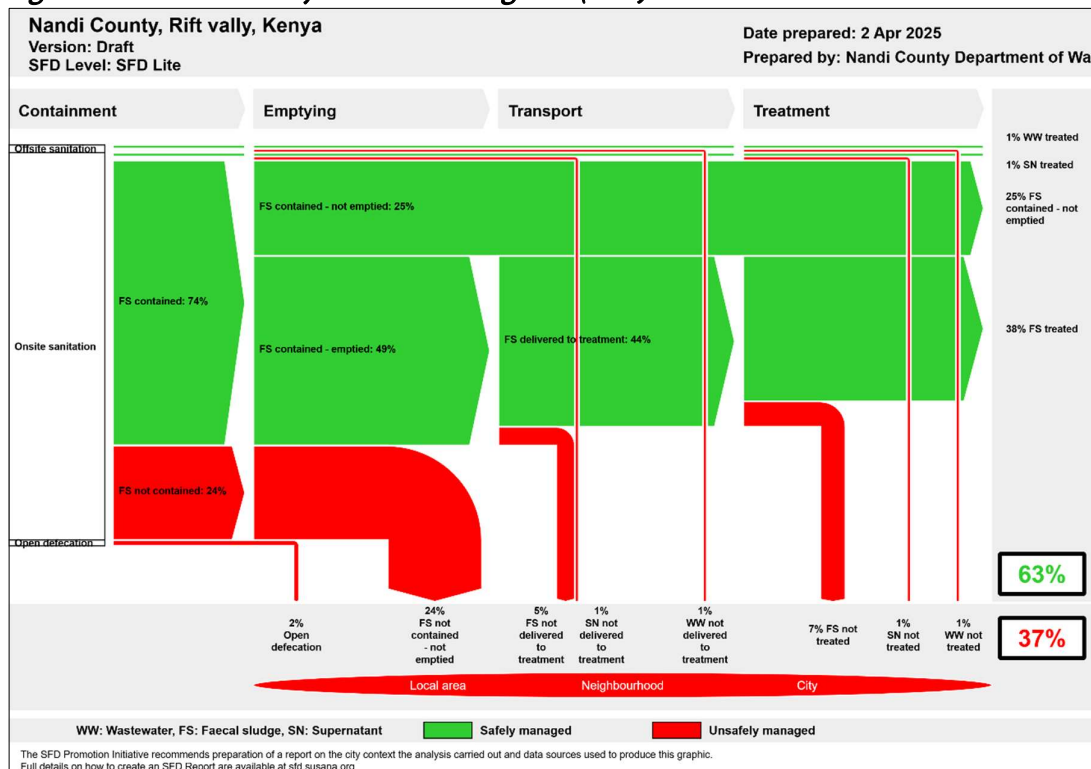
- Expand the mandate of public health officers to monitor sanitation compliance and provide extension support to households and artisans.

2.3.4. Assessment of fecal sludge and wastewater management and existing treatment facilities

The Shit Flow Diagram (SFD) below visually represents the flow of faecal sludge (FS), supernatant (SN), and wastewater (WW) through the following stages:

1. Containment – where the waste is initially deposited (e.g., pit latrines, septic tanks).
2. Emptying – the removal of waste from the containment system.
3. Transport – movement of the emptied waste to treatment sites.
4. Treatment – processing the waste to render it safe for disposal or reuse.
5. Each segment of the diagram shows proportions of the population’s waste that is either safely managed (green) or unsafely managed (red).

Figure 7: Nandi County Shit Flow Diagram (SFD)



A. Containment

- 74% of the population uses sanitation systems where FS is safely contained.

- 24% of FS is not contained, meaning the systems used are faulty, overflowing, or not properly constructed.
- 2% of the population practices open defecation.

Implications: Nearly 1 in 4 people use unsafe systems. These contribute to environmental contamination and health risks.

B. Emptying

- Of the 74% with contained FS:
 - 49% is emptied.
 - 25% is not emptied.
- 24% of uncontained FS and 2% open defecation do not reach this stage.

Implications: There's a risk of illegal dumping or overflow where services are lacking or unaffordable.

C. Transport

- 44% of FS is successfully transported to treatment facilities.
- 5% of FS emptied is not delivered to treatment.
- 1% of SN and 1% of WW is not delivered either.

Implications: Transport inefficiencies result in unsafely managed waste and pollution.

D. Treatment

- 38% of FS is treated.
- 7% of FS reaches treatment facilities but is not effectively treated.
- SN and WW show only 1% treated each.

Implications: Wastewater and supernatant treatment are critically low, and more capacity is needed.

Safely Managed Flows (Green Paths): 63%

This includes:

- 25%: FS safely contained but not emptied.
- 38%: FS emptied, transported, and treated.
- Small portions of WW and SN that are treated.

Note: This level of safely managed sanitation is above many rural counties but still far from universal.

Unsafely Managed Flows (Red Paths): 37%

This includes:

- 24%: FS not contained.
- 5%: Emptied but not transported to treatment.
- 7%: Untreated FS at treatment sites.
- 1% each: SN and WW not treated.
- 2%: Open defecation.

These flows contribute directly to health and environmental hazards.

Strategic Implications for Nandi County WSIP (under KWaSH)

Key Issues Identified	Strategic Interventions
24% of waste not contained	Enforce building codes for latrines; support improved toilets
Low emptying & transport regulation	Professionalize and license desludging services; subsidize emptying
Treatment gaps	Expand and upgrade FS treatment facilities; include SN and WW in plans
Open defecation persists	Community-led total sanitation (CLTS), school WASH programs
Poor WW/SN management	Extend sewerage coverage; pilot decentralized treatment
Weak tracking of flows	Establish digital M&E systems; map informal dumping

While Nandi County has made progress in onsite containment and some FS treatment, major gaps remain in transport, treatment, and liquid waste management. These inefficiencies lead to 37% of excreta being unsafely managed, posing a clear risk to health and the environment. The SFD provides a powerful tool for targeting investments, policy reform, and community engagement under the WSIP and KWaSH program.

2.4. Access to WASH for Schools and Healthcare Facilities

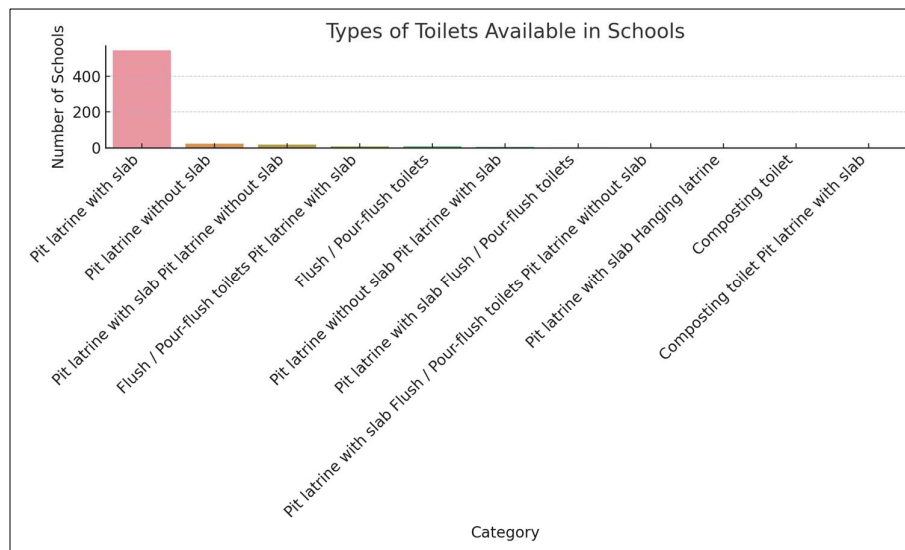
2.4.1. Status of water supply and sanitation in schools and health care facilities

2.4.1.1. WASH in Schools

Toilet type: The dominant facilities are pit latrines with slabs (62%, 379 schools) followed by flush toilets (21%, 128 schools), and pit latrines without slabs (11%, 67 schools).

Adequacy and equity: On average, there is one usable toilet for every 58 pupils. Only 58% (355 schools) had separate toilets for boys and girls, and just 12% (74 schools) had accessible toilets for children with disabilities.

34% of sanitation facilities were rated as unsafe or in poor condition. Many reported cracked walls, overflowing pits, and lack of privacy barriers.



Appendix 12 shows images depicting sanitation infrastructure in schools including drop holes, latrines, and drainage areas.

Recommendations:

- Construct and maintain gender-segregated, age-appropriate, and disability-accessible latrines.
- Provide technical support for improving unsafe toilet facilities.
- Institute minimum standards for pupil-to-toilet ratios in schools and monitor compliance.
- Allocate budget for routine inspections and minor repairs of toilet infrastructure.

a) Menstrual Hygiene Management

MHM Facilities — Most schools lack private and equipped spaces for menstrual hygiene support.

Private MHM spaces: Only 29% (177 schools) of schools had private spaces equipped with soap and water for menstruating girls.

Waste disposal: Where facilities exist, 23% (141 schools) reported using burning pits or incinerators, while 19% (116 schools) dispose of menstrual waste in latrines. Covered bins were available in only 1 out of 5 schools (approximately 20%, 122 schools).

MHM support systems: Only 17% (104 schools) of schools had appointed female staff to offer MHM counseling, and even fewer had educational materials or designated awareness sessions.

Recommendations:

- Equip all schools with private, safe, and clean MHM spaces that include water and soap.
- Provide disposal mechanisms such as incinerators or bins with liners and lids.
- Train female staff to support and counsel learners on MHM issues.
- Ensure regular supply and access to menstrual products for schoolgirls.

b) Waste Management

Solid waste infrastructure: 39% of schools had a designated system for waste collection and storage. The rest relied on open dumping, burning, or informal disposal practices.

Disposal practices: 36% burn waste on-site, 18% dump it openly. None of the schools reported formal links to municipal waste collection.

O&M protocols: Only 27% had formal cleaning protocols in place. Less than 20% of schools had staff trained in cleaning or minor repairs, and many reported a lack of dedicated WASH budgets.

Monitoring: Just 14% of schools monitored WASH indicators regularly or had maintenance plans.

Figure 8: Availability of solid waste infrastructure



Recommendations:

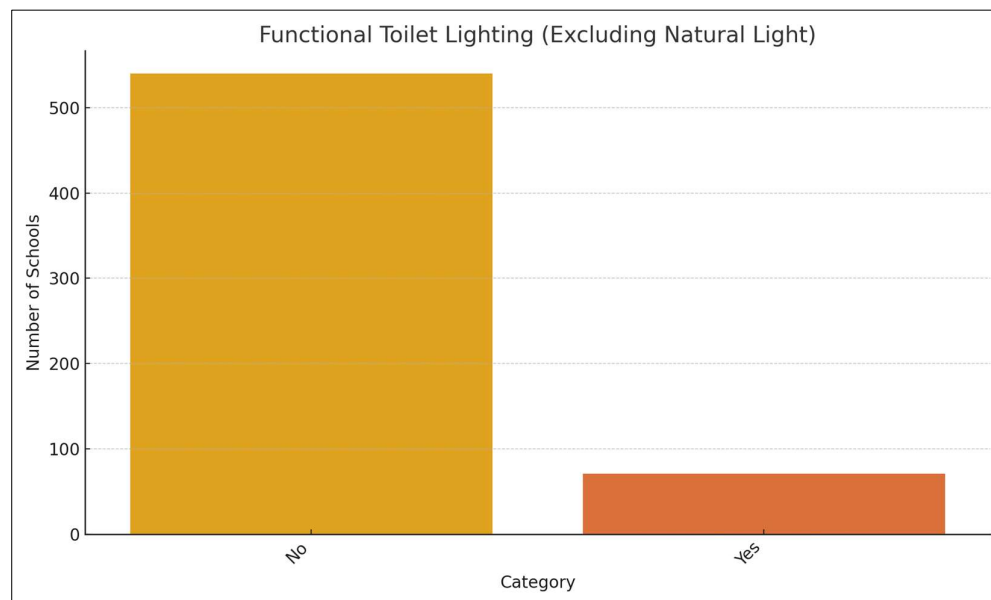
- Establish structured waste management systems in schools, including secure storage and disposal facilities.
- Develop standard cleaning protocols and assign dedicated WASH focal persons in every school.
- Build school staff capacity on infrastructure maintenance, waste segregation, and safety.
- Facilitate linkages with local authorities for periodic waste collection where possible.

c) Energy and Lighting for Climate Resilience

Lighting in toilets: 81% of schools lack functional lighting in toilets, posing safety risks especially for girls and evening use.

Renewable energy: Very few schools reported using solar-powered pumps or lighting, despite the potential for climate-smart interventions.

A majority of schools lack lighting, raising safety concerns especially for girls.



Recommendations:

- Install solar-powered lighting in toilets and critical school infrastructure.
- Promote the adoption of solar-powered water pumps in schools lacking reliable energy access.

- Support energy audits and clean energy integration as part of WASH improvements.
- Include lighting and energy needs in school WASH assessments and budgeting.

d) Physical and Service Level Assessment

In 67% of schools, toilets and handwashing stations were located more than 30 meters from classrooms. This distance affects regular use and safety, particularly for younger learners.

Structural integrity and safety: 21% of schools reported vandalized or damaged water infrastructure (taps, tanks, pipes), while 18% had visible hazards such as exposed wiring or broken doors in toilet areas.

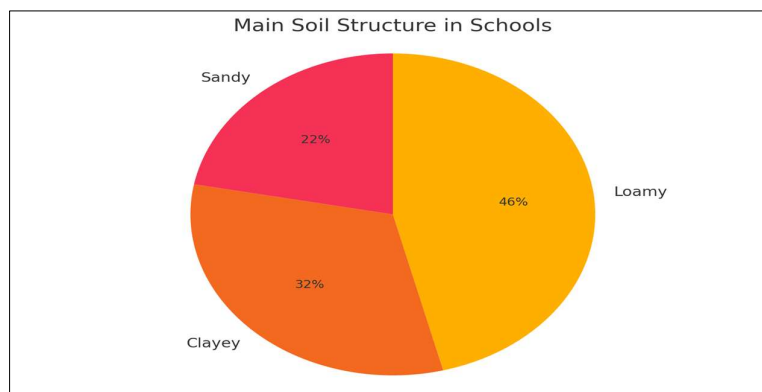
Service level adequacy: Schools lacking fencing or lockable facilities faced additional security and cleanliness issues. In many cases, shared use with nearby communities contributed to overuse or contamination.

Availability of signage and SOPs: Only 24% of schools had visual hygiene promotion materials displayed. SOPs for cleaning, water treatment, and maintenance were present in just 12% of cases.

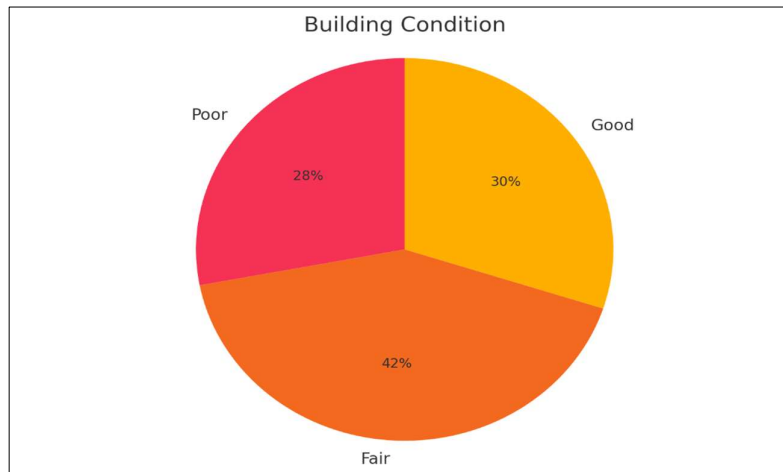
Contamination risks within 500m: 33% of schools had potential sources of contamination (e.g., waste dumps, latrines, livestock enclosures) located within 500 meters, increasing health hazards.

Soil structure: The predominant soil types were loamy (46%), clay (32%), and sandy (22%), which influence infrastructure durability and drainage planning.

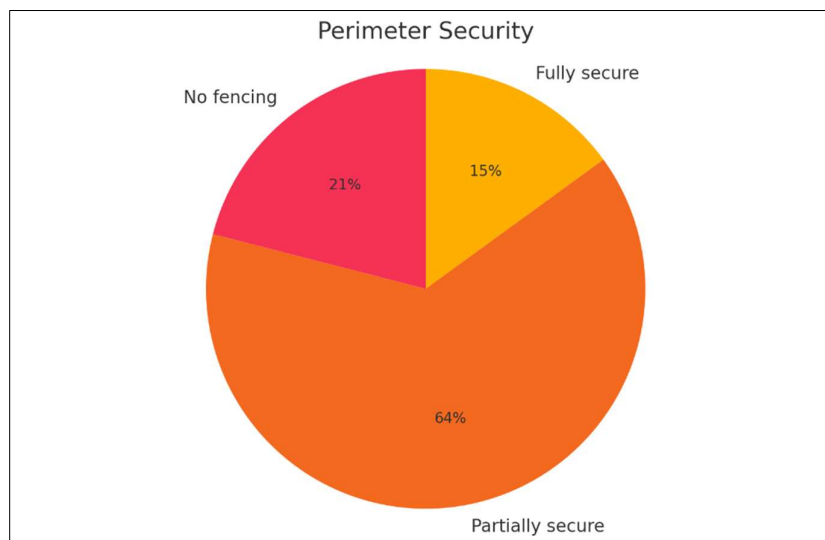
Loamy and clayey soils dominate, which has implications for latrine and drainage design.



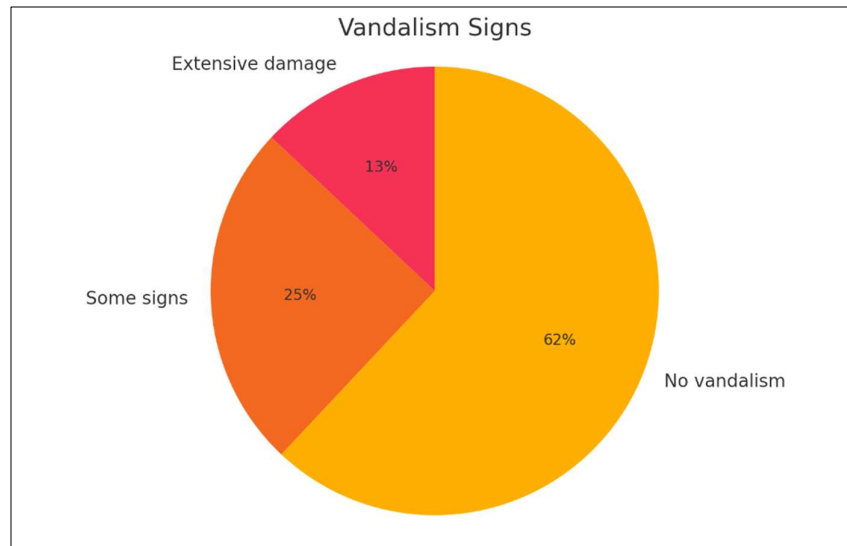
Proximity of WASH infrastructure to classrooms. Many WASH facilities are in fair or poor condition, requiring structural upgrades.



Over a fifth of schools lack secure fencing, posing safety and vandalism risks.



Over one-third of schools show signs of damage, highlighting the need for security and maintenance.



General condition of surrounding environment: 61% of schools were rated as having fair surrounding cleanliness and drainage, while 22% were poor.

Accessibility: 76% of schools had rough access roads; 18% were only accessible by footpaths, limiting accessibility for supply trucks or emergency services.

Space for expansion: 58% of schools reported having free land available for future WASH infrastructure or classroom construction.

WASH building condition: 42% of buildings housing WASH infrastructure were rated fair, 28% poor, and only 30% good.

Perimeter security: 64% of schools had partially secure fencing, while 21% had no defined boundaries.

Visible vandalism: Signs of vandalism (e.g., broken windows, graffiti, tampered tanks) were observed in 38% of schools.

Below are selected field photos documenting vandalism within school facilities:

Figure 9: Severely damaged pit latrine made from unreinforced wooden poles — unsafe and unfit for learners



Recommendations:

- Ensure toilets and handwashing facilities are within safe, accessible distances from classrooms.
- Provide routine maintenance support to address vandalism and damage to infrastructure.
- Equip schools with SOPs, visible signage, and hygiene messaging to reinforce safe practices.
- Consider fencing and controlled access to WASH facilities where shared use creates risks.

2.4.1.2. WASH in Health care Facilities

The WASH survey covered 123 healthcare facilities (HCFs) in Nandi County (one of the nineteen target counties). These facilities span 6 sub-counties (Aldai, Chesumei, Emgwen, Mosop, Nandi Hills, and Tinderet). They include mostly primary care facilities: the vast majority (~78%) are dispensaries, about 6–8% are health centres, and only a handful are sub-county hospitals. This indicates that the sample is largely composed of small rural clinics, with very few higher-level hospitals.

Respondents: Nearly all respondents were the facility in-charges or their designates. Every surveyed facility provided the name of the in-charge, suggesting that the survey team predominantly interviewed facility heads. This uniform respondent profile means the insights reflect perspectives of those responsible for facility management, ensuring data reliability on institutional WASH conditions.

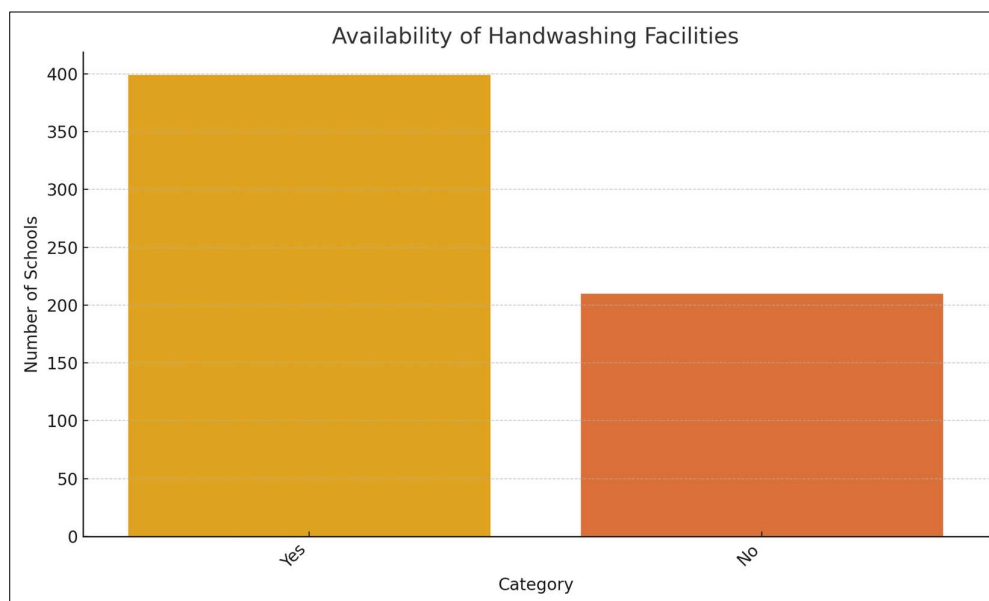
Staff and Patients: The facilities serve varying volumes of patients. On average each facility reported 3 toilets (“drop holes”), with a range from 1 to 10. In about 46% of facilities, there is a staff-only toilet available, while the rest have staff sharing toilets with patients. The median ratio of staff to toilets is 1:1 (most have one toilet per staff or better), indicating that in general staff numbers are small relative to available latrines. However, a few facilities (3 cases) have more than 5 staff per toilet, hinting at possible overcrowding or underserviced staff needs in those cases.

Gender and Accessibility: About 54% of facilities have sex-segregated toilets for male and female users, while 46% have only unisex (gender-neutral) toilets shared by all. Additionally, only 37% (46 facilities) have at least one toilet that is accessible to persons with disabilities (e.g. with ramps or handrails), leaving 63% of facilities without any disability-friendly latrine. These gaps highlight areas for inclusive WASH improvements.

Handwashing stations: Functional handwashing stations with both soap and water were reported in only 41% (251 schools) of schools since is because of handwashing campaigns that were done to mitigate COVID 19. Many rely on bucket systems without proper drainage.

The majority of functional stations are located near toilets or in open yards, but only 17% (104 schools) are accessible to young children or learners with mobility challenges. Many schools lack both soap and proper drainage for consistent hand hygiene.

Hygiene education: Hygiene promotion activities are irregular or absent in 72% (382 schools) of surveyed schools.



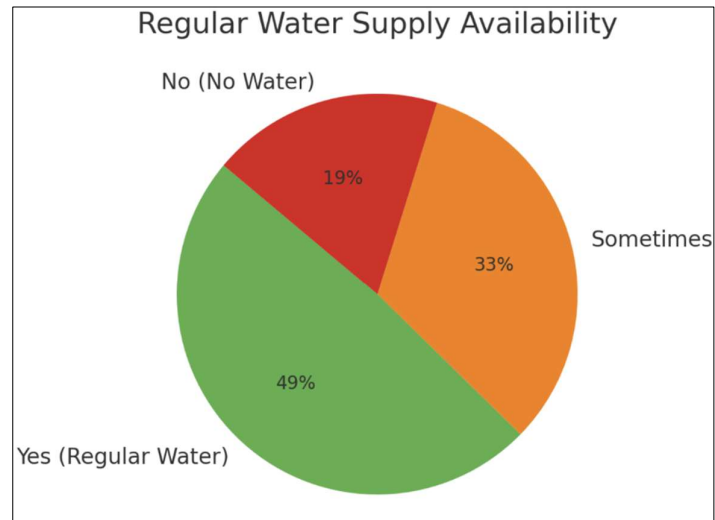
Appendix 13 illustrates the handwashing infrastructure available in schools assessed under this survey. These depict both functional and makeshift facilities:

Recommendations:

- Install accessible and functional handwashing stations with soap and water at strategic locations in schools.
- Implement hygiene promotion programs and include hygiene education in the school curriculum.
- Train school management and pupils on correct hand hygiene behavior.
- Include infrastructure support for safe and durable handwashing facilities.

a) Water Supply Analysis

Availability of Water: A significant portion of facilities struggle with water access. Only ~49% (60 facilities) reported having regular water supply (“Yes” to normally having water). The rest either have water “*Sometimes*” (intermittently) or not at all. In fact, **23 facilities (19%) have no on-site water source**, and another **32.5%** have water only sometimes (seasonal or irregular)



This means that nearly two-thirds of facilities lack reliable year-round water. At the time of the survey, among those that *do* normally have water, about 12% were experiencing an outage (no water flowing that day), underscoring reliability issues. Facilities that said they “*sometimes*” have water had a 20% chance of being dry on the survey day, whereas even 7% of those claiming regular supply were found dry on that day – indicating occasional breakdowns or service interruptions even in “reliable” systems.

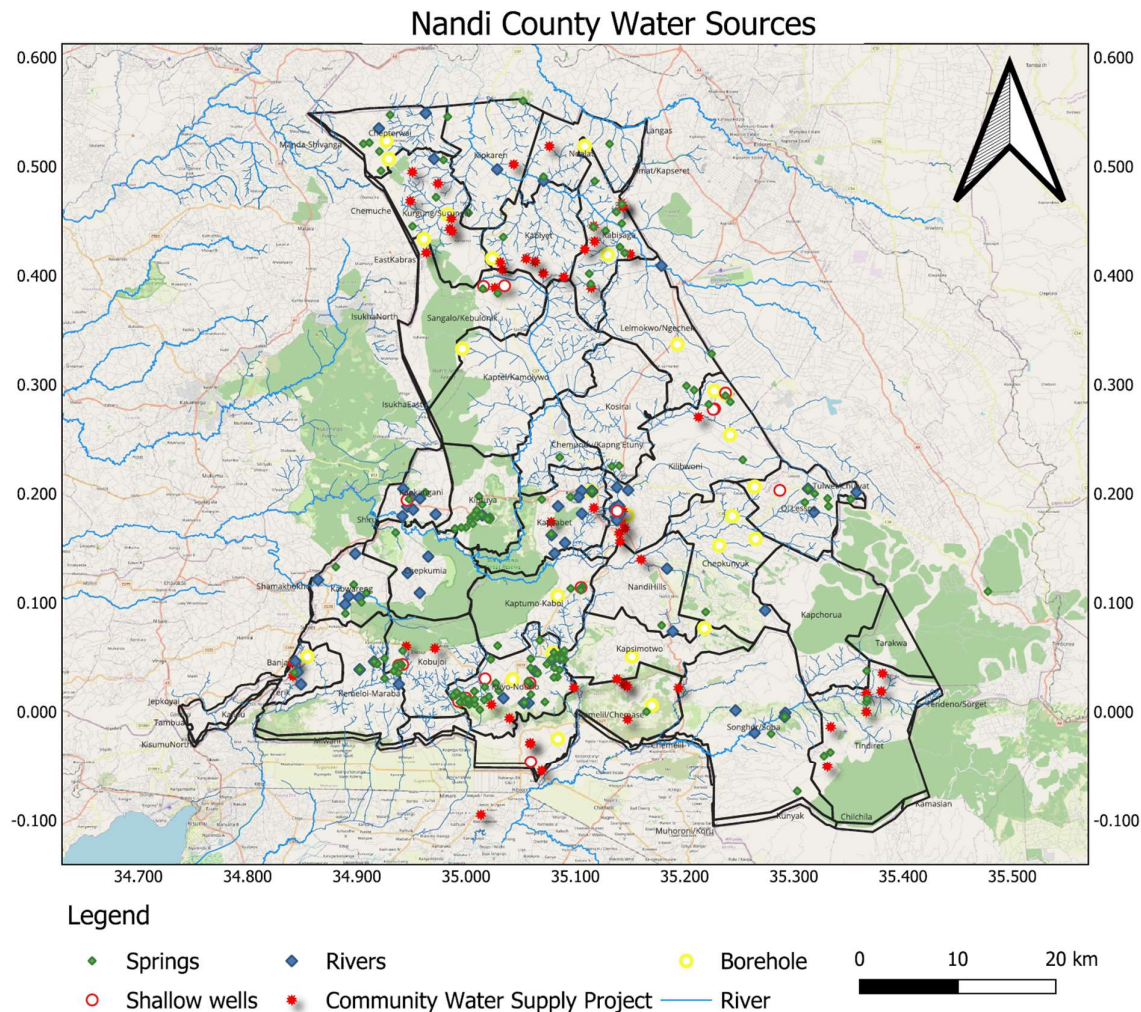
Main Water Sources: The facilities rely on a mix of water sources, with rainwater harvesting being the single most common source. Among the 100 facilities that have some water supply, 48% use rainwater as their main source (usually collected from roofs and stored). Piped water is the next major source: 27% have a piped water supply (13% piped inside the building and 14% piped to an outside tap on the compound). An additional 13% rely on boreholes or tube-wells as their primary source. A minority use protected wells (8%) or springs (4%). Notably, no facility reported using unsafe sources like rivers or unprotected wells as their main supply, and none use water trucking (tanker) as a primary source. This means all facilities with water have at least an improved source on paper – although rainwater, if not sufficiently stored, can be inadequate in dry periods.

On- vs Off-Premise Water: About two-thirds of the facilities with water have their source on the premises. Specifically, 68% of facilities have water coming from within the facility grounds (either piped into the facility or an on-site well/borehole or rain tank). However, 32% must rely on off-site water sources, requiring staff to fetch water from some distance. Around 13% have a source within 500 meters, while 19% (nearly a fifth) have to go more than 500 m to get water. This indicates a significant workload in those facilities – fetching water from half a kilometer or farther can consume staff time and may limit water usage. Furthermore, 18.7% of all facilities (the ones with no

on-site source) presumably rely on external sources like neighboring community taps or streams, which is not captured in the survey but is an implied hardship.

Seasonal Reliability: Many facilities experience seasonal water shortages. Fewer than half (about 47%) of the facilities with a water supply indicated that their main source provides water throughout the year. Another 23% said water is available “mostly” year-round but is unavailable for a few weeks each year (<30 days). The remaining 30% – nearly one-third – reported that their water source is not available year-round (dry for over a month each year). This aligns with the high dependence on rainwater: facilities counting on rainwater suffer in dry seasons, as do those with shallow wells that seasonally dry up. In total, about 67.5% of all facilities do not have sufficient water year-round (including those with no supply) – a critical gap for infection prevention and service delivery.

Water Quality and Treatment: Most facilities have improved sources, but water quality treatment is still a concern. 78% of facilities reported *always* having drinking water available from the main source when needed, but the survey also asked about treatment: Many facilities (data not shown in summary) indicated they do minimal treatment. Some treat water by chlorination or boiling, but a number rely on the perceived safety of protected sources. Compliance with standards: Only a small fraction of facilities (likely those with piped supply or well-managed rain tanks) would meet national water quality standards.



Spatial Trends in Water Access: Within Nandi County, water access varies by sub-county. For instance, in Emgwen sub-county (central Nandi), almost all facilities have some water (only ~5% with no supply), thanks in part to better infrastructure around Kapsabet town. In contrast, more remote sub-counties like Aldai and Mosop have the highest rates of facilities with *no* water (around 30% of facilities in those sub-counties lack an on-site supply). Nandi Hills and Tinderet (in the south/east) show the highest reliance on rainwater harvesting – over half of the facilities in Nandi Hills use rainwater as the main source – whereas Chesumei and Mosop have more facilities with boreholes or protected springs (rainwater use was under 20% there). These spatial disparities highlight the need for targeted interventions: e.g. drilling boreholes or extending piped schemes in Aldai and Mosop, and improving rainwater storage capacity in Nandi Hills.

b) Sanitation Facilities (Toilets)

Presence of Toilets: 100% of surveyed facilities have at least one toilet/latrine on-site for use – an encouraging finding that means no facility is entirely without sanitation. The number of toilets (“drop holes”) per facility ranges from 1 to 10, with a median of

3. However, distribution is skewed: about 42% of facilities have only 1–2 toilets in total (often just a single double-pit latrine), which can be inadequate for both staff and patient use. Larger facilities (mostly health centers) have more: only ~5% have more than 6 toilets.

Types of Toilets: Nearly all facilities have improved sanitation facilities. An overwhelming ~97% of facilities have pit latrines with slabs (the most common type) as their primary toilet technology for patients. In fact, *119 out of 123* facilities reported having a pit latrine with slab. A minority of facilities have flush toilets: 6 facilities (5%) have a flush/pour-flush toilet connected to a sewer system (likely in or near urban centers), and 9 (7%) have flush toilets to septic tanks or pits. It's worth noting some facilities have both flush and pit latrines (for example, a health center might have an indoor flush toilet in the maternity ward and pit latrines for outpatients). Importantly, no facilities reported using unimproved latrine types such as pit latrines without a slab, bucket latrines, or hanging latrines for patient use. This means *in terms of infrastructure*, all facilities meet at least a basic sanitation standard (improved facility). There were zero instances of open defecation at facilities – every facility had something in place.

Dedicated and Gender-Segregated Toilets: Just over half the facilities (63 facilities, ~51%) have separate toilets for males and females (sex-segregated). The remaining facilities (49%) have unisex toilets shared by all (common in small dispensaries). Additionally, 56 facilities (46%) have staff-only toilets (dedicated latrines for staff use, separate from patient toilets). In the majority of dispensaries, however, staff and patients share the same latrine. Very few facilities (<10%) have specialized toilets such as maternity/children's toilets with menstrual hygiene facilities – in fact, only 12 facilities reported having menstrual hygiene management (MHM) facilities (e.g. disposal bins for pads) in their toilets, a clear gap for female patient comfort and dignity. For instance, many dispensaries have no covered bin or incinerator for menstrual waste, which can discourage school-age girls or female patients.

Location of Toilets: Toilets at the facilities are predominantly located outdoors. About 66% of facilities (81) have toilets outside the main building but on the premises – typically pit latrine blocks in the compound. Only 43% (53 facilities) have any toilet within the health facility building (e.g. an indoor restroom). A small subset (11 facilities) have both indoor and outdoor toilets. This suggests that most primary facilities rely on standalone latrine structures. Outdoor toilets can be less convenient (especially at night or during rain) and may pose security concerns for patients. None of the surveyed facilities indicated having to send patients off-premises for toilet needs; even those without water still had on-site latrines.

Accessibility and Inclusivity: A notable gap is access for disabled persons. Only 37% of facilities have at least one latrine that is accessible for people with limited mobility or vision (e.g. with a ramp, support rails, or wide door). The rest (63%) lack disability-friendly toilets, meaning wheelchair users or those with mobility impairments would

struggle. Moreover, about 20% of facilities reported that their toilets are *not safe for all users*. “Safe for all users” was a survey criteria encompassing privacy, structural safety and usability. The 25 facilities that answered “No” likely lack features like inside locks, adequate lighting, stable flooring, or have privacy concerns (e.g. doorless stalls) – making some users (especially women or children) feel unsafe. Around 14% of facilities also noted poor lighting at the toilets (no functional light at night), compounding safety and 24-hour usability issues.

Condition and Cleanliness: Encouragingly, most facilities keep their toilets in at least a usable state. 85% of facilities said “most toilets are in good working condition.” In more detail: 104 facilities (84.6%) indicated their toilets are functional; 16 facilities (13%) said toilets are “*not working but repairable*” (e.g. a broken door or filled pit that needs emptying); and only 3 facilities (2.4%) reported toilets that are *beyond repair*. Thus, nearly all facilities have functional sanitation, though about 15% are in need of repairs or rehabilitation. Cleanliness is generally satisfactory: 61.8% of facilities rated their toilets as “clean”, 36.6% as “somewhat clean” (moderate), and only 2 facilities (1.6%) called them “not clean”. This suggests regular cleaning is done in most places – possibly reflecting periodic supervision or community health committee oversight. However, there were 28% of facilities observing visible structural issues like cracks in the walls or slabs of latrines, which could indicate eventual maintenance needs or potential safety hazards if those cracks worsen (especially in old VIP latrine slabs).

Example – Well-Equipped vs. Underserved Facility: To illustrate the range of sanitation conditions: *Ollessos Health Centre* (Nandi Hills) is a relatively well-resourced facility – it has 5 toilets, separated for male and female, with running water and is kept clean; it even has proper bins for waste in the female toilets. In contrast, *Chebilat Dispensary* (Aldai sub-county) has only 2 pit latrine stalls (unisex), no water on-site to flush or clean, and no special provisions for staff or female hygiene – highlighting the stark differences within the same county.

c) Hygiene (Handwashing and Infection Control)

Handwashing Facilities Presence: The survey assessed the presence of handwashing facilities (HWFs) at critical locations in the facilities – specifically at points of care (e.g. consultation rooms, treatment rooms) and near toilets. The results show major gaps in hand hygiene infrastructure:

- **At Points of Care:** Only 55% (68) of facilities had a functional hand hygiene station at points of care on the day of the survey (functional meaning water and soap or alcohol hand-rub available). Another 32.5% (40) had a station but it was not functional (e.g. a sink with no soap/water, or an empty sanitizer dispenser). The remaining 12% (15 facilities) had no handwashing facility at points of care at all. This means in nearly half of clinics, healthcare providers did

not have ready access to hand hygiene while examining or treating patients – a significant infection prevention lapse.

- **At Toilets:** Handwashing stations near patient toilets were even less common. Only 35% (43 facilities) had a functional handwashing facility within 5 meters of the latrine. Another 26% had a station by the toilet that lacked soap and/or water (basically a dry tap or empty bucket). And critically, 39% (48 facilities) had no handwashing facility near the toilets at all. In those places, after using the latrine, patients and staff have no convenient place to wash hands – unless they walk to a distant tap or bring their own water. This is a major hygiene gap. In total, about 65% of facilities do not meet the basic standard of handwashing at toilets (i.e. either no facility or non-functional facility for handwashing by toilets)

Types of Handwashing Stations: The facilities that do have handwashing hardware use a variety of setups:

- The most common setup is the classic veronica bucket or other container with a tap – 61 facilities have these simple bucket/tank devices.
- 36 facilities have a plumbed single-pipe tap (a faucet connected to plumbing, often over a sink).
- 11 facilities have a more elaborate permanent handwashing station with multiple taps (these might be trough sinks in larger centers).
- 7 facilities use a tippy-tap (a rudimentary jerrycan-and-foot-lever system often seen in community settings).
- 7 facilities have a large water tank with multiple taps as a handwashing point (common in places with rainwater harvesting).
- Only 4 facilities mentioned some “other” type of handwashing facility.

This indicates most rely on basic, low-cost handwashing setups. Veronica buckets (often placed outside exam rooms or at clinic entrances) are popular due to water scarcity and lack of plumbed sinks in dispensaries. However, these require constant refilling and soap provision.

Number of Handwashing Facilities: Most facilities that have handwashing stations don’t have many – the median number of HWFs is 1 per facility. About 40% have only one station in the entire facility. The average is 2 (some larger facilities had up to 5 or more across different departments, and one facility had 20, likely a larger hospital or multiple points in a big health centre). Notably, 8 facilities (6.5%) reported 0 handwashing facilities anywhere on site. Those are likely the same that said “No” at points of care and also have none at toilets – meaning absolutely no dedicated place to wash hands with soap on the premises, a critical situation.

Functionality and Maintenance: Among facilities with handwashing stations, about 80% said their handwashing facilities are in good working condition (86 facilities). About 19% said their handwash stations are not working but can be repaired (perhaps broken taps, or stands that need fixing), and 2 facilities (2%) reported handwashing facilities that are broken beyond use. Additionally, about 15% noted that their handwashing stations are *not easy to clean* (e.g. rough surfaces or dirt accumulation points) and a similar 15% said the stations are *not safe for all users* – possibly meaning water containers at awkward heights or slippery areas. 58% of facilities said their handwashing stations are accessible to people with disabilities (e.g. reachable from a wheelchair), which leaves ~42% not accessible – somewhat better than toilet accessibility, but still room for improvement.

On a positive note, many facilities have at least implemented some form of hand hygiene solution (even if imperfect). But the big issue is compliance – in the sense that soap or alcohol-based handrub was often missing. Observationally, if 40 facilities had non-functional stations at points of care (meaning no soap/water at that moment), that's a compliance failure. It implies that even where infrastructure exists, maintenance (refilling water, replenishing soap) is inconsistent. In total, only about 55% of facilities truly had effective hand hygiene ready to use during the survey.

Waste Segregation and Hygiene Practices: Proper segregation of waste is an important part of hygiene. About 50% of facilities *correctly segregate* their waste into at least three bins (general, infectious, sharps) at point of use, according to the survey. Another ~37% attempt segregation but not to standard (missing bins or mixing some waste), and ~14% have no proper bin system (using maybe one or two bins or none). While this is more about waste management (next section), it ties into hand hygiene – poor segregation can lead to contamination and increased need for handwashing which, if not available, raises infection risks.

d) Healthcare Waste Management (Waste Disposal)

Proper waste disposal is critical for WASH in healthcare. The survey looked at solid waste (medical waste) segregation and disposal methods, including infectious waste and sharps, as well as fecal waste management.

Waste Segregation: As mentioned, about half of the facilities (61) segregate waste correctly into labeled bins for general, infectious, and sharps waste. The remainder either do it partially (45 facilities have some bins but not meeting all requirements) or not at all (17 have no proper bins). This means in many clinics, infectious waste might be mixed with general refuse or sharps not separated – posing risks to cleaners, waste handlers, and the community.

Infectious Waste Disposal: Practices for disposing infectious (hazardous) healthcare waste vary:

- The most common method is burning in a protected pit (protected combustion): 44 facilities (36%) use this method. This typically means they have a brick or concrete-lined pit where waste is periodically burned and ashes buried – a rudimentary but contained method.
- Incineration is the second most common overall, but usually using low-tech incinerators. 27 facilities (22%) use an “*Incinerator (other) / burning chamber*” – likely single-chamber drum incinerators or brick incinerators that do not reach high temperatures. Only 4 facilities (3.3%) have a modern two-chamber high-temperature incinerator (850–1000°C) meeting international standards – these are advanced devices, and having 4 in one county is actually notable (likely at larger hospitals or recently improved health centres).
- Open burning in the open air (no pit) is used by 25 facilities (20%) – an unsafe practice where waste is burned on the ground or in a pile, leading to air pollution and incomplete destruction of pathogens.
- Off-site disposal is used by some: 13 facilities (10.6%) collect their infectious waste to be transported for disposal off-site (e.g. by a county hospital or a waste service). This is common for facilities near a town with a bigger hospital incinerator.
- A few use burial: 2 facilities bury untreated infectious waste in a lined pit without burning (not ideal, but contained), while 1 facility admitted to adding infectious waste into the general waste stream without treatment [90†output] .
- Alarming, 4 facilities (3.3%) acknowledged open dumping of infectious waste (simply dumping in an open area. This is a serious biohazard: it can lead to scavenging and disease transmission.

