# REPUBLIC OF KENYA

# The Garissa County Water Sanitation Strategy and Investment Plan (CWSS&IP)

*Towards sustainable, Adequate, quality water and sanitation services*

# Preamble

Water is life, and in Garissa County, water is also the foundation of livelihoods, health, dignity, and resilience. The people of Garissa face unique challenges due to our county's arid and semi-arid climate, growing population, climate shocks, and socio-economic pressures, including the responsibility of hosting large refugee populations. Recognizing these realities, the Garissa County Water Sanitation Strategy and Investment Plan (CWSS&IP) has been developed as a guiding blueprint to ensure that every resident, in both urban and rural areas, has access to safe, affordable, and reliable water, sanitation, and hygiene (WASH) services.

This strategy is not just a technical document; it is a commitment. It is a promise from the County Government of Garissa to prioritize water and sanitation as key drivers of our development agenda — a foundation for improved health, enhanced education, thriving agriculture, strengthened pastoral livelihoods, climate resilience, and inclusive economic growth.

The CWSS&IP reflects the collective input of our citizens, community organizations, water service providers, national agencies, and development partners. It aligns with Kenya's Vision 2030, the Water Act (2016), and Sustainable Development Goal 6, and places Garissa on the path toward achieving universal access to water and sanitation services by 2030.

As the County Executive Committee Member responsible for Water, Environment, and Natural Resources, I proudly endorse this plan as the official framework to guide investments, reforms, and coordinated actions in Garissa's water and sanitation sector. The strategy sets clear priorities: protecting and conserving water resources, expanding equitable and climate-resilient water and sanitation infrastructure, promoting innovation and technology, and strengthening the governance and accountability mechanisms that ensure services are inclusive, efficient, and sustainable.

The success of this plan will depend on our collective efforts — from government departments and development partners to Water User Associations, private sector actors, and, most importantly, the people of Garissa County. Together, we can secure a water-smart future that leaves no one behind.

Let us move forward with determination, unity, and commitment, ensuring that water and sanitation truly become enablers of dignity, health, and prosperity for every household and community across Garissa.

Signed,



Ahmed Mohamed Ibrahim
County Executive Committee Member (Water, Environment, Natural Resources & Climate Change)
**GARISSA COUNTY**

Date: 12th May 2025

# Executive Summary

The Garissa County Water Sanitation Strategy and Investment Plan (CWSS&IP) presents a comprehensive roadmap for delivering sustainable, adequate, and high-quality water and sanitation services to all residents of Garissa County. Located in Kenya's arid and semi-arid northeast, Garissa spans over 44,000 square kilometers and is home to more than 840,000 people, including one of the world's largest refugee populations in Dadaab. The county faces complex challenges—low and erratic rainfall, frequent droughts and floods, rapid population growth, high poverty levels, and weak infrastructure—that have historically constrained access to safe water, sanitation, and hygiene (WASH) services. The CWSS&IP is designed to address these issues head-on, positioning water and sanitation as drivers of resilience, economic development, and social well-being.

Aligned with national and global frameworks such as Kenya's Vision 2030, the Water Act (2016), the National Water and Sanitation Investment Plan (NAWASIP), and the Sustainable Development Goals (particularly SDG 6 on clean water and sanitation), the plan sets an ambitious goal of achieving universal access to safe water and sanitation by 2030. To achieve this, the strategy prioritizes five interconnected areas: protecting and improving water resources; expanding safe, reliable, and affordable water supply infrastructure; ensuring adequate, climate-resilient sanitation and hygiene services; strengthening governance, accountability, and community participation; and integrating climate adaptation and disaster risk reduction across all WASH services.

Core interventions include rehabilitating and solarizing boreholes to ensure reliable year-round supply; constructing rainwater harvesting systems in schools, health centers, and government facilities; rehabilitating and expanding water pans and small-scale irrigation systems; and piloting desalination technologies to address groundwater salinity in affected areas. The strategy also addresses the county's acute sanitation gaps by promoting inclusive, gender-sensitive sanitation solutions in households, schools, public institutions, and informal settlements, alongside the development of fecal sludge management systems to improve environmental health. Importantly, the plan emphasizes governance reforms: strengthening the capacity of Water User Associations (WUAs), expanding the roles of public utilities like GARUWASCO and GAWASCO, formalizing public-private partnerships (PPPs), and enhancing data collection, monitoring, and evaluation to ensure accountability and evidence-based decision-making.