In summary, roughly 58% of facilities rely on incineration or protected pit burning (more controlled methods), whereas 23% rely on unsafe open burning or dumping. The remainder use off-site or burial which, if properly done, can be safe. The lack of widespread proper incinerators means many facilities resort to burning in pits or open air, which while reducing waste volume, may not fully sterilize the waste.

Sharps Waste Disposal: Sharps (needles, blades) pose a high risk if not destroyed. Disposal practices for sharps are as follows:

- The most common method for sharps is off-site disposal: 53 facilities (43%) send sharps to be disposed elsewhere, typically via referral hospital incinerators. Many clinics collect used needles in safety boxes which are then picked up or dropped

off periodically for centralized incineration – a positive finding if it is indeed happening reliably.

- On-site incineration (low-tech) is the next common: 29 facilities (24%) use an “incinerator (other)/burning chamber” for sharps, and 4 facilities (3%) have high-temp dual-chamber incinerators for sharps. Combined, about 27% incinerate sharps on-site.
- Burning in protected pits accounts for 21 facilities (17%) – often, sharps are thrown into a burn pit (sometimes in their sharps box) and set on fire. This can leave needle fragments unless the fire is very hot.
- Unsafe methods: 8 facilities (6.5%) admit to open burning of sharps (e.g. in an open heap), and 5 (4%) even to open dumping of sharps without treatment – an extremely dangerous practice that can lead to needle-stick injuries in the community. Additionally, 1 facility mixes sharps with general waste, and 1 uses burial of sharps.
- Only 1 facility uses an autoclave for sharps (steam sterilization), which is uncommon in such settings.

The data shows about 70% of facilities manage sharps in a relatively safe manner (off-site, incinerated, or at least burned in a pit). However, approximately 30% have improper sharps disposal – particularly those doing open burning/dumping. This is a critical area for intervention, as improperly disposed sharps can cause HIV, hepatitis, and other infections to waste handlers or community members. It’s worth noting the higher use of off-site disposal for sharps compared to infectious waste, possibly due to widespread use of sharps safety boxes and existing programs for sharps collection.

General Solid Waste: Although not detailed in the prompt, general (non-medical) waste at facilities is usually collected in pits or bins and often burned as well. Many rural facilities burn all trash (papers, packaging) on-site. A few nearer towns might have municipal garbage collection. The survey’s “Not treated and added to general waste” option (chosen by 1 facility for infectious, 1 for sharps) indicates some mixing occurs – which is problematic.

Faecal Waste Management: For facilities with waterborne sanitation (flush toilets), fecal waste management is an issue. The survey specifically asked if there are fecal sludge emptying services available: 95% (116) of facilities said No – there are no regular exhauster services in their vicinity – and only 6 said Yes (1 replied “Don’t know”). This implies that septic tanks or pit latrines, once full, are difficult to empty. Most likely, facilities with pit latrines dig new pits when old ones fill, or manually empty into nearby pits – a practice sometimes done informally. The lack of exhauster trucks in rural areas is a known challenge. In practical terms, pit latrines are managed by periodic relocation or informal emptying. Facilities with septic tanks (e.g. those with flush toilets) may face

overflow issues if they cannot get them emptied. This points to a need for county services or innovative sludge management solutions (like small-scale exhausters or composting toilets) in the future WASH programs.

Infrastructure for Waste: Only a minority of facilities had infrastructure like incinerators or placenta pits. From the data, we know 4 had high-grade incinerators and roughly 27 had basic incinerators. Some facilities likely have placenta pits for maternity waste (though Nandi being largely dispensaries, many may not conduct deliveries, so fewer placenta pits needed). Waste management facilities vandalism was low (only 4 cases reported vandalized waste facilities), suggesting that where incinerators or pits exist, they are not heavily tampered with but might suffer from neglect or lack of fuel.

Risks and Gaps: The critical gaps in HCWM are the use of open burning and dumping in ~13 facilities for infectious waste and ~13 facilities for sharps (some overlap). This is a direct hazard that can be addressed by providing proper waste pits or incinerators and training. Another gap is segregation: the 14% with no bins likely throw all waste together, making safe disposal harder. Sharps boxes and incineration: The fact that 43% send sharps off-site is good, but ensuring that network functions (safety boxes supply, transport, and actual incineration at hospitals) is key.

e) Facility Infrastructure & Security

Beyond WASH-specific facilities, the survey also looked at general infrastructure and security aspects that indirectly affect WASH services:

Structural Condition of WASH Buildings: When asked to describe the state of buildings housing WASH facilities (toilets, bathrooms, etc.), 56% of respondents said “in good condition” – meaning walls, roofs, floors, doors/windows are mostly intact. 39% said there are some broken or missing components in these structures (for example, a toilet block might have a broken door or leaky roof, but is still usable). About 5% (6 facilities) reported the buildings for WASH (like their toilet block or bathing shelter) are in poor condition overall, requiring major repairs. This indicates that while outright collapse is rare, many toilet structures could benefit from maintenance (fixing doors, roofs, and masonry cracks). The presence of cracks in 34 toilets (as noted earlier) aligns with this assessment. For instance, in one facility the latrine’s concrete floor slab was cracked through – still in use, but potentially dangerous if not fixed.

Perimeter Security: Having a secure compound is important to prevent vandalism of WASH facilities (e.g. theft of rainwater tanks or taps) and to ensure patient safety. Only 45.5% of facilities (56) have a fully secure perimeter – defined as an intact wall or fence around the facility with controlled entry points. Another 35.8% (44 facilities) have a partial fence – some sections are missing or damaged. And 18.7% (23 facilities) have no fence or wall at all, allowing unrestricted public access. Facilities without secure perimeters tend to experience more vandalism and also face challenges in controlling stray animals or unauthorized use of their water and sanitation resources. For example,

if a facility has no fence, community members might use the latrine or water point after hours, which can lead to faster fill-up of pits or water depletion. The survey specifically noted vandalism incidents:

- **Fence vandalism:** 16 facilities reported their perimeter fence was vandalized (cut wire, broken sections), the highest frequency among structures.
- **Building vandalism:** 14 facilities had their main building vandalized (e.g. broken windows, graffiti).
- **Water points vandalism:** 12 facilities experienced broken water taps due to vandalism.
- **Toilet vandalism:** 11 facilities saw damage to latrines from vandalism (e.g. doors removed, locks broken).
- **Handwashing stations:** 8 were vandalized, possibly meaning stolen buckets or taps.
- **Waste facilities:** 4 saw vandalism (could be damage to incinerator or pit covers).

This shows that vandalism is a real issue affecting WASH infrastructure – especially fences and water points. Facilities with partial or no fencing are likely more prone to such issues, which creates a vicious cycle (broken infrastructure reduces service availability, which then takes long to repair due to resource constraints).

Facility Security Personnel: While not explicitly surveyed, one can infer that if 55% have incomplete/no fences, many of these probably also lack security guards at night. This can lead to theft of items like solar panels, plastic water tanks, or taps – which has been reported anecdotally in some areas. Indeed, several facilities mentioned missing tap heads (likely stolen for brass), which aligns with the 12 cases of water tap vandalism.

Available Space and Expansion: The survey included taking photos of free space in the facility (questions 5b, 5c) – suggesting interest in whether facilities have room to expand WASH infrastructure. Most rural facilities in Nandi do have some compound space. It was noted if there was free space for new buildings: around 90% of facilities responded that yes, there is free space on facility land for construction of new structures. This is encouraging for future WASH upgrades (like room to build new toilet blocks or drill boreholes). However, a few facilities (especially in trading centers) are land-constrained.

f) Comparative Analysis

When comparing sub-counties:

- **Chesumei** generally scored better on sanitation (higher percentage of facilities with adequate toilets and cleanliness scores) perhaps due to closer supervision from the county offices located there.

- **Aldai** consistently lagged: highest no-water cases, more reports of poor toilet conditions and open waste burning. This sub-county may require greater investment and oversight.

Key Findings and Recommendations

Key Findings:

- **Water:** Only half of facilities have reliable water supply; rainwater is the predominant source in Nandi. Seasonal shortages affect 1 in 3 facilities. 1 in 5 facilities has no on-site water at all. This severely limits hygiene and service delivery, especially during dry seasons.
- **Sanitation:** All facilities have improved toilets, mostly pit latrines with slabs, which is a positive foundation. However, many facilities have an insufficient number of toilets (over 40% with just 1-2 toilets) and lack sex-segregated or accessible toilets. About 20% of facilities report toilets that are not fully safe or clean, indicating maintenance and cleanliness issues in a minority of sites.
- **Hygiene:** Handwashing infrastructure is a critical gap. Only 35% of facilities have handwashing stations near toilets with soap and water, and just over half have functional hand hygiene at points of care. In practice, this means health workers and patients often cannot wash hands at crucial moments, undermining infection control. On average there are only 1-2 handwashing points per facility, often just a bucket and basin.
- **Waste Management:** Waste segregation is implemented in about half the facilities; the other half need bins and training. Disposal of medical waste is mixed – around 60-70% of facilities manage to either incinerate or safely contain their infectious and sharps waste, but the rest resort to open burning or dumping, which poses health hazards. Very few facilities have modern incinerators; most rely on basic pits. Sharps disposal is somewhat better (thanks to sharps boxes and off-site programs) but still, 10% of facilities openly burn or dump sharps, which is unacceptable. Fecal sludge management is looming trouble – nearly all latrines are never emptied formally, risking overflow or collapse in the future.
- **Infrastructure & Security:** About 45% of facilities have strong infrastructure and secure compounds, but the majority have moderate to poor structural conditions and/or no perimeter fence. Vandalism and theft have damaged WASH facilities in roughly 1 in 10 facilities (notably broken fences, stolen taps). Most facilities do have land for expansion, which is an opportunity for new WASH projects.
- **Inequities:** Within the surveyed county, remote and rural sub-areas (Aldai, Mosop) show worse WASH conditions (water scarcity, infrastructure issues) compared to peri-urban centers (Emgwen, Nandi Hills). This likely reflects disparities in investment and natural water availability. We can expect similar

rural-urban disparities across counties (e.g., facilities in arid or remote counties likely fare worse in water access than those in more developed counties).

Recommendations and Opportunities

1. **Invest in Water Supply Systems:** Investing in rainwater harvesting improvements (larger storage tanks, first-flush systems) would immediately benefit the 48% relying on rainwater. Additionally, expanding piped water schemes or boreholes to the one-third of facilities currently off-grid (especially in Aldai and Mosop) should be a priority under the Kenya WASH Program. Even small piped distribution from nearby springs or wells could dramatically improve reliability. Consider funding communal boreholes that serve clusters of facilities and neighboring communities to leverage economies of scale.
2. **Emergency Water Storage:** Ensure every facility has at least 2–3 days of water storage capacity. Many have some storage (plastic tanks) but possibly not enough. Providing or upgrading water storage (e.g., 10,000+ liter tanks) can help facilities bridge short outages and handle dry spells, which is crucial for resilience.
3. **Sanitation Upgrades:** Though all facilities have latrines, adding more toilets in facilities with high patient loads or few units is necessary to reduce waiting times and ensure cleanliness (as overused latrines get dirty faster). Gender-segregated blocks should be constructed where absent, and disability-accessible toilets (with ramps, support bars) should be included in new designs. This can often be done by retrofitting one existing stall with a ramp and handrails. Also, integrate Menstrual Hygiene Management – provide covered bins and ensure disposal methods (like incineration or pits for pads) for any facility seeing female outpatients.
4. **Handwashing and Hygiene:** This is arguably the most critical gap to fix at relatively low cost. Every facility needs functioning handwashing facilities at all toilets and all points of care. We recommend supplying durable handwashing stations (e.g. installing sinks or leaky tins with stands) and, importantly, establishing a supply chain for continuous soap provision (or alcohol hand rub). The program could support monthly deliveries of soap/alcohol based on facility size, and include behavior change training for staff to make handwashing a routine. Installing simple low-cost technologies like tippy taps in the interim is easy, but sustaining them with soap/water is key. Hand hygiene improvements have an immediate impact on infection rates, so donors will find this an attractive high-impact investment.
5. **Waste Management Improvements:** To eliminate open burning and dumping, provide each facility with at least a protected ash pit or drum incinerator. For sharps, continue to strengthen the safety box collection scheme – perhaps invest

in a centralized medical waste collection vehicle that serves all facilities monthly. The program might fund 3-4 modern incinerators regionally (e.g. at sub-county hospitals) and coordinate smaller facilities to send waste there (covering transport costs). In the short term, supply waste segregation materials: color-coded bins and bin liners for infectious and general waste, plus training on their use. For placenta and other anatomical waste in facilities conducting deliveries, construct or rehabilitate placenta pits (lined pits with covers). Ensure each facility has personal protective equipment for waste handlers (gloves, boots). The cost of providing each facility with a brick incinerator or burn pit upgrade and some bins is relatively modest and could dramatically reduce health risks.

6. **Fecal Sludge Management:** Initiate county-level solutions like contracting an exhauster truck or working with the private sector for pit emptying services. Given 95% reported no service, the county could invest in at least one exhauster truck dedicated to emptying facility pits/septics annually or as needed. Where that's not feasible, consider trialing innovative toilets (like urine-diverting dry toilets or bio-digesters) that reduce the need for frequent emptying. The upcoming WASH program could fund pilots for such technologies in a few pilot facilities.
7. **Infrastructure Repairs and Security:** Allocate some budget for rehabilitating broken WASH structures – e.g., fix cracked toilet slabs, replace broken doors, repair drainage around water points. Minor works can greatly extend facility lifespan. Additionally, improve perimeter security: erect fences for the 23 unfenced facilities (perhaps chain-link which is cheaper than masonry), and mend the 44 partial fences (could be done through community labor if materials are provided). A secure facility protects the WASH investments (water tanks, solar pumps, etc.). Also, communities can be sensitized to respect and help watch over facility infrastructure to reduce vandalism. For high-theft items like taps, consider installing metal-grated cages or use plastic taps of low recycle value to deter theft.
8. **Training and SOPs:** Alongside hardware, invest in training for health workers on WASH and infection prevention. Only about half the facilities practice proper segregation and handwashing – indicating knowledge or habit gaps. Develop simple Standard Operating Procedures (SOPs) and checklists (as hinted in the survey questions about infrastructure manuals and SOPs) for daily/weekly routines: checking water levels, cleaning toilets, refilling soap, emptying bins, etc. Train a point person at each facility (e.g. the infection control nurse or in-charge) to oversee WASH maintenance. The survey data suggests many issues (like soap missing or waste not segregated) are due to lapses in routine practice, which training and accountability can address.

9. **Monitoring and Support:** Use the baseline survey as a benchmark. It highlights critical gaps per facility. Going forward, regular monitoring (quarterly supervision visits) should check on the status of water, sanitation, and waste at each facility. This will sustain momentum and ensure that any new equipment provided (tanks, incinerators, etc.) are being used and maintained. Donors and stakeholders can be shown progress indicators like “% of facilities with functional handwashing facilities” rising over time as investments are made.
10. **Community and Intersectoral Engagement:** Many facility WASH issues intersect with the community (water source sharing, vandalism, no waste pickup). Engaging county water departments, community health volunteers, and even school WASH programs (for synergies) can amplify results. For example, linking a nearby school rainwater harvesting project with the health facility could ensure both have water in dry season. Or combining waste disposal for both community and facility via a public-private partnership could be explored. Emphasize that improving facility WASH not only benefits patients and staff, but also the surrounding community (reducing environmental contamination and disease transmission).

The WASH survey in Nandi County’s health facilities reveals a generally adequate presence of basic infrastructure (toilets exist everywhere, and improved types), but also underscores serious deficits in consistent water supply, hygiene practices, and waste management that directly affect healthcare quality. The data-driven insights highlight critical gaps (like the 65% without handwashing at toilets) that can now be addressed with targeted funding and interventions. By investing in simple but impactful solutions – water storage, rainwater harvesting, handwashing stations, bin supply, and training – stakeholders can dramatically improve health outcomes and clinic environments.

- Many schools and health facilities in Nandi County have inadequate WASH infrastructure. While most institutions have some form of latrine, many lack piped water connections and handwashing stations. Pit latrines remain the dominant form of sanitation, with a significant number of them not meeting Ministry of Health or Ministry of Education standards.
- A WASH baseline survey for all public school and public HCFs (level 2 and 3) in Nandi County conducted that less than 40% of public primary schools had access to reliable water sources year-round.
- **Disparities in Access Across Different Institutions:** Urban institutions tend to have better WASH infrastructure than those in rural and peri-urban areas. Health centers in rural areas rely on rainwater harvesting or water vendors, while others experience seasonal shortages. Schools in informal settlements or flood-prone areas face challenges such as poor drainage, frequent latrine collapse, and waterborne diseases during rainy seasons.

- **Operation and Maintenance Modalities:** Operation and maintenance (O&M) of WASH facilities are inconsistent. Most institutions lack designated WASH maintenance personnel or budgets. School Boards of Management and Health Facility Management Committees often struggle to prioritize WASH amid competing needs. Many facilities rely on ad hoc repair strategies and external support from NGOs or faith-based organizations.
- **Financing Modalities:** Funding for WASH in schools and health facilities primarily comes from county budgets, national government transfers (especially for schools), and sporadic support from donors or CDF allocations. However, allocations remain insufficient, and WASH is often underfunded relative to infrastructure development or staffing. There are no clear mechanisms for sustaining recurrent costs such as water bills, soap, or latrine desludging.

2.4.2. Hygiene promotion programs in educational and health care facilities

- **Current Health and Hygiene Awareness Initiatives:** Hygiene programs exist but are largely donor-driven or tied to health campaigns such as deworming, cholera prevention, or COVID-19 response. The Public Health Department occasionally conducts hygiene promotion sessions, particularly in schools, markets and community levels i.e villages.
- **Areas for Improvement and Expansion:** There is a need to institutionalize hygiene education in school curricula and routine health outreach. The county can expand health club programs, train teachers, and health workers as hygiene champions. Programs should also incorporate behavioral change communication (BCC) tailored to local cultural norms.
- **Climate-Adaptive and Inclusive WASH Infrastructure:** Few facilities have infrastructure adapted for climate resilience. Seasonal flooding, long dry spells, and water table variability severely impact service reliability. Only a few health centers have elevated latrines or rainwater tanks with capacity to last through dry seasons. Inclusive WASH designs (e.g., for persons with disabilities) are virtually absent in most public institutions.

2.4.3. Challenges and gaps in service provision

- **Menstrual Hygiene Management (MHM):** MHM remains a critical challenge in schools. Many girls lack access to menstrual products, disposal options, and privacy. Inadequate facilities lead to absenteeism and, in some cases, school dropout. Where MHM programs exist, they are inconsistent and rarely monitored for impact.
- **Medical Waste Management:** Many health centers lack proper waste segregation and disposal systems. Incinerators are few and poorly maintained, resulting in

unsafe burning or open dumping. Handling of infectious waste is inadequate, posing public health risks.

- **Barriers to Access**

Key barriers include:

- **Affordability:** Schools and health centers struggle to afford regular water supply and sanitation maintenance.
- **Social Norms:** Cultural taboos around menstruation hinder MHM interventions. Some communities deprioritize girls' hygiene and sanitation needs.
- **Geographic Barriers:** Remote locations experience higher logistical and infrastructure constraints.

- **Strategies for Inclusivity and Sustainability**

- Introduce climate-smart WASH infrastructure in new school and health facility projects.
- Promote community-supported maintenance models, including partnerships with parent associations and youth groups.
- Expand menstrual hygiene management programs, with county support for pads and teacher training.
- Support school-based and facility-based WASH monitoring, integrating it into county health and education dashboards.
- Encourage low-cost and inclusive WASH designs, incorporating gender, age, and disability considerations.

2.5 Multiple Use Water Services (MUS) and Livelihood Needs in Nandi County

Multiple Use Water Services (MUS) is an approach that integrates water provision for domestic needs with other livelihood activities such as agriculture and livestock rearing. This section explores the current state of MUS in Nandi County, its impact on livelihoods, and potential strategies for enhancement.

2.5.1. Water needs beyond domestic use, including small-scale irrigation, livestock, and small-scale industry

In Nandi County, water is utilized for several purposes beyond household consumption. These include:

- **Agriculture:** Small-scale irrigation supports the cultivation of crops like tea, coffee maize, and vegetables
- **Livestock Rearing:** Watering points are essential for dairy and beef cattle, which are significant to the local economy.
- **Aquaculture:** Fish farming is emerging as an alternative livelihood, requiring reliable water sources.

- **Agro-processing:** Water is used in processing agricultural products, such as milk and tea. Tea processing industries is the leading consumer of water

Table 3: Water Uses Beyond Domestic Supply in Nandi County

Use	Description	Areas Practiced
Agriculture	Irrigation for crops like tea, coffee, maize, vegetables	Most parts of Nandi-across all sub counties
Livestock Rearing	Watering for dairy and beef cattle	Predominantly Mosop, Nandi Hills sub-counties
Aquaculture	Fish farming in ponds and tanks	Nandi Hills, Emgwen
Agro-processing	Processing of tea, coffee, milk and other agricultural products	Tea factories are spread across all sub-counties. While coffee is predominantly in Tindiret

2.5.1.1. Livestock Population in Nandi County (2019)-KNBS

- Dairy Cattle: Approximately 309,038 dairy cattle were reported, accounting for about 10% of Kenya's national dairy herd.
- Indigenous Cattle: Around 45,584 indigenous cattle were present in the county
- Sheep and Goats: The county had about 68,536 indigenous sheep and goats.
- Poultry
 - Indigenous Poultry: Approximately 571,107 birds.
 - Commercial Layers: About 30,000 birds.
 - Broilers: Around 3,990 birds.
- Other Livestock:
 - Dairy Goats: Approximately 1,512.
 - Pigs: Around 153.
 - Quails: Approximately 1,000.

Table 4: Total Estimated Daily Water Demand: ~27 million liters/day

Livestock Type	Population	Avg Daily Water Demand (liters)	Total Daily Demand (liters)
Dairy Cattle	309,038	80	24,723,040
Indigenous Cattle	45,584	30	1,367,520
Sheep/Goats	68,536	5	342,680
Dairy Goats	1,512	10	15,120
Pigs	153	15	2,295
Indigenous Poultry	571,107	0.5	285,554
Commercial Layers	30,000	0.3	9,000
Broilers	3,990	0.2	798
Quails	1,000	0.1	100

2.5.1.2. Current Initiatives and Strategies

1. Development of Water Master Plan

The County Government of Nandi, in collaboration with the Water Sector Trust Fund, is formulating a comprehensive Water Master Plan. This plan aims to:

- Increase water coverage across the county.
- Reduce the distance residents travel to access potable water.
- Ensure conservation and protection of natural resources.
- Maximize the use of 2,500 hectares of land for irrigation purposes, up from the current 250 hectares.
-

2. Promotion of Solar-Powered Water Projects

The county has initiated solar-powered water projects to provide cost-effective and sustainable water solutions. These projects aim to:

- Reduce the operational costs associated with water pumping.
- Ensure a reliable water supply for both domestic and agricultural use.

3. Training and Capacity Building

In partnership with the Kenya Water Institute and the Water Sector Trust Fund, the county has conducted training sessions for members of the Nandi County Water Users Association. The objective is to equip committee members with the necessary knowledge for proper implementation and management of water projects.

2.5.1.3. Livelihood Impacts

The implementation of MUS in Nandi County has the potential to:

- Enhance agricultural productivity through improved irrigation.
- Support livestock farming by providing reliable water sources.
- Promote small-scale enterprises that rely on water, such as brick-making and fish farming.
- Improve health outcomes by ensuring access to clean water.

2.5.1.4. Barriers to MUS Adoption in Nandi County and Strategies to overcome them

1. Infrastructure Limitations

Barrier: Many water systems are designed for single-use (domestic only), limiting their capacity for productive uses like irrigation and livestock watering.

Strategies:

- Redesign water systems with MUS principles – integrate cattle troughs, irrigation outlets, and household taps in new designs.
- Upgrade existing systems – retrofit boreholes and springs with storage tanks and distribution extensions for productive use.
- Prioritize multi-village schemes in agricultural zones where water demand is diversified (e.g., Aldai, Tinderet).

2. Institutional and Policy Gaps

Barrier: Lack of clear guidelines, policies, or coordination mechanisms supporting MUS at the county level.

Strategies:

- Integrate MUS into the County Water Act or by-laws, recognizing both domestic and livelihood water uses as essential.
- Establish a MUS Working Group under the County WASH Coordination Unit (CWCU) with representatives from water, agriculture, livestock, and community development.
- Align county water investment planning with sector-specific development plans (Agriculture Sector Development Support Programme, etc.).

3. Financial Constraints

Barrier: Households and community groups lack financing options to expand or adapt water systems for productive use.

Strategies:

- Facilitate access to microfinance and savings cooperatives for water-based income-generating projects.
- Leverage Results-Based Financing (RBF) and donor-backed blended finance to fund MUS infrastructure.
- Promote cost-sharing models through Water User Associations and self-help groups, supported by matching grants.

4. Low Community Awareness and Technical Capacity

Barrier: Many communities are unaware of the MUS concept or lack skills to manage multi-use systems effectively.

Strategies:

- Conduct community sensitization campaigns highlighting MUS benefits (food security, income, resilience).
- Develop and deliver modular training for Water Users Associations (WUAs), targeting planning, maintenance, and equitable use of MUS systems.
- Use local champions and peer-to-peer learning to spread awareness, especially in agricultural extension networks.

5. Gender and Social Barriers

Barrier: Women and marginalized groups often face exclusion from MUS planning and control, despite being primary users of water for both domestic and productive purposes.

Strategies:

- Ensure inclusive WUA membership with gender quotas and youth representation.
- Train women and youth in MUS-related business models, such as horticulture, poultry, and fish farming.
- Apply participatory planning tools (e.g., resource mapping, visioning workshops) that ensure equal voice from all user groups.

6. Water Source Depletion and Environmental Concerns

Barrier: Over-extraction or seasonal scarcity limits the feasibility of MUS in some areas.

Strategies:

- Promote rainwater harvesting, sand dams, and managed aquifer recharge (MAR) as water buffers.
- Implement water allocation plans to balance domestic and productive uses sustainably.
- Establish catchment protection programs through community by-laws and conservation incentives.

2.5.2. Role of water user associations in managing multiple-use services

2.5.2.1. Role of Small-Scale Climate-Smart Agriculture in Advancing MUS

Small-scale Climate-smart agriculture encompasses practices that increase productivity, enhance resilience to climate change, and reduce greenhouse gas emissions. In Nandi County, CSA practices contribute to MUS in the following ways:

1. Diversification of Water Use:

CSA promotes the use of water for multiple purposes, including irrigation, livestock watering, and aquaculture, aligning with the principles of MUS.

2. Enhanced Water Efficiency

Techniques such as conservation agriculture and agroforestry improve soil moisture retention, reducing the need for frequent irrigation.

3. Improved Livelihoods:

By integrating CSA practices, farmers can increase crop yields and income, making investments in water infrastructure more viable.

2.5.2.2. Water-Efficient Irrigation Systems Supporting MUS

Implementing water-efficient irrigation technologies is crucial for optimizing water use in multiple sectors. Key systems include:

1. Drip Irrigation:

Delivers water directly to plant roots, minimizing evaporation and runoff.

2. Rainwater Harvesting:

Collects and stores rainwater for use during dry periods, ensuring a continuous water supply for various needs.

3. Solar-Powered Pumps:

Utilize renewable energy to pump water, reducing operational costs and environmental impact.

2.5.2.3. Integration Strategies for Nandi County

To effectively integrate CSA and water-efficient irrigation systems into MUS frameworks, the following strategies are recommended:

- **Capacity Building:**

Train farmers on CSA practices and the operation of efficient irrigation systems.

- **Policy Development:**

Formulate policies that support the adoption of CSA and efficient irrigation technologies, ensuring alignment with MUS objectives.

- **Financial Support:**

Provide subsidies or low-interest loans to encourage investment in CSA and irrigation infrastructure.

- **Research and Development**

Invest in research to identify locally appropriate CSA practices and irrigation technologies.

3. WATER AND SANITATION SERVICES INSTITUTIONAL STRUCTURE AND FINANCING

The chapter discusses the sector governance and services delivery models, sector funding arrangements, revenue generation models and challenges in financial sustainability.

3.1. Sector Governance and Service Delivery Models

3.1.1. Overview of institutions responsible for water and sanitation service provision

3.1.1.1. *key policies and regulations:*

Overarching Policies and Plans	
Constitution, 2010	On Water: Under Article 43 Economic and Social Rights, the Constitution of Kenya (Republic of Kenya, 2010) guarantees every person's right to clean and safe water in adequate quantities. Moreover, in relation to the water sector, the Constitution mandates water service provision to the county government. The Constitution also mandates that the state encourage public participation in the management, protection and conservation of the environment under Article 69(1)(e).
Vision 2030	Kenya's Vision 2030 is the national long-term development plan covering the period 2008 to 2030 that aims to transform the country into a rapidly industrializing middle-income nation by the year 2030. Vision 2030 is based on three pillars: economic, social and political. The Vision is being implemented through successive five-year Medium-Term Plans (MTP).
Medium-Term Plan (MTP)	Currently the government is finalizing its third MTP, which will identify key policy actions, reforms, programs and projects that the government will implement in the 2018–2022 period in line with its priorities, the Kenya 2010 Constitution and the long-term objective of Vision 2030. MTP 2018–2022 recognized climate change as a cross-cutting issue and mainstreamed climate change actions in sector plans.
Big Four Agenda, 2018–2022	The Government of Kenya's Big Four Agenda established priorities areas for 2018–2022 of ensuring food security, affordable housing, increased manufacturing and affordable healthcare (Wamalwa, 2018). Sector plans and budgets are aligned with Big Four priorities (Wamalwa, 2018)
On Water:	
Kenya National Water Master Plan 2030	The National Water Master Plan 2030 was launched on March 26, 2014. It analysed water demand, water balance and other parameters highlighting the effects of climate change on the country's water resources. It pointed out areas with water deficit and water demand increases, which would require effective water demand management such as water savings, recycling of water, etc. Overall, the document formulates the strategy and prepares an action plan for sustainable water resources development and management for six catchment areas toward 2030.

Water Act, 2016 (Amended 2024)	Water Act, 2016 provides the governance structure for the whole water sector and aligns the water sector with the Constitution's primary objective of devolution. Water Act, 2016 is a revised version of the Water Act 2002 that redefines roles and responsibilities of the main institutions.
The National Water Services Strategy (NWSS) (2007–2015)	The strategy's vision is an "assured water supply, sewerage services and basic sanitation for all Kenyans for improved health and wealth creation on an individual level and for the nation." The strategy deals with water supply, sewage and basic sanitation in both urban and rural settings. It addresses challenges in the sector and sets out goals and principles for water resources management and development: it also identifies medium-term indicators for achievement.
Kenya's Water Sector Strategic Plan 2009–2014	The plan aims to: (a) Increase the knowledge among stakeholders of the current challenges and changes in the sector (b) Provide policy and regulatory guidance to stakeholders as to how the challenges should be met (c) Provide a conducive environment for improved collaboration and coordination by stakeholders (d) Provide a structure for follow-up and evaluation that covers all aspects of water development (Republic of Kenya, 2009).

On Sanitation

Kenya Environmental Sanitation and Hygiene Policy (KESHP) 2016–2030	A framework to achieve universal access to improved sanitation, emphasizing devolved governance, behavior change, public-private partnerships, and eliminating open defecation.
Kenya Environmental Sanitation and Hygiene Strategic Framework (KESF) 2016–2020	A national guide for state and non-state actors to address bottlenecks in achieving universal sanitation access and eradicating open defecation, focusing on equitable service delivery.
Sessional Paper No. 7 Of 2024, National Sanitation Management Policy (NSMP)	Addresses governance, management, regulatory, service delivery, investment, and financing challenges to achieve universal access to safely managed sanitation by 2030.
Kenya Comprehensive School Health Policy 2018	Focuses on improving sanitation, water access, and hygiene in schools through programs like <i>Epuka Uchafu</i> and <i>Afya Shuleni</i> to reduce hygiene-related illnesses and absenteeism.

Nandi county water and sanitation policies

County Physical and Land Use	The plan is a flagship framework that guides Nandi County's spatial development, land use planning, and resource allocation over a ten-year period, with significant implications for WASH services and
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Development Plan 2024–2034	environmental sustainability. Its overarching objectives include promoting orderly urban and rural development, protecting natural resources critical to water supply, and ensuring equitable access to infrastructure, including water and sanitation systems. For WASH, the plan prioritizes safeguarding water catchments—such as forests, wetlands, and river basins—against encroachment and degradation, which are major threats to Nandi’s water security. Key components include zoning regulations to preserve water source areas; infrastructure blueprints for piped water and sewerage systems in urban centers; climate-resilient land use strategies to mitigate flood and drought impacts on water availability; and provisions to reduce land conflicts that exacerbate WASH disparities.
Nandi County Climate Change Action Plan 2018-2022	The Plan is a strategic framework designed to build resilience against climate change impacts, such as erratic rainfall, prolonged droughts, and flooding, which directly affect water availability and sanitation services in the county. Aligned with Kenya’s National Climate Change Action Plan, it integrates WASH objectives by prioritizing water security, sustainable sanitation, and community-driven adaptation measures. The inclusion of the Financing Locally-Led Climate Action Program (FLLoCA) enhances its impact by providing financial resources for grassroots projects, enabling communities to implement solutions like rainwater harvesting, spring protection, and sanitation facilities tailored to local needs. The plan’s objectives include reducing vulnerability to climate-induced water scarcity, improving sanitation to prevent disease outbreaks during floods, and restoring degraded ecosystems to stabilize water supplies. Key components involve promoting water conservation technologies, such as roof catchments and small dams; rehabilitating catchments through reforestation and wetland protection; supporting community-led sanitation initiatives to reduce open defecation; and leveraging FLLoCA funds to empower local groups, including women and youth, in climate action.
Nandi County Climate Change Fund (CCCF) Legislation, 2021	It established a dedicated financial mechanism to support climate adaptation and mitigation initiatives, with a strong focus on WASH-related projects that enhance water access and sanitation resilience. Recognizing the disproportionate impact of climate change on water resources—such as reduced river flows and contaminated springs—the legislation aims to mobilize resources from county budgets, national allocations, donor contributions, and community inputs to fund locally relevant solutions. Its objectives include financing water supply systems in climate-stressed areas, improving sanitation infrastructure to withstand floods, and empowering communities to manage resources sustainably.

3.1.1.2. Government agencies at national and county levels

National Level

Ministry of Water, Sanitation, and Irrigation	The Ministry of Water, Sanitation, and Irrigation is the key institution responsible for the water sector in Kenya including <u>development of legislation</u>, sector coordination and guidance, monitoring and evaluation, sector investments, planning and resource mobilization. The ministry's mission is to contribute to national development by <u>promoting and supporting integrated water resource management</u> to enhance water availability and accessibility. The ministry includes: 1. Water Services (water supply): i. Department of Water Infrastructure Development ii. Department of Water, Sewerage and Sanitation Development iii. Department of Trans-boundary Water iv. Department of National Water Resources 2. Water Resources Management 3. Land Reclamation i. Department of Land Reclamation
Water Resources Authority (WRA)	WRA is a state corporation under the Ministry of Water and Sanitation established under Section 11 of the Water Act, 2016 (Water Resources Authority, n.d.a). Initially it was established under the Water Act, 2002 as a Water Resources Management Authority (WRA). It is the major government organization responsible for the implementation of policies and strategies relating to <u>management of water resources</u>, e.g., collecting all information on water resources, protection of catchment areas, controlling water quality, regulation of the development and use of all water storage infrastructure, and climate change adaptation. It is also in charge of appointing catchment area advisory committees (called Basin Water Resource Committees in the Water Act, 2016) and their facilitation (Republic of Kenya, 2009). WRMA has adopted a decentralized and participatory structure. It operates six Regional Offices across the country which cover the five major water towers (Mt. Kenya, Aberdares ranges, Mau Forest, Cherangani Hills and Mt. Elgon) and are in charge of managing the 26 sub regions in the country (Regional Offices, n.d.).
Water Tribunal	The Water Act, 2016 established the Water Tribunal under Section 111 for the purposes of <u>dispute resolution</u> concerning water resources or water services where there is a business contract, unless the parties have otherwise agreed to an alternative dispute resolution mechanism.
National Water Storage Authority (NWSA)	The National Water Harvesting and Storage Authority established in Section 30 of the Water Act, 2016 is responsible for <u>development and management of national public waterworks</u> (e.g., dams, boreholes) for water resource management and flood control, development and enforcement of a water harvesting policy and undertaking strategic water emergency interventions during

	droughts on behalf of the national government. NWSA is the former National Water Conservation and Pipeline Corporation.
Water Sector Trust Fund (WSTF)	WSTF is a state corporation under the MoWSI, established under Section 113 of the Water Act, 2016, with a mandate to provide conditional and unconditional grants to counties and to assist in <u>financing the development and management of water and sanitation services in marginalized areas</u> or any area that is considered by the Board of Trustees to be under-served
Water Services Regulatory Board (WASREB)	WASREB is a regulatory state corporation established by the Water Act, 2016 that has a mandate to regulate the water services sector. The regulator sets, monitors and reviews rules and regulations to ensure water services provision is affordable, efficient, effective and equitable.

Regional and Basin Levels

Basin Water Resource Committee (BWRC)	Basin Water Resources Committees are established under Section 25 of the Water Act, 2016 for each respective basin area. BWRCs are replacing Catchment Areas Advisory Committees, which previously played a regulatory function at the regional level. Its members are drawn from stakeholders within the basin. They are responsible for the management of water resources in the respective basin. Under the Water Act the basin committees <u>advise the Water Resources Authority (WRA) and county governments</u> concerning protection and conservation of water resources, management of permits (e.g., granting and cancellation); they perform annual reporting on water issues and their performance, and collect and analyze information on water resources. Moreover, they are in charge of developing a basin area water resources management strategy in consultation with the WRA and the county governments. In addition, they <u>facilitate the establishment and operations of Water Resource User Associations.</u>
Water Works Development Agencies (WWDAs)	Powers and functions of the waterworks development agencies according to the Water Act, 2016 are: 1. To undertake the <u>development, maintenance and management of the national public waterworks</u> within its area of jurisdiction (national public waterworks are waterworks whose water resource is: cross-county in nature, financed out of the national government share of national revenue and intended to serve a function of the national government [2030 Water Resources Group, n.d.] 2. To operate the waterworks and provide water services as a bulk water service provider, until such a time as responsibility for the operation and management of the waterworks are handed over to a county government, joint committee, authority of county governments or water services provider within whose area of jurisdiction the waterworks is located.

	3. To provide technical services and capacity building to county governments and water service providers within its region.
Water	
County Level	
County Governments	The Fourth Schedule of Kenya's Constitution (2010) stipulates that the functions and powers of the county governments include water and sanitation services, storm water management in built-up areas, and solid waste management. The national government is responsible for developing policies and regulations for water resource management, while counties are responsible for implementing these policies. This includes monitoring and enforcing applicable regulations under the Water Act, 2016, establishing water service providers (WSPs) in compliance with standards set by WASREB and putting in place measures for the provision of water services to rural areas that are not considered to be commercially viable for the provision of water services. County plans are to include sector plans for the provision of water services. Counties are encouraged to develop institutional arrangements with other counties on inter-jurisdictional areas of common concern, including flow of water.
Council of Governors	The Council of Governors provides a mechanism for consultation among county governments. It has a Water, Forestry and Mining Committee that was constituted to consider matters relating to, inter alia, sustainable water management and climate change. The committee reviews legislation and provides information on best practices, and encourages inter-county agreements relating to cross-county issues.
Community and Sub-Basin Levels	
Water Resource Users Associations (WRUA)	WRUAs are established under Section 29 of the Water Act at the sub-basin level. They are associations of water users, riparian land owners and other stakeholders and are responsible for "collaborative management of water resources and resolution of conflicts concerning the use of water resources." According to the Water Act, 2016: "The basin water resources committees may contract water resource users associations as agents to perform certain duties in water resource management." WRUAs are funded by the Water Services Trust Fund (WSTF) through the WRUA Development Cycle (WDC) Framework (WRUA Brochure, n.d.). WRUAs can mobilize internal funds through registration fees, annual subscriptions, membership and other income-generating activities. WRUAs are typically community-based organizations. There are more than 600 of these local groups that play an important role in ensuring community participation in water resource management and moving data generated at the national level to counties and communities (which is particularly important in flood early warning systems).

	The optimum number of WRUAs is 1,237, whereas there are currently only 670 WRUAs across the six catchment areas (Water Resources Authority)
Water Services Providers (WSPs)	Water Services Providers are publicly-owned, licensed by the WASREB (Regulatory Board) to provide water services and responsible for the development of county assets under Section 78 (1). The 2030 Water Resources Group (2015) notes that traditionally WSPs have not been considered creditworthy and have had difficulties in obtaining commercial finance to invest in their water infrastructure.

3.1.2. Role of county government, Water Service Providers (WSPs), and community-based organizations

Key responsibilities for Nandi County Government include; policy formulation, regulation, Water Services provision and consumption and uses. Important institutions vested with policy formulation responsibilities at the County level include:

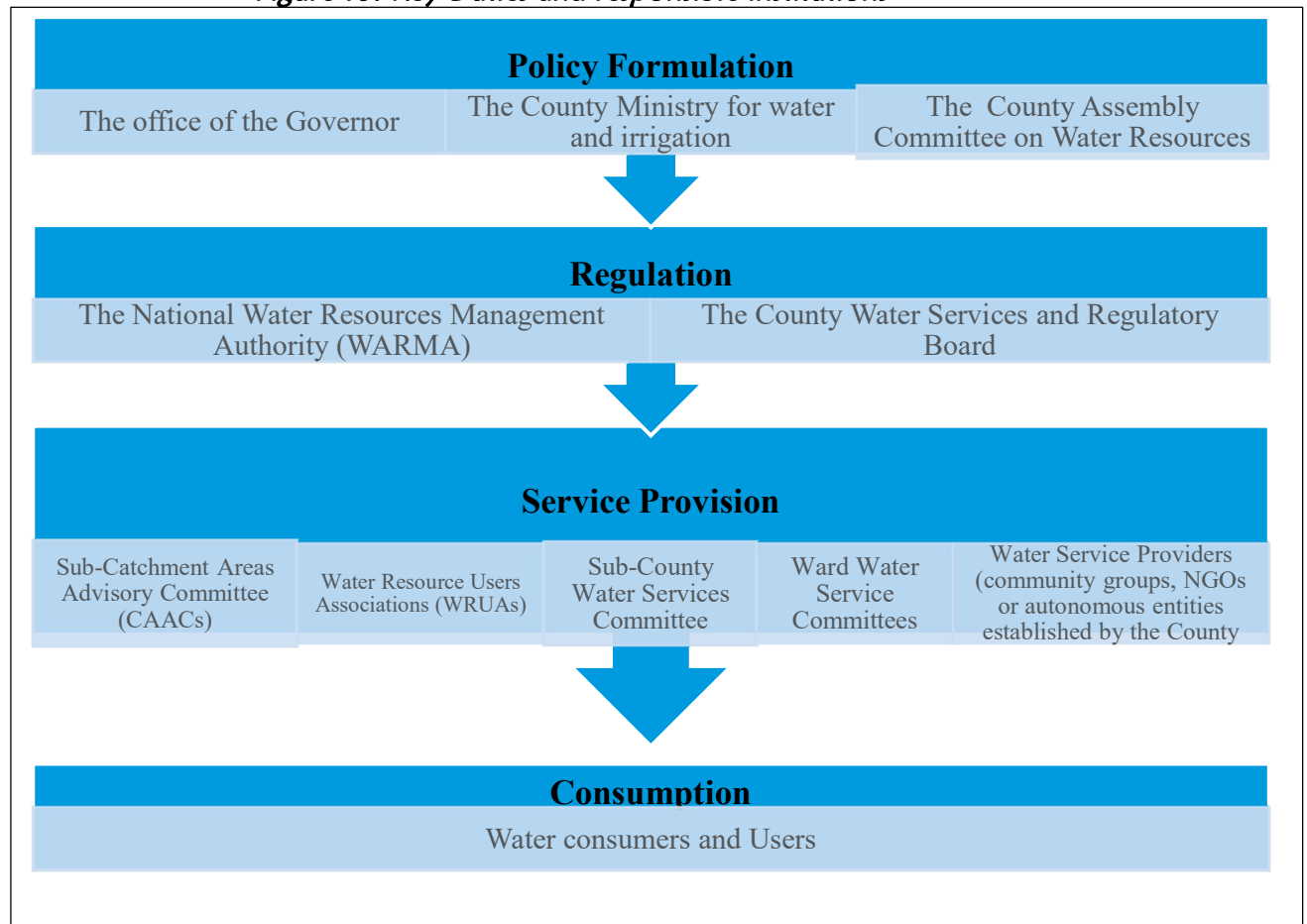
- The Office of the Governor
- The County department for water and irrigation
- The County Assembly Committee on Water Resources.

Institutions responsible for water resources and services regulation include:

- The National Water Resources Management Authority
- The Water Services and Regulatory Board.

Water service provision institutions constitute: Sub-Catchment Areas Advisory Committees; WRUAs, Sub-County Water Services Committees; Ward Water Service Committees; and Water Service Providers.

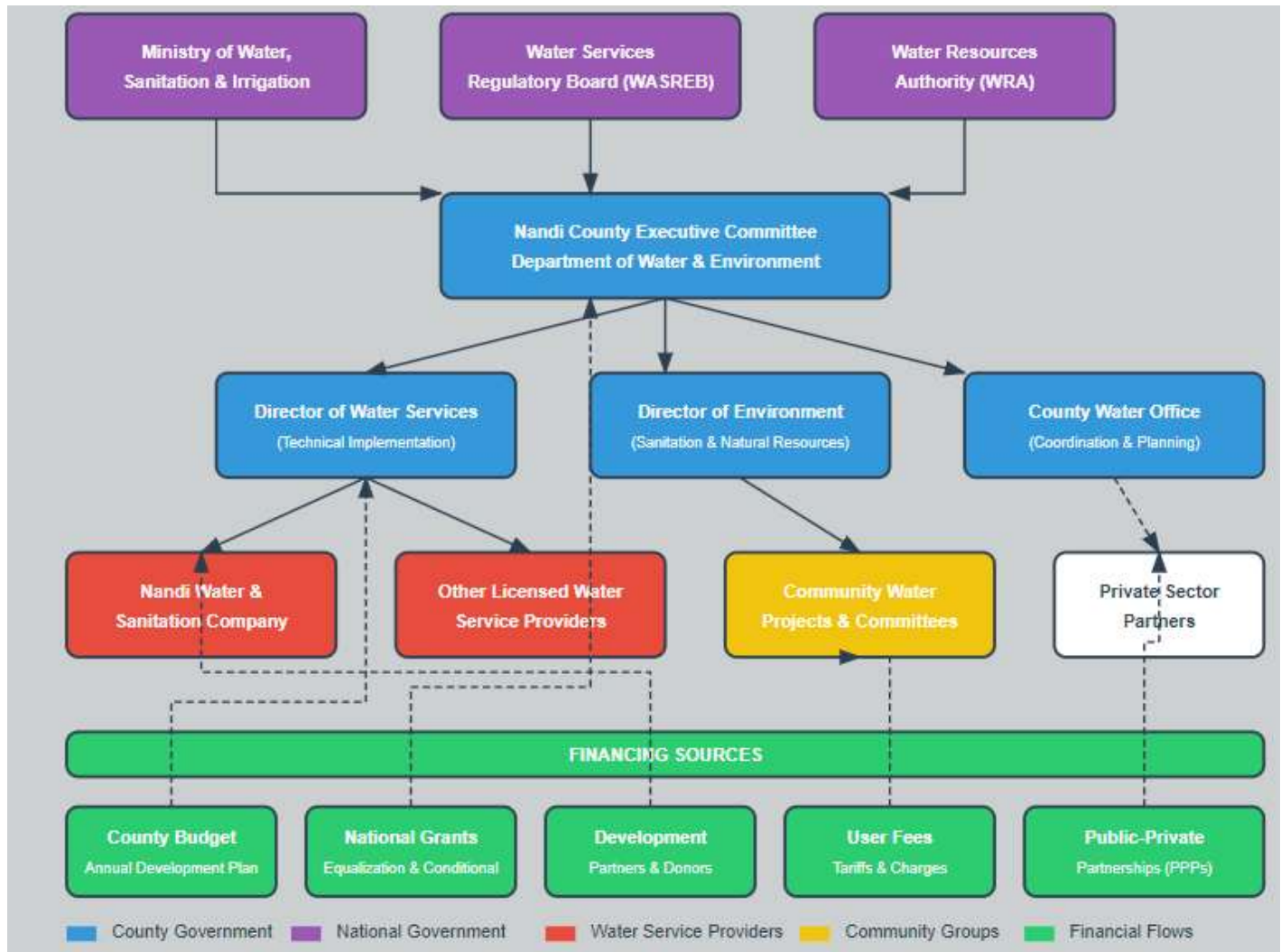
Figure 10: Key Duties and responsible institutions



a. The Office of the Governor

The County Governor is the Chief Executive officer in the county and has the mandate to direct and supervise all water provision and sanitation services in the county. The office of the Governor shall be constituted as per the provisions of the Kenya Constitution 2010.

Figure 11: Water and Sanitation Services Institutional Structure and Financing for Nandi County Government



b. The County department for Water

The County department for water shall be responsible for development and implementation of water policies at the County. Other functions shall include;

- Ensure proper management and coordination of the water sector in the County
- Supervision of water institutions in the County to ensure equitable and effective water and sanitation services in the county
- Sourcing finances to enhance water and sanitation services

The Ministry will be headed by the cabinet secretary who shall be appointed by the Governor. Chief Executive Office and other directorates shall be recruited by the County Public Service Board on needy basis.

c. County Assembly Committee on Water Resources Management & Provision

The county assembly committee on Water Resources Management & Provision shall;

- a) Enact appropriate legislation governing sustainable management of water resources and efficient provision of water and sanitation services in the county.
- b) It shall also oversee smooth implementation of water policy instruments to enhance water and sanitation provision in the county.

d. Sub-county Water Services Committees

There shall be a Sub-County Water Services Committee in all the Sub-Counties of Nandi County. The committee shall be chaired by the Sub-County Administrator and will comprise of the sub county water Officer (as secretary). Other members shall include heads of departments especially those constituting the Water Services and Regulatory Board and representatives of other relevant government agencies development partners and the private sector within the sub county.

Functions of the committees will be to;

- a) Coordinate the activities of the Water Services and Regulatory Board at the sub-county level

e. Ward Water Services Committees

The Ward Water Services Committees shall be headed by the Ward administrator. The chief of the area, village administrators, local CSOs, youth and women representatives and other Technical Staff and Partners in the ward shall be members of the committee.

The committee shall perform the following functions; -

- a) Coordinate the activities of the Water Services and Regulatory Board at the sub-county level
- b) Provide technical assistance to the communities.
- c) Conduct community mobilization and sensitization in the ward
- d) Document and transmit information to the sub-county Water Services Committee and the board on matters relating to water resource use and governance

f. Water Resources Authority (WRA)

According to the Water Act (2016), Water Resource Authority shall be responsible for;

- a) Regulate and protect water resources in the county from adverse impacts

- b) Delineate water catchment areas for gazettement
- c) Identify with stakeholders protected areas for gazettement
- d) Liaise with other bodies for better management and regulation of water bodies within the county
- e) Monitor and enforce conditions attached to water permits and water use within the county
- f) Regulate water infrastructure, use, and effluent discharge
- g) Develop principles, guidelines and procedures for the allocation of water within the county
- h) Manage and protect water catchments
- i) Formulate catchment management strategies
- j) Manage and conserve water resources in the county
- k) Declare state and community schemes
- l) Coordination with other bodies for early warning, preparedness, and mitigation measures against water related disasters such as floods and droughts
- m) Advise the county ministry with respect to water resources management
- n) Determine and collect charges for water use
- o) Seek legal address with consent of the attorney general in case of contraventions
- p) Constitute CAACs and support WRUAs
- q) Establish water resources monitoring networks
- r) Collect, analyse, collate, and disseminate water resources information; and
- s) Encourage stakeholder participation in water resources management including resilience to water related disasters such as floods and droughts.

g. Sub-county Area Catchment Advisory Committees

In every sub-county there shall be a sub-county Area Catchment Advisory Committee constituted with accordance to section 16 of the water Act 2002. Key functions will include;

- a) Advice on water resources conservation, apportionment and use at the sub-counties
- b) Grant adjustment and cancellation or variation of water permits
- c) Provide technical assistance to the WRUAs.

h. Water Resource Users Association committees

This is the lowest level of water resources management reporting to Sub- County Area Catchment Advisory Committee. It will comprise a representative(s) of concerned line

Ministries, community and local leaders, youth and women leaders. Its membership will comprise the chair elected from the WRUAs.

- a) Implement water catchment activities at catchment areas
- b) Involvement in decision making process to identify and register water users
- c) Collaboration in water allocation and catchments management
- d) Assisting in water monitoring and information gathering
- e) Conflict resolution and cooperative management of water resources

i. Water Services Providers

The following are the main water service providers in the county: -

- 1) Kapsabet Nandi Water and Sanitation Company - KANAWASCO
- 2) Tachasis Water and Sanitation Company –TAWASCO

In accordance to water Act 2016, water services providers shall be responsible for;

- a. The provision of water services within the area specified in the licence
- b. The development of county assets for water service provision.
- c. Establish a mechanism for handling consumer complaints which meets the standards set by the County Water Services and Regulatory Board.

ii. CBO Community-Based Model (CBO)

These are Small-scale schemes managed by registered community groups or Water Users Associations (WUAs).

- 1) Kobujoi Water Users Association
- 2) Cheptil Dam Water Users Association.
- 3) Kipngoror Water Users Association

3.1.3. Role of communities and community organizations in managing water systems

Communities in Nandi County are actively involved in managing water systems, particularly in rural areas where government-led water provision is limited. CBOs, such as WRUAs and water committees, are pivotal in operating and maintaining water supply systems, including boreholes, piped schemes, and springs. These organizations embody the principle of Integrated Water Resources Management (IWRM), which advocates for managing water at the lowest appropriate level. KANAWASCO promotes stakeholder engagement through **quarterly customer clinics and biennial satisfaction surveys**, fostering transparency, feedback collection, and public education on conservation and sanitation.

There are numerous water supply schemes in the County in both large and community operated schemes. The major scheme includes the Kapsabet water supply scheme which

is electricity driven and supplies water to Kapsabet Town and its environs. It is run and managed by KANAWASCO. Other major schemes include Nandi hills water supply, Lelmokwo, Kaptumo, Kobujoi, Sarora, Kabiyeet, Kimatkei, and Keben water supply schemes. In addition, there are approximately 150 small water schemes run and operated by community project management committees. There are plans by the County in partnership with Lake Victoria North Water Services Board to undertake the construction of Keben Water Project which will form the main source of water by gravity to Kapsabet and Nandi hills town.

The Tachasis water project is one of seven rural water schemes identified for public-private partnership (PPP) models in 2022. The community manages the scheme through a water committee responsible for operations, maintenance, and fee collection. The current registered connections are 1,465, with active connections being 1430. This places the coverage at 62% serving a population of 31,370 in service area. Community members contribute labor for pipeline maintenance and participate in decision-making through monthly meetings, ensuring local ownership.

EPK, a multinational tea company, supports water provision in Chepkunyuk ward through corporate social responsibility (CSR) initiatives. Since 2010, EPK has constructed 10 community water points, serving over 5,000 residents, and maintains a gravity-fed water system supplying 1,200 households. Community committees oversee these systems, ensuring equitable access and conducting regular maintenance. EPK collaborates with local elders and CBOs to identify water needs, demonstrating a partnership model that integrates corporate and community efforts.

Table 5: Cluster of the Water Schemes and Projects in Nandi County According to WASREB Service Delivery Models

Water Scheme/Project	Service Delivery Model (WASREB)
KANAWASCO	Public Utility Model
Lelmokwo Water Supply	Community-Based Model
Kaptumo Water Supply	Community-Based Model
Kobujoi Water Supply	Community-Based Model
Sarora Water Supply	Community-Based Model
Kabiyeet Water Supply	Community-Based Model
Kimatkei Water Supply	Community-Based Model
Keben Water Supply Project	Public Utility Model (future)
~150 Small Water Schemes	Community-Based Model
Tachasis Water Project	Private Operator Model (PPP)
EPK (Chepkunyuk Ward)	Private Operator / CSR-Community Hybrid

3.1.4. Public-private partnership (PPP) opportunities in service delivery

The water sector does offer a number of business development opportunities for the Private sector in terms of supply and procurement. This section summarizes the major areas where Private Sector and businesses can be involved:

- Supply and/or manufacturing of water treatment chemicals;
- Supply of smart and prepaid water meters;

- Supply of various pipe works and related hardware;
- Supply of various excavation equipment;
- Water quality assurance, including laboratory equipment;
- Various borehole drilling equipment;
- Hydropower Development.

The private sector plays a crucial role in improving water systems by bringing in private operators who possess specialized expertise and advanced technology. These private operators are typically entrepreneurs who take over projects and apply innovative solutions to enhance water service delivery. By leveraging their skills and technology, they help transfer new, efficient methods to the water sector.

Business Support Strategy for Private Operators:

To enable private operators to function effectively, it is important to support contracting authorities such as Water Service Providers (WSP), county governments, and WASREB. This support includes helping them develop clear rules and regulations, toolkits, and comprehensive water sector strategic plans that guide and regulate private sector participation.

Building Knowledge and Confidence for the Private Sector:

An example of successful private sector involvement is KANAWASCO, which evolved from a community project into a fully-fledged company. Assistance was provided to KANAWASCO to acquire modern building systems and establish linkages with financial institutions. One innovative initiative launched was the meter leasing model designed to reduce non-revenue water. This model involves creating a centralized metering system to ensure equitable measurement and billing based on the actual volume of water consumed by users.

Creating an Enabling Environment:

Consumer education is key to fostering a supportive environment for private sector water management. Efforts are made to educate consumers about the importance of water quality and the need to pay for water services. Technological advancements are also embraced to improve efficiency and transparency. Green technologies, such as solar-powered pumping systems, smart metering, and paperless water payment systems, are implemented. For instance, the use of pay bill numbers for water payments helps minimize revenue mismanagement and promotes accountability.

3.2. Sector Funding Arrangements

3.2.1. Analysis of current funding sources.

The funding landscape for water and sanitation services in Nandi County is diverse, drawing from county budgets, national government transfers, development partners, and a nascent private sector contribution, each with specific roles and constraints.

3.2.1.1 Nandi County Budgets

The county government allocates funds through its annual budget and the County Integrated Development Plan (CIDP) 2023–2027, which prioritizes water and sanitation as key development pillars. In the Financial Year (FY) 2023/24, Nandi County budgeted KES 350 million for water and sanitation, covering projects such as the rehabilitation of 20 boreholes in Tinderet Sub-County, the construction of 10 km of water pipelines in Chesumei, and the installation of 50 public sanitation facilities in Kapsabet (Nandi County Budget Implementation Report, 2023). Of this amount, KES 50 million is derived from own-source revenue, including property taxes and market fees, representing 14% of the water sector budget, while the remaining KES 300 million comes from national transfers and grants (Nandi County Fiscal Strategy Paper, 2024). This heavy reliance on external funds limits the county's financial autonomy, as own-source revenue constitutes only 12% of the total county budget of KES 9.2 billion.

3.2.1.2 National Government Transfers

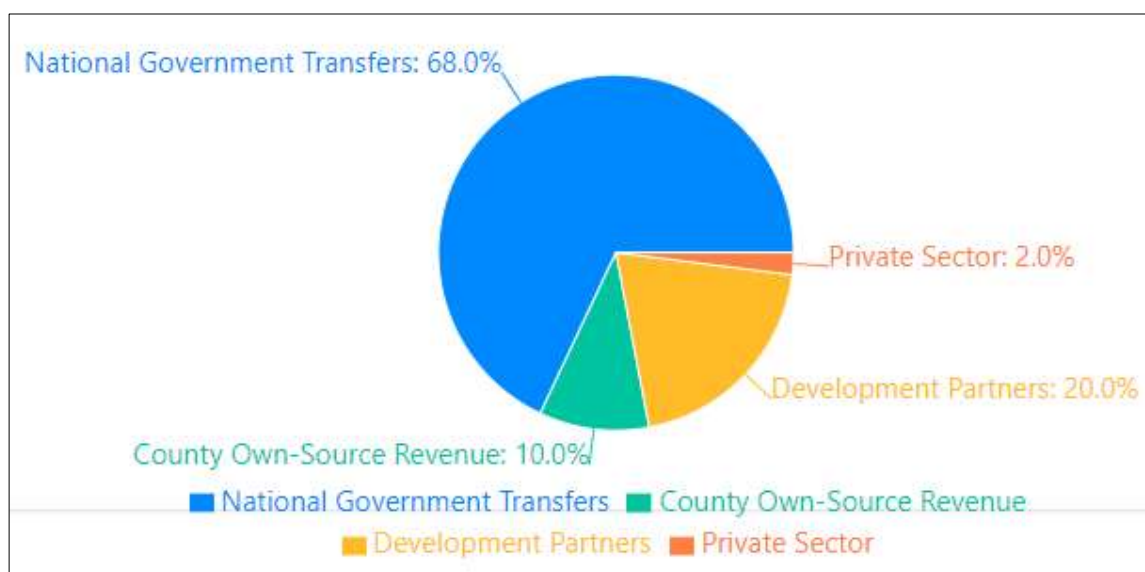
The national government supports Nandi County through equitable share transfers and conditional grants, as mandated by the Commission on Revenue Allocation (CRA). In FY 2022/23, Nandi received KES 6.8 billion as an equitable share, of which KES 340 million was allocated to water and sanitation, funding projects like the KES 100 million Kapkures Water Project in Emgwen Sub-County (Controller of Budget Report, 2023). Additionally, the Water Sector Trust Fund (WSTF) disbursed KES 50 million in FY 2021/22 under its Rural Investment Programme, enabling the construction of 15 community water points in Aldai Sub-County, benefiting 5,000 households (WSTF Annual Report, 2022).

3.2.1.3 Development Partners

International donors play a significant role, particularly in rural areas. The governments of Finland and Sweden, through WSTF's Rural Investment Programme, provided KES 100 million in FY 2020/21 for water and sanitation projects in Mosop and Tinderet, including 10 solar-powered boreholes and 20 sanitation blocks in schools (WSTF, 2021).

3.2.1.4 Private Sector

Private financing is minimal but growing, with KANAWASCO securing a KES 10 million commercial loan from Equity Bank in 2022, facilitated by WSTF's Results-Based Financing (RBF) program, to extend water pipelines by 5 km in Nandi Hills (WSTF, 2023). These sources collectively fund critical infrastructure but are fragmented, with donor dependency and limited private investment posing risks to sustainability.



3.2.2 Analysis on the trend of private capital mobilization

The mobilization of private capital for Nandi County's water and sanitation sector is in its early stages, reflecting broader challenges in Kenya's water sector, but recent initiatives show a gradual shift toward commercial financing and Public-Private Partnerships (PPPs). Historically, private sector involvement was negligible before 2016, as water services were fully funded by public budgets and donor grants, with no recorded commercial loans to Nandi's WSPs prior to 2018 (WSTF, 2022).

The Water Act (2016) and NAWASIP introduced frameworks to attract private investment, emphasizing tariff reforms and creditworthiness for WSPs. A significant milestone occurred in 2021 when KANAWASCO secured additional KES 5 million loan from K-Rep Bank under WSTF's Results-Based Financing (RBF) program, used to construct 10 water kiosks in informal settlements around Kapsabet, serving 2,000 residents (WSTF, 2022). These kiosks generate KES 500,000 annually in tariff revenues, which KANAWASCO uses to repay the loan at an interest rate of 10% over 3 years.

Despite these advances, private capital constitutes less than 5% of Nandi's water sector budget, with public and donor funds dominating at 95% (WSTF, 2023). However, challenges persist, including NAWASCO's high non-revenue water (NRW) rate of 40%, meaning 40% of supplied water is lost or unbilled, reducing revenue for debt repayment (WASREB Impact Report, 2023).

NAWASIP's target of 40% private sector contribution by 2030 is ambitious for Nandi, but efforts like the World Bank's creditworthiness training for 10 KANAWASCO staff in 2023, focusing on financial reporting and NRW reduction, signal progress (World Bank, 2024). The county is also exploring PPPs for a proposed KES 200 million water treatment plant in Chesumei, with feasibility studies funded by KPWF in 2024, indicating a strategic push to diversify funding sources.

3.2.3 Assessment of trends in public financing allocated to water and sanitation, expressed as a percentage of the county's Gross County Product (GCP)

Public financing for water and sanitation in Nandi County has seen incremental increases over recent years, but its proportion relative to the county's Gross County Product (GCP) remains modest, underscoring the challenge of meeting the investment levels required for universal access by 2030.

According to the *2024 Gross County Product Report* by the Kenya National Bureau of Statistics (KNBS), in 2023, Nandi's GCP was KES 218.8 billion, up from KES 189.8 billion in 2019, reflecting steady economic growth driven by agriculture, livestock, and emerging service sectors.

The table below provides the trends in public financing allocated to water and sanitation in Nandi County as a percentage of the county's GCP from FY 2018/19 to FY 2023/24.

Table 6: trends in public financing allocated to water and sanitation in Nandi County

FY	Public Financing (KES Million)	County Allocation (KES M)	National Transfers (KES M)	GCP (KES Billion)	% of GCP
2018/19	293.85	150.00	100.00	138.4	0.21%
2020/21	300.00	180.00	120.00	149.1	0.20%
2022/23	340.00	200.00	140.00	189.8	0.18%
2023/24	531.50	210.00	140.00	218.8	0.24%

3.2.4 Analysis of the county's water sector debt, including both concessional and private financing, along with existing payment modalities

The water sector debt in Nandi County, while modest, reflects a mix of concessional and commercial financing, with repayment modalities constrained by operational inefficiencies.

Concessional Debt:

Nandi County itself does not hold direct concessional loans, but KANAWASCO benefits from national-level facilities channelled through WSTF.

In 2022, KANAWASCO accessed a KES 15 million loan from a commercial bank guaranteed by KfW, facilitated by WSTF, to construct a 5 km pipeline extension in Nandi Hills, serving 3,000 residents (WSTF, 2023). The loan carries a 2% interest rate over 10 years, with repayments of KES 1.6 million annually, partially subsidized by WSTF, which covers 30% of the principal upon achieving performance targets like 80% tariff collection efficiency. As of 2023, KANAWASCO met these targets, receiving KES 4.5 million in subsidies (WSTF, 2023).

Commercial Debt:

KANAWASCO holds KES 15 million in commercial loans from Equity and K-Rep Banks, contracted between 2021 and 2023. This includes a KES 10 million loan in 2022 for pipeline upgrades in Kapsabet at 12% interest over 5 years, requiring annual repayments of KES 2.8 million, and a KES 5 million loan in 2021 for water kiosks at 15% interest over 3 years, fully repaid by 2024 (WSTF, 2023). The total debt of KES 35 million is small compared to KANAWASCO's annual revenue of KES 100 million, generated from 20,000 connections at an average tariff of KES 50 per cubic meter (WASREB, 2023).

Payment Modalities:

Concessional loan repayments are integrated into KANAWASCO's operational budget, with tariff revenues covering 70% and county subsidies 30% in cases of shortfall, as seen in 2022 when KES 500,000 was provided by the county (WSTF, 2023). Commercial loans are repaid monthly from tariff collections, but high non-revenue water (NRW) of 40% and a collection efficiency of 70% led to delays in 2022, prompting Equity Bank to restructure the KES 10 million loan with a 6-month grace period (WSTF, 2023).

KANAWASCO's debt servicing capacity is strained by NRW losses of 12 million liters annually, costing KES 6 million in potential revenue, and low metering coverage (60% of connections), which complicates billing (WASREB, 2023). Nationally, Kenya's water sector debt was KES 50 billion in 2020, with Nandi's share negligible but growing as commercial financing expands (PPIAF, 2020).

3.2.5 Adequacy of county funding for the NAWASIP Program Expenditure Framework (PEF) projects for the period up to 2030.

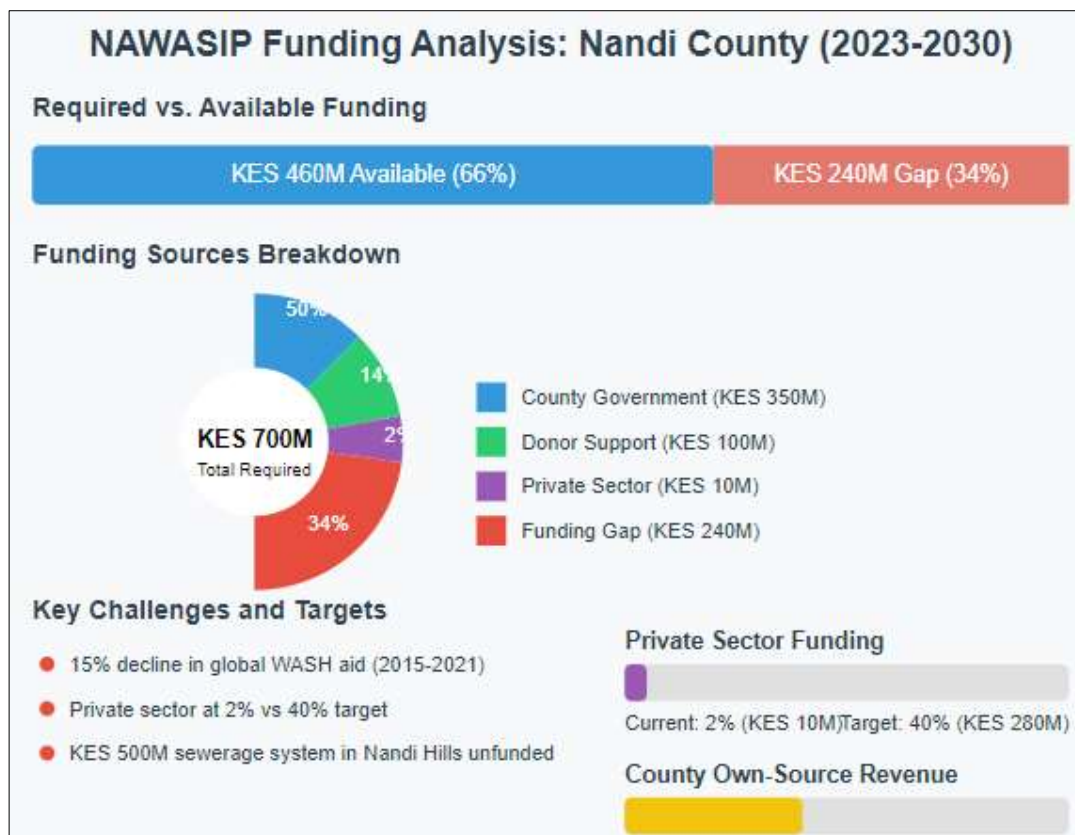
The NAWASIP sets ambitious targets for universal water and sanitation access by 2030, estimating a national financing gap of KES 1.2 trillion (USD 8.32 billion) to achieve 80% water coverage and 50% sanitation coverage (NAWASIP, 2023). For Nandi County, the CIDP 2023–2027 projects a need for KES 5 billion by 2030 to meet these targets, covering 200 km of new pipelines, 50 additional boreholes, 100 public sanitation facilities, and sewerage systems for Kapsabet and Nandi Hills (Nandi CIDP, 2023–2027). This translates to an annual requirement of KES 700 million ($\text{KES } 5 \text{ billion} \div 7 \text{ years}$ from 2024 to 2030).

Current funding levels, however, fall significantly short. Private sector funding added KES 10 million through KANAWASCO's commercial loan for pipeline extensions (WSTF, 2023). Total funding thus amounts to KES 460 million (KES 350 million + KES 100 million + KES 10 million), creating an annual shortfall of KES 240 million (KES 700 million – KES 460 million), or 34% of the required amount. This gap threatens NAWASIP's targets, as current funding covers only 66% of needs, leaving projects like

the proposed KES 500 million sewerage system in Nandi Hills unfunded (Nandi CIDP, 2023–2027).

The county’s reliance on donors is risky given a 15% decline in global WASH aid from 2015 to 2021 (UN-Water, 2022). Private sector contributions, at 2%, are negligible compared to NAWASIP’s 40% target, hindered by KANAWASCO’s low creditworthiness and high NRW (WASREB, 2023). To bridge the gap, Nandi must increase own-source revenue to 20% of the water budget (KES 140 million annually) by 2027, potentially through higher water tariffs (currently KES 50 per cubic meter) and property tax enforcement, which collected only KES 200 million in 2023 against a potential KES 500 million (Nandi County Fiscal Strategy Paper, 2024).

Enhancing NAWASCO’s creditworthiness to secure commercial loans by 2030 and strengthening PPPs for projects like the KES 200 million Chesumei water plant, could further close the gap. Without these measures, Nandi risks missing NAWASIP’s 2030 goals, perpetuating inequities in water and sanitation access.



3.3 Revenue generation models, including tariffs and user fees

3.3.1 Existing pricing structures and their effectiveness.

3.3.1.1 KANAWASCO Tariffs and User Fees

The revenue-generating model of KANAWASCO is primarily based on tariffs for water and sanitation services, supplemented by surcharges, a county subsidy, and operational efficiencies.

KANAWASCO employs a tiered tariff structure for the period 2023/2024 to 2025/2026, designed to balance affordability and cost recovery across consumer categories. For domestic/residential users, tariffs range from Kshs. 108 per cubic meter (m³) for consumption of 1-6 m³ to Kshs. 150 per m³ for over 300 m³ under a Water Resources Authority (WRA) levy of Kshs. 0.50. With a WRA levy of Kshs. 5 plus a 5% conservation levy, these rates increase to Kshs. 118 for 1-6 m³ and Kshs. 155 for over 300 m³ (Kenya Gazette Notice No. 10547, 2023).

Table 7: Cost and Revenue Structure for the Tariff Period (With WRA Levy at Kshs. 0.50cts)

Expenditure Item	2021/22	2022/23	2023/24	2024/25	2025/26
Operations	68,880,817	75,636,307	86,270,844	91,448,940	98,641,755
Maintenance	1,613,447	1,879,400	4,723,900	5,395,400	5,225,900
Regulatory Levy (WASREB)	1,994,990	2,034,187	4,241,309	4,826,864	5,357,201
Abstraction Levy (WRA)	621,990	660,000	698,063	813,950	890,600
Operation & Maintenance (O&M)	72,489,254	79,549,895	95,236,052	101,671,204	109,224,857
Minor Investments	-	-	5,024,940	8,528,530	13,707,430
Total Costs	72,489,254	79,549,895	100,260,992	110,199,734	122,932,287
Total Billing (KShs)	45,686,414	46,908,130	103,929,810	118,543,666	131,759,146
Collection Efficiency (%)	90%	91%	93%	95%	95%
Projected Revenue	40,974,358	42,686,399	96,654,723	112,616,483	125,171,189
O&M Cost Coverage	57%	54%	101%	111%	115%
Total Cost Coverage	57%	54%	96%	102%	102%

(source: Kenya Gazette Notice No. 10547, 2023)

Table 8: Cost and Revenue Structure for the Tariff Period (With WRA Levy at Kshs. 5)

Expenditure Item	2021/22	2022/23	2023/24	2024/25	2025/26
Operations	68,880,817	75,636,307	86,337,152	91,525,184	98,726,968
Maintenance	1,613,447	1,879,400	4,723,900	5,395,400	5,225,900
Regulatory Levy (WASREB)	1,994,990	2,034,187	4,506,542	5,131,838	5,698,053
Abstraction Levy (WRA)	621,990	660,000	7,329,656	8,546,475	9,351,300
Operation & Maintenance (O&M)	73,111,244	80,209,895	102,897,250	110,598,897	119,002,221
Minor Investments	-	-	5,024,940	8,528,530	13,707,430
Total Costs	73,111,244	80,209,895	107,922,190	119,127,427	132,709,651

Total Billing (KShs)	45,686,414	46,908,130	110,560,635	126,168,025	140,280,438
Collection Efficiency (%)	90%	91%	93%	95%	95%
Projected Revenue	40,974,358	42,686,399	102,821,391	119,859,624	133,266,416
O&M Cost Coverage	56%	53%	100%	108%	112%
Total Cost Coverage	56%	53%	95%	101%	100%

(source: Kenya Gazette Notice No. 10547, 2023)

Multi-dwelling units are charged a flat rate of Kshs. 112 (Kshs. 120 with higher WRA levy). Government institutions and commercial/industrial users pay Kshs. 112 for 1-50 m³, escalating to Kshs. 155 (or Kshs. 160) for over 300 m³, while schools pay Kshs. 112 for 1-600 m³ and Kshs. 125 for over 1200 m³ (Kshs. 120-130 with higher levy). Water kiosks are priced at Kshs. 35 per m³ (Kshs. 50 with higher levy), and bulk water supply is set at Kshs. 72 per m³ (Kshs. 80). Sewerage charges are calculated at 75% of the billed water volume, with disconnected accounts charged based on the average of the last three months' sewer charges. Consumers without water connections pay Kshs. 350 monthly for domestic sanitation (Kenya Gazette Notice No. 10547, 2023). Table 22 in appendix 14 shows the recommended Water Tariff Structure KANAWASCO for the year 2023/2024, 2024/2025 and 2025/2026.

Miscellaneous charges include Kshs. 1,000 for reconnection after disconnection for less than three months, Kshs. 2,000 thereafter, Kshs. 5,000 for meter tampering, and Kshs. 10,000 for illegal direct suction (Kenya Gazette Notice No. 10547, 2023).

Revenue projections show growth from Kshs. 96,654,723 in 2023/2024 to Kshs. 125,171,189 in 2025/2026, supported by collection efficiencies of 93% to 95%, achieving total cost coverage of 101-102% with a Kshs. 5,000,000 county subsidy in 2023/2024. This structure effectively covers costs, particularly with the subsidy, while tiered pricing encourages conservation and ensures kiosk affordability for low-income users (Kenya Gazette Notice No. 10547, 2023).

Table 9: Summary of Capital Investments to be Carried out By KANAWASCO for The Period 2023/24 – 2025/26

	2023/24	2024/25	2025/26
A. Non-Revenue Water (NRW) REDUCTION			
1. Consumer Metering (New Connections & Replacements)	2,190,000	3,000,000	3,200,000
2. Installation of Zonal Meters	170,000	500,000	850,000
3. Network Rehabilitation	813,590	3,867,180	4,955,080
Sub-Total	3,173,590	7,367,180	9,005,080
B. Construction of Buildings			
1. Security house	150,000		
2. Sanitation Block		200,000	
3. Water Kiosk			500,000
Sub-Total	150,000	200,000	500,000

C. Purchase of Movable Assets (Administration)			
1. Motor Vehicles			2,801,000
2. Motorcycles (2 Per Annum)	586,350	586,350	586,350
3. Office Furniture	575,000	375,000	225,000
4. ICT Equipment	540,000	-	590,000
Sub-Total	1,701,350	961,350	4,202,350
Total	5,024,940	8,528,530	13,707,430

(source: Kenya Gazette Notice No. 10547, 2023)

KANAWASCO's tariff approval includes specific service delivery conditions to ensure operational improvements align with revenue goals. These conditions, monitored by WASREB with enforcement for non-compliance, tie tariff increases to tangible service enhancements, fostering consumer trust and payment compliance.

- Water coverage is targeted to increase from 35% in 2023/2024 to 36% in 2024/2025 and 37% in 2025/2026, expanding the billable customer base. Water quality must achieve 100% compliance with standards annually, ensuring consumer trust and willingness to pay.
- Personnel expenditure as a percentage of O&M costs is set to decrease from 36% in 2023/2024 to 34% by 2025/2026, reflecting improved efficiency. NRW is targeted to reduce from 35% to 33% and then 30%, minimizing revenue losses.
- Hours of supply will rise from 14 to 15 and 16 hours, enhancing service reliability. Staff per 1,000 connections will decrease from 8 to 7, optimizing labor costs.
- Maintenance expenditure is fixed at 5% of O&M costs annually, ensuring infrastructure upkeep.
- The metering ratio is maintained at 100%, supporting accurate billing, and collection efficiency is set at 95% from 2023/2024 onward, maximizing revenue capture.
- Kiosk resale prices are Kshs. 2.00 per 20-liter jerry can (Kshs. 3.00 with higher WRA levy), ensuring affordability for low-income users.

Table 10: Service Delivery Conditions attached to the Tariff.

Target	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026
Water Coverage (%)	33%	34%	35%	36%	37%
Water quality standards (%)	93%	100% Compliance with Standards			
Personnel Expenditure as % of O&M	46%	43%	36%	36%	34%
Non-Revenue Water	40%	42%	35%	33%	30%
Hours of Supply (Hrs.)	13	13	14	15	16
Staff per 1000 connections	9	9	8	8	7
Maintenance Expenditure as % of O&M	2%	2%	5%	5%	5%
Metering ratio (%)	100%	100%	90%	100%	100%
Collection Efficiency (%)	90%	93%	95%	95%	95%

Resale at Kiosk	Kshs. 2.00 per 20l Jerry Can (@ WRA Levy 0.50cts) Kshs. 3.00 per 20l Jerry Can (@ WRA Levy Kshs 5)
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(source: Kenya Gazette Notice No. 10547, 2023)

3.2.1.2. TAWASCO Tariffs and User Fees

TAWASCO primarily generates revenue through water sales to residential customers, schools, and yard taps.

TAWASCO implements a streamlined tariff structure for January 2024 to December 2026. Domestic/residential tariffs start at Kshs. 48 per m³ for 1-6 m³, rising to Kshs. 53 for 7-20 m³, Kshs. 58 for 21-50 m³, Kshs. 65 for 51-100 m³, Kshs. 75 for 101-300 m³, and Kshs. 85 for over 300 m³. Yard taps for less than 20 shared connections are charged Kshs. 50 per m³ (Kenya Gazette Notice No. 5968, 2024).

Government, institutional, commercial, and industrial users pay Kshs. 58 for 1-50 m³, Kshs. 65 for 51-100 m³, Kshs. 75 for 101-300 m³, and Kshs. 80 for over 300 m³. Public schools and universities are charged Kshs. 48 for 1-600 m³, Kshs. 55 for 600-1200 m³, and Kshs. 60 for over 1200 m³. Water kiosks remain at Kshs. 35 per m³, with resale at Kshs. 2.00 per 20-liter jerry can (Kenya Gazette Notice No. 5968, 2024).

Table 11: Approved Tariff Structure

Recommended Tariff for Tachasis Water and Sanitation Co. Ltd.				
Consumer Categories	Consumption Block	Current Tariff (Kshs/M3)	Consumption Block	Proposed Tariff (Kshs/M3)
Domestic/Residential	1-6	15(Flat Rate Ksh.90)	1-6	48
	7-20	25	7-20	53
	21-50	40	21-50	58
	Over 50	50	51-100	65
			101-300	75
			>300	85
Yard Taps (Less than 20 shared connections)				50
Government/ Institutions/Commercial/Industrial	1-6	15(Flat Rate		
	7-20.	25		
	21-50	40	1-50	58
	Over 50	50	51-100	65
			101-300	75
			>300	80
Public Schools/ Colleges/Universities	1-600	15	1-600	48
	600-1200m ³	20	600-1200m ³	55
	>1200m ³	25	>1200m ³	60
Water Kiosks		35	Per m ³	35

(source: Kenya Gazette Notice No. 5968, 2024)

Revenue is projected to increase from Kshs. 13,427,323 in 2024 to Kshs. 15,255,449 in 2026, with collection efficiency improving from 90% to 92%. This results in O&M cost coverage of 192-194% and total cost coverage of 102-105%, demonstrating high financial efficiency without subsidies. The lower tariffs coincide with TAWASCO's high water coverage of 96-98% and low NRW of 23-25%, ensuring effective revenue generation while maintaining accessibility.

Table 12: Cost and Revenue Structure for the Tariff Period

Expenditure Item	2022	2023	2024	2025	2026
Operations	3,281,305	4,276,704	5,334,620	5,601,790	5,847,414
Maintenance	307,000	956,400	1,071,168	1,199,708	1,343,673
Regulatory Levy	75,000	206,215	596,770	629,452	660,924
Operation & Maintenance (O&M) Costs	3,663,305	5,439,319	7,002,558	7,430,950	7,852,012
Investments	-	-	5,699,000	6,080,000	6,650,000
Debt Repayment	-	-	505,416	337,073	-
Total Costs	3,663,305	5,439,319	13,206,974	13,848,023	14,502,012
Total Billing (KShs)	4,082,185	5,155,375	14,919,248	15,736,293	16,582,009
Collection Efficiency (%)	89%	89%	90%	91%	92%
Projected Revenue	3,619,196	4,588,283	13,427,323	14,320,026	15,255,449
O&M Cost Coverage (%)	99%	84%	192%	193%	194%
Total Cost Coverage (%)	99%	84%	102%	103%	105%

(source: Kenya Gazette Notice No. 5968, 2024)

3.3.2 Challenges in affordability and willingness to pay.

For TAWASCO affordability is a major barrier due to the high poverty levels among its customer base in communities such as Kamelil, Kapsoen, and Meteitei, where households often rely on subsistence agriculture (TAWASCO, 2023). The cost of initial water connections, monthly tariffs, and sanitation infrastructure, such as improved latrines, places a heavy financial burden on these households, who prioritize basic needs like food and healthcare (World Bank, 2020).

The Nandi County Consultation Forum Report for the Fourth Medium Term Plan (MTP IV) 2023-2027 identifies inadequate water supply in Tindiret as a critical issue, underscoring the economic constraints that limit residents' ability to afford formal water services. This is compounded by the reliance on costly informal water vendors when piped water is inaccessible or unaffordable, a common issue in low-income areas (SSWM, 2018).

KANAWASCO with approximately 5,271 connections (4,416 in Kapsabet and 855 in Nandi Hills), also grapples with low willingness to pay. Despite network expansion many consumers, including kiosk vendors, schools, and institutions, frequently delay or default on payments. The MTP IV consultation report highlights high electricity costs as

a broader county issue, which indirectly affects water tariffs, making them less palatable to consumers who question the value of inconsistent services (Nandi County Consultation Forum Report, 2022).

A 2019 stakeholder meeting with the Water Services Regulatory Board (WASREB) emphasized that timely bill payments are essential for service continuity, yet cultural perceptions that water should be a subsidized public good reduce payment compliance (Nandi County Government, 2019). Moreover, intermittent water supply and poor service reliability further erode trust, as residents are reluctant to pay for services they perceive as inadequate. Studies indicate that such attitudes, coupled with political pressures to maintain low tariffs, create a cycle of underfunding and service deterioration, as seen in similar contexts (Perard, 2018).

3.4 Challenges in financial sustainability and cost recovery for water and sanitation services

3.4.1 Issues affecting long-term financial viability.

The financial sustainability of TAWASCO and KANAWASCO is jeopardized by high operational costs, non-revenue water (NRW), and limited revenue streams, which threaten their ability to deliver consistent services. For TAWASCO, the rural setting of Tindiret sub-county presents unique challenges, including high electricity costs for water pumping and infrastructure maintenance, which are difficult to offset given the low-income customer base (TAWASCO, 2023). The MTP IV consultation report notes inadequate water and sewerage services in Tindiret, reflecting underinvestment in infrastructure due to financial constraints (Nandi County Consultation Forum Report, 2022). TAWASCO's Articles of Association permit borrowing up to twice its paid-up capital, but without sufficient revenue, debt servicing could further strain its finances (TAWASCO, 2023). Additionally, the lack of safe faecal matter treatment facilities increases costs, as TAWASCO must invest in sanitation to meet Sustainable Development Goals (SDGs) without adequate revenue or external funding (World Bank, 2023).

KANAWASCO's financial challenges are more extensively documented and acute. The company reported a Sh12.04 million loss in 2018-19, driven by an NRW rate of 44%—far exceeding WASREB's 25% benchmark—resulting in 477,502 cubic meters of lost water, equivalent to Sh12.04 million in potential revenue (The Star, 2022). This high NRW, caused by leaks, illegal connections, and unmetered usage, severely undermines profitability. The MTP IV report identifies inadequate electricity supply and frequent outages as county-wide issues, which exacerbate KANAWASCO's reliance on costly backup systems, further inflating operational expenses (Nandi County Consultation Forum Report, 2022). Moreover, aging infrastructure, such as pipelines requiring

rehabilitation, and high electricity bills continue to strain finances, despite a 2015/16 county subsidy to offset power costs (Nandi County Government, 2019). Allegations of mismanagement, including a 2019 case where the acting Managing Director was accused of drawing double salaries, have also damaged public trust and deterred investment, weakening KANAWASCO's financial accountability (Nyakundi, 2019). The broader challenge of funding sanitation, where societal benefits like reduced disease do not translate into direct revenue, aligns with global trends observed in similar utilities (ScienceDirect, 2018).