Recognizing the disproportionate impacts of climate change and water scarcity on women, children, pastoralist communities, and displaced populations, the CWSS&IP integrates gender equity and social inclusion throughout its design. It seeks to address both structural inequalities and the emerging challenges of climate-induced migration, urbanization, and resource competition. Partnerships with national agencies, development partners such as UNHCR, UNICEF, IRK, SCI, PGI, USAID, and the Water Sector Trust Fund (WSTF), and local private sector actors will be critical to mobilize the financial, technical, and institutional resources required to implement this ambitious agenda.

By executing the CWSS&IP, Garissa County aims to unlock the full economic potential of its water resources, strengthen livelihoods in agriculture and livestock, improve public health outcomes, and build resilience against climate shocks. Ultimately, this strategy lays the foundation for a water-secure, inclusive, and prosperous future for all the people of Garissa County.

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## Acronyms

| Acronym | Full Meaning |
|---|---|
| ADP | Annual Development Plan |
| ASAL | Arid and Semi-Arid Lands |
| BCC | Behavior Change Communication |
| CBO | Community-Based Organization |
| CCCAP | County Climate Change Action Plan |
| CCCCF | County Climate Change Fund |
| CECM | County Executive Committee Member |
| CIDP | County Integrated Development Plan |
| CIMES | County Integrated Monitoring and Evaluation System |
| CRA | Climate Risk Assessment |
| CSO | Civil Society Organization |
| CWSS&IP | County Water, Sanitation and Hygiene Strategy and Investment Plan |
| ESIA | Environmental and Social Impact Assessment |
| ESMF | Environmental and Social Management Framework |
| FPIC | Free, Prior, and Informed Consent |
| FSM | Fecal Sludge Management |
| FSTP | Fecal Sludge Treatment Plant |
| GARUWASCO | Garissa Rural Water and Sanitation Company |
| GAWASCO | Garissa Water and Sewerage Company |
| GISEDP | Garissa Integrated Socio-Economic Development Plan |
| GRM | Grievance Redress Mechanism |
| HCF | Health Care Facility |
| IEC | Information, Education and Communication |
| JMP | Joint Monitoring Programme (WHO/UNICEF) |
| KNBS | Kenya National Bureau of Statistics |
| KESH | Kenya Environmental Sanitation and Hygiene Policy |

| Acronym | Full Meaning |
|---|---|
| M&E | Monitoring and Evaluation |
| MoWSI | Ministry of Water, Sanitation and Irrigation |
| MHM | Menstrual Hygiene Management |
| MUS | Multiple-Use Water Systems |
| NAWASIP | National Water and Sanitation Investment Plan |
| NCCAP | National Climate Change Action Plan |
| NDMA | National Drought Management Authority |
| NEMA | National Environment Management Authority |
| NIMES | National Integrated Monitoring and Evaluation System |
| NGO | Non-Governmental Organization |
| NRW | Non-Revenue Water |
| O&M | Operations and Maintenance |
| OBA | Output-Based Aid |
| ODF | Open Defecation Free |
| PPP | Public-Private Partnership |
| RBF | Results-Based Financing |
| SACCO | Savings and Credit Cooperative Organization |
| SDG | Sustainable Development Goal |
| SME | Small and Medium Enterprise |
| STAWI | Sustainable, Transformational, Accessible Water Interventions |
| UNHCR | United Nations High Commissioner for Refugees |
| UNICEF | United Nations Children's Fund |
| USAID | United States Agency for International Development |
| WASH | Water, Sanitation, and Hygiene |
| WASREB | Water Services Regulatory Board |
| WRA | Water Resources Authority |

| Acronym | Full Meaning |
|---|---|
| WSP | Water Service Provider |
| WSTF | Water Sector Trust Fund |
| WUA | Water User Association |
| WiNS | WASH in Schools |
| WiHCF | WASH in Health Care Facilities |