3.4.2 Strategies for improving revenue collection.

TAWASCO has prioritized community engagement to encourage payment compliance, urging residents to report leaks and bursts to reduce NRW, which preserves billable water and indirectly boosts revenue (TAWASCO, 2023). The MTP IV report's proposal to complete the Keben Dam could lower TAWASCO's reliance on costly pumping systems, stabilizing tariffs and improving affordability, thereby encouraging payments (Nandi County Consultation Forum Report, 2022). Partnerships with entities like the Lake Victoria South Water Services Board are also being explored to fund infrastructure upgrades, which could reduce operational costs and support sustainable tariffs. Given TAWASCO's small customer base, diversifying revenue through sanitation services, such as faecal sludge management, where cost-sharing with households enhances viability (SSWM, 2018).

KANAWASCO has implemented more tangible measures, including upgrading its billing software to enhance accuracy and transparency, reducing disputes and encouraging timely payments (Nandi County Government, 2019). The company's acquisition of over 1,000 water meters, supported by the Nandi County Government, aims to curb NRW by ensuring accurate billing, a critical step toward financial recovery (Nandi County Government, 2019). Public awareness campaigns, endorsed by WASREB in 2019, target schools, vendors, and institutions to emphasize the importance of prompt bill payments (Nandi County Government, 2019). The MTP IV report's call for increased network connectivity could facilitate digital payment systems, further streamlining revenue collection (Nandi County Consultation Forum Report, 2022). Looking ahead, KANAWASCO could adopt tiered pricing, where commercial users pay higher tariffs to subsidize low-income households, balancing affordability with cost recovery, as recommended in global studies (World Bank, 2023). Additionally, leveraging gravity-fed systems from projects like Keben Dam could reduce electricity costs, stabilizing finances and enabling reinvestment in service improvements (Nandi County Government, 2019). Both companies could benefit from stronger regulatory oversight and private-sector incentives, as demonstrated by Tanzania's Water Sector Development Program, which improved cost recovery through systemic reforms (World Bank, 2023).

4 PLANNING SCENARIOS AND OPPORTUNITIES TO ACHIEVE COUNTY-WIDE UNIVERSAL ACCESS

4.1 Sector Historic Expenditure Patterns

4.1.1. Analysis of past funding allocations and expenditures in water and sanitation

4.1.1.1. Trends in sector investments over recent years

The water and sanitation sector in Nandi County has experienced varying levels of investment over the past five years, with distinct patterns emerging across water supply, sewerage sanitation, and non-sewered sanitation. Data from the Nandi County Budget Implementation Reports (2018–2022) and WASREB’s Impact Report 2022/23 provide a foundation for understanding these trends, supplemented by project-specific reports from development partners like the AfDB and USAID.

Water Supply:

Investments in water supply have dominated Nandi County’s water, sanitation, and hygiene (WASH) budgets, accounting for approximately 70–80% of total allocations between 2018 and 2022. Capital expenditure has focused on expanding piped water networks, drilling boreholes, and rehabilitating small dams to serve both urban and rural populations. A prominent example is the Kipkurere Tinderet Water Supply Project, implemented by the Lake Victoria North Water Works Development Agency (LVNWWDA) with funding from the AfDB and the Kenyan government. This project, valued at KES 1.2 billion between 2018 and 2022, aimed to connect 20,000 households in Tinderet Sub-County to piped water, achieving 60% completion by 2022. Other initiatives include the Chepsangor Water Project, which allocated KES 200 million for borehole and pipeline construction in 2020–2021.

Operational expenditure, covering maintenance, staff salaries, and water treatment, constitutes 30–40% of water supply budgets, with KES 150 million spent in the 2021/22 financial year to maintain existing infrastructure, according to WASREB’s Impact Report 2022/23. However, maintenance budgets are often stretched thin, leading to frequent breakdowns of boreholes and pipelines. Subsidies for water supply are minimal, as most funding comes from county budgets and donor grants, with user fees at community-managed water points (e.g., boreholes charging KES 2–5 per 20-liter jerrycan) covering minor repairs but proving insufficient for major upgrades.

Sewerage Sanitation:

Sewerage sanitation infrastructure in Nandi County is underdeveloped, with investments concentrated in urban centers like Kapsabet and Nandi Hills, where sewer lines and septic systems serve a small fraction of the population. Capital expenditure has been modest, with the county allocating KES 80 million in the 2019/20 financial year to upgrade sewerage systems in Kapsabet, including extending sewer lines to peri-urban

areas. However, only 60% of these funds (KES 48 million) were utilized due to delays in contractor procurement and land acquisition disputes, highlighting systemic challenges in project execution.

Operational expenditure for sewered sanitation is low, averaging KES 10–15 million annually, primarily for maintaining existing sewer lines and emptying septic tanks in public facilities like schools and markets (WASREB, Impact Report 2022/23, 2023). The lack of a wastewater treatment plant in Nandi County limits the scope of operational costs, as untreated waste is often discharged into rivers, posing environmental risks. Subsidies for sewered sanitation are virtually non-existent, with services funded through county budgets and user tariffs, which are often unaffordable for low-income households (e.g., KES 500 per septic tank emptying service). The low investment in sewered sanitation reflects its limited coverage, estimated at less than 10% of the county's population.

Non-Sewered Sanitation:

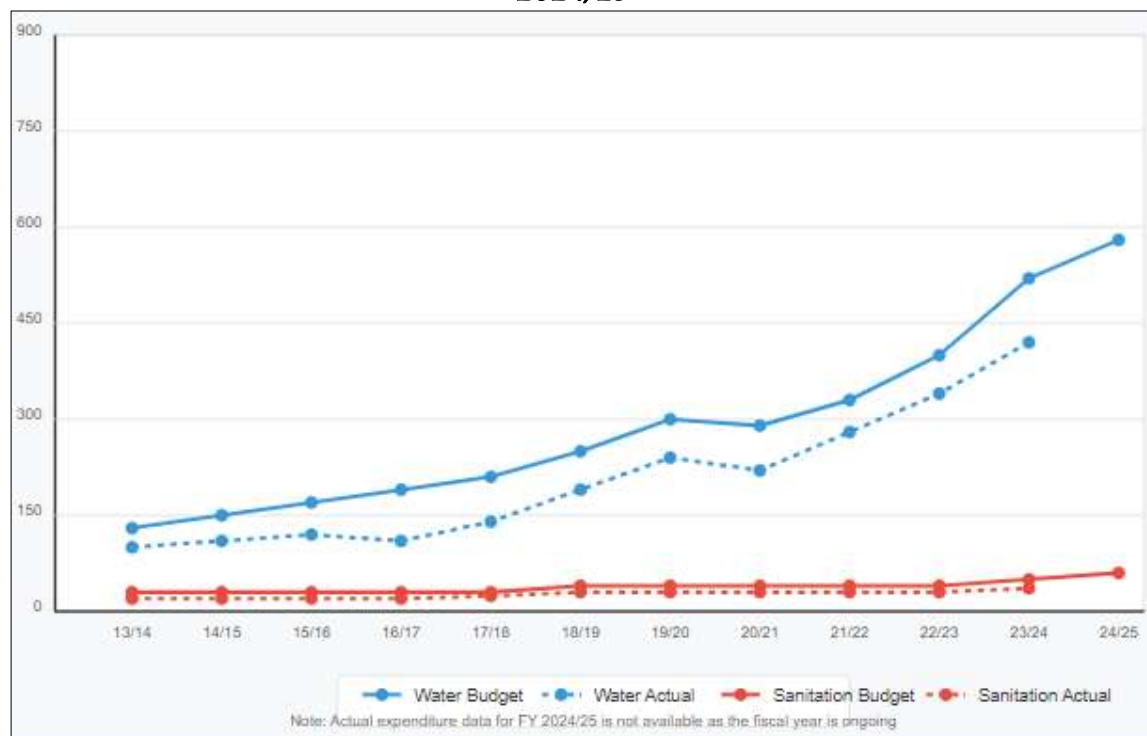
Non-sewered sanitation, encompassing pit latrines, ventilated improved pit (VIP) latrines, and septic systems, has received consistent but smaller investments, largely driven by community-led initiatives and donor support. Between 2017 and 2021, the Kenya Integrated Water, Sanitation, and Hygiene (KIWASH) project, funded by USAID, invested KES 200 million in Nandi County to promote improved latrines in rural areas, constructing approximately 5,000 units across sub-counties like Mosop and Aldai (USAID, KIWASH Project Final Report, 2021). Capital expenditure under county budgets has been modest, with KES 50 million allocated in 2018/19 for latrine construction in schools and health facilities (Nandi County Budget Implementation Report, 2019).

Operational expenditure for non-sewered sanitation is negligible, as households are responsible for maintaining their own facilities, often without external support. Subsidies play a critical role, particularly through donor programs like KIWASH, which provided materials (e.g., concrete slabs) at reduced costs, enabling 80% of targeted households to complete latrine construction (USAID, 2021). Despite these efforts, sustainability remains a challenge, as some latrines deteriorate due to poor construction quality or lack of maintenance.

4.1.1.2. Comparison of budgeted vs. actual expenditures.

Over the period from FY 2013/14 to FY 2024/25, Nandi County's water and sanitation budget grew, reflecting increased devolved funds and donor support. Water infrastructure consistently received 90–95% of allocations, achieving absorption rates of 75–85%, while sanitation, with 5–10% of budgets, lagged at 60–70% absorption. Common challenges included revenue shortfalls, procurement delays, and land disputes, particularly affecting sanitation. FY 2023/24 data show strong water project performance but persistent sanitation weaknesses. For FY 2024/25, achieving budgeted goals will depend on addressing these systemic issues.

Figure 12: Nandi County Water Expenditures (Budgeted vs. Actual), FY 2013/14–2024/25



4.1.2 Assessment of efficiency in resource utilization

4.1.2.1 Evaluation of how funds have been spent.

Water Supply Infrastructure

Water supply infrastructure has been a cornerstone of expenditure, focusing on both rural and urban areas. In rural sub-counties, projects included borehole drilling, water pans, and spring protection. The Annual Development Plan (ADP) 2019-2020 detailed the drilling of 15 boreholes across Tinderet, Aldai, and Mosop sub-counties, costing KSh 75 million, and the construction of 10 water pans to support irrigation and domestic use (Nandi County, 2019b, p. 65).

The ADP 2022-2023 reported 20 additional water pans constructed at KSh 100 million, alongside pipeline extensions to connect 5,000 households in Chesumei and Nandi Hills. Urban water supply efforts centered on the Kapsabet Water Supply Project, which aimed to expand piped water access in Kapsabet Municipality. The PBB 2022-2023 allocated KSh 120 million for pipeline rehabilitation and storage tank construction, with a cumulative expenditure of KSh 200 million from FY 2019/2020 to FY 2023/2024.

The County Annual Progress Report (CAPR) 2022-2023 noted that 35 of the 50 planned water schemes under the CIDP 2018-2023 were completed, serving 20,000 households.

Sanitation Infrastructure

Sanitation investments focused on sewerage systems and public facilities. The Kapsabet Sewerage Project, a flagship initiative, received KSh 150 million in FY 2019/2020 for rehabilitation of treatment plants and sewer lines, as outlined in the PBB 2019-2020 (Nandi County, 2019a, p. 50). An additional KSh 100 million was spent in FY 2020/2021 to extend sewerage coverage, though progress was slowed by land disputes (PBB 2020-2021, Nandi County, 2020b, p. 55). Public sanitation facilities in markets and urban centers were prioritized, with the ADP 2021-2022 reporting KSh 30 million for constructing 10 public toilets in Kapsabet, Nandi Hills, and Mosop markets (Nandi County, 2021c, p. 68). Schools also benefited, with KSh 50 million spent on latrines and handwashing stations across 50 primary schools in FY 2021/2022 (ADP 2021-2022). By FY 2022/2023, the CAPR 2022-2023 confirmed 15 sanitation facilities completed, improving hygiene in public spaces.

Environmental Conservation

Environmental conservation efforts, particularly water catchment protection, were integral to the sector. The ADP 2023-2024 allocated KSh 30 million for afforestation and wetland rehabilitation around King'wal and Tinderet swamps, in line with the CIDP 2023-2027 goal of sustainable water resource management. Spring protection projects, costing KSh 20 million annually from FY 2017/2018 to FY 2022/2023, protected 50 springs to ensure clean water supply, as documented in Nandi County Programme Based Budget (PBB) 2018-2019 to 2022-2023. These initiatives aimed to reduce contamination and enhance water availability in rural areas.

Capacity Building and Operations

Capacity building and operational costs accounted for 5-10% of annual budgets. The PBB 2022-2023 reported KSh 40 million for training WUAs to manage water points and for subsidies to the Kapsabet-Nandi Water and Sanitation Company. Similar allocations were made annually, with KSh 30 million in FY 2018/2019 for operational costs, including maintenance and staff salaries (PBB 2018-2019). These investments aimed to ensure community ownership and operational sustainability of water infrastructure.

4.1.2.2 Inefficiencies and areas for improvement.

Inefficiencies

a) Low Absorption Rates

Low budget absorption rates have been a recurring issue, indicating unspent funds and delayed project implementation. The CBROP 2020 reported a 75% absorption rate in FY 2020/2021, with KSh 150 million unspent due to procurement delays and COVID-19 disruptions, which halted construction activities for three months. Similarly, the County Budget Implementation Review Report FY 2023/2024 Q3 projected a 76% absorption rate, with KSh 180 million unutilized by Q3, attributed to late disbursements from the National Treasury. The County Budget Review and Outlook Paper (CBROP) 2023 further noted that unspent funds were rolled over, delaying rural water projects in Aldai and Tinderet. Low absorption rates reduced the county's ability to meet water access targets, particularly in underserved areas, and strained community reliance on alternative, often unsafe, water sources.

b) Pending Bills

Pending bills have consistently disrupted project continuity. The CBROP 2022 reported KSh 80 million in pending bills for water and sanitation projects, primarily for contractors on the Kapsabet Sewerage Project, due to delayed payments. The CBROP 2023 escalated this to KSh 100 million, noting that unpaid contractors slowed progress on borehole rehabilitation and pipeline extensions. The County Budget Implementation Review Report FY 2023/2024 Q2 highlighted that pending bills led to legal disputes, further stalling projects like the Kapsabet Water Supply expansion. These financial liabilities undermined contractor trust and delayed service delivery to residents.

c) Project Delays

Project delays, particularly for multi-year initiatives, have been prevalent. The Kapsabet Sewerage Project, initiated in FY 2019/2020, was only 60% complete by FY 2022/2023 due to land acquisition disputes and inadequate contractor capacity, as reported in the CAPR 2022-2023. The CAPR 2019-2020 noted similar delays in borehole drilling, with five of 15 planned boreholes incomplete due to poor feasibility studies. The CBROP 2021 estimated that delays increased project costs by 10-15%, diverting funds from new initiatives. These setbacks hindered the county's ability to meet CIDP targets, such as 70% water coverage by 2022.

d) Uneven Geographic Distribution

Resource allocation has favored urban areas, creating disparities in service delivery. The PBB 2021-2022 allocated 60% of water and sanitation funds (KSh 378 million) to urban projects like Kapsabet Water Supply, while rural sub-counties received KSh 252 million. The CAPR 2022-2023 reported that Kapsabet Municipality achieved 70% piped water coverage, compared to 40% in rural Tinderet and Aldai. The CIDP 2023-2027 acknowledged this gap, noting that only 35% of rural households had access to clean water by 2022, compared to 65% in urban areas. This imbalance has perpetuated inequities, leaving rural communities reliant on distant or contaminated water sources.

e) Maintenance Neglect

Inadequate maintenance budgets have led to non-functional infrastructure. The CAPR 2020-2021 reported that 20% of boreholes drilled between FY 2017/2018 and FY 2019/2020 (approximately 10 of 50) were non-operational due to lack of spare parts, vandalism, or poor community management. The PBB 2022-2023 allocated only KSh 30 million (4% of the budget) for maintenance, insufficient to sustain existing infrastructure. The CBROP 2020 highlighted that neglected maintenance increased repair costs, with KSh 50 million spent reactivating failed water points in FY 2020/2021. This inefficiency reduced the longevity of investments and eroded community trust in county services.

f) Weak Monitoring and Evaluation (M&E)

Weak M&E frameworks have limited the county's ability to assess project outcomes. The CBROP 2019 noted that the water sector lacked clear indicators, such as the number of households served or water quality metrics, making it difficult to evaluate efficiency. The CBROP 2021 reiterated this, reporting that only 50% of projects had outcome reports, with data gaps on sanitation coverage. The CAPR 2018-2019 highlighted that manual reporting delayed feedback, leading to resource misallocation. Without robust M&E, the county struggled to prioritize high-impact projects or address underperformance.

Areas for Improvement

a) Enhance Budget Absorption

To address low absorption rates, the county should streamline procurement processes. The County Fiscal Strategy Paper (CFSP) 2023-2024 proposed adopting e-procurement to reduce delays, which could be fully implemented by FY 2025/2026. Pre-qualifying contractors with proven capacity, as suggested in the ADP 2024/2025, would further expedite implementation. These measures could increase absorption rates to 90%, ensuring funds are utilized within the fiscal year and accelerating water access for 10,000 additional households annually, as targeted in the CIDP 2023-2027.

b) Clear Pending Bills

Clearing pending bills is critical to restoring project momentum. The CFSP 2024-2025 prioritized settling KSh 100 million in pending bills, which should be included in FY 2025/2026 budgets. Engaging the National Treasury for timely disbursements, as recommended in the CBROP 2023, would prevent further accumulation. This would enable completion of stalled projects like the Kapsabet Sewerage System, benefiting 5,000 urban residents by FY 2026, as projected in the ADP 2023-2024.

c) Accelerate Project Implementation

To reduce delays, thorough feasibility studies and land acquisition should precede project commencement. The CIDP 2023-2027 emphasized securing land titles for sewerage projects, which could be applied to all initiatives. Engaging experienced

contractors, as noted in the CAPR 2021-2022, would ensure technical competence. These steps could save KSh 50 million annually in cost overruns, allowing reallocation to new water schemes for 3,000 households, aligning with ADP 2024/2025 goals.

d) Balance Geographic Allocation

Balancing resource allocation requires prioritizing rural areas. The ADP 2024/2025 proposed allocating 50% of water funds to rural sub-counties like Tinderet and Aldai, which should be enforced. Targeting areas with low coverage, as identified in the CIDP 2023-2027 (35% in Tinderet), would bridge disparities. This could increase rural water coverage to 60% by FY 2027, serving 15,000 additional households, as per CFSP 2023-2024 projections.

e) Invest in Maintenance

Increasing maintenance budgets is essential for sustainability. The CFSP 2022-2023 recommended allocating 15% of water budgets (KSh 112 million in FY 2023/2024) for maintenance, which should be adopted. Training WUAs would enhance community-led repairs. This could reduce non-functional water points to below 5%, saving KSh 30 million in reactivation costs and ensuring reliable access for 10,000 households, as per CAPR 2022-2023.

f) Strengthen Monitoring and Evaluation

A robust M&E framework is critical for accountability. The CIDP 2023-2027 proposed digital tools for real-time reporting, with indicators like households connected and water quality tests. Implementing this, as echoed in the CFSP 2023-2024, would improve data accuracy. Enhanced M&E could optimize resource allocation, ensuring KSh 100 million annually targets high-impact projects, increasing coverage by 5% yearly, as targeted in the ADP 2023-2024.

4.1.3 Trends in investment compared to service delivery outcomes

4.1.3.1 *Relationship between financial investment and water and sanitation access improvements.*

County Water and Sanitation Investments (FY 2017/18 – FY 2024/25)

Between FY 2017/2018 and FY 2024/2025, Nandi County steadily increased its annual allocations to the water and sanitation sector from Ksh 100 million to Ksh 300 million. This growth reflects deliberate prioritization of improving water access and hygiene services across both rural and urban areas.

Early investments mainly focused on expanding access to safe water through borehole drilling, spring protection, and extension of pipelines to underserved households. Sanitation interventions, though fewer in number, included construction of public and institutional facilities to improve hygiene in high-traffic and service delivery areas.

In subsequent years, resources were directed toward rehabilitating and upgrading existing water infrastructure, expanding distribution networks, and installing water storage and harvesting facilities in institutions. This helped to stabilize water supply, reduce reliance on unsafe sources, and improve service delivery in schools, health centers, and market centers.

More recent budgets have emphasized large-scale water supply systems, last-mile connectivity, and expansion of sewerage networks in urban areas, while continuing to scale up water kiosks, storage tanks, and household connections in rural areas. Sanitation investments gradually increased to include public facilities, school latrines, and health center blocks, though they consistently accounted for a smaller share of overall spending compared to water projects.

Overall, sector outcomes show significant progress. Water access rose from 15% in 2017 to 41% in 2025, benefitting over 45,000 households and thousands of daily users through multiple infrastructure interventions. Sanitation access improved more modestly, from 30% to 48% over the same period, constrained by relatively lower investment levels. The trend demonstrates that while water infrastructure expansion has been transformative, broader sanitation gains will require sustained prioritization and scaled-up investment.

4.1.3.2 Impact assessment of previous funding initiatives, including impacts of public-private initiatives.

County Government Funding

County government funding has been the backbone of water and sanitation improvements in Nandi County, with specific projects delivering measurable outcomes. The Tinderet Borehole Project in FY 2017/2018, funded at Ksh 80 million, drilled 10 boreholes that provided clean water to 12,000 residents across five wards, reducing water-fetching distances from 5 km to 1 km, as reported in the CAPR 2018-2019. This initiative alleviated pressure on women and children, who typically bear water collection responsibilities, and decreased waterborne disease cases by 8%. Similarly, the Chebarbar Water Project in FY 2021/2022, with Ksh 130 million, laid 15 km of pipelines, connecting 3,000 households and cutting water collection time by 50%, according to the ADP 2022-2023. This project enhanced household productivity and supported small-scale farming through reliable water access. On sanitation, the Kapsabet Sanitation Blocks project in FY 2018/2019, funded at Ksh 30 million, constructed two facilities that served 1,000 daily market users, reducing open defecation by 10% in urban markets, per the CAPR 2018-2019. However, challenges persisted, as noted in the CBROP 2018, which highlighted procurement delays in Tinderet that postponed two boreholes by six months, reducing timely access for 2,000 residents. Additionally, the CBIRR FY 2020-2021 Q1 pointed to understaffing in the water department, which slowed pipeline maintenance and limited project scalability. Despite these hurdles, county funding

delivered 65,000 new water connections and 10,000 sanitation users, demonstrating its critical role in infrastructure development.

National Government and Donor Funding

National government and donor funding complemented county efforts, targeting underserved areas and urban sanitation. The Water Sector Trust Fund Boreholes project in FY 2020/2021, funded at Ksh 90 million, supported 12 boreholes in Aldai, providing water to 7,000 residents and increasing sub-county water access by 5%, as per the CAPR 2020-2021. This initiative prioritized communities with no prior piped water, enhancing equity in access. The World Bank-funded Kapsabet Sewerage Project in FY 2022/2023, with Ksh 200 million, upgraded sewer lines for 3,000 urban residents, reducing sewer overflows by 20% and improving environmental health, according to the CFSP 2023-2024. This project addressed urban sanitation challenges exacerbated by population growth. Similarly, UNICEF's School Latrines project in FY 2019/2020, funded at Ksh 40 million, built facilities in 10 Aldai schools, serving 3,000 students and increasing hygiene compliance by 15%, as noted in the CAPR 2019-2020. These latrines reduced absenteeism among girls during menstruation, promoting education equity. However, the CBIRR FY 2023-2024 Q2 reported that donor compliance requirements delayed Kapsabet sewerage works by three months, affecting 500 households. The CBROP 2021 also noted timeline mismatches between county and donor schedules, complicating project execution. Despite these issues, national and donor funds added 15,000 water and 6,000 sanitation beneficiaries, significantly bridging infrastructure gaps.

Public-Private Initiatives

The Private Maintenance Contract for Mosoriot Water Supply in FY 2022/2023, funded at Ksh 30 million, boosted system uptime from 70% to 90%, providing consistent water to 5,000 residents, as reported in the CBROP 2022. This contract leveraged private sector expertise to minimize outages, stabilizing supply during peak demand. However, PPPs were urban-centric, with no rural water or sanitation initiatives recorded, limiting their county-wide impact. The CIDP 2023-2027 highlighted high setup costs as a barrier to rural PPPs, deterring private investment in low-revenue areas. The CBROP 2023 noted regulatory delays in expanding the Kapsabet partnership to sewerage, stalling potential sanitation gains. Overall, PPPs enhanced urban water delivery for 13,000 residents but failed to address rural or sanitation needs, reflecting a commercial focus that underserved broader county priorities. The CBIRR FY 2024-2025 Q1 suggests plans to pilot rural PPPs, but outcomes remain pending.

4.1 WASH Service Coverage Scenarios, Investments, and Reform Needs

According to the 2022 Kenya Demographic and Health Survey, only 46% of the household population in Nandi County has access to at least basic drinking water services. This is significantly lower than the national Kenyan average of 68%, indicating a substantial gap in water infrastructure or accessibility in the county.

37% of Nandi's household population has access to at least basic sanitation services. This is slightly below the national average of 41%, suggesting that sanitation infrastructure in Nandi is marginally worse than Kenya's overall situation.

For KANAWASCO only 36% of the population is covered by piped water services, with sewerage coverage lagging at 15%. In contrast, sanitation coverage—largely through on-site systems—stands at 98%. The utility serves 6,463 registered consumers, of whom only 4,211 are active, and 2,025 are dormant. Tindiret and surrounding areas, serviced by TACHWASCO, fare somewhat better in water access, with 62% of the 31,370 residents covered through 1,430 active connections out of 1,465 registered.

Table 13: KANAWASCO Current WASH Service Coverage

Category	Value
Total Registered Consumers	6,463
Active Consumers	4,211
Dormant Consumers	2,025
Water Coverage	36%
Sewerage Coverage	15%
Sanitation Coverage	98%

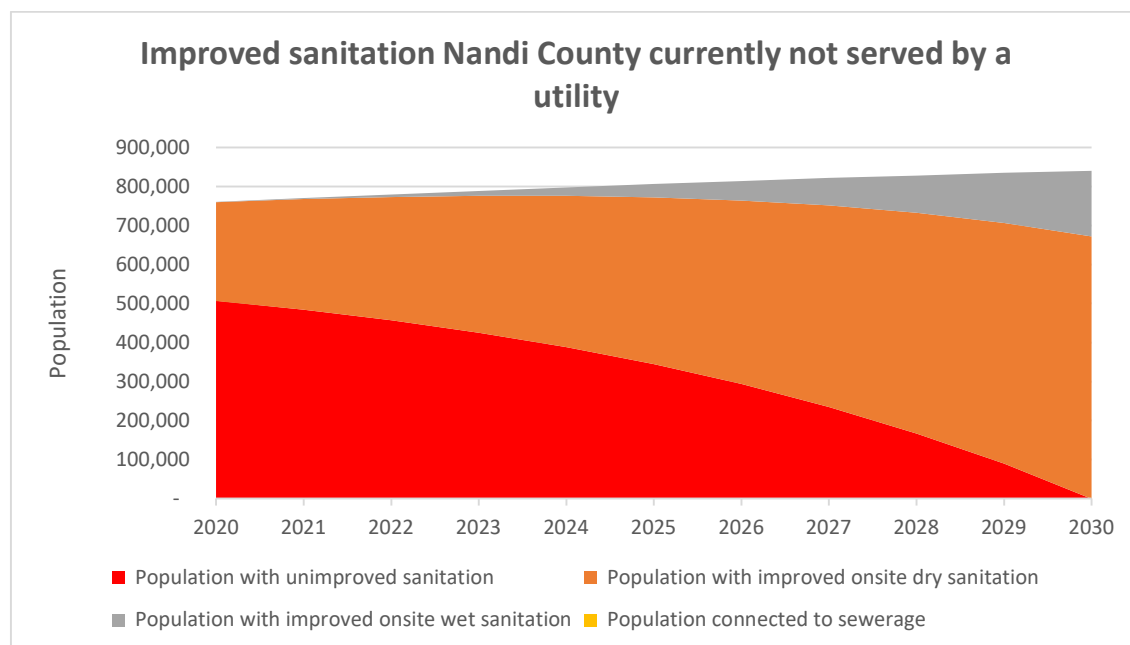
Table 14: TAWASCO Current Water Coverage

Category	Value
Registered Connections	1,465
Active Connections	1,430
Coverage	62%
Sanitation Coverage	0
Total Population in Service Area	31,370

4.2.1. Projections of future service demand based on population growth, urbanization and climate change

4.1.2.1 *Expected changes in demand due to demographic shifts and climate change impacts.*

Over the period from 2020 to 2030, the expected changes in demand for sanitation services in Nandi County's areas not currently served by a utility will likely be shaped by both demographic growth and climate change impacts. As the population continues to grow, the demand for sustainable and resilient sanitation solutions will increase accordingly. This demographic shift places pressure on existing infrastructure and highlights the need for expanded access to improved sanitation options, particularly in rural and underserved areas. Simultaneously, climate change is expected to exacerbate water scarcity, increase the frequency of extreme weather events, and intensify public health risks, factors that necessitate more robust, adaptive sanitation systems. In response, the chart below illustrates a strategic transition away from unimproved sanitation towards improved onsite solutions, especially dry sanitation systems, which are more resilient in water-stressed environments. The gradual rise in improved wet sanitation and sewer connections reveals a parallel need for integrated planning that considers water availability, energy efficiency, and environmental sustainability.



4.2.1.2. *Infrastructure Needs Based on Projected Population Trends*

To adequately meet escalating water demands, Nandi County must implement strategic infrastructure development aligned with demographic projections and climate realities.

According to the 2023 *Annual Sector Performance Report (Issue No. 5/2023)* by WASREB, the current water coverage in Nandi County stands at 42%, below the national target of 80% by 2030. This infrastructure deficit is acute in peri-urban settlements around Kapsabet, where population growth averages 4.2% annually (*KNBS Economic Survey Report, 2023*).

a. Expansion of Distribution Networks

Aging pipelines contribute to NRW losses of 45% (*WASREB, 2023 – "Non-Revenue Water in Kenya: Status and Mitigation Strategies" [Issue No. 2/2023]*). A 2023 report of the Auditor-General on KANAWASCO found that 58% of distribution lines in Kapsabet and Nandi Hills exceed their 30-year lifespan, leading to frequent breakdowns. The draft Nandi County Government (2023) *Water Master Plan 2018-2030* estimates rehabilitation costs at KSh 1.2 billion, with an additional KSh 750 million needed for informal settlement expansions.

b. Diversification of Water Sources

The WRA report on *Aquifer Mapping and Groundwater Development Plan for Kenya's Rift Valley Region (2022)* identified aquifers in Chesumei and Emgwen yielding 8–15 m³/hour per borehole, capable of serving 200,000 residents. Meanwhile, 35% of rural households rely on natural springs. For urban supply, the proposed Kipkaren River abstraction project could deliver 30,000 m³/day.

c. Climate-Resilient Infrastructure

The County Government of Nandi (2023) – "Climate Risk Atlas and Adaptation Strategy" recommends 50 water pans and sand dams with 1.2 million m³ storage, benefiting 150,000 residents. Rainwater harvesting pilots in Nandi Hills cut domestic demand by 35%. The Northern Collector Tunnel Phase II (AWWDA, 2023) could supplement eastern Nandi's supply.

4.2.1.3. Adequacy of Existing Resources for Projected Service Demand

The 2023 Annual Technical Audit Report of KANAWASCO reveals severe infrastructure gaps. Approximately 65% of rural water schemes are non-functional, leaving about 210,000 residents dependent on unprotected water sources. Urban water systems are critically overstretched. Kapsabet's main water supply system, which draws from the Kipkaren River and boreholes, currently produces approximately 4,200 m³/day against a demand of 6,800 m³/day. This deficit forces the utility to implement strict rationing schedules, with some areas receiving water only twice weekly.

Recent monitoring data from the Water Resources Authority indicates significant pressure on aquifers across Nandi County. In Kapsabet, piezometric records show an average annual groundwater level decline of 0.6-0.8 meters between 2018-2022. This

depletion trend is particularly concerning given that only about 25% of the county's viable groundwater potential has been developed.

Addressing these challenges requires a multi-pronged approach. The Water Resources Authority reveals significant gaps in permit compliance, with only **58% of commercial water abstractors** in Nandi County holding valid permits. Sectoral disparities are pronounced: while municipal systems show relatively higher compliance (78%), agricultural users lag at just **42%**, reflecting challenges in regulating small-scale and informal operations.

4.1.3 Policy and institutional reforms needed for effective service expansion

4.2.2.1. Key policy changes required to enhance service delivery

(i) Water Service Delivery

Transformative policy reforms are essential to address systemic challenges in Nandi County's water service delivery framework. According to assessments conducted by WASREB (2022), the centralized management approach currently employed across the county has resulted in significant operational inefficiencies, with response times for technical issues in rural areas averaging 7.2 days compared to the national benchmark of 2 days. The County should therefore enact comprehensive decentralization policies that empower sub-county water committees with technical capacity, operational authority, and financial resources to oversee local water schemes. The 2023 Nandi Water Services Policy Draft proposes establishing Ward Water Management Units (WWMUs) with community representation to improve service responsiveness and foster accountability. These decentralized structures, when coupled with appropriate technical training and resources, could reduce system downtime by approximately 60% based on pilot implementations in Chesumei Sub-County.

Tariff reform represents another critical policy priority to ensure financial sustainability within the water sector. Current analysis indicates that the prevalent flat-rate billing system employed across 68% of rural schemes fundamentally undermines revenue collection, covering only 57% of operation and maintenance costs. This approach has resulted in a cumulative maintenance backlog valued at approximately KSh 230 million. Evidence-based tariff restructuring that incorporates volumetric charging, cross-subsidization mechanisms for vulnerable populations, and cost-recovery principles could significantly enhance service sustainability. According to WASREB (2023), implementing a graduated tariff structure with lifeline provisions for low-income households could increase revenue by 34% while maintaining affordability for essential consumption. Additionally, the County must develop comprehensive asset management policies that require water service providers to establish dedicated

maintenance reserves equivalent to at least 15% of annual revenue, addressing the persistent challenge of deferred maintenance that has undermined infrastructure longevity.

Water resource protection policies must also be strengthened to safeguard supply sustainability in the face of climate change and competing demand pressures. Drawing from successful examples in neighboring Uasin Gishu County, Nandi should implement a comprehensive watershed protection policy that establishes mandatory buffer zones around water sources, creates incentive mechanisms for conservation activities by landowners, and institutes penalties for environmental degradation activities that threaten water security. Such policies would complement WASREB's strategic plan 2023-2027, which aims to provide regulatory environment that facilitates sustainable water services in line with Human Rights to water and sanitation

(ii) Non-Sewered Sanitation Service Delivery

Non-sewered sanitation services in Nandi County require substantial policy reform to address the alarming 64% sanitation gap identified in the CIDP 2023-2027). Current regulatory frameworks addressing on-site sanitation systems are fragmented across multiple departments with limited coordination, resulting in inadequate oversight and enforcement. According to the Nandi County Public Health Department (2023), only 42% of households have access to improved sanitation facilities, with open defecation rates remaining particularly high in Aldai (23%) and Tinderet (31%) sub-counties. Promoting comprehensive community-led total sanitation (CLTS) programs through institutionalized policy frameworks represents a critical intervention, with evidence from the USAID-funded Kenya RAPID program (2022) demonstrating 85% reduction in open defecation in participating communities within 18 months of implementation.

Market-based sanitation frameworks should also explicitly incentivize household latrine construction through targeted subsidies for vulnerable populations and technical support mechanisms. The Public Health Act enforcement provisions require substantial strengthening, with current staffing ratios of one public health officer per 8,400 residents falling significantly below the recommended 1:5,000 ratio. Furthermore, policies should mandate minimum sanitation standards in public institutions, particularly schools and health facilities.

Fecal sludge management represents another critical area requiring policy attention, as 87% of excreta in Nandi County currently receives no treatment before environmental disposal. The county should develop comprehensive fecal sludge management regulations that establish licensing requirements for exhauster services, designate appropriate treatment facilities, and create incentives for innovative treatment technologies appropriate for the county's geography and settlement patterns.

(iii) Sewered Sanitation Service Delivery

Urban centers in Nandi County require comprehensive policy frameworks to guide the development of centralized sewerage systems, which currently serve less than 11% of the urban population. Developing robust policies that enforce developer contributions for infrastructure expansion represents a critical intervention, with successful models from Nakuru County demonstrating that mandatory connection fees equivalent to 1.5% of development value can generate substantial resources for network expansion.

The County could strategically adopt the existing results-based financing models like OBA, AOD, etc. to attract private investment in sewerage infrastructure, particularly in rapidly growing towns like Kapsabet and Nandi Hills. Similar approaches in comparable counties have mobilized approximately KSh 420 million in private financing for sanitation infrastructure by providing partial subsidies contingent on verified service delivery outcomes. Additionally, the County should develop comprehensive trade effluent regulations for industrial discharges, with particular focus on the numerous tea processing facilities that currently release untreated wastewater containing chemical residues.

Sewerage infrastructure planning policies must also integrate climate resilience considerations, particularly given increasing precipitation intensity during rainy seasons. Existing drainage systems in Kapsabet town are designed for historical rainfall patterns and would be overwhelmed by projected climate scenarios, potentially causing sewage overflows into water bodies. The Nandi County Climate Change Action Plan aims to mandate design standards accounting for projected climate scenarios through 2050, ensuring long-term infrastructure viability.

(iv) Private Sector Participation in Service Delivery

Leveraging public-private partnerships (PPPs) represents a critical strategy for addressing Nandi County's substantial water and sanitation investment gaps, estimated at KSh 15 billion over the next decade (Nandi CIDP, 2023-2027). However, current county regulations provide limited guidance and incentives for private sector engagement, with only one water utility, KANAWASCO, operating under a formalized Service Provision Agreement (WASREB, 2021). The County should establish comprehensive PPP frameworks specifically tailored to water and sanitation services, drawing from successful national models while adapting to local contexts. According to assessments by the Kenya Private Sector Alliance (KEPSA, 2023), streamlining licensing processes and creating standardized contracting templates could reduce transaction costs by approximately 40%, significantly enhancing investment attractiveness.

Build-Operate-Transfer (BOT) arrangements for bulk water supply infrastructure represent particularly promising opportunities for private sector participation. Management contracts for existing water supply systems could enhance operational efficiency and reduce non-revenue water.

The sanitation sector offers additional opportunities for private sector engagement, particularly in fecal sludge management where current public capacity is severely constrained. Establishing enabling policies for private exhausters, treatment operators, and resource recovery enterprises could create approximately 230 direct jobs while addressing critical service gaps. The Public Private Partnership policy statement (2011) proposes creating designated opportunity zones with tax incentives for sanitation businesses, simplified licensing procedures, and performance-based subsidies to catalyze market development in underserved areas.

4.2.2.2. Institutional adjustments to improve governance and accountability.

Strengthening the County Water Services Regulatory Board represents a fundamental institutional adjustment needed to enhance governance within Nandi's water sector. According to institutional assessments conducted by the Kenya Institute for Public Policy Research and Analysis (KIPPRA, 2023), the current regulatory structure suffers from critical capacity constraints, with technical staffing at 42% of recommended levels and monitoring coverage extending to only 68% of registered water service providers. The Board requires comprehensive capacity enhancement through recruitment of additional technical personnel, technological modernization for real-time monitoring capabilities, and expanded legal authority to enforce compliance standards. Strengthening regulatory capacity could improve service provider compliance with quality standards by approximately 35% within three implementation years, directly benefiting an estimated 367,000 residents currently receiving substandard services.

Regular performance audits of utilities, coupled with transparent public reporting mechanisms, are essential for accountability enhancement. According to assessments by the Office of the Auditor General (2023), only 28% of recommended key performance indicators are currently being systematically tracked, creating substantial accountability gaps. Implementing quarterly performance reviews with standardized metrics covering operational efficiency, financial sustainability, service quality, and environmental compliance is recommended. These reviews should be complemented by public participation forums held semi-annually at sub-county levels, enhancing transparency through direct citizen engagement.

Additionally, integrating WRUAs into formal decision-making structures represents a critical institutional adjustment for enhancing community ownership and reducing resource conflicts. The County should establish formal consultation mechanisms

requiring WRUA input on water allocation decisions, infrastructure planning, and catchment management initiatives.

Coordination across departments and governance levels represents another critical institutional challenge requiring systematic adjustment. The establishment of an integrated WASH Coordination Unit reporting directly to the County Executive Committee would enhance synergies and optimize resource allocation. The proposed institutional restructuring aims to consolidate planning, implementation monitoring, and evaluation functions within a unified framework while maintaining specialized technical divisions. Additionally, vertical coordination between county and national government agencies requires formalized mechanisms, as current ad-hoc arrangements have resulted in misaligned investments and missed opportunities for leveraging national programs.

4.2.2.3. Key (regulatory) performance indicators to be tracked

Establishing comprehensive performance monitoring frameworks is essential for tracking progress and ensuring accountability in Nandi County's water and sanitation sector. Water coverage represents the most fundamental indicator of service accessibility, with current levels at 45% against the national target of 80% by 2030 aligned with Sustainable Development Goal 6. This indicator should be disaggregated by sub-county, urban-rural classification, and socioeconomic quintiles to identify inequities and target interventions. According to the Kenya Integrated Household Budget Survey (2022), water access disparities between highest and lowest wealth quintiles in Nandi County currently exceed 37 percentage points, highlighting significant equity challenges. Regular tracking through annual household surveys and water point mapping would provide critical data for evidence-based planning and resource allocation.

NRW represents a critical efficiency and sustainability indicator that should be systematically monitored across all water service providers. Current NRW levels exceeding the national average at 37% translate to substantial financial losses estimated at KSh 87 million annually (WASREB Impact Report, 2021). The County should establish mandatory reduction targets aligned with WASREB benchmarks, requiring service providers to achieve phased improvements reaching 25% by 2027. This monitoring should distinguish between physical losses (leakages) and commercial losses (metering inaccuracies, unauthorized consumption) to enable targeted interventions. Implementation of Advanced Metering Infrastructure (AMI) in district metered areas would enhance measurement accuracy and facilitate prompt leak detection.

Water quality compliance represents another fundamental performance indicator directly impacting public health outcomes. According to the Ministry of Health surveillance data (2023), waterborne disease incidence in Nandi County remains 23%

above the national average, with particular hotspots in informal settlements and rural areas dependent on unprotected sources. Comprehensive water quality monitoring programs should track bacteriological compliance (currently estimated at 72%) with targets of achieving 90% adherence to World Health Organization standards by 2027. This monitoring should encompass both utility supplies and alternative sources such as springs, wells, and vendors that serve significant population segments.

4.2.3. Investment needs to close service gaps and improve sustainability

The water and sanitation sector in Nandi County remains underdeveloped, with service gaps primarily driven by outdated infrastructure, high operational costs, and limited institutional capacity. In FY 2022/23, KANAWASCO reported a financial loss of KES 9.3 million—down from a profit of KES 4.6 million the previous year—largely due to a reduction in grants and persistent inefficiencies. NRW stands at 37%, far above the WASREB benchmark of 25%, and electricity expenses alone exceed KES 2 million monthly. To counteract this, KANAWASCO has prioritized the solarization of its pumping systems. A pre-feasibility study has been completed, and a proposal for hybrid solar-electric systems has been submitted to the Ministry of Water, aiming to curb high electricity costs and redirect savings toward infrastructure expansion.

In TAWASCO's rural service area, the situation is equally pressing. Much of its infrastructure dates back to 1994, leading to frequent pipeline bursts and water losses. The company relies on chlorination at the initial tank stage due to the absence of treatment plants. While this has somewhat reduced incidences of waterborne diseases, it leaves the system vulnerable to fluctuations in raw water quality. Priority investments here include filtration units, pipe replacements, chlorination upgrades, and enhanced community engagement through water clinics and annual AGMs to promote safe consumption practices and maintain trust in utility services.

Institutionally, both KANAWASCO and TAWASCO emphasize the need for reforms in tariff policy, governance structures, billing systems, and capacity development. The formation of ward-level water service committees and the enforcement of county legislation to strengthen regulatory oversight and accountability is recommended.

KANAWASCO is also preparing for a major sewerage system expansion. Currently, only 30% of Kapsabet is sewered. A rehabilitation and extension project, supported by the African Development Bank and Government of Kenya, is set to increase connections from 1,300 to 10,000. It includes constructing two new wastewater treatment plants and extending trunk lines to peri-urban areas like Chekabar. For underserved and informal settlements, the plan includes public sanitation facilities and subsidized modern toilets, aiming to curb open defecation and ensure equitable access. Complementing this, the Keben Dam project, under a Public-Private Partnership (PPP) model, is being advanced to deliver gravity-fed water to Kapsabet and Nandi Hills. With designs

completed, this project is critical in addressing current supply limitations and reducing dependency on energy-intensive pumping systems.

Climate-Resilient and Sustainable Investment Priorities

Climate resilience is now a central theme in WASH planning and investments in Nandi County. Projects such as the solarization of water systems in Kapsabet, Lessos, and Kapkangani are designed to offset rising energy costs and reduce carbon emissions. The 2018 landslide, which disrupted over 230 connections in TAWASCO's area for nearly a year, underscores the vulnerability of current infrastructure. To address this, TAWASCO has prioritized the relocation of pipelines away from erosion-prone areas and investment in slope stabilization and drainage control infrastructure.

In rural regions like Tindiret and Aldai, where population densities are low, centralized sewer systems are not economically viable. TAWASCO has adopted a sustainable, decentralized approach to sanitation, promoting WC-to-septic tank systems and shared public sanitation units at shopping centers. Additionally, it advocates for controlled on-site sludge management, using shallow pits on private land that dry over time and are safely sealed. This low-cost model is well suited to hilly, remote areas and, with proper training, poses minimal risk to groundwater.

Catchment protection remains a cornerstone of climate-resilient planning. Both utilities stress the importance of preserving the North and South Nandi Forests, from which most of the county's raw water is sourced. The Master Plan calls for reforestation, riparian buffer zones, and erosion control to maintain sustainable water flows and prevent sedimentation in intake structures.

Beyond infrastructure, community-driven governance has proven vital. TAWASCO has successfully secured wayleaves for pipelines through voluntary landowner agreements, avoiding costly expropriations. This model ensures equitable access and lowers project costs, reflecting the broader emphasis on participatory development.

Table 38 in appendix 15 summarises Water sector Investment needs and Estimates.

5 SECTOR INVESTMENT PLAN, INSTITUTIONAL REFORMS, AND FINANCING STRATEGY

5.1 Strategic Objectives for the Sector

5.1.1. Vision and key priorities for water, sanitation, and hygiene services

The CWSSIP for Nandi County outlines a road map for progressively achieving universal and sustainable water and sanitation services while promoting hygiene practices. It focuses on the most vulnerable populations, including children and marginalized communities. This strategy addresses the county's unique challenges, such as ageing water supply infrastructure, water scarcity due to seasonal rivers, and illegal connections, while ensuring that no one is left behind.

The strategy builds on evidence-based interventions, lessons from past programs, and an in-depth review of emerging issues such as urbanization and climate change. It is informed by extensive consultations with stakeholders, including county leadership, local communities, and development partners, ensuring it is inclusive and actionable.

The Strategic Framework presents a clear vision, objectives, and guiding principles tailored to Nandi's context. It identifies priority areas for interventions, such as upgrading water systems, promoting community-led sanitation initiatives, enhancing coordination among sector players, and investing in climate-resilient solutions.

5.1.1.1. Vision

A thriving Nandi County where all communities have equitable, sustainable, and reliable access to safe water, sanitation, and hygiene services, empowering every resident to lead a healthy and dignified life.

5.1.1.2. Mission

To drive inclusive and sustainable WASH development in Nandi by improving water supply systems, strengthening sanitation and hygiene practices, and fostering community-led solutions. We are committed to working with local and international partners, leveraging resources, and building capacity to ensure long-term access to quality WASH services for all residents.

5.1.1.3. Goals and Objectives

Goal 1: Ensure Universal Access to Safe Water

Objective 1.1: Increase access to safe and reliable water sources by rehabilitating existing infrastructure and developing new supply systems, targeting a 100% coverage rate by 2030.

Goal 2: Strengthen Sanitation and Hygiene Practices

Objective 2.1: Ensure 100% sanitation coverage by 2030 through targeted education campaigns, community engagement, and increased access to public sanitation facilities.

Goal 3 One Water Planning

Objective 3.1 To improve the quantity and quality of water available by protecting and restoring degraded watersheds through water planning and investments by non-water departments

Goal 4 Enhance Coordination and Accountability

Establish a coordinated WASH framework with clear roles for all stakeholders, fostering a collaborative approach that aligns with county development objectives and the national WASH agenda.

5.1.2. Alignment with national plans SDG`S

5.1.2.1. Vision

A county where every resident has access to safe, affordable, sustainable, and climate-resilient water, sanitation, and hygiene services for improved health, livelihoods, and dignity.

5.1.2.2. Mission

To provide inclusive, equitable, and efficient WASH services through collaborative planning, sustainable investment, and innovation—aligned with national and global commitments including Kenya’s Vision 2030, the Constitution of Kenya 2010, and SDG 6.

5.1.2.3. Key Strategic Objectives

Strategic Objective	Alignment with National Frameworks	Alignment with SDGs
1. Increase access to safe and reliable water supply	Kenya Vision 2030 (Social Pillar), National Water Master Plan	SDG 6.1 – Universal and equitable access to safe and affordable drinking water
2. Expand coverage of safely managed sanitation services	Kenya Environmental Sanitation and Hygiene Policy (KESHP), Water Act 2016	SDG 6.2 – Access to adequate and equitable sanitation and hygiene
3. Promote sustainable water resource management and catchment protection	National Water Resources Management Strategy	SDG 6.6 – Protect and restore water-related ecosystems
4. Strengthen institutional capacity and sector governance	Water Act 2016, County Governments Act 2012	SDG 16.6 – Develop effective, accountable, and transparent institutions
5. Improve water and sanitation service efficiency through private sector participation	National Water Policy, PPP Policy Framework	SDG 17.17 – Promote effective public, public-private, and civil society partnerships

Strategic Objective	Alignment with National Frameworks	Alignment with SDGs
6. Enhance climate resilience of water and sanitation systems	National Climate Change Response Strategy (NCCRS)	SDG 13.1 – Strengthen resilience and adaptive capacity to climate-related hazards
7. Ensure inclusive WASH services for vulnerable and marginalized groups	Constitution of Kenya – Article 43 (Right to Water and Sanitation)	SDG 10.2 & SDG 6.2 – Empower and promote the social inclusion of all
8. Institutionalize monitoring, evaluation, and data-driven planning	National Integrated Monitoring and Evaluation System (NIMES)	SDG 6.b – Support and strengthen the participation of local communities

5.1.3. Cross-Sectoral Integration and Climate Resilience

Cross-sectoral integration is critical to ensuring that water, sanitation, and hygiene (WASH) services contribute to the broader development goals of Nandi County. The county recognizes that effective WASH planning must be aligned with initiatives in health, education, agriculture, environment, and climate change adaptation.

Health Sector Integration

Access to clean water and sanitation directly supports disease prevention and improved public health. The county’s health programs increasingly integrate WASH components, including hygiene promotion in community health outreach and WASH infrastructure in healthcare facilities.

Education Sector Integration

School WASH programs promote better health and learning outcomes, especially for girls. The county collaborates with the Ministry of Education to integrate WASH into school infrastructure development, including menstrual hygiene management (MHM) and hygiene education.

Agriculture and Livelihoods

Water is vital for irrigation, livestock watering, and agro-processing. The county promotes water-efficient agricultural practices and multiple use water services (MUS) to enhance food security and income generation.

Environmental and Land Use Management

The county works with NEMA and the Water Resources Authority (WRA) to protect catchments and regulate land use near critical water sources. Integration ensures sustainability of ecosystems and long-term water availability.

Climate Resilience and Adaptation

Climate change poses threats including erratic rainfall, droughts, and floods. Nandi County is integrating climate resilience into WASH planning by:

- Promoting solar-powered and off-grid water systems.
- Investing in nature-based solutions like wetlands and forest restoration.
- Developing early warning systems for water stress and climate hazards.
- Including WASH infrastructure in the County Climate Change Action Plan (CCCAP).

Cross-Cutting Recommendations

Component	Solution	Key Benefit
Energy	Solar PV for pumps & pumps ATMs	Reliable, off-grid power
Infrastructure	Raised plinths, flood-proof slabs	Protection during floods
Nature-Based	Sand dams, constructed wetlands	Groundwater recharge; natural treatment
Finance	Water ATMs; micro-finance for household systems	Cost recovery; affordability
Community Engagement	WUA training on maintenance & adaptation	Local ownership; rapid response to climate shocks

Next Steps for Integration

1. **Vulnerability Mapping:** Use GIS to overlay drought- and flood-risk zones with WASH infrastructure.
2. **Pilot & Scale:** Select 2–3 sites in each risk category to pilot combined solutions (e.g., solar-sand-dam hybrid).
3. **Partnerships:** Leverage existing donor programs (KWASH, GIZ, SNV) and county budget lines for co-financing.
4. **Monitoring & Learning:** Deploy simple indicators (e.g., days of service interruption, water table depth) and adapt design iteratively.

By blending technological, nature-based, and social approaches, Nandi County can build a truly resilient WASH system that weathers both drought and flood extreme.

5.2. Water Supply Infrastructure Investment Plan

5.2.1. Planned projects for new water supply systems and rehabilitation of existing ones

5.2.1.1. Diversification of Water Supply Sources

Ensuring a reliable water supply in Nandi County requires diversifying available sources. Enhancing surface water storage through the construction and rehabilitation of dams, reservoirs, and weirs will improve availability, with a focus on sustainably harnessing key rivers like Kipkurere, Kibos, Kundos and Ainabng'etuny in Tinderet highlands, Yala, Kipkaren, Kimondi and Birei for irrigation. Safeguarding riparian zones is essential to maintaining natural water flow and preserving the environment. Conducting hydro-geological surveys and sustainable groundwater exploration of the same in water-stressed regions such as Kapsabet, Mosoriot, Nandi Hills and Kabiyet will help identify and manage groundwater resources effectively. Rainwater harvesting is another practical solution, with large-scale systems installed in institutions like schools, health centers, and markets, while households receive support through subsidies. Additionally, establishing storage tanks and reservoirs in areas prone to seasonal shortages will help ensure a continuous water supply.

5.2.1.2. Modernization of Water Treatment Systems

Investing in modern water treatment infrastructure is critical for Nandi County to provide clean and safe water. Existing treatment plants must be upgraded to incorporate advanced technologies and renewable energy solutions like solar power, which will reduce operational costs. Decentralized small-scale water treatment units can serve under-served areas, leveraging innovative mobile treatment systems and eco-friendly solutions like constructed wetlands. Developing treatment plants that process domestic and industrial wastewater must also prioritise wastewater management. Treated wastewater can be safely reused for agricultural irrigation, induces trial cooling, and landscaping, reducing the strain on freshwater resources.

5.2.1.3. Strengthening Water Distribution Networks Towards Lastmile Connectivity

A robust water distribution network is necessary to ensure equitable access and last-mile connectivity across Nandi County. Focus should be on rehabilitating and expanding existing water infrastructure, including repairing and replacing ageing distribution pipes to minimize water loss due to leaks and illegal connections. Expanding the network to under-served rural areas and rapidly growing urban centers such as Mosoriot, Kabiyet, Kaiboi, Kaptumo, Kobujoi, and Maraba will bridge access gaps. Innovative metering technologies such as smart taps should be introduced to enhance billing accuracy and detect water wastage. Additionally, community-based water kiosks can be established in remote areas to offer affordable water access. Integrating renewable energy sources like solar and wind power for pumping and distribution systems will enhance efficiency and reliability while reducing costs.

5.2.1.4. Climate-Resilient Water Infrastructure

The impacts of climate change further exacerbate these challenges. Nandi County is increasingly experiencing irregular rainfall patterns, severe droughts, and sporadic

floods, which disrupt water availability and quality. Degradation of water catchment areas such as the Nandi North Forest, Kobujoi, Kimondi Cerengoni ecosystem critical for supplying the county's rivers and streams further limits the capacity of natural water systems to meet rising demand. Unsustainable land-use practices, deforestation, and soil erosion compound these issues, reducing the recharge of underground aquifers and impacting the flow of surface water sources. Downstream sources are characterized by significantly low flows, polluted due to erosion and concentration of contaminants.

As the impacts of climate change become increasingly evident, the need for climate-resilient water infrastructure has never been more critical. From devastating floods to prolonged droughts, changing weather patterns put immense pressure on our water resources and infrastructure. Often designed without accounting for these extreme events, traditional systems struggle to keep pace with the challenges ahead. To safeguard communities, economies, and ecosystems, we must prioritize building water infrastructure that is sustainable, efficient, and adaptable to future climate conditions.

Climate-resilient infrastructure is a key focus of the county's strategy to mitigate the impacts of climate change. Flood control systems, including embankments and drainage channels, are being constructed to manage the increased frequency and intensity of floods. Drought mitigation measures, such as underground water storage tanks and using drought-tolerant crops, are being promoted to ensure water availability during dry seasons. Water resource mapping and data collection are being enhanced to improve planning and decision-making by identifying vulnerable areas and prioritizing interventions.

Building climate-resilient water infrastructure requires a holistic approach that combines adaptation strategies, sustainable technologies, decentralized systems, institutional and policy frameworks and community engagement. By focusing on flexibility, efficiency, and innovation, these systems can withstand and adapt to the unpredictable impacts of climate change, ensuring reliable and equitable access to water for current and future generations.

Therefore, Nandi County must adopt climate-resilient water infrastructure such as intelligent monitoring systems that shall use real-time data, forecasting, early warnings and remote sensing, climate-resilient water storage such as underground storage. Additionally, smart water grids such as leak detection systems, smart meters and automated systems can be to optimize water distribution and minimize wastage and green infrastructure solutions such as the establishment of wetland and riparian buffers.

To achieve sustainable and climate-resilient infrastructure, there is a need to ensure the well-being of both the environment and the society experiencing the transition. To achieve this, the county must undertake a participatory approach that shall allow consideration of the environment and the culture. This necessitates the environmental and social assessment that subjects every action to a study to determine whether the activities shall cause harm to culture and the environment. Every transitioning activity or project should be subjected to screening as the first step to ensure social and environmental safety. The screening shall then inform whether the activities require further environmental and social studies to identify potential environmental and social impacts resulting from the proposed activity.

Complement/grievance provisions, such as grievance desks, are also needed to capture the community's opinions to achieve a sustainable infrastructure.

5.2.1.5. Public-Private Partnerships (PPPs) and Financing

Nandi County should embrace public-private partnerships to secure sustainable investment in water projects. Incentives such as tax breaks can attract private sector investments in water infrastructure. Collaboration with international development organizations can co-finance large-scale projects. A tiered water tariff system should be implemented to generate sustainable revenue while offering subsidies to low-income households. Microfinance options can also empower communities to invest in small-scale water projects. Capacity building for local water utility staff and establishing Water User Associations (WUAs) will ensure transparent and accountable management of water resources.

5.2.1.6. Community Engagement and Education

Active community involvement is critical for the success of water management initiatives. Awareness campaigns should focus on water conservation, pollution control, and sanitation practices. Communities must be engaged in protecting water sources through activities such as reforestation and catchment area conservation. Training programs can empower residents to maintain and operate local water systems effectively. Establishing local monitoring committees will ensure community-driven oversight and foster a sense of ownership over water resources.

5.2.1.7. Policy and Regulatory Framework

Aligning water resource management with policy and regulatory frameworks will enhance sustainable investment. All initiatives should align with the County Integrated Development Plan (CIDP) and Kenya Vision 2030. Developing a County Water Policy will outline specific priorities and implementation guidelines. Strengthened enforcement of regulations protecting water sources and riparian zones will safeguard these vital resources. Monitoring compliance with environmental standards in water projects will ensure sustainability and minimize negative impacts.

5.2.1.8 Innovation and Technology Adoption

Leveraging modern technology can transform water resource management in Nandi County. Intelligent water management systems, such as Internet of Things (IoT) devices and sensors, can provide real-time water quality, quantity, and distribution data. Block chain technology can enhance transparency in water supply contracts and transactions. Promoting water-efficient technologies, such as drip irrigation and low-flow fixtures, will reduce water wastage in agriculture and domestic use. In saline-prone areas, desalination technologies can be introduced to diversify water sources.

5.2.1.9. Gender and Social Inclusion

Ensuring gender and social inclusion in water resource management is essential. Targeted interventions should prioritize improving water access for women, girls, and vulnerable groups, acknowledging their disproportionate burden in water collection. Women-led water user committees can be established to manage community-based water projects. Providing resources and training for menstrual hygiene management (MHM) will empower women and girls in schools and communities. All water projects must consider the needs of persons with disabilities and marginalized groups to ensure equitable access.

5.2.2. Consideration of MUS/WASH+ approaches in design and implementation

Nandi County's approach to water supply infrastructure development recognizes the need to go beyond basic drinking water provision. The integration of Multiple-Use Water Services (MUS) and WASH+ approaches ensures that investments support diverse community needs—such as domestic use, agriculture, livestock, sanitation, and hygiene—thereby enhancing socio-economic development, food security, and health outcomes. This strategy is aligned with the Kenya Water, Sanitation and Hygiene (K-WASH) Framework, which emphasizes inclusive, climate-resilient, and sustainable WASH services.

5.2.2.1. Strategic Objectives

- Expand and upgrade rural and urban water supply infrastructure to support multiple uses.
- Ensure that water supply investments are integrated with sanitation, hygiene, and nutrition outcomes (WASH+).
- Enhance the resilience, sustainability, and efficiency of water supply systems

5.2.2.2. Key Investment Areas and Priorities

Investment Area	Key Actions	Target Beneficiaries	Estimated Cost (KES)	Timeframe
Multiple-Use Water Systems (MUS)	Design and construct systems that serve both domestic and productive uses (e.g., irrigation, livestock). Provide water troughs, cattle dips, and communal irrigation points.	Smallholder farmers, pastoralists, rural households	1.2 billion	2025–2030

5.2.3. List of specific investments, their estimated costs, expected beneficiaries, and environmental/social risks.

Table 39 in appendix 16 outlines the proposed water supply infrastructure projects for Nandi County under K-WASH framework. The projects are designed to improve access, efficiency, and sustainability of water supply systems through targeted investments that

also consider climate resilience and multi-sectoral impact. Each project is accompanied by estimated costs and a risk assessment to ensure informed planning and implementation. A detailed breakdown of the investment plan is also given in Table 40 in appendix 16.

5.3. Sanitation and Hygiene Services Investment Plan

5.3.1. Priority sanitation projects, including non-sewered sanitation and fecal sludge management

Table 41 in appendix 17 provided project details, cost estimates, and risk mitigation strategies for Sanitation and Hygiene Services Investment Plan in Nandi County.

5.3.1.1. Development of Sewerage Systems

Efficient sewerage systems are critical for improving sanitation in upcoming urban like Mosoriot, Kibiyet, Kaptumo, Kaiboi and other rapidly growing towns in Nandi County. The county government can establish centralized sewerage systems for metropolitan areas, incorporating modern treatment plants to process wastewater. Treated wastewater can be reused for agriculture, landscaping, or industrial purposes. In areas where centralized systems are not feasible, decentralized wastewater treatment systems (DEWATS) can be adapted to serve smaller communities.

To ensure the sustainability of these systems, the county can integrate eco-friendly technologies such as biogas production from sludge, which can provide renewable energy for local communities. Mapping and zoning urban centres will help plan sewer networks to cater to future population growth while protecting riparian zones and water catchments from contamination.

5.3.1.2. Latrine and Toilet Facilities Expansion (Non-sewered Sanitation)

Improving access to safe latrines and toilet facilities is essential in rural and peri-urban areas. The county can promote the construction of ventilated improved pit (VIP) latrines, ecological sanitation toilets, and pour-flush toilets. Subsidies and micro-loans can support households in building durable and hygienic sanitation facilities.

Public facilities, including schools, marketplaces, and health centers, should be equipped with gender-segregated and accessible toilets that cater to the needs of people with disabilities. In addition, integrating menstrual hygiene management (MHM) solutions within these facilities will ensure that women and girls have dignified access to sanitation.

5.3.1.3. Promotion of Community-Led Total Sanitation (CLTS)

Community-led total Sanitation (CLTS) can effectively eliminate open defecation and promote behavioural change. Through CLTS, the county can mobilize communities to take ownership of their sanitation challenges by identifying issues, constructing latrines,

and adopting better hygiene practices. Engaging local leaders, schools, and youth groups as champions of change will create a ripple effect, fostering collective action

5.3.4. Development of Public Hygiene Services

Public hygiene services must be enhanced to promote cleanliness and reduce the spread of diseases. Handwashing stations with soap and water should be installed at public places such as bus stops, marketplaces, and schools. Additionally, the county should encourage private sector participation in setting up pay-per-use sanitation blocks that offer high standards of cleanliness and sustainability. Regular cleaning schedules for public spaces, streets, and drainage systems should be implemented to prevent the accumulation of waste.

5.3.1.5. Integrated Waste Management Systems

Sanitation and solid waste management are interlinked. The county should establish integrated waste management systems to dispose of solid and liquid waste properly. Investments in waste collection, segregation, and treatment facilities will help reduce the pollution of water sources and ensure a cleaner environment. Creating partnerships with local waste recyclers and entrepreneurs will enhance waste materials' recycling and safe reuse, contributing to the circular economy.

5.3.1.6. Capacity Building and Awareness Campaigns

Capacity-building programs are crucial to ensure adequate sanitation management. The county can train local artisans and contractors to construct durable sanitation facilities while maintaining environmental standards. Public awareness campaigns focusing on the importance of sanitation, hygiene, and waste management will drive behavior change. These campaigns can disseminate messages through mass media, community forums, and schools.

5.3.1.7. Inclusion of Vulnerable Groups

Sanitation strategies should be inclusive and cater to the needs of marginalized groups, including women, children, persons with disabilities, and older people. Special programs can support these groups in accessing sanitation facilities and training on proper hygiene practices. Schools and public institutions should have disability-friendly toilets and sanitation facilities that address menstrual hygiene needs.

5.3.1.8. Sanitation and fecal sludge management.

Sanitation in Nandi County is predominantly served through onsite systems such as pit latrines and septic tanks, with limited infrastructure for the safe emptying, transport, and treatment of faecal sludge. This has resulted in a significant proportion of waste being unsafely managed, posing risks to public health and the environment. As the county continues to urbanize, effective sanitation and fecal sludge management have become critical priorities. This section outlines key strategies and investments needed to

improve sanitation access and establish a sustainable FSM system in line with national guidelines and Sustainable Development Goals.

Focus Area	Intervention	Expected Outcome
Onsite Sanitation	Promote improved latrine technologies (e.g., lined pits, ventilated improved latrines)	Increased access to safe, hygienic household sanitation
	Support upgrading of shared/public latrines in urban centers	Improved access in high-density areas
FSM Infrastructure	Establish fecal sludge transfer stations and designated disposal sites	Reduced illegal dumping and environmental contamination
	Develop decentralized sludge treatment facilities (e.g., in Kapsabet, Nandi Hills)	Safe treatment and disposal of sludge
FSM Services	Support private operators with training and equipment for pit emptying	Increased coverage and quality of FSM services
	Develop a licensing and performance monitoring system for service providers	Improved accountability and service standards
Policy and Regulation	Enforce building codes that require sanitation and sludge containment systems	Compliance with sanitation regulations
	Develop county FSM guidelines and tariffs	Structured and sustainable FSM market
Community Engagement	Run hygiene and sanitation behavior change campaigns	Increased use of improved toilets and safe disposal practices

5.3.2. Behavioral and private sector strategies.

In order to achieve sustainable water and sanitation outcomes in Nandi County under the County Water and Sanitation Strategy and Investment Plan (CWSSIP), it is essential to address both demand- and supply-side constraints. This requires a dual approach:

- **Behavioral strategies** that drive demand and ensure long-term community ownership and safe hygiene practices.
- **Private sector engagement strategies** that mobilize innovation, capital, and operational efficiency for improved service delivery.

The following tables outline the key strategies under these two pillars, highlighting specific objectives and illustrative activities tailored to the local context of Nandi County. These strategies aim to complement public sector investments and enhance the reach, sustainability, and inclusivity of water and sanitation services

Behavioral Change Strategies

Strategy	Objective	Examples/Activities
Community-Led Total Sanitation (CLTS)	Eliminate open defecation and promote latrine use.	Triggering exercises, follow-up visits, public declarations.
Social Norms and Hygiene Promotion	Encourage consistent handwashing and sanitation practices.	School-based WASH programs, hygiene campaigns using local media.
Incentivized Behavior Change	Motivate households to adopt improved toilets or connect to services.	Sanitation marketing, rebates for toilet upgrades, awards for WASH champions.
Capacity Building and Awareness	Build knowledge around WASH rights and responsibilities.	Training for community health volunteers, peer-to-peer learning, posters and IEC materials.
Inclusive Engagement	Ensure all groups (women, youth, PWDs) are included in decision-making.	Gender-balanced WASH committees, accessible designs for toilets.

Private Sector Engagement Strategies

Strategy	Objective	Examples/Activities
Public-Private Partnerships (PPPs)	Improve service delivery and infrastructure financing.	Contracts for FSM services, water kiosk management, BOT schemes for treatment plants.
Market Development for Sanitation Products	Stimulate local production and sale of toilets, handwashing stations, etc.	Support to artisans, training on toilet construction standards, product fairs.
Microfinance for WASH Investments	Enable households and small businesses to invest in WASH.	Partnerships with SACCOs or MFIs to provide sanitation loans.
Business Support Services	Strengthen capacity of local WASH entrepreneurs.	Business planning support, technical training, linking to supply chains.
Innovation and Technology Deployment	Leverage private innovation for service efficiency.	Mobile apps for reporting service gaps, use of GPS for pit-emptying tracking.

5.3.3. WASH investments for schools and healthcare facilities

Public institutions such as schools, health facilities, and government offices play a critical role in promoting and sustaining access to safe water, sanitation, and hygiene (WASH) services. However, many of these facilities in Nandi County face infrastructural and service delivery gaps that hinder adequate hygiene, health, and productivity outcomes.

Strategic investments in institutional WASH are therefore essential to ensure a clean, safe, and inclusive environment for learners, patients, staff, and the wider community. The following table outlines key investment areas, their intended objectives, and expected impacts for targeted institutions under the CWSS-IPS

Institution Type	Investment Area	Description	Expected Impact
Schools (Primary & Secondary)	Water Supply Systems	Installation of rainwater harvesting tanks, boreholes, or piped water connections.	Improved student hygiene, reduced absenteeism, gender-sensitive access.
	Sanitation Infrastructure	Construction of gender-segregated, inclusive toilets with handwashing facilities.	Safe sanitation access for all learners, including girls and children with disabilities.
	Hygiene Promotion	WASH clubs, hygiene education, and menstrual hygiene management (MHM) programs.	Behavior change, improved health outcomes and dignity.
Health Facilities (Dispensaries, Health Centers, Hospitals)	Safe Water Access	Installation or upgrade of water supply systems to meet WHO standards.	Reduced risk of infections, better patient care, and hygiene for staff.
	Sanitation & Waste Management	Construction of lined pits/septic systems, placenta pits, and incinerators.	Improved infection control, environmental protection.
	Hand Hygiene Infrastructure	Installation of handwashing stations with soap at key points (wards, entry points).	Improved hygiene compliance and prevention of healthcare-associated infections.

Institution Type	Investment Area	Description	Expected Impact
Government Offices & Public Institutions	Improved Water Access	Connection to reliable water supply or borehole development.	Enhanced productivity and hygiene in public service delivery.
	Staff Sanitation Facilities	Upgrading of toilet blocks and provision of handwashing stations.	Dignified working conditions, gender inclusion, and improved sanitation.
	Awareness and Capacity Building	WASH sensitization for public workers and facility managers.	Increased responsibility and sustainability of infrastructure.

5.4. Water Resources Management and Catchment Conservation Investment Plan

5.4.1. Planned investments in watershed protection, groundwater recharge, and pollution control

As part of the Water Resources Management and Catchment Conservation Investment Plan, Nandi County has prioritized strategic investments in watershed protection, groundwater recharge, and pollution control. These efforts are vital to safeguarding the county's key water sources, particularly the Yala, Kipkaren, and Nzoia catchments, which are increasingly threatened by deforestation, land degradation, agricultural expansion, and pollution.

Watershed management initiatives will focus on restoring degraded landscapes to improve water retention, reduce soil erosion, and strengthen ecosystem services. This will include reforestation and afforestation in critical catchment zones, especially along riparian corridors and forested hills in areas such as Nandi South and Nandi North. Soil and water conservation structures, such as terraces, gabions, and check dams, will be established in erosion-prone zones to minimize runoff and improve infiltration. At the same time, climate-smart agriculture and agroforestry practices will be promoted among local farmers to enhance productivity while protecting the environment.

To ensure the sustainability of groundwater resources, targeted investments will support aquifer recharge and protection. Infiltration structures such as soak pits, recharge wells, and infiltration basins will be developed in groundwater-stressed areas to enhance natural replenishment. Protection of recharge zones will be reinforced through land use regulation, fencing, and community sensitization, while hydrogeological mapping and monitoring systems will be developed to guide future planning and safeguard aquifer integrity.

Pollution control is another critical pillar of this investment plan. Rapid urbanization and agricultural intensification in Nandi County have led to increased contamination risks for both surface and groundwater sources. In response, the WSIP outlines interventions to improve wastewater and faecal sludge management in urban centers like Kapsabet and Nandi Hills, including the development of decentralized treatment facilities. To address agricultural pollution, the county will promote the establishment of vegetative buffer zones along water bodies, encourage reduced chemical use, and support organic farming practices. Furthermore, enforcement of the 30-meter riparian buffer regulation will be strengthened to prevent encroachment and protect water bodies from siltation and pollution.

Improved solid waste management infrastructure is also planned, including better waste collection systems and the rehabilitation of landfill sites to prevent leachate contamination. These technical interventions will be complemented by public education, institutional capacity building, and partnerships with the Water Resources Authority (WRA), National Environment Management Authority (NEMA), and other key stakeholders to ensure enforcement of environmental standards.

These investments are not only essential for securing clean and reliable water supplies for domestic, agricultural, and industrial use but also for enhancing Nandi County's resilience to climate change. By integrating watershed conservation, recharge enhancement, and pollution control within a coordinated and participatory planning framework, the WSIP provides a solid foundation for sustainable water resource management in the county.

5.4.2. Collaborative initiatives with WRA and other stakeholders

The development of the Nandi County Water and Sanitation Strategy and Investment Plan (WSIP) has been anchored in a strong framework of stakeholder collaboration and integrated planning. Recognizing that effective water resource management and service delivery require coordinated action across multiple sectors and actors, the County Government of Nandi has prioritized an inclusive, participatory approach throughout the planning process.

Collaboration has involved a wide range of stakeholders, including county departments such as Water, Environment, Agriculture, Health, and Lands, as well as national government agencies like the Water Resources Authority (WRA), Kenya Forest Service (KFS), and the National Environment Management Authority (NEMA). In addition, community-based organizations, Water Resource Users Associations (WRUAs), water service providers (WSPs), development partners, civil society organizations, and academic institutions have all played key roles in contributing insights, data, and practical solutions.

This inclusive approach has helped to ensure that the WSIP is grounded in local realities and aligned with broader national priorities. Through a series of stakeholder workshops, technical consultations, and validation forums, participants have jointly

identified priorities, developed strategies, and contributed to the design of investment interventions. This process has not only enhanced the relevance and legitimacy of the WSIP but has also fostered ownership and commitment among key actors who will be involved in implementation.

Integrated planning has been a central principle in the development of the strategy, ensuring that water and sanitation investments are aligned with land use planning, environmental conservation, health goals, and climate resilience efforts. The WSIP aligns with the Nandi County Integrated Development Plan (CIDP), County Spatial Plan, and the National Water Master Plan 2030, ensuring coherence with both local and national development frameworks.

To sustain coordination beyond the planning phase, the county is strengthening institutional mechanisms for inter-sectoral collaboration. These include the formation of multi-sectoral steering committees, revitalization of County Environment and Water Committees, and partnerships with WRUAs to ensure grassroots involvement in catchment protection and water resource management. The county also aims to establish public-private partnerships (PPPs) to mobilize investment and expertise from non-state actors.

Through this collaborative and integrated approach, Nandi County is laying the foundation for a sustainable and inclusive water and sanitation sector. The WSIP serves not only as a technical roadmap but also as a shared platform for collective action toward improved water security, environmental stewardship, and public health.

5.4.3. Integrated approach to water resource planning across different sectors

A key pillar of the Water Resources Management and Catchment Conservation Investment Plan in Nandi County is the adoption of an integrated approach to water resource planning across various sectors. Recognizing that water is a cross-cutting resource that underpins agriculture, health, urban development, energy, environment, and economic growth, the County Government is committed to breaking down institutional silos and promoting coordinated planning and implementation.

This integrated approach is grounded in the principles of Integrated Water Resources Management (IWRM), which emphasizes coordinated development and management of water, land, and related resources to maximize economic and social welfare without compromising the sustainability of vital ecosystems. In Nandi County, this has involved aligning water resource planning with broader county development goals, particularly those set out in the County Integrated Development Plan (CIDP), County Spatial Plan, and the national frameworks such as the Water Act 2016 and the National Water Master Plan 2030.

Key sectors have been actively engaged in the development of the WSIP to ensure that water investments are responsive to multiple needs and impacts. The agriculture sector, for instance, has been involved in designing sustainable irrigation and soil moisture conservation strategies that both improve productivity and protect upstream

catchments. The health sector has contributed insights on water quality, sanitation, and hygiene (WASH) priorities to reduce disease burden and improve public health outcomes. Similarly, the environment and forestry sectors have worked collaboratively to integrate watershed restoration, climate resilience, and biodiversity protection into water planning efforts.

Urban planning and infrastructure departments have been engaged to address the growing demand for water and sanitation services in expanding towns like Kapsabet and Nandi Hills. Investments in water supply infrastructure have been coordinated with land use plans to ensure that development does not compromise recharge zones, wetlands, or riparian areas. In addition, solid waste management and stormwater drainage have been considered as part of a holistic approach to reducing pollution in water bodies.

To facilitate this integration, institutional mechanisms are being strengthened at the county level. These include interdepartmental coordination committees, joint planning forums, and shared data platforms that promote collaboration, information exchange, and harmonization of activities. The WSIP also promotes cross-sectoral capacity building and encourages the participation of communities, the private sector, and civil society in planning and monitoring processes.

By embedding water planning within a broader multi-sectoral framework, Nandi County aims to ensure that water resource management is not only more efficient and equitable but also resilient to climate and socio-economic changes. This integrated approach lays the groundwork for sustainable development and water security for all residents of the county.

5.4.3.1. "ONE WATER" Approach

The County Government will implement a "ONE WATER" planning and investment framework, which ensures that all departments, especially those involved in agriculture, climate change, environmental management, and others, integrate their investments and projects into the overall water management strategy. This will promote collaboration between water-related activities and broader environmental goals, such as agricultural water use, climate resilience, and sustainable land management. This approach will be achieved through the following:

- **Collaboration and Integration:** Departments such as Agriculture, Environmental Management, and Climate Change will align their activities, ensuring that water-related investments, such as irrigation infrastructure, climate change adaptation, and land restoration projects, are incorporated into a single cohesive strategy. For example, agricultural water use efficiency will be promoted alongside catchment protection efforts to avoid water scarcity.
- **Joint Planning, Implementation, and Monitoring:** This integrated approach will involve joint planning and coordination among various stakeholders, including the County Government, WRA, NGOs, and the private sector. Investments will be identified and executed in collaboration to maximize impact. Regular monitoring and evaluation mechanisms will be implemented to track progress and ensure the effectiveness of the interventions.

5.5. Institutional Reforms and Service Delivery Models (SDMs)

5.5.1. Proposed models for urban and rural service delivery

The County Government recognizes the importance of a robust institutional framework to deliver equitable, efficient, and sustainable water supply and sanitation (WSS) services. Adopting appropriate Service Delivery Models (SDMs) ensures that all urban and rural populations can access reliable and affordable water and sanitation services. This section summarizes the institutional structure and SDMs the county will adopt to enhance service delivery, particularly in light of the diverse needs of different communities, economies of scale, and the regulatory guidelines set forth by the Water Services Regulatory Board (WASREB).

5.5.1.1 Institutional Structure and Service Delivery Models

The County Government will adopt a flexible and saleable approach to service delivery, with different models tailored to the urban and rural populations. The SDMs will be designed to ensure the following objectives:

- **Equity and Access:** The delivery models will ensure that all communities, including marginalized and hard-to-reach areas, have clean water and sanitation services.
- **Sustainability:** Service delivery will be designed with long-term sustainability in mind, incorporating effective, financially viable operations and maintenance (O&M) strategies.
- **Economies of Scale:** The county will focus on utilizing economies of scale where appropriate, especially in urban areas, where centralized systems can more cost-effectively serve larger populations.
- **Commercial Viability:** The service delivery models will also consider commercial viability, ensuring that service providers can generate sufficient revenue to support operations, repairs, and expansion, as guided by WASREB's regulatory standards.

5.5.1.2. Service Delivery Models for Urban and Rural Populations

a. Urban Areas

In urban areas, the County will prioritize expanding existing urban Water Service Providers (WSPs) to meet the growing demand for water and sanitation services. This will involve strengthening the infrastructure, ensuring service quality, and expanding coverage to underserved urban neighbourhoods. The urban WSPs will provide efficient O&M services, leveraging the economies of scale that urban systems offer to maintain cost-efficiency and improve service delivery.

b. Rural Areas

The county will adopt more decentralized SDMs for rural areas, especially those with thinly spread populations. This may involve establishing community-managed water schemes, small-scale decentralized WSPs, or leveraging public-private partnerships to address service delivery gaps. In areas where expanding urban WSPs is not feasible due to geographic constraints, the County may set up separate rural water service providers, ensuring that services are tailored to the specific needs of remote communities.

5.5.1.3 Delineation of Service Areas

The County will clearly define service areas for each WSP, urban and rural, considering population density, geographic factors, and access to existing infrastructure. Service areas will be delineated to ensure accountability and the efficient distribution of resources. This process will be guided by regulatory frameworks, including WASREB's service area guidelines.

5.5.2. Governance and accountability mechanisms for water service providers

The effectiveness of service delivery in Nandi County is currently limited by fragmented governance, overlapping mandates, and capacity constraints. A series of institutional reforms and service delivery model (SDM) enhancements are proposed:

- **Establishing a County WASH Coordination Unit:** This unit will serve as the nerve center for multi-stakeholder coordination, resource mobilization, and integrated planning across departments (water, health, education, environment).
- **Formalizing Community-Based Water Service Providers (WSPs):** Many rural areas rely on informal WSPs and Water User Associations. These will be brought under the regulatory ambit through licensing, technical support, and performance-based contracts.
- **Operationalizing the County Sanitation Committee:** This multi-agency committee will guide implementation of sanitation policies, coordinate sanitation financing, and oversee fecal sludge management.
- **Enhancing County Regulatory Function:** The County will adopt the Water Services Regulatory Board (WASREB)'s guidelines to strengthen oversight, compliance, and reporting by all WSPs, especially small and rural providers.
- **Capacity Building and Professionalization:** Continuous training, peer learning, and digital tools will be deployed to upskill technical staff, governance boards, and water operators.
- **Adopting Context-Specific SDMs:** Service delivery models will be tailored to suit different geographic and socio-economic contexts, including:
 - **Small Town Utility Model** (e.g., for Nandi Hills and Kapsabet)
 - **Rural Cluster Model** for interconnected community schemes
 - **Delegated Management Models** for informal or remote areas
- **Improving Accountability Mechanisms:** All WSPs will be required to implement transparency tools, such as citizen charters, quarterly reporting, and public engagement forums. Community monitoring through social audits will be encouraged.

- **Digital Governance Tools:** Introduction of GIS mapping, asset registers, mobile monitoring apps, and dashboard reporting to track infrastructure, service levels, and operational efficiency.

5.5.3. Strategies for improving financial viability and operational efficiency

Nandi County's water and sanitation sector stands at a critical juncture as it seeks to accelerate universal access, address deep-rooted institutional challenges, and scale up investment in climate-resilient infrastructure. The Sector Investment Plan, Institutional Reforms, and Financing Strategy is a comprehensive framework aimed at transforming service delivery through targeted financial commitments, system reforms, and strategic partnerships. Table 42 in appendix 18 summarises the Institutional Reforms and Services Delivery Models (SDM).

5.5.3.1. Strategic Objectives for the Sector

The overarching goal is to ensure that every resident of Nandi County enjoys equitable, safe, and sustainable access to water and sanitation services by 2030. This will be achieved through:

- **Universal Coverage:** Expand water and sanitation infrastructure to reach 100% coverage in both urban and rural areas.
- **Climate Resilience:** Design and implement water and sanitation systems that withstand floods, droughts, and climate variability.
- **Gender Equity and Inclusion:** Address the needs of women, girls, youth, and persons with disabilities in service planning and delivery.
- **Institutional Strengthening:** Reform governance structures to improve efficiency, transparency, and accountability.
- **Private Sector Engagement:** Foster public-private partnerships (PPPs) and attract private capital into WASH projects.

5.5.3.2. Planned Infrastructure Investments

Nandi County has identified a pipeline of priority projects to be implemented between 2025 and 2030. These include:

- **Urban Water Supply:** Rehabilitation and expansion of Kapsabet and Nandi Hills water supply systems, including smart metering, storage tanks, and distribution lines.
- **Rural Water Supply:** Development of solar-powered boreholes, spring protection, small dams, and community gravity schemes.
- **Sanitation:** Construction of public sanitation blocks, decentralized wastewater treatment systems, and sewer network extensions in urban centers.
- **Institutional WASH:** Installation of rainwater harvesting systems and hygiene infrastructure in schools and health facilities.

The total estimated investment required for these interventions is KES 4.5 billion over five years. All projects will be guided by climate risk assessments and include environmental and social safeguard.

5.6. Sector Financing Requirements and Sourcing Plan

5.6.1. Estimated costs for planned investments and reforms

A summary of the investment required is provided below. These investments are projected across a 5-year period (2025–2030), with annual allocations averaging KES 1,195.8 million per year.

Table 15: Summary of Investment Requirements (KES Millions)

Investment Area	Cost (KES Millions)
Water Supply Infrastructure Investments Implementation Plan	3,058
Sanitation and Hygiene Services Investments Implementation Plan	1,823
Water Resources Management and Catchment Conservation	238
Institutional Reforms and Service Delivery Models (SDMs)	40
Total Estimated Cost	5,159

5.6.2. Strategies to mobilize funding from public, private, and donor sources

To realize the ambitious investment goals set forth in the County Water and Sanitation Strategy and Investment Plans (CWSSIPs), Nandi County has outlined a comprehensive and diversified financing approach. The county seeks to mobilize resources from multiple actors—including government, private sector, development partners, and the community—through blended and sustainable mechanisms.

5.6.2.1. Blended Financing Mechanisms

Nandi County recognizes that the scale of water and sanitation infrastructure development cannot be met solely through traditional government funding. A blended financing approach is proposed to combine the strengths of various financing streams:

Public Sector Funding: The County Government of Nandi, alongside the MoWSI, is expected to provide baseline funding for essential infrastructure, particularly in underserved areas. This includes direct budgetary allocations averaging KES 611.6 million annually for water supply and KES 528.6 million for sanitation.

Private Sector Investment: Strategic engagement with private sector actors will be encouraged, especially in areas such as borehole drilling, rainwater harvesting, supply chain logistics, and facility maintenance. Incentives will be developed to attract commercial financing and technical expertise.

Donor and Development Partner Support: Nandi County will actively seek grants, technical assistance, and concessional loans from bilateral and multilateral development

partners. These funds are critical for high-cost capital projects, such as the decentralized treatment facilities (DTFs) in Mosoriot, Kaptumo, Kobujoi, and Maraba, totaling KES 1.17 billion.

Community Contributions: Community-based models will support localized initiatives such as last-mile connectivity and small scheme expansions. Communities may contribute labor, local materials, or participate in operation and maintenance (O&M) programs to ensure sustainability.

5.6.2.2. Public-Private Partnership (PPP) Models

The county aims to scale up **PPP arrangements** to support capital-intensive and technically complex water and sanitation projects. These PPP initiatives will be governed by formal service-level agreements, ensuring clear roles, performance targets, and accountability mechanisms.

Table 16: Key investment areas and their corresponding PPP

Sector	PPP Strategy
Water Supply	Contracting private firms for borehole drilling, small scheme extensions, and metering services to enhance efficiency and expand coverage.
Sewered Sanitation	Development of major infrastructure like the Kapsabet Last Mile Sewerage Project (KES 500 million) through joint public-private execution.
Non-sewered Sanitation	Partnering with local artisans and SMEs for the construction of toilets, ablution blocks, and menstrual hygiene cubicles in schools and markets.

5.6.2.3. Leveraging Donor and NGO Support

Specific program areas have been designed to attract targeted donor support, including:

- **Community-Led Total Sanitation (CLTS):** With a planned investment of **KES 75 million** to make 500 villages open-defecation free.
- **Institutional WASH Facilities:** Including construction and renovation of toilets in healthcare centers and schools (KES 20 million allocated for sanitation upgrades in schools alone).
- **Behavior Change and Communication:** Development of Information, Education, and Communication (IEC) materials (KES 5 million) to enhance hygiene awareness in public schools.
- Donors will be invited to co-fund these community-centered, high-impact programs.

5.6.2.4. Community-Based Financing and Ownership

The strategy also emphasizes strong **community ownership and cost-sharing**, especially in:

- **Small Scheme Expansion and Last Mile Connectivity:** Communities will play a role in identifying needs, contributing local labor, and participating in maintenance.
- **Catchment and Environmental Protection:** Activities such as tree planting and fencing (KES 100 million for tree planting alone) will involve local groups and conservation committees.

5.6.3. Financial sustainability plans, including tariff adjustments and subsidy mechanisms

The county government recognizes that long-term viability of water and sanitation services requires a robust mix of revenue generation, cost-efficiency, and targeted subsidies. The following strategies have been developed to guide this effort:

5.6.3.1. Cost Recovery through Tariff Adjustments

To support sustainable service delivery, the County Government plans to implement gradual tariff adjustments that reflect the true cost of providing water and sanitation services. These adjustments will be:

- **Progressive and Transparent:** Ensuring pricing structures are equitable, with higher-income consumers subsidizing services for lower-income groups.
- **Informed by Operational Costs:** Tariffs will be reviewed regularly to reflect changes in energy, labor, and maintenance costs, particularly for boreholes, water treatment systems, and sanitation infrastructure.
- **Regulated and Approved:** All tariff revisions will undergo stakeholder consultation and follow regulatory approvals to ensure social acceptability and legal compliance.

5.6.3.2. Targeted Subsidies for Vulnerable Populations

Recognizing the financial limitations of certain households, especially in rural and informal settlements, CWSSIP outlines mechanisms to protect affordability, including:

- **Subsidized Connections:** Offering reduced fees for first-time connections, especially through last-mile connectivity projects planned for 100 small schemes (KES 300 million total).
- **Lifeline Tariffs:** Ensuring a minimum quantity of water is available at a low or no cost for the poorest households.
- **Public WASH Investments:** Direct funding for public ablution blocks (KES 15 million for schools; KES 4 million for healthcare facilities) and menstrual hygiene

cubicles (KES 0.5 million) helps reduce out-of-pocket expenses for basic sanitation.

5.6.3.3. Efficiency in Operations and Maintenance (O&M)

To avoid passing inefficiencies onto consumers, the county is investing in measures to reduce operational costs:

- Capacity Building for Small Water Providers (KES 10 million): Training programs to enhance financial planning, billing, and customer service efficiency.
- Water Resource Protection (KES 238 million): Investments in catchment conservation, fencing, and reforestation aim to secure water availability and reduce treatment costs in the long run.
- Rehabilitation Projects (KES 300 million): Revamping 60 water schemes improves infrastructure reliability, thus lowering maintenance costs and service interruptions.

5.6.3.4. Blended Financing and Cross-Subsidization

The County intends to leverage multiple financing sources (public, private, and donor) to reduce dependence on user fees alone:

- Public-Private Partnerships (PPPs): Infrastructure such as the Kapsabet sewerage system (KES 500 million) and decentralized treatment facilities (DTFs) in Mosoriot, Kaptumo, Kobujoi, and Maraba (totaling KES 1.17 billion) are designed for PPP models.
- Donor and Development Partner Engagement: External funding will be targeted for capital-heavy, socially impactful projects, especially in sanitation and WASH for institutions.
- Community Contributions: Community members will be engaged in-kind (e.g., labor, local materials) to reduce capital expenditure while enhancing local ownership.

5.6.3.5. Institutional Reforms and Governance

Strong governance is essential for both service quality and financial sustainability. Nandi County has allocated KES 40 million to institutional reforms that include:

- Development of County WASH Policies and Action Plans
- Operationalization of the Nandi WASH Forum
- Establishment of Monitoring & Evaluation Systems
- Public Sensitization Campaigns on Conservation and Hygiene

6. ENVIRONMENTAL AND SOCIAL ASSESSMENT

6.1 Environmental, Health and Safety in the WASH Sector for Nandi County

This section outlines the critical Environmental, Health and Safety (EHS) considerations for all Water, Sanitation and Hygiene (WASH) sector investments within Nandi County. As the County scales up the WASH infrastructure and service delivery, it is imperative that all interventions are guided by principles of sustainability, safety and the well-being of the community.

6.1.1 Situational Analysis of EHS Risks in the WASH Sector in Nandi County

The environmental, health, and safety (EHS) risks related to water supply and sanitation infrastructure in the assessed region are severe. Access to safe and reliable water remains limited, with less than one-fifth of households having piped water, and almost two-thirds of healthcare facilities lacking dependable year-round access. A substantial portion of water sources are unprotected springs, increasing the risk of contamination from human waste, livestock, and agrochemicals. Infrastructure is often outdated and insufficient, particularly in schools and healthcare facilities, which further compromises service delivery and public health.

Summary of Findings

Table 43 in appendix 19 provides a summary of the situational analysis of WASH from the data surveys undertaken.

Sanitation and hygiene conditions are equally concerning. Many healthcare facilities lack adequate toilets, with most having unisex options and very few accessible to people with disabilities. Handwashing facilities are rare among households with fewer than one in five having both soap and water available. Waste management practices are poor, often relying on unsafe methods like open burning. Additionally, vulnerable groups face EHS-related risks with reports of harassment or violence linked to water access and schools facing threats from vandalism and poorly maintained facilities. These systemic challenges indicate urgent needs for infrastructure upgrades, policy support and targeted interventions.

6.1.2 Integrated WASH EHS Risk Management Strategy for Nandi County

To effectively address EHS risks, a multi-pronged strategy is needed—one that goes beyond infrastructure to include behavioural change, stakeholder participation and local capacity strengthening. Equitable access can be improved through rehabilitated sources but also by decentralizing water management and enhancing supply chain access to water treatment products.

Improving WASH outcomes requires targeted investment in inclusive facilities and sustained hygiene promotion through schools and community health workers. Empowering women and youth in water governance and securing water points can reduce risks and ensure safer more sustainable service delivery. Table 44 provides a summary of the EHS Risks & Mitigation Measures.

6.1.3 Integrated Framework for Regulatory Compliance and Environmental, Health, and Safety (EHS) Management in WASH Development for Nandi County

To ensure responsible, sustainable and safe WASH services, Nandi County needs an Integrated Framework for Regulatory Compliance and EHS Management. This section provides a plan for implementing this framework through water abstraction permits, environmental impact licenses, and EHS performance monitoring.

6.1.4 Compliance and Monitoring Plan for Water and Sanitation Investments

The Compliance and Monitoring Plan detailed in Table 45 in Appendix 20 outlines the key activities, responsible entities, timelines, deliverables, and monitoring indicators necessary to ensure that all water and sanitation investments meet national legal requirements and World Bank Environmental and Social Framework (ESF) standards. It covers the full project cycle, beginning with the inventory and assessment of water sources, validation of yields, and acquisition of water abstraction permits in line with the Water Act 2016. Environmental and social impact licensing is addressed through project screening, stakeholder consultations, preparation of ESIA reports, and the acquisition of NEMA licences, guided by EMCA 1999 and relevant ESF standards. During construction and operation, the plan includes the implementation and monitoring of Environmental and Social Management Plans (ESMPs), alongside environmental, health, and safety (EHS) activities such as the development of project-specific EHS plans, routine inspections, OHS performance tracking, and environmental quality monitoring. A Grievance Redress Mechanism (GRM) is also established to log and resolve community concerns. Each activity in the table is linked to specific deliverables, indicators of progress, and applicable legal or policy frameworks to support effective monitoring and accountability.

6.1.5 Environmental, Health and Safety Monitoring Plan

To ensure the effectiveness of the mitigation measures and promote adaptive environmental governance, the County will establish an integrated EHS monitoring system based on the components detailed in Table 46 in Appendix 21.

6.2 Social Assessment for Nandi County

Social risks present significant challenges within the WASH sector in Nandi County thereby impacting equitable access, safety and sustainability. Understanding and addressing these risks is crucial for effective WASH programming and ensuring positive outcomes for all community members. From the survey data obtained, below are the key social risks hindering WASH service delivery in the county.

Table 17: key social risks hindering WASH service delivery

Social Risk Area	Description	Key Considerations
Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA)	Water scarcity is shown in the survey to exacerbate domestic tensions and violence, while the risk of incidents at water points is highest at night.	Need for safe management of water infrastructure (lighting, access routes) to mitigate risks.
Vulnerability and Exclusion	WASH access and facilities are inequitable. Some households, particularly in remote areas, face longer distances to water sources. Schools often lack separate toilets for boys and girls and accessible toilets for children with disabilities.	Importance of equitable distribution and management of infrastructure to avoid excluding vulnerable populations.
Community Dynamics and Management	Challenges in funding, technical skills, and maintenance despite community ownership of water sources. Instances of vandalism and damage to WASH infrastructure in schools. Shared use of facilities can lead to overuse or contamination.	Need for sustainable management of infrastructure, focusing on community capacity and preventing misuse.
Hygiene Practices and Behaviors	Weak hygiene practices at the household level, with limited access to handwashing facilities and hygiene education. Hygiene promotion activities in schools are often irregular or absent.	Importance of managing community health issues through hygiene promotion and supportive infrastructure.
Water Quality and Safety Perceptions	Households report water quality issues and low trust in untreated water sources. Contamination from human/animal waste and agrochemical runoff is a concern.	Direct link to the management of community health, as water quality impacts health and safety.

Institutional and Governance Factors	Gaps in community feedback mechanisms in WASH governance. Concerns about equitable distribution of water and access. Limited monitoring and lack of maintenance plans undermine sustainability.	Need for effective grievance resolution mechanisms and transparent infrastructure management.
Land Ownership and Documentation for Water and Sanitation Infrastructure	While not a central issue, water abstraction permits are required, indicating legal frameworks around water use.	Highlights the legal dimension of developing water and sanitation infrastructure.

6.2.1 Mitigation Measures for Key Social Risks in Water, Sanitation, and Hygiene (WASH) Projects

The table below outlines key social risks commonly associated with WASH projects and presents targeted mitigation measures to promote inclusive, safe, and sustainable water and sanitation service delivery.

Table 18: key social risks commonly associated with WASH projects

Social Risk Area	Mitigation Measures
Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA)	• Install lighting at water points and along access paths • Ensure water points are near homes/schools to minimize walking distances • Conduct community sensitization on GBV risks and reporting mechanisms • Engage women in infrastructure design and site selection • Establish community watch groups and referral systems for GBV cases
Vulnerability and Exclusion	• Map vulnerable groups (elderly, PWDs, remote communities) during planning • Ensure accessible WASH facilities in schools and public institutions (e.g., ramps, handrails, gender-segregated toilets) • Prioritize underserved areas in infrastructure roll-out • Partner with CBOs and local leaders to identify and address exclusion risks

Social Risk Area	Mitigation Measures
Community Dynamics and Management	• Build capacity of Water User Associations (WUAs) in maintenance and financial management • Provide ongoing training for school management committees • Promote community-led operation and maintenance (O&M) plans • Develop accountability structures to prevent vandalism and ensure facility upkeep
Hygiene Practices and Behaviors	• Integrate hygiene education into school curricula and community outreach • Construct handwashing stations at schools and public places • Promote behavior change campaigns targeting critical hygiene practices (e.g., handwashing with soap) • Support school health clubs to reinforce hygiene messages
Water Quality and Safety Perceptions	• Regularly test water sources and share results with the community • Promote household-level water treatment (e.g., boiling, chlorination) • Train communities on safe water storage and handling • Implement protective measures around water sources to prevent contamination
Institutional and Governance Factors	• Establish and publicize community grievance redress mechanisms • Engage communities in decision-making for equitable water distribution • Develop maintenance plans with clearly defined roles and funding strategies • Strengthen coordination between county departments and local institutions
Land Ownership and Documentation	• Ensure water abstraction permits are obtained in compliance with WRA regulations • Clarify land tenure and usage rights before infrastructure development • Involve landowners and local authorities in land access negotiations • Keep transparent records of land agreements and water permits

6.2.2 Institutional Roles and Responsibilities in Nandi County WASH Project Implementation

The successful implementation of County Water, Sanitation, and Hygiene (WASH) projects relies on the coordinated efforts of various institutions at national, county, and community levels. Each institution plays a distinct role in planning, financing, implementation, regulation, monitoring, and community engagement. Clearly defining these roles and responsibilities enhances accountability, promotes efficiency, and ensures sustainability of WASH interventions.

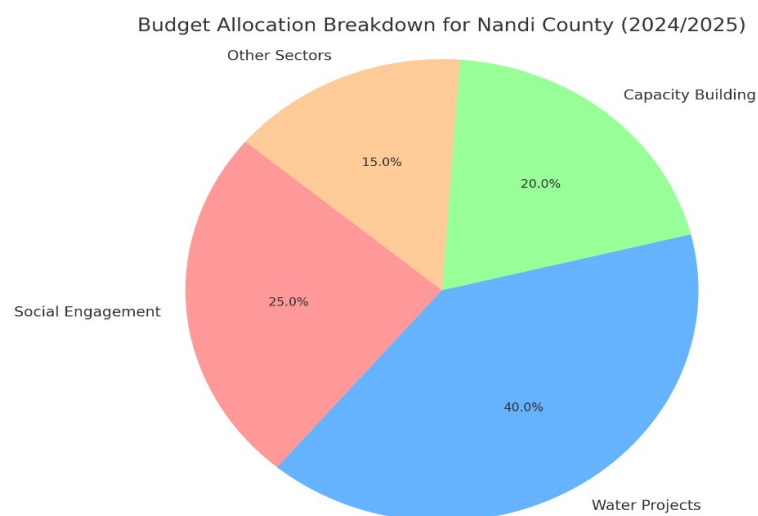
Table 19: Roles and Responsibilities in Nandi County WASH Project Implementation

Institution/Team	Key Responsibilities	K-WASH Program Allignment
County WASH Department / Project Technical Team	- Inventory and mapping of water sources - Technical assessments and design of WASH projects - Supervision of construction works - Maintenance planning	- Identify and prioritize projects for K-WASH - Align County water strategy with K-WASH goals - Ensure climate-resilient and inclusive infrastructure
Environmental & Social Safeguards Team	- Screen projects for ESIA/ESMP needs - Categorize project risks - Ensure compliance with environmental and social safeguards - Promote inclusive project planning	- Integrate K-WASH Environmental and Social Safeguards Framework - Support climate adaptation and inclusion components
ESIA Consultant / County Environment Office	- Conduct full EIAs - Lead stakeholder and community consultations - Develop ESMPs based on identified risks and impacts - Ensure public disclosure and NEMA compliance	- Ensure K-WASH projects meet EMCA and K-WASH E&S requirements - Guide public participation and documentation

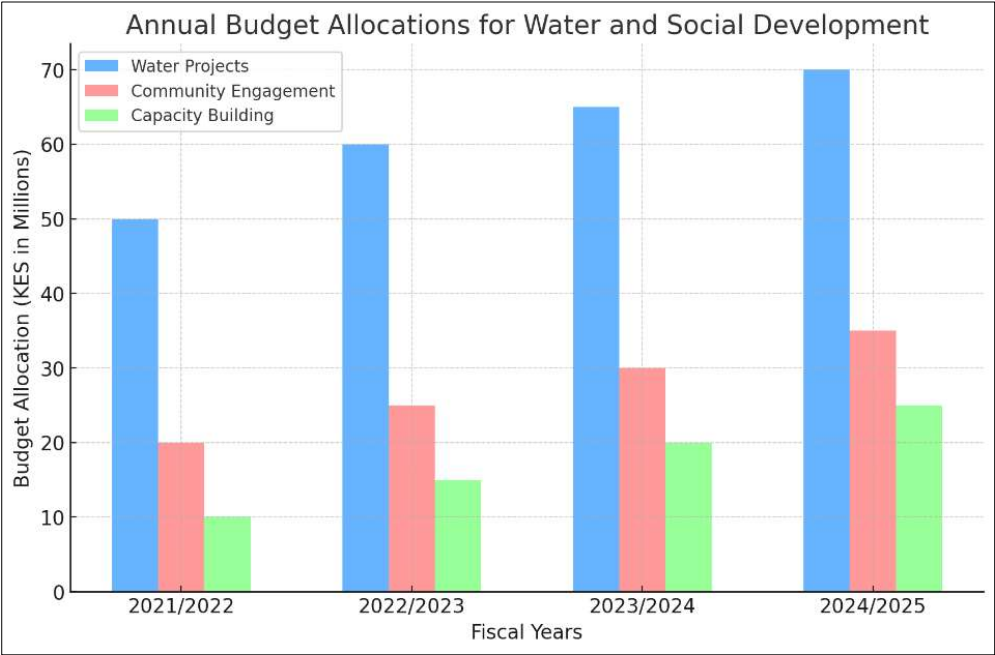
Institution/Team	Key Responsibilities	K-WASH Program Alignment
Grievance Redress Committee / Social Safeguards Team	- Operate the Grievance Redress Mechanism (GRM) - Resolve community complaints - Maintain records and reporting of grievance resolution - Support stakeholder engagement	- Establish K-WASH-compliant GRM system - Ensure transparency, accountability, and timely response

6.2.3 County Budget Allocation for Social Development Initiatives

Nandi County has demonstrated a growing commitment to inclusive development through budgetary allocations that support community engagement, stakeholder participation, and capacity building—critical pillars for effective and equitable water governance. Through mechanisms such as the Equitable Development Act 2023 and the operationalization of the Ward Development Fund (WDF), the county allocated KES 1.1 billion—over 40% of its development budget in FY 2024/2025—to ward-level projects identified through participatory processes. These provisions empower local communities to voice their priorities, particularly in water and sanitation infrastructure, while ensuring that project planning incorporates diverse perspectives, including those of women and marginalized groups.



Additionally, the county has invested in capacity building for Ward Project Identification and Implementation Committees (WPIICs), enhancing local understanding of planning, budgeting, and project oversight. These investments strengthen transparency, accountability, and community ownership—foundations for sustainable water resource management. The integration of gender-responsive planning and public participation in budget processes further aligns with national and global best practices, advancing SDG 6 (clean water and sanitation) and SDG 5 (gender equality) at the county level.



7. IMPLEMENTATION ROADMAP, MONITORING AND EVALUATION, AND COMMUNICATION PLAN

7.1. Strategy and Investments Implementation Plan

7.1.1. Step-by-step action plan for executing the strategy

To ensure the sustainability of WASH systems in Nandi County while generating revenue to maintain and expand these services, the county government should adopt a strategic investment approach that combines social impact with economic viability. This involves identifying and capitalizing on innovative opportunities within the water, sanitation, and hygiene sectors that meet the community's needs and create self-sustaining revenue streams.

The county government will leverage its resources to establish essential infrastructure, such as modern water treatment plants, wastewater recycling facilities, and community-based water kiosks, that generate income through affordable user fees and industrial partnerships. Investing in eco-friendly sanitation solutions, such as biogas production from organic waste and the sale of treated wastewater for irrigation and industrial use, can further boost revenue while addressing environmental concerns.

Integrating public-private partnerships (PPPs) can also attract external investment, expertise, and innovation, fostering long-term sustainability. Initiatives like bottled water enterprises, solar-powered water supply systems, and waste recycling businesses generate income and create employment opportunities for local communities. By prioritizing data-driven decision-making and real-time monitoring systems, the county can optimize operations, ensure transparency, and enhance service delivery, building a resilient and sustainable WASH ecosystem.

Table 47 and Table 48 in appendix 23 highlight the Water Supply Infrastructure Investments Implementation Plan and Sanitation and Hygiene Services Investments Implementation Plan respectively.

Table 49 and Table 50 in appendix 24 shows Water Resources Management and Catchment Conservation Implementation Plan.

7.1.2. Responsibilities of key institutions and stakeholders

The successful implementation of the Nandi County Water Sanitation Strategy and Investment Plan (CWSS & IP) under the Kenya Water and Sanitation Hygiene (K-WASH) program requires a clear, structured framework that assigns specific responsibilities to the relevant officers and institutions. This section delineates the roles of key stakeholders, including officers directly responsible for planning, coordination, execution, monitoring, and evaluation of the strategy and investments.

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Institutional Roles and Designated Officers

Institution/Department	Specific Role	Responsible Officer(s)
County Executive Committee (CEC) – Lands, Physical Planning, Housing Water, Environment, Natural Resources and Climate Change.	Policy direction, high-level coordination, resource mobilization	CEC Member – Water and Sanitation
County Department of Lands, Physical Planning, Housing Water, Environment, Natural Resources and Climate Change County Department of Health and Sanitation	Day-to-day coordination, technical oversight, budgeting, project execution, stakeholder engagement	Chief Officer – Water and Sanitation Director – Water Services Director – Sanitation Services. K-WASH Coordinator

Institution/Department	Specific Role	Responsible Officer(s)
County Treasury	Budget allocation, disbursement, financial monitoring, donor engagement	Chief Officer – Finance and Economic Planning County Budget Officer, Procurement officer, finance officer
County Monitoring and Evaluation Unit (Office of the Governor)	Performance monitoring, progress tracking, impact evaluation	Director – Monitoring and Evaluation, monitoring and evaluation officer
Water Service Providers (WSPs)	Operation and maintenance of infrastructure, revenue collection, customer service, NRW reduction	Managing Directors of Public Utilities (e.g., Kapsabet Water & Sewerage Company) Technical Managers (Operations and Maintenance)
Sub-County and Ward Administrations	Local mobilization, supervision of small schemes, facilitation of Ward Water Committees	Sub-County Administrators Ward Administrators
Community-Based Organizations/Water Users Associations	Community-level scheme management, reporting, user engagement	Chairpersons and Secretaries of WUAs Village-based Water Committees
National Government (Ministry of Water, Sanitation and Irrigation)	Policy support, inter-county coordination, technical support	Regional Coordinator – Ministry of Water County Director – Water (National Ministry)
WASREB (Regulator)	Licensing, tariff approvals, utility performance monitoring	Regional Compliance Officer – WASREB
WRA (Water Resources Authority)	Water resource planning, abstraction permitting, catchment protection	Sub-Regional Water Resources Officer – WRA
Water Sector Trust Fund (WSTF)	Grants and financing for rural WASH infrastructure under K-WASH	County Focal Person – WSTF
Development Partners/NGOs	Technical assistance, co-financing,	County Programme Managers – e.g.,

Institution/Department	Specific Role	Responsible Officer(s)
	implementation of community-level WASH interventions	UNICEF, World Vision, Amref Health Africa
Private Sector (Contracted Service Providers)	PPP implementation, infrastructure delivery, technological solutions	Project Managers – Contracted Firms (based on project)

7.1.2.1. Coordination and Oversight Mechanisms

County Water Sector Steering Committee (CWSSC):

- **Chair:** CEC Member – Water and Sanitation
- **Secretariat:** Chief Officer – Water and Sanitation
- **Membership:** Directors from relevant departments, WSPs, development partners, private sector representatives
- **Function:** Provide strategic oversight, approve investment priorities, review performance

County Water Sector Technical Working Group (CWSTWG):

- **Chair:** Director – Water Services
- **Membership:** Technical staff from water, sanitation, finance, M&E, WSPs, and civil society
- **Function:** Coordinate implementation logistics, resolve technical challenges, review work plans

Ward Water Committees

- **Chair:** Ward Administrator or local representative
- **Membership:** Community leaders, CBO representatives, Water Users Committees
- **Function:** Support local planning, supervise implementation of minor works, ensure community engagement

7.1.2.2. Implementation Support Functions

Function	Lead Officer/Unit	Key Tasks
Investment Planning	Chief Officer – Water and Sanitation County Planning Unit	Project identification, prioritization, cost-benefit analysis
Procurement and Contract Management	County Procurement Officer Project Engineers	Tendering, contract award, supervision of works
Monitoring & Evaluation	Director – Monitoring and Evaluation (Office of the Governor) M&E Officer – Water Department	Track progress indicators, document lessons learned, conduct evaluations
Financial Management	County Accountant – Water Sector Finance Officer – Treasury	Budgeting, fund disbursement, reporting, audit compliance
Community Engagement and Hygiene Promotion	Public Health Officer – Sanitation Unit Ward Administrators	Community sensitization, behavior change communication, grievance redress

7.1.2.3. Implementation Timeline and Milestones

The implementation of the CWSSIP will be structured in phases (2025–2030), aligned with the County’s Annual Development Plans (ADPs) and K-WASH funding cycles.

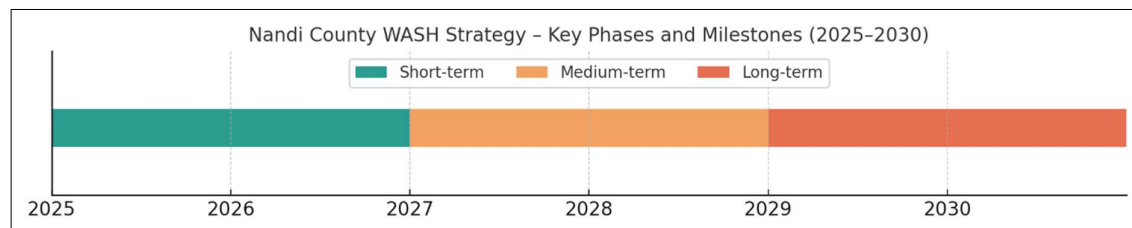
Step-by-Step Action Plan with Responsibilities and Outputs

Step	Action	Timeline	Responsible Party	Expected Output
1	Finalize and validate CWSSIP with key stakeholders	Q1–Q2 2025	County Executive Committee Member (CECM) for Water; Chief Officer; Department of Water and Sanitation	Approved County Water and Sanitation Strategy and Investment Plan (CWSSIP)
2	Establish County WASH Coordination Unit (CWCU)	Q2 2025	Chief Officer; County Director of Water Services	Operational CWCU with defined roles and staff
3	Mobilize resources and finalize project-specific financing agreements	Q2–Q4 2025	County Treasury; Department of Water and Sanitation; Development Partners	Signed financing agreements; secured funding for priority projects

Step	Action	Timeline	Responsible Party	Expected Output
4	Conduct baseline assessments for target areas	Q3 2025	County Monitoring and Evaluation (M&E) Unit; Sub-County Water Officers	Comprehensive baseline data reports for targeted areas
5	Procure works and initiate construction of priority projects	Q4 2025–Q2 2026	Procurement Unit; Department of Water and Sanitation; Contractors	Initiated construction of water and sanitation infrastructure projects
6	Institutionalize performance monitoring and reporting tools	Q1 2026	CWCU; M&E Unit; ICT Department	Implemented digital monitoring tools; regular performance reports generated
7	Conduct capacity-building for implementers and communities	Q2–Q4 2026	Department of Water and Sanitation; NGOs/CBOs; Training Institutions	Trained personnel and community members; enhanced capacity for WASH management

7.1.2.4. Key Phases and Milestones:

- **Short-term (2025–2026):** Project preparation, baseline data, institutional setup, and pilot interventions.
- **Medium-term (2027–2028):** Full-scale infrastructure roll-out, private sector engagement, and mid-term review.
- **Long-term (2029–2030):** Final evaluations, sustainability audits, and handover of community-owned assets.



7.2. Monitoring and Evaluation (M&E) Plan

7.2.1. Framework for tracking progress against strategic objectives

An effective Monitoring and Evaluation (M&E) system is critical to track progress, measure outcomes, and inform decision-making for the implementation of the Nandi County Water Sanitation Strategy and Investment Plan (WSIP) under the Kenya Water and Sanitation Hygiene (KWaSH) program. This M&E plan outlines the framework,

tools, timelines, and indicators that will be used to ensure accountability, transparency, and continuous improvement throughout the strategy implementation cycle.

Objectives of the M&E Plan

- **Track Implementation Progress:** Monitor physical and financial progress against annual work plans and targets.
- **Measure Outcomes and Impact:** Assess how interventions improve access, quality, efficiency, and sustainability of water and sanitation services.
- **Promote Accountability:** Ensure that all implementing actors deliver as planned and that funds are used efficiently.
- **Support Learning and Decision-Making:** Use evidence to adapt programs, inform policy, and guide resource allocation.

Monitoring and Evaluation Framework

Level	Type of Monitoring	Responsibility	Frequency	Tools/Methods
Input	Budget utilization, staffing, procurement	County Treasury, Procurement Unit	Quarterly	Budget reports, procurement audits
Process	Activity implementation, coordination, service delivery	Water Department, WSPs, NGOs	Monthly/Quarterly	Field reports, supervision checklists
Output	Infrastructure completed, people reached, trainings conducted	Water and Sanitation Unit, M&E Unit	Quarterly	Site inspections, program reports
Outcome	Increased access to safe water, improved hygiene practices	M&E Unit, Public Health Office	Biannually	Household surveys, utility performance data
Impact	Reduced waterborne diseases, improved quality of life	Department of Health, M&E Directorate	Annually	Health data analysis, impact studies

7.2.2. Key performance indicators (KPIs) and targets for each component

A. Water Supply Indicators

Indicator	Definition	Target (By 2028)
% of population with access to safely managed drinking water services	Proportion of households with water available on premises, available when needed, and free from contamination	85%
Non-Revenue Water (NRW) rate	% of water produced not billed due to leaks, theft, or meter errors	Reduced to below 25%
Functionality rate of rural water points	% of rural water schemes/systems that are operational	≥ 90%
Number of new water connections	Piped household connections added annually	At least 150,000 new connections

B. Sanitation and Hygiene Indicators

Indicator	Definition	Target (By 2028)
% of households with access to improved sanitation	Sanitation facilities that hygienically separate human excreta from human contact	75%
% of schools with functional WASH facilities	Schools with toilets, handwashing stations, and menstrual hygiene support	100%
Number of villages certified ODF (Open Defecation Free)	Communities where open defecation has been eliminated	80% of villages
Proportion of population practicing handwashing with soap	Households with handwashing facilities with soap and water	60%

C. Institutional and Financial Indicators

Indicator	Definition	Target
% of WSPs operating on cost-recovery basis	Utilities generating sufficient revenue to cover O&M costs	100%
Number of WSPs with performance contracts	WSPs with signed and enforced contracts with the County	All licensed WSPs
% of planned investments implemented on time	Completed projects vs. scheduled milestones	≥ 90%

Indicator	Definition	Target
Timeliness of financial and performance reporting	Reports submitted on schedule to oversight bodies	Quarterly and annual compliance

7.2.2.1. Data Management and Reporting

- **Data Collection:** Each implementing partner will collect and submit data using standardized tools. WSPs, field officers, and NGOs will be trained on data quality assurance.
- **Database Management:** The County M&E Unit will maintain a centralized digital M&E database aligned with the National Integrated Monitoring and Evaluation System (NIMES).
- **Reporting Schedule:**
 - Monthly activity reports (by implementing officers)
 - Quarterly performance reviews (by Departments and CWSSC)
 - Annual sector performance report (published and presented to the County Assembly and public)

7.2.2.2. Evaluation Strategy

- **Mid-Term Review (MTR):** Conducted at the midpoint of the 5-year implementation period to assess progress and recommend course corrections.
- **End-Term Evaluation (ETE):** Comprehensive assessment at the end of the plan cycle to evaluate effectiveness, efficiency, and sustainability.
- **Impact Assessments:** Periodic studies to evaluate long-term effects on public health, economic productivity, and environmental sustainability.

7.2.2.3. Monitoring and Evaluation Plan – Roles and Responsibilities

Effective implementation of the M&E Plan requires clear allocation of roles and responsibilities among key stakeholders at the county, sub-county, and community levels. Each institution and officer involved in the WSIP implementation under the KWaSH program has a specific role in ensuring that data is collected, analyzed, and reported accurately and on time presented in **table format** for clarity and ease of use:

7.2.3. Roles and responsibilities for data collection, reporting, and evaluation

Institution/Office	Responsible Officer(s)	Role in M&E	Key Tasks
County Department of Water and Sanitation	Chief Officer, Director – Water, Director – Sanitation K-WASH coordinator	Sector-level coordination and reporting	- Supervise data collection - Prepare sector M&E reports - Participate in evaluations

County Water and Sanitation Strategy and Investment Plan (CWSSIP) for Nandi County

Institution/Office	Responsible Officer(s)	Role in M&E	Key Tasks
County M&E Unit (Office of the Governor)	Director – Monitoring and Evaluation	County-wide M&E coordination and data management	- Manage centralized M&E system - Conduct data quality assurance - Coordinate evaluations
Department of Health / Public Health Office	County Director of Public Health	Monitor health and hygiene outcomes	- Track hygiene behavior indicators - Collect health-related data - Participate in joint monitoring missions
County Treasury / Finance Department	Chief Officer – Finance, Sector Accountant – Water	Financial tracking and value-for-money monitoring	- Monitor fund utilization - Ensure financial reporting - Support audits
Sub-County Water Offices	Sub-County Water Officers	Field-level monitoring and reporting	- Collect local data - Validate field reports - Submit to county headquarters
Ward Administrators	Ward Administrators	Local coordination and citizen feedback facilitation	- Coordinate local M&E forums - Escalate issues to sub-county - Support citizen engagement
Water Service Providers (WSPs)	Managing Director, M&E/Operations Staff	Data collection on service delivery and financial performance	- Submit monthly/quarterly reports - Track NRW and coverage - Monitor customer satisfaction
Community-Based Organizations / WUAs	WUA Chairpersons, Project Officers	Community-level tracking of water point functionality and sanitation behavior	- Report on rural water point status - Support ODF monitoring - Mobilize hygiene behavior change
County Water Sector Steering Committee (CWSSC)	Chairperson – County Executive (Water)	Oversight and accountability	- Review quarterly reports - Approve M&E findings and course corrections

Institution/Office	Responsible Officer(s)	Role in M&E	Key Tasks
County Water Sector Technical Working Group (CWSTWG)	Sector Technical Officers	Technical backstopping and performance monitoring	- Analyze M&E data - Recommend policy/implementation adjustments - Troubleshoot technical challenges
Annual Stakeholder Review Forum	Convened by CEC – Water and Sanitation	Multi-stakeholder evaluation and strategic alignment	- Share performance results - Gather stakeholder input - Update strategic direction

7.3. Communication and Advocacy Plan

The success of the County Government's water, sanitation, and hygiene (WASH) initiatives is closely tied to effective communication, advocacy, and community engagement. The Communication and Advocacy Plan outlines the strategies and activities the County Government will implement to increase awareness, build support for WASH issues, and promote sustainable behaviour change among the population. The plan is structured to address the communication strategy for WASH issues and the advocacy efforts to secure support for WASH initiatives, as well as awareness and behaviour change campaigns that will engage the community in improving water, sanitation, and hygiene practices.

7.3.1. Strategies for stakeholder engagement and public awareness

The communication strategy will ensure that key WASH messages reach all stakeholders, including the general public, government agencies, civil society organizations, water service providers, and international partners. The main objectives of the communication strategy are to:

- **Ensure Transparency and Accountability:** Regular communication will be used to update the public and stakeholders on the progress of WASH initiatives, the allocation of funds, and the impact of the projects. This will include detailed reports, press releases, and community engagement forums.
- **Enhance Public Awareness of WASH Issues:** The strategy will prioritize informing the community about the importance of safe water, sanitation, and hygiene practices to improve health outcomes, quality of life, and environmental sustainability. This will involve information sharing on proper hygiene practices, safe water handling, and sanitation facilities.

- **Foster Stakeholder Engagement:** The County Government will involve various stakeholders in the planning and implementing WASH projects, ensuring that the voices of local communities, water users, and marginalized groups are heard. The strategy will include multi-stakeholder dialogues, town hall meetings, and participation in national and international WASH forums.
- **Crisis Communication and Risk Management:** In times of crisis, such as disease outbreaks (e.g., cholera), floods, or droughts, the communication strategy will ensure timely and accurate dissemination of information related to water safety, sanitation practices, and emergency response. The plan will outline clear protocols for communication during emergencies.
- **Use of Multiple Communication Channels:** The strategy will utilize diverse communication platforms such as social media, radio, television, community meetings, SMS alerts, and public service announcements to reach different population segments. Traditional media (e.g., local radio) will target rural populations, while digital platforms will be leveraged for urban and younger populations.

7.3.2. Mechanisms for information dissemination

Advocacy efforts will focus on raising the profile of WASH issues among decision-makers, policymakers, and the public to ensure that WASH services receive the necessary attention and resources. The objectives of the advocacy plan are to: Engage Policymakers and Government Leaders: The County Government will work to prioritise WASH issues at the local, regional, and national levels. Advocacy will be directed at county policymakers, the national government, and key decision-makers to secure the political will and funding for WASH infrastructure and sector reforms.

Promote WASH in Development Plans: The County will advocate for including WASH goals in broader development plans, including climate resilience, education, health, and poverty reduction initiatives. WASH will be integrated into broader sector policies to promote its cross-cutting role in achieving sustainable development.

Strengthen WASH Financing: Advocacy will target national and international donors to secure additional funding for WASH programs, particularly in rural and underserved areas. This will include engaging with development partners, international agencies, and financial institutions to promote investment in water and sanitation projects.

Advocate for Gender-Responsive WASH Policies: The County will ensure that WASH policies are gender-sensitive, addressing the specific needs of women, children, and other vulnerable groups. Advocacy will focus on promoting gender equity in water access, sanitation, and hygiene promotion, with particular attention to the unique needs of women and girls regarding menstrual hygiene management.

Create Coalitions and Partnerships: The County Government will collaborate with local civil society organizations, water user groups, community-based organizations, and advocacy networks to amplify efforts for WASH reform. Working with stakeholders will strengthen the advocacy voice and help mobilize resources for WASH initiatives.

7.3.3. Advocacy initiatives to secure political and financial support

Effective communication and advocacy are critical to the successful implementation of the Nandi County Water, Sanitation, and Hygiene (WASH) Strategy and Investment Plan (WSIP). Advocacy ensures the strategy is understood, accepted, and supported by political leaders, budget holders, development partners, communities, and other key stakeholders. This plan outlines strategic initiatives to mobilize the necessary political will and financial investments required to meet Nandi County's WASH targets under the KWASH program.

7.3.3.1 Objectives of the Advocacy Plan

The key objectives of this advocacy initiative are to:

- Build strong political support for prioritizing WASH in the county's development agenda.
- Mobilize increased public sector investment and timely budgetary allocations.
- Attract donor funding and private sector participation in WASH programs.
- Enhance citizen awareness and community ownership of WASH initiatives.

Effective stakeholder engagement and public awareness are pivotal for the success and sustainability of WASH (Water, Sanitation, and Hygiene) initiatives in Nandi County. Drawing from best practices and lessons learned in Kenya and globally, the following strategies are recommended:

7.3.3.2 Strategies for Stakeholder Engagement

- 1. Establish a County WASH Coordination Unit (CWCU):**
 - Form a multi-stakeholder platform comprising government departments (e.g., Water, Health, Education), NGOs, community-based organizations (CBOs), private sector entities, and community representatives.
 - Ensure the CWCU facilitates regular dialogue, joint planning, and coordinated implementation of WASH activities.
- 2. Implement the Mutual Accountability Mechanism (MAM):**
 - Adopt the MAM framework to foster transparency and accountability among stakeholders.
 - Encourage stakeholders to make public commitments and regularly report on progress, enhancing trust and collaboration.
- 3. Conduct Participatory Planning and Decision-Making:**
 - Engage communities in the planning, design, and implementation of WASH projects to ensure they meet local needs and preferences.
 - Utilize tools like community mapping and needs assessments to gather input and foster ownership.

4. Strengthen Capacity Building:

- Provide training and resources to local stakeholders, including community leaders, health workers, and educators, to enhance their ability to manage and sustain WASH services.
- Focus on building skills in areas such as hygiene promotion, facility maintenance, and financial management.

5. Leverage Existing Community Structures:

- Collaborate with established community groups, such as women's associations, youth groups, and religious organizations, to disseminate WASH messages and mobilize participation.
- These groups can serve as effective channels for communication and engagement.

7.3.3.3. Strategies for Public Awareness

1. Develop Comprehensive Communication Campaigns:

- Design culturally appropriate and locally relevant campaigns using various media channels, including radio, community theater, and print materials, to promote key WASH behaviors.
- Messages should focus on the health benefits of improved water and sanitation practices.

2. Implement School-Based WASH Programs:

- Integrate WASH education into school curricula and establish hygiene clubs to instill good practices among students.
- Engage students as change agents to influence behaviors within their families and communities.

3. Utilize Community-Led Total Sanitation (CLTS) Approaches:

- Facilitate CLTS initiatives to empower communities to eliminate open defecation through collective behavior change.
- This approach encourages communities to take the lead in improving their sanitation conditions.

4. Employ Digital Tools and Innovations:

- Adopt mobile-based platforms, such as WhatsApp chatbots, to disseminate WASH information, gather feedback, and monitor service delivery.
- These tools can enhance reach and engagement, especially among younger populations.

5. Organize Community Events and Demonstrations:

- Host events like World Water Day celebrations, clean-up drives, and facility inaugurations to raise awareness and encourage community involvement.
- Such events can serve as platforms for education and advocacy.

7.3.3.4. Key Advocacy Strategies and Initiatives

Advocacy Area	Initiative	Target Audience	Lead Agencies
Political Buy-in and Leadership	Organize high-level policy forums and WASH leadership briefings with County Executive and Assembly	Governor, CECs, County Assembly Committees	Department of Water & Sanitation, Office of the Governor
Budgetary and Financial Support	Present costed WSSIP proposals during County Planning and Budget Consultations	County Treasury, County Budget & Economic Forum (CBEF)	Department of Finance, Water & Sanitation
Donor and Development Partner Engagement	Host County WASH Investment Roundtable and prepare donor briefing kits	Development partners, NGOs, UN agencies	Governor's Office, CEC – Water
Community Mobilization	Conduct community radio shows, barazas, and WASH champions programs to raise public support	Local communities, Ward representatives, water users	Ward Administrators, Sub-County Health Teams
Private Sector Engagement	Engage in Public-Private Dialogue Forums to attract partnerships in water supply and sanitation services	Local businesses, corporates, investment forums	County Investment Office, WSPs
Media and Public Relations	Utilize print, digital, and social media campaigns to promote success stories and investment opportunities	General public, journalists, influencers	Communication Office, County M&E Unit
Institutional Strengthening	Advocate for policy reforms including performance contracting, WSP autonomy, and tariff review	County Assembly, WSP Boards, regulatory bodies	Department of Water, Legal Affairs Unit

7.3.3.5. Key Messages

- “Water and Sanitation are Development Catalysts – Invest Now, Prosper Tomorrow.”
- “A Healthy County Begins with Safe Water and Sanitation for All.”
- “Every Shilling Invested in WASH Returns in Health, Education, and Productivity.”
- “Nandi County is Ready for Investment in Sustainable Water and Sanitation Systems.”

7.3.3.6. Communication Channels

A multi-channel communication approach will be adopted to reach different stakeholders effectively:

- Policy briefs and strategy summaries for policymakers.
- Community dialogues and roadshows in all sub-counties.
- Radio and social media campaigns targeting both urban and rural populations.
- Progress bulletins and newsletters for stakeholders and partners.
- Annual WASH performance reports highlighting achievements and investment gaps.

7.3.3.7. Monitoring and Evaluation of Advocacy Efforts

Indicator	Target by 2028
Number of policy advocacy forums held	At least 85 county-level forums
Percentage of annual budget allocated to WASH	Increase from 3% to at least 8%
Amount of donor/partner funding mobilized	KES 1 billion in additional financing
Private sector investments in water and sanitation	At least 5 new PPP projects initiated
Public awareness level on WASH strategy	>70% of households reached through media

7.4. Monitoring and Evaluation Plan

Table 20: Summary of the Implementation Plan and the Resource Requirements

S/No	Objective	Strategy	Responsibility	Resource Requirements KES Millions	2025 -26	2026 -27	2027 -28	2028 -29	2029 -30
1	Water Supply Infrastructure Investments Implementation Plan	Supply of Domestic Water	CG/MoWSI/ NIA/ PARTNERS/ COMMUNITY	23,058	4,611	4,611	4,611	4,611	4,611
2	Sanitation and Hygiene Services Investments Implementation Plan	Provision of sanitation service	CG/MoWSI/WSP/ PARTNERS/ COMMUNITY	11,322	2,264	2,264	2,264	2,264	2,264
3	Water Resources Management and Catchment Conservation Implementation Plan	Water Resources Management and Catchment Conservation Implementation Plan	CG/MOWSI/WSP/ PARTNERS/ COMMUNITY	238	47.6	47.6	47.6	47.6	47.6
4	Institutional Reforms and Services Delivery Models (SDM)	Institutional Reforms and Services Delivery Models (SDM).	CG/MoWSI/WSP/ PARTNERS/ COMMUNITY	40	8	8	8	8	8

Table 21: Water Resources Management and Catchment Conservation Implementation Plan

S/No	Strategic Pillar	Thematic Area	Resource Requirements KES Millions
1	Water Supply Infrastructure Investments Implementation Plan; Sanitation and Hygiene Services Investments Implementation Plan	Supply of Domestic Water Groundwater Harvesting Surface Water Harvesting	23,058
2	Water Supply Infrastructure Investments Implementation Plan; Sanitation and Hygiene Services Investments Implementation Plan; Water Resources Management and Catchment Conservation Implementation Plan; Water Supply Infrastructure Investments Implementation Plan	Community-led Total Sanitation Provision of institutional and Public WASH facilities Provision of Sewerage Infrastructure Behaviour Change and Communication Provision of Waste Management Services	11,322
3	Sanitation and Hygiene Services Investments Implementation Plan; Water Resources Management and Catchment Conservation Implementation Plan	Water Catchment Improvement Riverline Protection Wetlands Restoration	238
4	Water Supply Infrastructure Investments Implementation Plan	Establishment and Entrenchment of Nandi WASH Forum Support and Strengthening of Small Water Service Providers	40
TOTAL			34,658

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- 2024/25 KENYA INTEGRATED HOUSEHOLD BUDGET SURVEY (KIHBS) – Pilot Report
- Report of the Auditor-General on Kapsabet Nandi Water and Sanitation Company Limited for the Year Ended 30 June 2023

APPENDICES

Appendix 1: Nandi County Climate: Monthly Averages

Table 22: Climate Nandi: Monthly Averages

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	34.0 (93.2)	36.0 (96.8)	37.0 (98.6)	34.0 (93.2)	30.0 (86.0)	27.0 (80.6)	27.0 (80.6)	28.0 (82.4)	31.0 (87.8)	33.0 (91.4)	33.0 (91.4)	33.0 (91.4)	37.0 (98.6)
Average high °C (°F)	28.65 (83.57)	28.39 (83.1)	29.13 (84.43)	26.66 (79.99)	25.62 (78.12)	24.35 (75.83)	24.32 (75.78)	24.82 (76.68)	26.72 (80.1)	28.42 (83.16)	28.62 (83.52)	26.72 (80.1)	26.52 (79.74)
Daily mean °C (°F)	23.36 (74.05)	23.52 (74.34)	23.75 (74.75)	21.12 (70.02)	20.24 (68.43)	19.35 (66.83)	19.61 (67.3)	20.21 (68.38)	22.12 (71.82)	23.69 (74.64)	23.75 (74.75)	23.01 (73.42)	22.01 (71.64)
Average low °C (°F)	15.24 (59.43)	16.04 (60.87)	15.36 (59.65)	15.36 (59.65)	14.52 (58.14)	13.85 (56.93)	13.87 (56.97)	15.36 (59.65)	14.68 (58.42)	14.71 (58.48)	14.71 (58.48)	14.63 (58.33)	14.86 (58.75)
Record low °C (°F)	12.0 (53.6)	12.0 (53.6)	12.0 (53.6)	12.0 (53.6)	12.0 (53.6)	10.0 (50.0)	10.0 (50.0)	12.0 (53.6)	12.0 (53.6)	12.0 (53.6)	12.0 (53.6)	10.0 (50.0)	10.0 (50.0)
Average precipitation mm (inches)	87.52 (3.45)	70.21 (2.76)	79.13 (3.11)	315.3 (12.41)	378.8 (14.89)	194.7 (7.66)	145.6 (5.73)	179.7 (7.08)	165.18 (6.5)	229.18 (9.02)	179.3 (7.06)	162.25 (6.39)	199.89 (7.87)
Average precipitation days (≥ 1.0 mm)	12.09	11.94	19.82	26.55	29.45	28.36	26.82	26.14	24.82	26.91	23.76	19.45	23.37
Average relative humidity (%)	56.93	53.74	62.87	77.32	85.1	85.06	81.59	79.06	75.98	74.7	75.39	68.3	73.0
Mean monthly sunshine hours	11.42	11.44	11.17	11.0	11.02	11.24	11.15	11.25	11.26	11.18	11.16	11.46	11.22

Appendix 2: Administrative Units by Sub County

Table 23: Administrative Units by Sub County, 2019

Sub-County	Divisions	Locations	Sub-Locations
Nandi Central	3	29	76
Nandi North	4	23	59
Nandi East	2	22	71
Nandi South	2	15	48
Tinderet	1	16	45

County Water and Sanitation Strategy and Investment Plan (CWSSIP) for Nandi County

Total	12	105	299
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Source: Ministry of Interior and Coordination, Nandi County

Appendix 3: Population Projections

Table 24: Population Projections (by Sub-County and Sex)

Subcounty	Census (2019)				2022 (Projection)			Projection (2025)			Projection (2027)		
	M	F	Inter-sex	T	M	F	T	M	F	T	M	F	T
Emgwen	73,291	74,255	7	147,553	76,319	79,645	155,965	79,829	83,772	163,601	82,063	86,353	168,417
Chesumei	80,949	83,180	4	164,133	84,293	89,218	173,512	88,170	93,841	182,011	90,638	96,733	187,371
Mosop	82,512	83,656	3	166,171	85,921	89,729	175,650	89,872	94,378	184,251	92,388	97,286	189,674
Nandi Hills	59,899	59,271	3	119,173	62,374	63,574	125,948	65,242	66,868	132,110	67,069	68,928	135,997
Aldai	85,718	87,029	3	172,750	89,260	93,347	182,606	93,364	98,184	191,548	95,978	101,209	197,187
Tinderet	58,890	57,039	2	115,931	61,323	61,180	122,503	64,143	64,350	128,493	65,939	66,332	132,271
Nandi County	441,259	444,430	22	885,711	459,490	476,693	936,183	480,621	501,393	982,014	494,075	516,841	1,010,916

Source: Nandi County CIDP 2023-2027

Table 25: Population Projections by Age Cohort

Age Cohort	2019 (Census)				2022 (Projection)			2025 (Projection)			2027 (Projection)		
	M	F	Inter-sex	T	M	F	T	M	F	T	M	F	T
0-4	53,291	52,679		105,970	54,970	54,898	109,868	55,429	53,902	109,331	54,906	53,385	108,291
5-9	58,511	57,623		116,134	53,484	54,805	108,289	53,792	55,633	109,425	54,107	54,968	109,075
10-14	63,723	62,390		126,113	52,319	53,665	105,984	52,566	53,753	106,319	52,782	54,312	107,094

County Water and Sanitation Strategy and Investment Plan (CWSSIP) for Nandi County

Age Cohort	2019 (Census)				2022 (Projection)			2025 (Projection)			2027 (Projection)		
	M	F	Inter-sex	T	M	F	T	M	F	T	M	F	T
15-19	55,370	53,371		108,741	50,912	52,395	103,307	51,039	53,111	104,150	51,221	53,179	104,400
20-24	39,138	41,307		80,445	48,340	49,799	98,139	49,826	51,162	100,988	49,925	51,647	101,572
25-29	30,974	34,366		65,340	44,208	46,194	90,402	45,963	48,004	93,967	46,957	48,916	95,873
30-34	30,576	34,531		65,107	36,988	38,352	75,340	41,621	44,312	85,933	42,780	45,521	88,301
35-39	23,955	21,144		45,099	30,397	31,324	61,721	32,869	33,511	66,380	35,894	37,408	73,302
40-44	21,156	19,734		40,890	24,275	24,947	49,222	27,742	28,884	56,626	29,364	30,316	59,680
45-49	17,645	16,966		34,611	17,871	18,866	36,737	20,942	21,397	42,339	23,176	23,936	47,112
50-54	11,823	11,982		23,805	12,910	14,396	27,306	14,755	16,252	31,007	16,691	17,867	34,557
55-59	10,355	11,081		21,436	9,297	10,630	19,927	10,535	12,328	22,863	11,686	13,507	25,193
60-64	8,043	8,005		16,048	6,923	7,595	14,518	7,337	8,842	16,179	8,081	9,909	17,990
65-69	6,051	6,585		12,636	5,177	5,549	10,726	5,384	6,240	11,624	5,641	7,009	12,649
70-74	4,349	4,690		9,039	4,190	4,630	8,820	3,726	4,615	8,341	3,868	5,036	8,904
75-79	2,758	3,231		5,989	3,001	3,540	6,541	2,973	4,057	7,030	2,806	4,049	6,855
80 +	3,541	4,743		8,284	4,228	5,108	9,336	4,123	5,390	9,513	4,192	5,876	10,068
All Ages	441,259	444,428	22	885,687	459,490	476,693	936,183	480,621	501,393	982,015	494,075	516,841	1,010,916

Source: Nandi County CIDP 2023-2027

Table 26: Population Projections by Urban Areas

Urban Area	Census (2019)				2022 (Projection)				Projection (2025)				Projection (2027)			
	M	F	Inter-sex	T	M	F	Inter-sex	T	M	F	Inter-sex	T	M	F	Inter-sex	T
Kapsabet	21,000	20,995	2	41,997	22,199	22,194	2	44,395	23,466	23,461	3	46,930	24,806	24,800	3	49,609
Nandi Hills	3,982	4,050	-	8,032	4,209	4,281	-	8,490	4,449	4,525	-	8,974	4,703	4,783	-	9,486
Mosoriot	2,364	2,552	-	4,916	2,499	2,697	-	5,196	2,641	2,851	-	5,492	2,791	3,013	-	5,804

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Baraton	996	1,047	-	2,043	1,052	1,106	-	2,158	1,112	1,169	-	2,281	1,175	1,235	-	2,410
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Source: Nandi County CIDP 2023-2027

Table 27: Population distribution and density by Sub-County

Sub-County	2019 (Census)			2022 (Projection)			2025 (Projection)		2027 (Projection)	
	Area (KM ²)	Population	Density	Area (KM ²)	Population	Density	Population	Density	Population	Density
Chesumei	475	164,133	345	475	173,512	365.6	182,011	384	187,371	394.0
Nandi Central	363	147,553	406	363	155,965	429.8	163,601	451	168,417	464.1
Nandi East	398	119,173	299	398	125,948	316.8	132,110	332	135,997	342.0
Nandi North	606	166,171	274	606	175,650	289.7	184,251	304	189,674	312.8
Nandi South	457	172,750	377	457	182,606	399.2	191,548	419	197,187	431.1
Tindiret	557	115,931	208	557	122,503	219.9	128,493	231	132,271	237.4
Nandi County	2,855.8	885,711	310	2,855.8	936,183	327.0	982,014	343.86652	1,010,916	353.99

Source: Nandi County CIDP 2023-2027

Table 28: Population Projection by ward

Ward	2019 CENSUS			2022			2025			2027		
	M	F	T	M	F	T	M	F	T	M	F	T
Kabisaga	11,192	11,586	22,778	11830	12246	24076	12409	12846	25255	12774	13224	25998
Chepterwai Ward	11229	11345	22,574	11869	11991	23860	12450	12579	25028	12816	12949	25765
Kurgung Surungai Ward	11105	11184	22,289	11738	11821	23559	12312	12400	24712	12675	12765	25440
Kipkaren Ward	12,286	12,335	24,621	12986	13038	26024	13622	13676	27298	14023	14079	28101
Kabiyet Ward	12,353	12,612	24,965	13057	13331	26388	13696	13983	27679	14099	14395	28494
Ndalat	11,390	11,551	22,941	12039	12209	24248	12628	12807	25435	13000	13184	26184
Sangalo Kebulonik	12,844	12,932	25,776	13576	13669	27245	14241	14338	28579	14660	14760	29420
Kabwareng Ward	12,068	12,473	24,541	12756	13184	25939	13380	13829	27209	13774	14236	28010

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Ward	2019 CENSUS			2022			2025			2027		
	M	F	T	M	F	T	M	F	T	M	F	T
Kobujoi Ward	15,356	15,667	31,023	16231	16560	32791	17026	17370	34396	17527	17882	35408
Terik Ward	11507	11731	23,238	12163	12399	24562	12758	13007	25765	13134	13389	26523
Kemeloi Maraba	20095	20536	40,631	21240	21706	42946	22280	22769	45049	22936	23439	46375
Ndurio Koyo	10223	10103	20,326	10806	10679	21484	11335	11201	22536	11668	11531	23199
Kaptumo Kaboi	16469	16519	32,988	17407	17460	34868	18260	18315	36575	18797	18854	37651
Kapsabet Ward	19,689	19,107	38,796	20811	20196	41007	21830	21185	43014	22472	21808	44280
Kapkangani Ward	12,855	13,665	26,520	13588	14444	28031	14253	15151	29404	14672	15597	30269
Chepkumia Ward	11,509	11,991	23,500	12165	12674	24839	12760	13295	26055	13136	13686	26822
Kilibwoni Ward	29,230	29,483	58,713	30896	31163	62059	32408	32689	65097	33362	33651	67013
Tindiret Ward	14,830	14,786	29,616	15675	15629	31304	16442	16394	32836	16926	16876	33803
Songhor Soba Ward	23,998	23,288	47,286	25366	24615	49981	26607	25820	52427	27390	26580	53970
Kapsimatwo Ward	10,659	10,140	20,799	11266	10718	21984	11818	11243	23060	12166	11573	23739
Chemelil Chemase Ward	9382	8805	18,187	9917	9307	19223	10402	9762	20164	10708	10050	20758
Chemundu Kapnge-Tuny Ward	18,250	18,708	36,958	19290	19774	39064	20234	20742	40976	20830	21353	42182
Kiptuiya Ward	13,415	14,327	27,742	14179	15143	29323	14874	15885	30758	15311	16352	31664
Kosirai Ward	14,844	15,037	29,881	15690	15894	31584	16458	16672	33130	16942	17163	34105
Kaptel Kamoiiwo	19,507	19,783	39,290	20619	20910	41529	21628	21934	43562	22265	22580	44844
Lelmokwo/Ngechek Ward	14,933	15,325	30,258	15784	16198	31982	16557	16991	33548	17044	17491	34535
Ollessos Ward	11,435	11,417	22,852	12087	12068	24154	12678	12658	25337	13051	13031	26082
Kapchorua Ward	9,173	8,812	17,985	9696	9314	19010	10170	9770	19941	10470	10058	20527
Nandi Hills Ward	18,479	18,541	37,020	19532	19598	39130	20488	20557	41045	21091	21162	42253
Chepkunyuk	20,812	20,501	41,313	21998	21669	43667	23075	22730	45805	23754	23399	47153
Tinderet Forest	21	20	41	22	21	43	23	22	45	24	23	47
Nandi North Forest	113	111	224	119	117	237	125	123	248	129	127	256

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Ward	2019 CENSUS			2022			2025			2027		
	M	F	T	M	F	T	M	F	T	M	F	T
Nandi South Forest	8	9	17	8	10	18	9	10	19	9	10	19
Intersex			22			23			25			26
Totals	441,259	444,430	885,711	466,403	469,756	936,183	489,237	492,753	982,014	503,635	507,255	1,010,916

Table 29: Population Projection by Broad Age Groups

Age Group	2019 (Census)			2022 (Projection)			2025 (Projection)			2027 (Projection)		
	M	F	T	M	F	T	M	F	T	M	F	T
I<1 year	9,988	9,702	19,690	10215	10,598	20,813	10,685	11,147	21,831	10,984	11,490	22,474
<5 years	53,291	52,679	105,970	54,970	54,898	109,868	55,429	53,902	109,331	54,906	53,385	108,291
Pre-School (3-5)	33,491	33,021	66,512	34,506	35,798	70,304	36,093	37,653	73,746	37,103	38,813	75,916
Primary school (6-13 yrs)	98,522	96,941	195,463	101,405	105,202	206,607	106,068	110,653	216,721	109,038	114,062	223,100
Secondary School (14-19 yrs)	67,853	65,559	133,412	69,213	71,805	141,018	72,396	75,525	147,921	74,423	77,852	152,275
Youth (15 – 29 Years)	125,482	129,044	254,526	143,460	148,388	291,848	146,828	152,277	299,105	148,103	153,742	301,845
Women of reproductive age (15-49 yrs)		221,419			261,877			280,381			290,923	
Economically Active Population (15-64)	249,035	252,487	501,522	282,121	294,498	576,619	302,629	317,803	620,432	315,775	332,206	647,981
Aged (65+)	16,699	19,251	35,950	16,596	18,827	35,423	16,206	20,302	36,508	16,507	21,970	38,477

Source: Nandi County CIDP 2023-2027

Table 30: Population of Persons with Disability by Type, Age and Sex

Type	M	F	Intersex	T
Hearing	1158	1204		2362
Speech	1095	852		1947
Visual	2052	2603		4655
Mental	1383	1610		2994
Physical	2553	3667		6221
Selfcare	1090	1107		2197
Total	6487	7733		14221

Source: Nandi County CIDP 2023-2027

Appendix 4: Gender Inclusion and Mainstreaming Insights from survey findings

Table 31: Gender Inclusion and Mainstreaming Insights from survey findings

Aspect	Key Findings from Survey Undertaken
Women's Role in Water Governance	- From the findings of the survey, it was reported that women are the primary users and managers of domestic water, yet their influence in water governance and infrastructure design is minimal. - It was found that only 14% of women participate in Water Resources User Association (WRUA) meetings and even fewer, less than 10% hold leadership positions in water management. - The survey identified that cultural norms, limited access to education and training and poverty are key barriers contributing to this underrepresentation. However, it was also found that 72% of women expressed interest in taking on leadership roles if given the necessary support and training.
Service Delivery	From the survey findings, it was reported that only 17.7% of households have access to piped water. It was found that the majority of households rely on unprotected shallow wells, hand pumps, and springs as their primary water sources. These sources were identified as being particularly vulnerable to contamination therefore posing significant health risks to the community.
Health Implications	Poor water quality poses health risks with women often being the primary caregivers when family members fall ill from waterborne diseases.
Impact on Girls' Education	Lack of safe, easily accessible water sources undermines girls' school attendance especially during menstruation due to sanitation and privacy needs.

Appendix 5: Climate Risk Assessment by Water Source Type

Table 32: Climate Risk Assessment by Water Source Type

<i>Water Source</i>	<i>Climate Risk</i>	<i>Vulnerability</i>	<i>Severity</i>	<i>Frequency</i>	<i>Impact on Service Provision</i>
<i>Springs</i>	Prolonged Droughts	High: Many are unprotected and dependent on groundwater recharge.	High: Drying up leads to water scarcity.	Increasing	Severe disruption, especially for domestic and livestock use.
<i>Rivers</i>	Seasonal Floods	Medium: Susceptible to contamination from runoff.	Medium: Can damage intake points and increase turbidity.	High	Temporary disruption; increased water treatment costs.
<i>Shallow Wells</i>	Irregular Rainfall	High: Recharge is directly dependent on rainfall.	High: Erratic rainfall disrupts water availability.	Increasing	Unreliable water source, affecting daily access.
<i>Boreholes</i>	Rising Temperatures	Medium: Increased evapotranspiration may reduce groundwater recharge.	Medium: Can lead to decreased yield over time.	Increasing	Gradual reduction in water availability.

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<i>Water Source</i>	<i>Climate Risk</i>	<i>Vulnerability</i>	<i>Severity</i>	<i>Frequency</i>	<i>Impact on Service Provision</i>
<i>Rainwater Tanks</i>	Erratic Rainfall	Low: Effectiveness depends on rainfall patterns.	Low to High: Unpredictable rainfall makes this source unreliable.	Increasing	Unreliable supplementary source; affects planning.
<i>Piped Systems</i>	Landslides	Medium: Pipelines can be damaged in hilly areas.	Medium to High: Disruption of water supply to connected households.	Low to Medium	Localized service disruption; repair costs.

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Table 33: Interventions proposed

<i>Sector</i>	<i>Specific Challenge</i>	<i>Adaptation Measures</i>	<i>Mitigation Measures</i>	<i>Key Details / Specifications</i>	<i>Prioritization Rationale</i>	<i>Indicative Budget (KES)</i>
Community Water Management	Limited capacity for community water governance.	Formation and training of Water Resources Users Associations (WRUAs).	Registration of all community water projects.	Training includes: preventive maintenance, tariff setting, financial management and conflict resolution. Registration will enhance governance and eligibility for external support.	Medium – Sustainability of water systems depends on local ownership and capacity.	- 30 WUAs x 5 days x 20 pax @ KES 2,000/day = 3,000,000 - Registration and materials = 500,000 Total: 3,500,000
	Weak community engagement.	Establish water project management committees.	Develop fee collection systems.	Committees involved in planning, monitoring, and maintenance of the water projects. Introduction of Fee systems will help to improve O&M financing.	Medium – this will build accountability and system longevity.	- 30 projects x 3 meetings x 20 pax @ KES 500 = 1,500,000 - Guideline development = 300,000 Total: 1,800,000
Infrastructure Development	Unreliable supply due to frequent breakdowns.	Invest in climate-resilient infrastructure.	Real-time reporting for breakdowns.	This includes deep boreholes, elevated tanks and mobile-based reporting system which will be integrated with county units.	High – Ensures that there is consistent access and that it aligns with resilience planning in CIDP.	- 10 boreholes @ KES 5M = 50,000,000 - 20 tanks @ KES 2M = 40,000,000 - Reporting system = 2,000,000 Total: 92,000,000
	Inadequate funds for repairs.	Rainwater harvesting and sub-surface dams.	Maintenance budget	Household and institutional tanks.	High – Reduces O&M burdens and	- 50 tanks @ KES 500,000 = 25,000,000

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<i>Sector</i>	<i>Specific Challenge</i>	<i>Adaptation Measures</i>	<i>Mitigation Measures</i>	<i>Key Details / Specifications</i>	<i>Prioritization Rationale</i>	<i>Indicative Budget (KES)</i>
			integrated at design stage.	Maintenance funds at ward level.	diversifies water sources.	- 5 sub-surface dams @ KES 10M = 50,000,000 - Ward-level funds (30 wards) @ KES 1M = 30,000,000 Total: 105,000,000
	Aging and inefficient infrastructure.	Rehabilitation of systems.	Ward-level prioritization of upgrades.	Includes spring protection, borehole rehab, piped system repairs.	High – Restores functionality and reduces losses.	- 50 springs @ KES 300,000 = 15,000,000 - 20 boreholes @ KES 1M = 20,000,000 - Pipe repairs = 10,000,000 Total: 45,000,000
Water Quality & Public Health	Contamination from waste and runoff.	Water Safety Plans (WSPs) and source protection.	Surveillance and chlorination.	Fencing, sanitation, integrated pest management and health worker training.	High – Crucial to public health (aligns with CIDP & SDG 6).	- 100 fences @ KES 100,000 = 10,000,000 - 50 sanitation units @ KES 200,000 = 10,000,000 - 1,000 chlorination kits @ KES 5,000 = 5,000,000 - Health worker training = 2,000,000 Total: 27,000,000

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<i>Sector</i>	Specific Challenge	Adaptation Measures	Mitigation Measures	Key Details / Specifications	Prioritization Rationale	Indicative Budget (KES)
	Unsafe drinking water.	Spring boxes and sealed tanks.	Installation of Chlorine dozers at intakes.	Protects against runoff; ensures residual disinfection.	High – this Reduces disease occurrence, especially in rural zones.	- 30 spring boxes @ KES 400,000 = 12,000,000 - 20 tanks @ KES 1.5M = 30,000,000 - 30 dosers @ KES 100,000 = 3,000,000 Total: 45,000,000
	Poor water quality at scale.	Centralized treatment plant.	Distribution upgrades.	Treats multiple sources centrally; improves water standardization.	High – it aims to Improve of equity and consistency of water access.	- Feasibility and design = 5,000,000 - Treatment plant = 100,000,000 - Network upgrades = 20,000,000 Total: 125,000,000
Environmental Conservation	Degradation of catchments.	Reforestation and buffer zones.	Catchment protection campaigns.	Seedling planting, protected buffer zones, community enforcement.	Medium –It Supports ecosystem restoration therefore improving recharge.	- 100,000 seedlings @ KES 200 = 20,000,000 - Catchment work = 10,000,000 Total: 30,000,000
	Climate stress (e.g., droughts).	Community-based restoration.	Awareness and regulation.	Promotes revegetation and sustainable land use.	Medium – Increases resilience and reduces degradation.	- Buffer zones = 15,000,000 - Campaigns (30 wards x KES 500,000) = 15,000,000 Total: 30,000,000

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<i>Sector</i>	Specific Challenge	Adaptation Measures	Mitigation Measures	Key Details / Specifications	Prioritization Rationale	Indicative Budget (KES)
<i>Financial & Institutional Support</i>	Inadequate funding streams.	Increase investment.	Diversify funding (PPP, donors, levies).	Resource mobilization strategy based on CIDP fiscal goals and WASREB guidelines.	High – this Enables execution of planned interventions.	- Strategy development = 5,000,000 (Cost derived from similar strategic planning exercises in CIDP 2023–2027)
	High community water supply costs.	—	Invest in solar-powered systems.	Solar for boreholes, piped systems, and small treatment plants.	Medium – it helps reduce the energy costs and enhances sustainability.	- 30 systems @ KES 800,000 = 24,000,000
	Lack of skilled labor.	Capacity building for technical personnel.	—	Training for engineers, hydrologists, and managers.	Medium – Addresses the technical sustainability gaps.	- Training programs = 10,000,000

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Appendix 6: NANDI County Water and Sanitation Planned Projects

Table 34: NANDI County Water and Sanitation Planned Projects

Name of Proposed Project/Investment	Summary Description of the Project Scope	Program Expenditure Category	PROJECT/INVESTMENT LOCATION DETAILS	
			Project Area	Project Location
Kapsabet Water and Sanitation Company	Solarization of the pumping scheme, Rehabilitation of old lines 35 km networks with assorted HDPE pipes, Purchase and installation of mechanical zonal metering 8 inch 3 NO, 4 NO. 6 inch, 5 NO. 4 inch, 8 NO 3inch, 8 NO. 2 inch, equipping of existing laboratory, installation of Web Based Billing Software to serve 7,000 connections, Purchase and installation of consumer meters and assorted fittings and operation of Kapkorio water projects (Solarization of the project, 13 km distribution network and rising main of 1 Km using HDPE pipe.	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Countywide	0.18177070871143808, 35.11836682692742
Lelmokwo Water Supply	• Construction of new pipeline length 7.4Km, Construction of 100cm masonry tank, Supply 500nr Consumer Water Meters, Construction of 100cm elevated steel tank, Office Block (Floor Area - 69m2) and 1nr 2 door VIP Long Drop Toilet, Construction of new pipelines DN 50 length 18.8Km, Rehabilitation of existing line, length	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.4111636761321033, 35.18003932707536

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	5.3Km, Supply 600nr Consumer Water Meters Construction of new intake works and treatment plant			
Construction of 90 NO. Spring Protections across the county	Construction of spring protections to serve as point sources for both schools and communities	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Countywide	1. Kapkorio spring 2. Soimining spring 3. Kiptarany spring 4. Baraseiyet spring 5. Kugeroniot spring 6. Kipikope spring 7. Chepkoiyo spring 8. Cheptil spring protection 9. Kolonget spring 10. Chepkatet spring 11. Chumeek spring 12. Kapnganio spring 13. Kiptang spring 14. Chemororoch spring 15. Namgoi spring 16. Mosobechoi spring 17. Simatwet spring 18. Chepkumia spring 19. Kapkangani spring 20. Cheptongon spring
Pipeline Extension for small 100 No Community water Projects	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Sub-County	1. Sarma Water Project 2. Kaptumo Water Project 3. Koimue Water Project 4. Koyo Water Project 5. Chemalin Water Project 6. Sugut/chebilat Water Project 7. Kambare Water Project 8. Kapchemai Water Project 9. Kamoboni Water Project 10. Kaptendon Water Project

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				11. Sinende Water Project 12. Silanga Water Project 13. Asurur Water Project 14. Kaptendon water project 15. Chepsui water project 16. Kapsasur water project 17. Kaptobongen water project 18. Kapkitara Water Project 19. Kisabei water project 20. Mumetet Water Project
Kipkoil Kimatkei Water Project	Construction of the Intake Works, Construction of the Raw Water Gravity Main DN150mm GI / uPVC,4.35Km, Construction of Distribution Pipelines DN50mm length 5Km, Construction of 2 Nr. Water kiosks, Construction of an office block Supply and installation of 550Nr. Meters, Construction of 20km pipeline, Supply of a computer, printer, office furniture, office toilet block, office fencing and Construction of 20 km distribution lines and water meters.	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Tindiret	
Kipngoror Water Supply	Construction of 13km Water Pipeline, Construction of an office block, Construction of a CFU and 100cm masonry tank, Supply & Installation of 1 High lift pump and genset, Supply of 200Nr. Consumer meters, Supply of computer, printer, office furniture, Rehabilitation of Existing Intake, 1nr 2 door VIP	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chepterwai	0.5001823828972853, 34.94997853856932

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	Long Drop Toilet and furnishing of the scheme office, Supply and installation of 3nr. Lightening Arrestors, Construction of 1nr. 1 Door Toilet with Septic Tank, interconnection of the Tanks, Supply and installation of DN 100mm Master Meter, Supply and installation of DN 100mm Gate Valve, Electrical installations for the Office, KPLC Connection, Plumbing Works for the Office, Plumbing Works at the T. Works			
Kapchemosin Water Project	Upgrading of the solar power system including power storage, and pumping unit Construction of 100m3 elevated steel tank Extension of service lines 30 Km long	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Aldai	0.1084742, 35.1064673
Sarora Water Project	Solarization of the project and last mile connectivity	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Mosop	0.46495042690168503, 35.00112176740513
Chepkoiyo water Project	Construction of intake works, Construction of masonry tanks 3 NO 100 M3, Purchase and supply of PVC pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering,	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network,	Mosop	0.4035022868367648, 35.129045720861996

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	Solarization of the pumping scheme10 km pipeline	tanks and last mile connections		
Biribiryet water Project	Construction of distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.38942370932059744, 35.18956923202878
Lamaiywo water Project	Construction of masonry tanks, Purchase and supply of PVC pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.3911881572946793, 35.150917523225985
Ndulele water Project	Solarization of the project, construction of 3km 3-inch pipeline, construction of 5km distribution line and metering.	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Mosop	0.4102789422861981, 35.069946352061805
Ngariet Kabruce water Project	Solarization of the project, construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Mosop	0.5188100377803156, 35.13745094171018
Kapkatembu Ngenyilel water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back	Construction of intakes (surface water sources), treatment facilities,	Mosop	0.522889668516391, 35.003005990026445

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	fill trench, distribution lines and metering	transmission mains, water distribution network, tanks and last mile connections		
Chemarot water Project	Construction of intake works and distribution lines	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.36244808420975333, 35.28382955206183
Ngechek water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.28747990716399013, 35.21743902310863
Kapkeben water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.28747990716399013, 35.21743902310863
Kaptobongen water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.20864052649802098, 35.03933250021106

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Kapkitara water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.19476688251916005, 34.98877611006141
Kipaskei Amai Nandi Primary water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.22145167793745532, 35.09042060117817
Kunurter Kikormoi water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.22015020243339412, 35.130075098091574
Kapkorio Kapsabet water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Emgwen	0.18177070871143808, 35.11836682692742
Kimong Solar water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network,	Mosop	0.44677635583092623, 35.023469926927554

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		tanks and last mile connections		
Lolminigai Kapkagaon water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Emgwen	0.2528208360098186, 35.24001668671856
Emdin Kapnganio water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Emgwen	0.21178348881017603, 35.26998102692736
Siwo Water Project water Project	Construction of masonry tanks, treatment works. Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Nandi Hills	0.18126599620761583, 35.210128742270605
Reberwo water Project	Solarization of the project distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.2696884203636163, 35.141582856821536
Kimogoch water Project	Solarization of the project, construction of 3km 3 inch pipeline,	Construction of intakes (surface water sources), treatment facilities,	Mosop	0.3902253000458829, 35.11005364042

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	construction of 5km distribution line and metering	transmission mains, water distribution network, tanks and last mile connections		
Kapngitung water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Mosop	0.4950924561022302, 35.0992878782234
Kapkaiton water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Nandi Hillls	0.10305257228382013, 35.31706165695329
Mataget water Project	Construction of distribution lines, last mile connectivity, metering and solarization of the project	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Chesumei	0.29026821724583945, 35.18011801343488
Cheptingting water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), transmission mains, water distribution network, tanks and last mile connections	Nandi Hillls	0.2853494327648072, 35.26479638473095
Mugundoi water Project	Construction of masonry tanks, Purchase and supply of pvc pipes,	Construction of intakes (surface water sources),	Aldai	0.1256150609181756, 35.12201355140576

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	Excavate trench, lay pipes and back fill trench, distribution lines and metering	treatment facilities, transmission mains, water distribution network, tanks and last mile connections		
Mosombor water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Aldai	0.061539232400408275, 35.09314537480795
Koyo water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Aldai	0.04868790234858724, 35.06907391936781
Kamobon water Project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Aldai	0034971120425810283, 34.74772275868334
Ngatipkong water project	Construction of masonry tanks, Purchase and supply of pvc pipes, Excavate trench, lay pipes and back fill trench, distribution lines and metering	Construction of intakes (surface water sources), treatment facilities, transmission mains, water distribution network, tanks and last mile connections	Tinderet	0.10305257228382013, 35.31706165695329

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Appendix 7: *Water resources shared across counties, including water allocation criteria and agreements.*

Table 35: Water resources shared across counties, including water allocation criteria and agreements

Water Source Type	Specific Resources	Estimated Capacity	Spatial Distribution	Shared Across Counties	Allocation Criteria / Agreements
Surface Water	Rivers: Yala, Kipkaren, Kimondi Springs: Kilibwoni, Keben Wetlands: Kipkurere, Chemoswet	River Yala: ~500 MCM/year Kipkaren: ~100 MCM/year Kimondi: ~80 MCM/year Springs: ~1–2 MCM/year each	Predominantly in western and central regions, including Nandi Hills, Mosop, and Tinderet	River Yala shared with Siaya and Kakamega counties River Kipkaren shared with Uasin Gishu County	Managed under WRA allocation plans and riparian agreements through Water Resource Users Associations (WRUAs)
Groundwater	Aquifers: Kapsabet, Nandi Hills, Tinderet Boreholes: Various across the county	Borehole yields: 3–10 m ³ /hour Total estimated storage: ~50 MCM	Widespread, with higher potential in highland zones such as Nandi Hills and Tinderet	Shared aquifers with Uasin Gishu and Kisumu counties	Abstraction permitted under WRA licensing; prioritization for domestic use and irrigation under WRA guidelines
Rainwater (Harvesting)	Roof catchments from schools and health centers Community rainwater tanks	Average rainfall: 1,200–2,000 mm/year Harvestable estimate: ~30 MCM/year	Evenly distributed, with higher potential in highland zones like Tinderet and Nandi Hills	Not applicable	Promoted through county Water, Sanitation, and Hygiene (WASH) programs and school water access initiatives
Springs and Wetlands	Springs: Keben, Chemoswet Wetlands: Kipkurere	Springs: ~1–2 MCM/year each	Concentrated in highland and escarpment areas	Some springs feed share tributaries	Managed under community bylaws and county environmental

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		<i>Wetlands: Serve as natural buffers, not direct supply sources</i>			acts; WRUA oversight in some zones
Shared Water Resources	River Kibos catchment	Capacity varies seasonally	Shared with Kisumu and Vihiga counties	Nandi, Kisumu, and Vihiga counties have committed to joint management of the River Kibos catchment, including resource pooling and increasing budget allocations for water resource management by at least 2.5%	

Appendix 8: Capacity Estimate of Existing Surface Water

Table 36: Capacity Estimate of Existing Surface Water

Catchment area	Area km ²	Rivers (Drainage basin)	Q (MCM/Yr)
Mosop	601.6 km ²	Kipkaren Nzoia Local Streams and Tributaries	100
Chesumei	432	Kingwal Local Streams and Tributaries	92.3
Nandi Hills	324.6	Mogong Local Streams and Tributaries	80.4
Tindiret	580.9	Kipkururei, Kibos, and Ainapn`getik Local Streams and Tributaries	110.15
Aldai	525	Kundos Local Streams and Tributaries	70.41
Emgwen	368.4 km ²	<i>Chebarbar</i> Local Streams and Tributaries	50.3
Totals	2,884 km ²		503.56 (MCM/Yr)

Source: Africa Groundwater Atlas Country Hydrogeology Maps, 2021

Appendix 9: Strategies for Conservation and Sustainable Management

Table 37: Strategies for Conservation and Sustainable Management

Strategy	Description	Status in Nandi County	Effectiveness	Recommendations
1. Reforestation and Agroforestry	Promotes tree planting and agroforestry on farms, degraded lands and catchment areas to improve soil stability, enhance water retention, sequester carbon, and conserve biodiversity.	- Some initiatives exist, often led by NGOs, CBOs and supported by the Kenya Forest Service (KFS) and the County Government. - Restoration projects have been piloted in degraded forests like Tinderet and Nandi South. - Adoption among farmers is growing but constrained by land scarcity, limited extension services, and access to quality seedlings.	High when well-coordinated and supported. Enhances soil fertility, reduces erosion, supports climate adaptation and restores biodiversity.	Scale up participatory reforestation programs targeting water towers and buffer zones. Enhance extension services, provide seedlings, and offer incentives for agroforestry. Promote multipurpose and indigenous species such as Grevillea and Calliandra.
2. Development of Sewer Systems and Wastewater Treatment	Construction of centralized and decentralized wastewater systems to manage domestic and	Kapsabet has partial sewer coverage. Most urban/peri-urban areas use septic tanks and pit latrines.	Very effective when implemented—significantly reduces waterborne pollution	Expand sewer infrastructure and promote constructed wetlands as decentralized treatment solutions.

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Strategy	Description	Status in Nandi County	Effectiveness	Recommendations
	industrial effluents, especially in urban areas. Nature-based solutions like constructed wetlands are encouraged.	Rivers like Kipkaren and Kingwal face pollution from untreated waste. Urban planning has not fully integrated wastewater management.	and protects aquatic ecosystems. Nature-based systems offer low-cost, low-maintenance solutions.	Integrate sanitation into spatial and water resource planning. Seek funding through public-private partnerships (PPPs).
3. Protection and Restoration of Riparian Areas	Involves safeguarding and rehabilitating riverbanks, wetlands, and springs to prevent erosion, sedimentation and habitat loss. Utilization of nature based solutions like growing of vetiver grass, bamboo and natural fencing.	- Many riparian zones are degraded due to encroachment, farming, and settlement. - Enforcement of NEMA buffer regulations is weak. Public awareness remains low.	Highly effective when enforced—filters runoff, supports biodiversity and reduces flood risks. Low-cost interventions show quick ecological benefits.	Clearly demarcate riparian buffers. Strengthen enforcement of environmental regulations. Engage communities through awareness, restoration programs, and co-management models.
4. Sustainable Farming Practices	Promotes conservation agriculture (CA), terracing, use of organic inputs, water harvesting, and integrated land management to improve soil health and resilience.	- Adoption is increasing among farmer groups, but limited among individual smallholders. - Practices like minimal tillage, mulching, and	Proven to improve productivity, reduce erosion and boost resilience to climate change. Long-term results depend on continued technical support.	Strengthen farmer training on CA and watershed-based farming. Provide incentives and demonstration plots.

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Strategy	Description	Status in Nandi County	Effectiveness	Recommendations
		cover cropping are underutilized.		Encourage rainwater harvesting and composting for soil fertility.
5. Wetland Conservation and Management	Protects wetlands (e.g., Kingwal Swamp) that serve as water filters, carbon sinks and biodiversity hotspots. Includes community engagement, eco-tourism and restoration.	- Wetlands are being drained for agriculture and encroached upon due to population pressure. - Legal protection is lacking and conservation initiatives are fragmented.	Vital nature-based solution for water regulation, biodiversity and climate mitigation. Vulnerable without long-term protection and ownership.	Gazette and zone critical wetlands. Develop community wetland management plans and alternative livelihoods (e.g., beekeeping, eco-tourism). Raise awareness through education and media campaigns.
6. Soil and Water Conservation Structures	Physical infrastructure such as terraces, check dams, contour bunds and water pans aimed at reducing soil erosion and harvesting rainwater.	- Implemented in highland areas, mainly through donor projects. - Often not maintained post-project due to lack of ownership or capacity.	Effective in reducing runoff and sedimentation when combined with vegetative measures. Longevity depends on maintenance.	Institutionalize soil conservation within catchment management plans. Train and equip community watershed committees. Combine structures with vegetation (grass strips, cover crops).

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Strategy	Description	Status in Nandi County	Effectiveness	Recommendations
7. Environmental Education and Governance	Builds awareness and institutional capacity for environmental stewardship. Promotes by-law enforcement, community mobilization and integration of traditional ecological knowledge.	- Active school clubs and some environmental committees exist. - However, traditional knowledge and enforcement of local laws are not fully leveraged.	Critical for long-term behavior change. Most successful when community-led and linked with visible improvements or benefits.	Embed environmental education in schools and ward development plans. Fund and empower ward-level environmental committees. Establish participatory monitoring and reporting mechanisms.
8. Nature-Based Tourism and Conservation Enterprises	Promotes eco-tourism and green enterprises linked to forests, escarpments, and wetlands. Encourages community conservancies and benefit-sharing from conservation.	Limited investment and marketing to date. Areas like Kingwal Swamp and Nandi Escarpment hold untapped potential for ecotourism and birdwatching.	High potential for job creation and financing conservation. Depends on community involvement, infrastructure, and access to markets.	Map key ecotourism assets and support infrastructure development. Promote Nandi as a green destination in county tourism strategies. Support formation of community-led conservancies and green enterprises.

Appendix 10: Key Climate Hazards Experienced in Nandi County

Table 38: Key Climate Hazards Experienced in Nandi County

Climate Hazard		Survey Findings
Prolonged Droughts	Extended dry spells have become more frequent and intense in the past decade leading to reduced streamflow's which further has led to the declining of groundwater levels and drying of water pans and springs; key water sources for both domestic use and livestock for the population in Nandi County.	The household survey highlights that only 48% of households reported year-round water availability, indicating the severe impact of droughts on water access. In Kaptel-Kamoiywo ward, women reported walking over 2 kilometers to fetch water during dry months, showcasing the burden of water scarcity.
Seasonal Floods	During the long and short rains, flash floods occur in low-lying areas such as parts of Tinderet and Aldai sub-counties, damaging water infrastructure, latrines, and sometimes leading to the contamination of surface water sources.	The survey data indicates that 40% of respondents reported pollution risks, with human and animal waste being a common issue, suggesting that floods can exacerbate contamination
Irregular Rainfall Patterns	Rainfall onset and cessation have become increasingly erratic, disrupting the recharge of groundwater and affecting the planning and management of water supply systems.	Shallow wells, which constitute 16% of the water sources in the county, are particularly vulnerable to irregular rainfall as their recharge depends directly on it.
Rising Temperatures	According to the Kenya Meteorological Department, average temperatures in Nandi County have risen steadily over the last two decades, increasing evapotranspiration rates and further reducing water availability, particularly in shallow wells and boreholes.	The household survey reveals that a significant number of households rely on shallow wells (106 mentions) and hand-pumped boreholes (100 mentions), making them susceptible to the impact of rising temperatures.

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Climate Hazard		Survey Findings
Landslides	In hilly areas of Nandi Hills and parts of Chesumei, intense rainfall events occasionally trigger landslides, which can damage water pipelines and restrict access to key facilities. Some parts of Nandi's highland zones, particularly in Nandi Hills and Tinderet sub-counties, have reported instances of landslides during periods of heavy rainfall. These events can destroy water infrastructure such as pipes and intakes and cause contamination of water sources through increased sedimentation and runoff.	Landslides also cause contamination of water sources through increased sedimentation and runoff.

Appendix 11: Schools water infrastructure (source, distribution, and storage)



Traditional hand pump with basic infrastructure, prone to wear and seasonal inaccessibility.



Tap mounted over drainage slab — limited hygiene and reliability without storage



School tap connected to black tank, but lacking proper drainage



Elevated twin plastic water tanks provided by donors for improved storage capacity.



Large handwashing station with multiple taps — ideal but underutilized in many schools.



Large black tank installed with step access — used for both handwashing and drinking

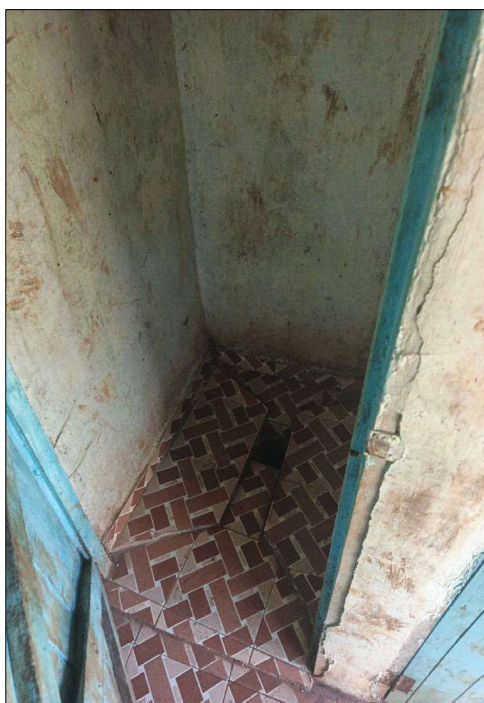


Masonry tank beside classrooms



Plastick tank in good condition

Appendix 12: sanitation infrastructure in schools including drop holes, latrines, and drainage areas.



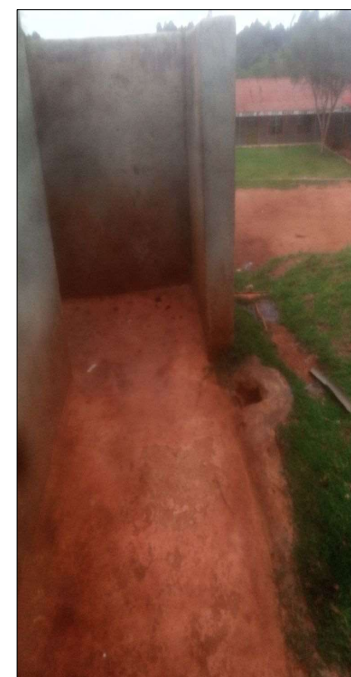
VIP latrine with tiled floor — clean interior but lacking support structures for users



Interior corridor of a toilet block: worn surfaces and poor drainage



Pit latrine with minimal finishing — risk of staining and odor.



unroofed and open toilet facility —privacy concerns.

Appendix 13: handwashing infrastructure available in schools



Makeshift handwashing setup with bucket and stick-operated flow — limited hygiene and risk of contamination



Bucket-mounted tap placed on a wooden frame — low-cost solution but limited drainage.



Communal handwashing station with multiple taps — durable structure with moderate accessibility



Stand-alone blue water dispenser with basin — present but lacks soap provision

Appendix 14: Recommended Water Tariff Structure for 2023/2024, 2024/2025 and 2025/2026

Table 39: Recommended Water Tariff Structure for 2023/2024, 2024/2025 and 2025/2026

Recommended Tariff for Kapsabet Nandi Water and Sanitation Co. Ltd. (KANAWASCO)					
Consumer Categories	Consumption Block	Current Tariff	Consumption Block	Recommended Tariff (WRA Levy 0.50cts)	Proposed Tariff WRA (Kshs 5/=) + 5% of User Charge (Conservation Levy)
	(m3)	(Kshs/M ³)	(m3)	(Kshs/M3)	(Kshs/M3)
Domestic/ Residential	0-6	80	1-6	108	118
	7-20.	90	7-20.	112	120
	21-50	100	21-50	120	125
	51-100	110	51-100	125	130
	100-300	130	101-300	135	140
	>300	150	>300	150	155
Multi- Dwelling Units	Flat Rate		Flat Rate	112	120
Government Institutions	0-6	80	-		
	7-20.	90			
	21-50	100	1-50	112	125
	51-100	110	51-100	130	135
	100-300	130	101-300	140	145
	>300	150	>300	155	160
Commercial/ Industrial	0-6	80			
	7-20.	90			
	21-50	100	1-50	112	120

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	51-100	110	51-100	130	135
	100-300	130	101-300	140	145
	>300	150	>300	155	160
Schools/ Colleges/Universities	1-600	70	1-600	112	120
	600<1200m3	80	600<1200 m3	120	125
	>1200m3	90	>1200m3	125	130
Unique Consumer Categories	Bulk Water Supply	N/A	Per m3	72	80
	Bowsing Points (Drawing point for private Tankers)	N/A	Per m3	112	120
	Water Kiosks	35	Per m3	35	50

(source: Kenya Gazette Notice No. 10547, 2023)

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Appendix 15: Water sector Investment Estimates

Table 40: Water sector Investment Estimates

Category	Description	Investment Estimate (KES)	Households Served	Funding Sources	Priority Sustainable & Climate-Resilient Features
Water Supply	Construction of mega water supply schemes, rehabilitation of water schemes, extension of small community projects, and last-mile connectivity	1,500,000,000	83,947	County Budget: 107,833,600 National Grants: 215,667,200 KRCS: 323,500,800 World Bank K-WASH: 539,168,000 PPPs and Development Partners	- Solarization of pumping schemes for energy efficiency - Rehabilitation of pipelines to reduce non-revenue water - Smart metering for efficient water use - Last-mile connectivity for equitable access
	Drilling and equipping boreholes for markets, schools, and households	888,000,000	-	County Budget, National Grants, PPPs	- Sustainable groundwater exploration - Community-managed borehole maintenance - Climate-resilient borehole designs
	Construction of yard taps and water kiosks	20,000,000	-	County Budget, Community Contributions	- Affordable access via community kiosks - Solar-powered pumping systems

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Category	Description	Investment Estimate (KES)	Households Served	Funding Sources	Priority Sustainable & Climate-Resilient Features
	Surface water harvesting (dams, pans, rock catchments, and rainwater harvesting structures)	650,000,000	-	County Budget, National Grants, Development Partners	- Climate-resilient storage systems - Riparian zone protection - Community-led rainwater harvesting
Sewered Sanitation	Kapsabet sewerage project and decentralized treatment facilities (Mosoriot, Kaptumo, Kobujoi, Maraba)	1,670,000,000	300,000	County Budget, PPPs, Development Partners	- Biogas production from sludge - Treated wastewater reuse for irrigation - Flood-proof infrastructure - Decentralized systems for urban growth
	Rehabilitation and water connection to ablution blocks in urban/market centers	15,000,000	Unknown	County Budget, Private Sector	- Sustainable maintenance models - Pay-per-use sanitation blocks

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Category	Description	Investment Estimate (KES)	Households Served	Funding Sources	Priority Sustainable & Climate-Resilient Features
Non-Sewered Sanitation	Community-Led Total Sanitation (CLTS) and training programs	75,350,000	500 villages	County Budget, NGOs, Development Partners	- Open defecation-free communities - Community-driven behavioral change - Training local artisans for sustainable facilities
	Institutional and public WASH facilities (healthcare, schools, ECDE centers)	51,900,000	Unknown	County Budget, National Grants	- Gender-specific and disability-friendly toilets - Menstrual hygiene management facilities - Climate-resilient sanitation designs
	Behavior change and communication (IEC materials)	5,000,000	50,000 individuals	County Budget, NGOs	- School-based hygiene education - Culturally tailored campaigns
	Waste management services (vehicles)	5,000,000	-	County Budget, Private Sector	- Integrated waste management systems - Recycling partnerships

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Category	Description	Investment Estimate (KES)	Households Served	Funding Sources	Priority Sustainable & Climate-Resilient Features
Water Resources Management	Catchment improvement, riverine protection, tree planting, and soil conservation	238,000,000	-	County Budget, WRA, Development Partners	- Reforestation and wetland restoration - Community-based catchment management - "One Water" integrated approach - Alternative livelihoods for sand harvesters
Policy & Reforms	WASH forum, policy development, capacity building, and community engagement	40,000,000	N/A	County Budget, Development Partners	- County WASH Forum for stakeholder coordination - County Water Policy development - Training for small water providers - Public awareness campaigns
Total	All WASH Investments	5,158,950,000	385,067+ households, 500 villages	Total: 5,158,950,000	Comprehensive focus on sustainable, inclusive, and climate-resilient WASH systems

Appendix 16: Proposed Water Supply Projects

Table 41: Proposed Water Supply Projects

Project Name	Description	Estimated Cost (KES)	Timeframe	Key Risks and Mitigation Measures
Construction of Keben Dam Mega Project	Construction of intake works, treatment plant, storage tanks, construction of gravity main and construction of distribution lines	15 billion	2026-2030	Risk: Land acquisition disputes. Mitigation: Early stakeholder engagement and legal support.
Kapsabet Urban Pipeline Extension	Extend piped water network to new residential and commercial zones.	15 billion	2025–2028	Risk: Urban sprawl outpacing service expansion. Mitigation: Phased approach and zoning coordination.
Kombe Gravity Scheme Expansion	Expansion of existing gravity-fed water system to cover underserved villages.	200 million	2025–2027	Risk: Land acquisition disputes. Mitigation: Early stakeholder engagement and legal support.
Rainwater Harvesting in Schools	Install rooftop rainwater harvesting systems in 150 schools.	120 million	2025–2026	Risk: Poor maintenance. Mitigation: Train school committees on O&M and monitoring.
Solarized Boreholes in Drought-Prone Wards	Drill and equip 30 boreholes with solar pumps in water-scarce areas.	300 million	2025–2027	Risk: Seasonal aquifer depletion. Mitigation: Conduct hydrogeological surveys and schedule abstraction.

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Project Name	Description	Estimated Cost (KES)	Timeframe	Key Risks and Mitigation Measures
Multi-use Small Dams and Water Pans	Construct 10 small dams for domestic and productive use in semi-arid areas.	350 million	2026–2029	Risk: Siltation and misuse. Mitigation: Community sensitization and catchment protection programs.
Construction 30 Mega water supply schemes	Construction of intake works, treatment plant, storage tanks, construction of gravity main and construction of distribution lines	900 million	2026–2030	Risk: Land acquisition disputes. Mitigation: Early stakeholder engagement and legal support.
Rehabilitation 60 water supply schemes	Pipeline rehabilitation, solarisation	300 million	2025–2027	Risk: Poor quality of past infrastructure, Outdated or incompatible system designs Mitigation: Conduct comprehensive technical assessments before rehabilitation - Use up-to-date designs and materials
Extend and expand 100 small water schemes	Pipeline extension and metering	300 million	2025–2027	Risk: Over-extraction from sources leading to depletion Mitigation: implement water conservation practices and limit water abstraction rates -Strengthen water source protection regulations

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Project Name	Description	Estimated Cost (KES)	Timeframe	Key Risks and Mitigation Measures
Borehole drilling for market centers and schools within the county	Drill and equip 80 boreholes with solar pumps in water-scarce areas	888 million	2025–2030	Risk: Seasonal aquifer depletion. Mitigation: Conduct hydrogeological surveys and schedule abstraction.
Construction of yard taps in counties market	Construction of 200-yard taps in Markets markets	20 million	2026-2030	Risk: Resistance from local vendors or market users due to new tariffs or water access restrictions - Vandalism of taps and infrastructure Mitigation: Conduct public sensitization campaigns before and during construction

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Table 42: Detailed Water Supply Infrastructure Investment Plan

SNO	Investment area	Key outputs	Key performance indicator	Unit	Planned Targets					Total Cost	Responsible person
					Y1	Y2	Y3	Y4	Y5		
1.	Construction of Mega water supply schemes	Constructed and completed 30 no Mega water supply schemes	No. Mega water supply schemes	No.	6	6	6	6	6	900,000,000	Director Water
2.	Expansion and rehabilitation of Kapsabet Water and Sanitation Company	Expansion and rehabilitation of Kapsabet Water and Sanitation Company	Expansion of Kapsabet Water and Sanitation Company	No	1	1	1	1	1	5,000,000,000	Director Water
3.	Construction of Keben Dam Mega Project	Construction of Keben Dam Mega Project	Construction of Keben Dam Mega Project	No	1	1	1	1	1	15,000,000,000	Director Water
4.	Rehabilitation of water schemes	Rehabilitated 60 water supply schemes	Number of Rehabilitation of water schemes	No.	6	6	6	6	6	300,000,000	Director Water
5.	Extension of small community projects and Last mile connectivity	100 small schemes extended and last mile connectivity done	No. of small schemes extended and last mile connectivity done	No	20	20	20	20	20	300,000,000	Director Water
4	Drilling of boreholes for markets	Drilled 24 boreholes for markets centers Nandi County	No. of boreholes drilled and equipped	No	5	5	5	5	4	288,000,000	Director Water
5	Drilling of boreholes for schools and households	Drilled 50 boreholes for markets centers Nandi County	No. of boreholes drilled and equipped	No.	10	10	10	10	10	600,000,000	Director Water

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SNO	Investment area	Key outputs	Key performance indicator	Unit	Planned Targets					Total Cost	Responsible person
6	Domestic water supply schemes	Construction of 200-yard taps in Markets markets	Number of yard taps constructed	No.	40	40	40	40	40	20,000,000	Director Water
7	Surface Water harvesting	Construct 40 dams/pans/rock Catchments and treatment facilities	No. of surface water Harvesting and treatment structures done	No	5	5	5	5	5	600,000,000	Director Water
8	Surface Water harvesting	Construction/installation of rainwater harvesting structures 200 no	number of completed water harvesting systems	No.	40	40	40	40	40	50,000,000	Director Water
	TOTAL									23,058,000,000	

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Appendix 17: Project details, cost estimates, and risk mitigation strategies for Sanitation and Hygiene Services Investment Plan

SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount	Responsible person
					Y1	Y2	Y3	Y4	Y5		
1	Community-led Total Sanitation	Delivering 500 villages open defecation free	500 villages delivered open defecation free	Villages	100	100	100	100	100	75,000,000	Director Public Health
2	Community-led Total Sanitation	identification and training of local artisans on improved sanitary facilities	45 identified and trained on improved sanitation	Persons	45	0	0	0	0	100,000	Director Public Health
3	Community-led Total Sanitation	Sensitization of local hardware stockists on improved sanitation facilities	50sensitized	Persons	6	0	0	0	0	50,000	Director Public Health
4	Community-led Total Sanitation	Community Health promoters' sensitization on hygiene and Sanitation and available appropriate technological options	1,502 Community Health promoters sensitized	Persons	1,502	0	0	0	0	100,000	Director Public Health
5	Provision of institutional and Public WASH facilities	Construct ablution blocks in healthcare facilities (facilities with zero)	Ablution blocks constructed in 20 Health care facilities	Ablution	4	4	4	4		4,000,000	Director Public Health

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount	Responsible person
6	Provision of institutional and Public WASH facilities	Construct 50 staff toilets in Health care facilities	50 staff toilets constructed in Health care facilities	Toilets	10	10	10	10	10	5,000,000	Director Public Health
7	Provision of institutional and Public WASH facilities	Construct gender-specific patients Sanitary facilities (Male/Female)	20 gender-specific sanitation facilities constructed in healthcare facilities	Toilets	4	4	4	4	4	2,000,000	Director Public Health
8	Provision of institutional and Public WASH facilities	Renovation of sanitation facilities in healthcare facilities	20 sanitation facilities renovated	Toilets	4	4	4	4	4	200,000	Director Public Health
9	Provision of institutional and Public WASH facilities	Provision of handwashing facilities in Health care facilities (without)	20 Health care facilities provided with Handwashing facilities	Handwashing station	4	4	4	4	4	200,000	Director Public Health
10	Provision of institutional and Public WASH facilities	Provision of handwashing facilities at the point of care	60 Health care facilities provided with Handwashing facilities at the point of care	Handwashing station	20	10	10	10	10	1,200,000	Director Public Health

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount	Responsible person
11	Provision of institutional and Public WASH facilities	Provision of handwashing facilities within 5 metres range of the toilet	18 health care facilities provided with handwashing facilities within 5 metres range of the toilet	Handwashing station	18	0	0	0	0	200,000	Director Public Health
12	Provision of institutional and Public WASH facilities	Installation of disability-friendly handwashing facilities in healthcare facilities	15 healthcare facilities provided with disability-friendly handwashing facilities	Handwashing station	15	0	0	0	0	200,000	Director Public Health
13	Provision of institutional and Public WASH facilities	Extension of pipeline and connections	36 facilities connected	Water connections	7	7	7	7	8	200,000	Director Public Health
14	Provision of institutional and Public WASH facilities	Procurement and installation of water storage tanks for healthcare facilities	20 health care facilities provided with water storage tanks	Water storage tanks	3	5	4	4	4	2,000,000	Director Public Health

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount	Responsible person
15	Provision of institutional and Public WASH facilities	Construct ablution blocks in Public primary schools and ECDE centres	Ablution blocks constructed in 10 Public primary schools and ECDE centres (15 door per school)	Ablution	2	2	2	2	2	15,000,000	Director Public Health
16	Provision of institutional and Public WASH facilities	Renovation of sanitation facilities in Public primary schools and ECDE centres	Renovation of toilets in 200 Public primary schools and ECDE centres	Toilets	40	40	40	40	40	20,000,000	Director Public Health
17	Provision of institutional and Public WASH facilities	Provision of handwashing facilities in Public primary schools and ECDE centres (without)	100 Public primary school and ECDE centres are provided with Handwashing facilities	Handwashing station	20	20	20	20	20	1,000,000	Director Public Health
18	Provision of institutional and Public WASH facilities	Provision of Menstrual Hygiene Management (MHM) services in Public primary schools	500 MHM cubicles constructed in public primary schools	Cubicles	100	100	100	100	100	500,000	Director Public Health

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount	Responsible person
20	Provision of institutional and Public WASH facilities	Roof water harvesting structure	100 Procurement and installation of water storage tanks for Public primary schools and ECDE centres	Water storage tanks	20	20	20	20	20	1,000,000	Director Public Health
22	Kapsabet Sewerage project Last Mile Project	Sewered connection to 300,000 households	800,000 sewer connections	Connections	600	600	600	600	600	10,000,000,000	Director Public Health
24	Mosoriot Decentralised Treatment Facility (DTF)	Construction of 500m3 decentralized treatment facility with septic tank	Construction of 500m3 decentralized treatment facility with septic tank	System	0	1	0	0	0	500,000,000	Director Public Health
25	Kaptumo Decentralised Treatment Facility (DTF)	Construction of 300m3 decentralized treatment facility with septic tank	Construction of 300m3 decentralized treatment facility with septic tank	System	0	0	1	0	0	250,000,000	Director Public Health
26	Kobujoi Decentralised Treatment Facility (DTF)	Construction of 250m3 decentralized treatment facility with septic tank	Construction of 250m3 decentralized treatment facility with septic tank	System	0	0	0	1	0	220,000,000	Director Public Health

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount	Responsible person
	Maraba Decentralised Treatment Facility (DTF)	Construction of 200m3 decentralized treatment facility with septic tank	Construction of 200m3 decentralized treatment facility with septic tank	System	0	0	0	0	1	200,000,000	Director Public Health
28	Provision of sanitation facilities in urban/market centres	Rehabilitation of existing ablution blocks	Number of ablution blocks rehabilitated	Number	16	12	12	12	12	5,000,000	Director Public Health
29	Provision of sanitation facilities in urban/market	Water Connection to ablution blocks in Urban/Market centres without	Number of ablution blocks connected with water	Number	30	23	20	15	12	10,000,000	Director Public Health
30	Behaviour changes and communication	Develop Hygiene and Sanitation Information Education & Communication materials (IEC) for use in schools	50,000 copies of IEC materials for Public primary schools and ECDE centres	Pieces	10,000	10,000	10,000	10,000	10,000	5,000,000	Director Public Health
31	Provision of Waste Management services	Procurement of waste management vehicles	Number of waste management vehicles acquired	Number	2	2	2	1	1	5,000,000	Director Public Health

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets	Total Amount	Responsible person
	TOTAL					11,322,950,000	

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Appendix 18: Institutional Reforms and Services Delivery Models (SDM)

Table 43: Institutional Reforms and Services Delivery Models (SDM)

	Investment Area	Key outputs	Key performance indicator	Unit	Planned Targets					Total Cost	Responsible person
					Y1	Y2	Y3	Y4	Y5		
1.	Stakeholder Coordination and Engagement	Multi-stakeholder WASH forum operationalized	Convene quarterly stakeholder meetings and Establish coordination frameworks	Number of meetings held	4	4	4	4	4	10,000,000	Director water Director Sanitation
2.	Policy Development and Institutional Strengthening	County WASH policies and action plans developed	Conduct policy review and development and Train County officials on WASH governance	Number of policies developed	1	1	0	0	0	10,000,000	Director water Director Sanitation
3.	Capacity Building and Technical Support	Small providers trained on governance and service delivery	Conduct training sessions on water management and develop financial sustainability plans for providers	Number of providers trained	10	15	20	20	19	10,000,000	Director water Director Sanitation

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4.	Community Engagement and Awareness	Public sensitization on water conservation and sanitation	Number of community meetings held	Number of Community engagement programs	6	6	6	6	6	10,000,000	Director water Director Sanitation
5.	Total									40,000,000	

Appendix 19: summary of the situational analysis of WASH from the data surveys undertaken

Table 44: summary of the situational analysis of WASH

EHS Risk Area	Specific Findings	Survey Findings Data
Water Supply and Infrastructure	Inadequate Access	Access to piped water remains low, with only 17.7% of households connected, while others rely on shallow wells (13.6%) and hand-pumped boreholes (12.8%). Additionally, nearly two-thirds of healthcare facilities lack reliable water, posing serious public health risks.
	Unreliable Access	Only 48% of households and 57% of schools have year-round water access, highlighting widespread supply inconsistencies. Meanwhile, 30% of healthcare facilities lack continuous access to their main water source, affecting service reliability.
	Water Quality Concerns	Nearly half (47%) of water sources are unprotected springs, making them highly vulnerable to contamination from waste and agrochemicals. Many healthcare facilities provide water with minimal or no treatment, increasing health risks for patients and staff.
	Infrastructure Deficiencies	Many schools rely on outdated hand pumps, taps lacking proper drainage, and aging, leaking infrastructure, all of which hinder reliable and safe water access for students and staff.
Sanitation	Inadequate Facilities	A significant 42% of healthcare facilities have only 1-2 toilets, and 46% use unisex toilets. Furthermore, a substantial 63% of these facilities lack toilets designed for accessibility for people with disabilities.
Hygiene	Lack of Handwashing Facilities	A significant 53% of households lack any handwashing facilities, while only 19.8% have handwashing stations equipped with both soap and water
Waste Management	Ineffective Systems	Waste often disposed of via open burning due to poor waste collection services.
EHS Risks	Vulnerability at Water Points	10.5% of households reported incidents of harassment or domestic violence at or related to water access points.
	Safety Risks in Schools	Vandalism and poorly maintained WASH facilities present significant safety concerns in schools.

Appendix 20: EHS Risks & Mitigation Measures

Table 45: EHS Risks & Mitigation Measures

EHS Risk Area	• Mitigation Measures
Water Supply and Infrastructure	• Expansion of piped water infrastructure prioritizing schools and healthcare facilities. • Rehabilitate and protect water sources like springs and boreholes. • Install solar-powered pumps to improve all year-round access. • Promote and support community-based water management for maintenance and accountability by offering training on the existing large percentage of community owner water resources.
Water Quality Concerns	• Enforce protection (such as native vegetation buffer) zones around water sources. • Provide water treatment kits or chlorination units at the household and community water facility levels. • Train communities on safe water storage and handling.
Infrastructure Deficiencies	• Replace traditional hand pumps and taps with durable, low-maintenance options such as solar pumps. • Install proper drainage systems. • Audit and rehabilitate old or leaking infrastructure.
Sanitation	• Construct gender-segregated and disability-accessible toilets in schools and healthcare facilities. • Establish sanitation committees to oversee cleanliness and maintenance.
Hygiene	• Distribute handwashing stations (e.g., tippy taps) with regular soap supplies to households and institutions. • Conduct hygiene promotion campaigns focusing on handwashing practices.
Waste Management	• Implement community-based solid waste collection and segregation programs. • Promote composting and recycling of wastes. • Provide support for structured waste disposal (e.g., bins, designated pits).
Vulnerability at Water Points	• Ensure water points are well-lit and in visible, secure locations. • Engage local women's groups and youth in managing access points.

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EHS Risk Area	Mitigation Measures
	Promote gender-sensitive water governance.
Safety Risks in Schools	- Secure WASH facilities with locks and fencing. - Set up school WASH clubs to monitor and maintain facilities. - Include regular repairs in school budgets and maintenance plans.

Appendix 21: Compliance and Monitoring Plan for Water and Sanitation Investments

Table 46: Compliance and Monitoring Plan for Water and Sanitation Investments

Component	Activity	Responsible Entity	Timeline	Key Deliverables	Monitoring Indicator	Applicable ESF Standard / Kenyan Law
Water Abstraction Permits	Inventory all planned and existing water sources	County WASH Team / Project Technical Team/Project Implementation Unit	Month 1–2	Water source inventory	Inventory completed and verified	Water Act 2016 (Kenya)
	Conduct water demand assessment and source yield validation	Water Resources Specialist	Month 2–3	Source assessment report	Validated yield per source	Water Act 2016, ESS1 (Assessment and Management of E&S Risks)
	Apply for water abstraction permits from WRA	Project Team with WRA Liaison	Month 3–4	WRA application submissions	# of applications submitted	Water Resources Management Rules 2007, Water Act 2016
	Obtain and maintain abstraction permits	Implementing Agency	Month 4–6 and ongoing	Valid abstraction permits	% of sources with permits	Water Act 2016, ESS1
Environmental and Social Impact Licensing	Screen projects for ESIA requirements	Environmental & Social Safeguards Team	Month 1–2	Screening Reports	% of projects screened	Environmental Management and Coordination

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Component	Activity	Responsible Entity	Timeline	Key Deliverables	Monitoring Indicator	Applicable ESF Standard / Kenyan Law
						Act (EMCA) 1999, ESS1
	Conduct ESIA and stakeholder consultations	ESIA Consultant / County Environment Office	Month 2–4	ESIA Reports, Stakeholder Reports	Number of consultations held	EMCA 1999, ESS10 (Stakeholder Engagement)
	Submit reports and obtain NEMA licenses	Lead Consultant / Project Team	Month 4–5	NEMA Licenses	# of licenses issued	EMCA EIA/EA Regulations 2003, ESS1, ESS5 (Land Acquisition), ESS6 (Biodiversity)
	Implement ESMPs and monitor compliance	Contractors / Supervision Team	Construction & Operation Phases	ESMP Implementation Reports	% of ESMP actions completed	ESS1, EMCA 1999, Workplace Health & Safety Rules 2004
Environmental, Health, and Safety (EHS) Monitoring	Develop project-specific EHS plans	EHS Specialist	Pre-construction	EHS Monitoring Plans	Number of plans completed	ESS1, ESS2 (Labor and Working Conditions)

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Component	Activity	Responsible Entity	Timeline	Key Deliverables	Monitoring Indicator	Applicable ESF Standard / Kenyan Law
	Conduct site inspections and EHS audits	EHS Officer / Supervision Consultant	Monthly / Quarterly	EHS Inspection Reports	# of inspections conducted	Occupational Safety and Health Act 2007, ESS2, ESS4 (Community Health and Safety)
	Monitor OHS performance and incident reporting	Contractors / EHS Team	Throughout project lifecycle	OHS Reports, Incident Logs	# of incidents & corrective actions	Occupational Safety and Health Act 2007, ESS2
	Environmental quality monitoring (water, noise, dust)	Environmental Officer / Laboratory Services	Construction & Operation	Monitoring Reports	% of parameters within limits	EMCA (Waste, Air, Water Regulations), ESS3 (Resource Efficiency and Pollution Prevention)
	Operate and manage a Grievance Redress Mechanism (GRM)	Grievance Redress Committee / Social Safeguards Team	Ongoing	GRM log and resolution reports	# of grievances resolved	ESS10, County Public Participation Acts

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Appendix 22: Environmental, Health and Safety Monitoring Plan

COMPONENT	OBJECTIVE	ACTIVITIES	INDICATORS / KPIS	TOOLS & METHODS	RESPONSIBLE INSTITUTIONS	FREQUENCY	EXPECTED OUTCOME
1. BASELINE DATA COLLECTION	Establish baseline conditions prior to implementation	- Consolidate existing data (WASH, Health, Hydro) - Map institutions and vulnerable areas	- % of coverage in baseline datasets - # of institutions mapped	Household surveys, school WASH assessments, facility audits, hydro-mapping	Water Dept., Public Health, Education Dept., GIS Unit	Once (project start)	Data-informed planning and M&E
2. ESIA AND LICENSING COMPLIANCE	Ensure environmental compliance for all projects	- Conduct ESIA's and obtain NEMA licenses - Permit abstraction points via WRA	- % of sub-projects with ESIA approval - # of licensed abstraction points	NEMA online portal, WRA licensing systems, ESIA reports	Water Dept., NEMA, WRA, Contractors	Quarterly	Legal compliance and reduced environmental risk
3. ESMP AND OHSP COMPLIANCE	Monitor adherence to E&S	- Implement ESMP/OHSP for all works	- % of compliant projects - # of OHS incidents	Inspection checklists, OHS logbooks,	ESST, Public Health Officers, Contractors	Monthly/Quarterly	Safe implementation and improved

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COMPONENT	OBJECTIVE	ACTIVITIES	INDICATORS / KPIS	TOOLS & METHODS	RESPONSIBLE INSTITUTIONS	FREQUENCY	EXPECTED OUTCOME
	safeguards and worker safety	- Conduct site inspections and audits	reported/resolved	contractor reports, third-party audits			safeguard outcomes
4. INSTITUTIONAL WATER QUALITY MONITORING	Ensure safe water quality in schools, health centers, and communities	-Conduct periodic testing of water points -Compare with KEBS/WHO standards	- % of compliant samples - # of corrective actions taken	Field testing kits, lab analysis, GIS-tagged sampling data	Public Health Dept., KEBS, Water Operators	Quarterly	Reduced waterborne diseases and user trust
5. OCCUPATIONAL HEALTH & SAFETY	Promote health and safety of workers and community	- Train workers on OHS - Provide PPE and signage - Track incidents	- # of OHS trainings - % of incidents reported & mitigated	Safety drills, training attendance, OHS dashboards	Contractors, Public Health, ESST	Monthly & Post-incident	Fewer injuries and improved site culture
6. DIGITAL MONITORING & GIS INTEGRATION	Leverage technology for real-time oversight	- Deploy GIS-enabled dashboards -Use mobile	- % of sites on GIS - # of mobile	GIS platform, KoboToolbox, ODK, GPS tracking	ESST, ICT Unit, M&E Officers	Real-time / Continuous	Evidence-based decision making and

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COMPONENT	OBJECTIVE	ACTIVITIES	INDICATORS / KPIS	TOOLS & METHODS	RESPONSIBLE INSTITUTIONS	FREQUENCY	EXPECTED OUTCOME
		tools for data collection	reports submitted				faster response
7. MULTI-STAKEHOLDER OVERSIGHT	Enhance coordination and local engagement	- Joint inspections with NEMA, WRA, WASH Committees - Capacity building of ESST	- # of joint monitoring visits - # of trainings held	Field inspection reports, committee minutes, stakeholder feedback tools	Water Dept., NEMA, WRA, Community WASH Committees	Bi-Annual	Inclusive governance and stronger accountability
8. EHS PERFORMANCE REPORTING	Foster transparency and adaptive governance	Compile EHS reports for County Assembly, NEMA, Donors - Share feedback with implementers	- # of reports submitted - % of recommendations implemented	Bi-annual EHS reports, feedback logs, action matrices	Water Dept., County Assembly, Donors	Bi-Annual	Improved compliance, funding confidence, learning loops

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Appendix 23: Water Supply Infrastructure Investments Implementation Plan

Table 47: Water Supply Infrastructure Investments Implementation Plan

SNO	Investment area	Key outputs	Key performance	Unit	Planned Targets					Total Cost
					Y1	Y2	Y3	Y4	Y5	
6.	Construction of Mega water supply schemes	Constructed and completed 30 no Mega water supply schemes	No. Mega water supply schemes	No.	6	6	6	6	6	900,000,000
7.	Expansion and rehabilitation of Kapsabet Water and Sanitation Company	Expansion and rehabilitation of Kapsabet Water and Sanitation Company	Expanded Kapsabet Water and Sanitation Company	No	1					5,000,000,000
8.	Construction of Keben Dam Mega Project	Construction of Keben Dam Mega Project	Construction of Keben Dam Mega Project	No	1					15,000,000,000
9.	Rehabilitation of water schemes	Rehabilitated 60 water supply schemes	Number of Rehabilitation of water schemes	No.	6	6	6	6	6	300,000,000
10.	Extension of small community projects and Last mile connectivity	100 small schemes extended and last mile connectivity done	No. of small schemes extended and last mile connectivity done	No	20	20	20	20	20	300,000,000
4	Drilling of boreholes for markets	Drilled 24 boreholes for markets centers Nandi County	No. of boreholes drilled and equipped	No	5	5	5	5	4	288,000,000

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SNO	Investment area	Key outputs	Key performance	Unit	Planned Targets					Total Cost
5	Drilling of boreholes for schools and households	Drilled 50 boreholes for markets centers Nandi County	No. of boreholes drilled and equipped	No.	10	10	10	10	10	600,000,000
6	Domestic water supply schemes	Construction of 200-yard taps in Markets markets	Number of yard taps constructed	No.	40	40	40	40	40	20,000,000
7	Surface Water harvesting	Construct 40 dams/pans/rock Catchments and treatment facilities	No. of surface water Harvesting and treatment structures done	Number	5	5	5	5	5	600,000,000
8	Surface Water harvesting	Construction/installation of rainwater harvesting structures 200 no	number of completed water harvesting systems	No.	40	40	40	40	40	50,000,000
	TOTAL									23,058,000,000

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Table 48: Sanitation and Hygiene Services Investments Implementation Plan

SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount
					Y1	Y2	Y3	Y4	Y5	
1	Community-led Total Sanitation	Delivering 500 villages open defecation free	500 villages delivered open defecation free	Villages	100	100	100	100	100	75,000,000
2	Community-led Total Sanitation	Identification and training of local artisans on improved sanitary facilities	45 identified and trained on improved sanitation	Persons	45	0	0	0	0	100,000
3	Community-led Total Sanitation	Sensitization of local hardware stockists on improved sanitation facilities	50sensitized	Persons	6	0	0	0	0	50,000
4	Community-led Total Sanitation	Community Health promoters' sensitization on hygiene and Sanitation and available appropriate technological options	1,520 Community Health promoters sensitized	Persons	1,520	0	0	0	0	100,000

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount
5	Provision of institutional and Public WASH facilities	Construct ablution blocks in healthcare facilities (facilities with zero)	Ablution blocks constructed in 20 Health care facilities	Ablution	4	4	4	4		4,000,000
6	Provision of institutional and Public WASH facilities	Construct 50 staff toilets in Health care facilities	50 staff toilets constructed in Health care facilities	Toilets	10	10	10	10	10	5,000,000
7	Provision of institutional and Public WASH facilities	Construct gender-specific patients Sanitary facilities (Male/Female)	20 gender-specific sanitation facilities constructed in healthcare facilities	Toilets	4	4	4	4	4	2,000,000
8	Provision of institutional and Public WASH facilities	Renovation of sanitation facilities in healthcare facilities	20 sanitation facilities renovated	Toilets	4	4	4	4	4	200,000
9	Provision of institutional and Public WASH facilities	Provision of handwashing facilities in Health care facilities (without)	20 Health care facilities provided with Handwashing facilities	Handwashing station	4	4	4	4	4	200,000
10	Provision of institutional and Public WASH facilities	Provision of handwashing facilities at the point of care	60 Health care facilities provided with Handwashing facilities at the point of care	Handwashing station	20	10	10	10	10	1,200,000

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount
11	Provision of institutional and Public WASH facilities	Provision of handwashing facilities within 5 metres range of the toilet	18 health care facilities provided with handwashing facilities within 5 metres range of the toilet	Handwashing station	18	0	0	0	0	200,000
12	Provision of institutional and Public WASH facilities	Installation of disability-friendly handwashing facilities in healthcare facilities	15 healthcare facilities provided with disability-friendly handwashing facilities	Handwashing station	15	0	0	0	0	200,000
13	Provision of institutional and Public WASH facilities	Extension of pipeline and connections	36 facilities connected	Water connections	7	7	7	7	8	200,000
14	Provision of institutional and Public WASH facilities	Procurement and installation of water storage tanks for healthcare facilities	20 health care facilities provided with water storage tanks	Water storage tanks	3	5	4	4	4	2,000,000
15	Provision of institutional and Public WASH facilities	Construct ablution blocks in Public primary schools and ECDE centres	Ablution blocks constructed in 10 Public primary schools and ECDE centres (15 door per school)	Ablution	2	2	2	2	2	15,000,000

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount
16	Provision of institutional and Public WASH facilities	Renovation of sanitation facilities in Public primary schools and ECDE centres	Renovation of toilets in 200 Public primary schools and ECDE centres	Toilets	40	40	40	40	40	20,000,000
17	Provision of institutional and Public WASH facilities	Provision of handwashing facilities in Public primary schools and ECDE centres (without)	100 Public primary school and ECDE centres are provided with Handwashing facilities	Handwashing station	20	20	20	20	20	1,000,000
18	Provision of institutional and Public WASH facilities	Provision of Menstrual Hygiene Management (MHM) services in Public primary schools	500 MHM cubicles constructed in public primary schools	Cubicles	100	100	100	100	100	500,000
20	Provision of institutional and Public WASH facilities	Roof water harvesting structure	100 Procurement and installation of water storage tanks for Public primary schools and ECDE centres	Water storage tanks	20	20	20	20	20	1,000,000
22	Kapsabet Sewerage project Last Mile Project	Sewered connection to 300,000 households	800,000 sewer connections	Connections	600	600	600	600	600	10,000,000,000
24	Mosoriot Decentralised Treatment Facility (DTF)	Construction of 500m3 decentralized treatment facility with septic tank	Construction of 500m3 decentralized treatment facility with septic tank	System	0	1	0	0	0	500,000,000

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount
25	Kaptumo Decentralised Treatment Facility (DTF)	Construction of 300m3 decentralized treatment facility with septic tank	Construction of 300m3 decentralized treatment facility with septic tank	System	0	0	1	0	0	250,000,000
26	Kobujoi Decentralised Treatment Facility (DTF)	Construction of 250m3 decentralized treatment facility with septic tank	Construction of 250m3 decentralized treatment facility with septic tank	System	0	0	0	1	0	220,000,000
	Maraba Decentralised Treatment Facility (DTF)	Construction of 200m3 decentralized treatment facility with septic tank	Construction of 200m3 decentralized treatment facility with septic tank	System	0	0	0	0	1	200,000,000
28	Provision of sanitation facilities in urban/market centres	Rehabilitation of existing ablution blocks	Number of ablution blocks rehabilitated	Number	16	12	12	12	12	5,000,000
29	Provision of sanitation facilities in urban/market	Water Connection to ablution blocks in Urban/Market centres without	Number of ablution blocks connected with water	Number	30	23	20	15	12	10,000,000

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SN O	Investment area	Key outputs	Key Performance Indicator	Unit	Planned Targets					Total Amount
30	Behaviour changes and communication	Develop Hygiene and Sanitation Information Education & Communication materials (IEC) for use in schools	50,000 copies of IEC materials for Public primary schools and ECDE centres	Pieces	10,000	10,000	10,000	10,000	10,000	5,000,000
31	Provision of Waste Management services	Procurement of waste management vehicles	Number of waste management vehicles acquired	Number	2	2	2	1	1	5,000,000
	TOTAL									11,322,950,000

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Appendix 24: Water Resources Management and Catchment Conservation Implementation Plan

Table 49: Water Resources Management and Catchment Conservation Implementation Plan

SNO	Investment Area	Key outputs	Key performance indicator	Unit	Planned Targets					Total Amount
					Y1	Y2	Y3	Y4	Y5	
1.	Water Catchment improvement	Sensitization and Mobilization	Number of meetings	No.	6	6	6	6	6	60,000
2.	Water Catchment improvement	Tree Planting	Number of tree seedlings planted	No.	20,000	20,000	20,000	20,000	20,000	100,000,000
3.	Water Catchment improvement	Protection through Fencing	Number of KM fenced	KM	10	10	10	10	10	2,000,000
4.	Water Catchment improvement	Catchment Protection Committees	No. of committees formed	No.	3	3	3	3	3	50,000
5.	Water Catchment improvement	Participatory Forest Management Plan (PFMPs)	Number of PFMPs developed		3	3	3	3	3	100,000
6.	Water Catchment improvement	Aerial Surveillance	Survey reports	No.	1	0	0	0	1	500,000
7.	Water Catchment improvement	Tree Nurseries	Number of tree nurseries established	No.	3	3	0	0	0	10,000,000

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SNO	Investment Area	Key outputs	Key performance indicator	Unit	Planned Targets					Total Amount
8.	Riverine Protection	Sanitization and mobilization	Number of meetings	No.	5	5	5	5	5	5,000,000
9.	Riverine Protection	Mapping and marking of riparian areas	Distance mapped	KM	20	20	20	20	20	5,000,000
10.	Riverine Protection	Tree planting	Number of tree seedlings planted	No.	2,000	2,000	2,000	2,000	2,000	100,000,000
11.	Riverine Protection	Alternative sources of livelihood for sand harvesters	Number of households supported	No.	100	100	100	100	100	10,000,000
12.	Riverine Protection	Soil conservation infrastructures	Length of soil conservation structures	No.	10	10	10	10	10	5,000,000
13.	TOTAL									238,160,000

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Table 50: Water Resources Management and Catchment Conservation Implementation Plan

SNO	Investment Area	Key outputs	Key performance indicator	Unit	Planned Targets					Total Cost
					Y1	Y2	Y3	Y4	Y5	
1.	Stakeholder Coordination and Engagement	Multi-stakeholder WASH forum operationalized	Convene quarterly stakeholder meetings and Establish coordination frameworks	Number of meetings held	4	4	4	4	4	10,000,000
2.	Policy Development and Institutional Strengthening	County WASH policies and action plans developed	Conduct policy review and development and Train County officials on WASH governance	Number of policies developed	1	1	0	0	0	10,000,000
3.	Capacity Building and Technical Support	Small providers trained on governance and service delivery	Conduct training sessions on water management and develop financial sustainability plans for providers	Number of providers trained	10	15	20	20	19	10,000,000
4.	Community Engagement and Awareness	Public sensitization on water conservation and sanitation	Number of community meetings held	Number of Community engagement programs	6	6	6	6	6	10,000,000
	Total									40,000,000

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S/No	Objective	Strategy	Responsibility	Resource Requirements KES Millions	2025 -26	2026 -27	2027 -28	2028 -29	2029 -30
1	Water Supply Infrastructure Investments Implementation Plan	Supply of Domestic Water	CG/MoWSI/NIA/ PARTNERS/COMMUNITY	3,058	611.6	611.6	611.6	611.6	611.6
2	Sanitation and Hygiene Services Investments Implementation Plan	Provision of sanitation service	CG/MoWSI/WSP/ PARTNERS/COMMUNITY	2,643	528.6	528.6	528.6	528.6	528.6
3	Water Resources Management and Catchment Conservation Implementation Plan	Water Resources Management and Catchment Conservation Implementation Plan	CG/MOWSI/WSP/ PARTNERS/COMMUNITY	238	47.6	47.6	47.6	47.6	47.6
4	Institutional Reforms and Services Delivery Models (SDM)	Institutional Reforms and Services Delivery Models (SDM).	CG/MoWSI/WSP/ PARTNERS/COMMUNITY	40	8	8	8	8	8