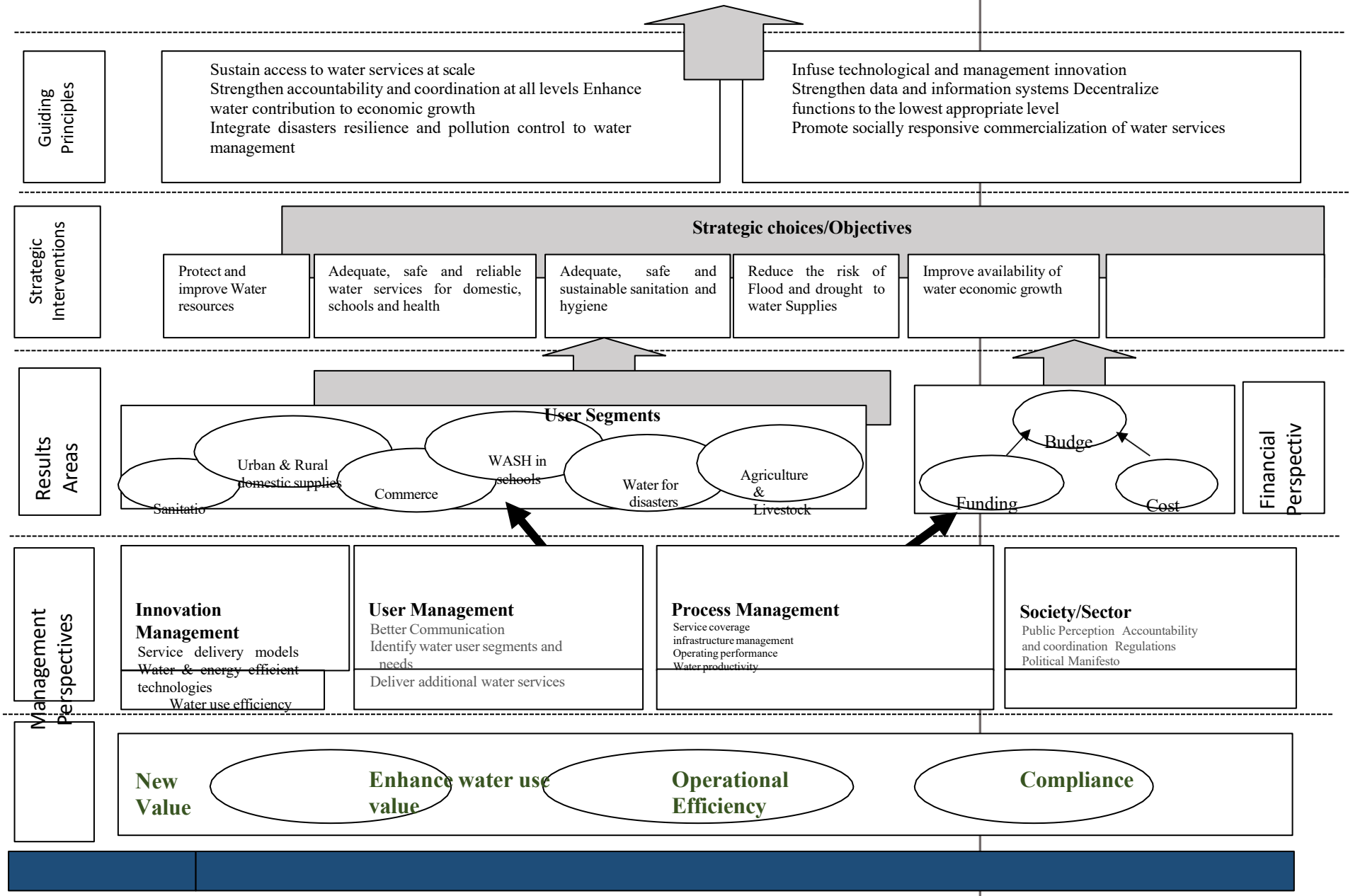


**Vision**: *Sustainable, adequate and quality water & Sanitation for socio-economic well-being of Garissa County*

**Mission**: *To facilitate management and access to sustainable and equitable water resources, water services & sanitation services*

# GARISSA COUNTY WATER SANITATION STRATEGY AND INVESTMENT PLAN MAP

Vision: *Sustainable, adequate, and quality water & Sanitation for socio-economic well-being*



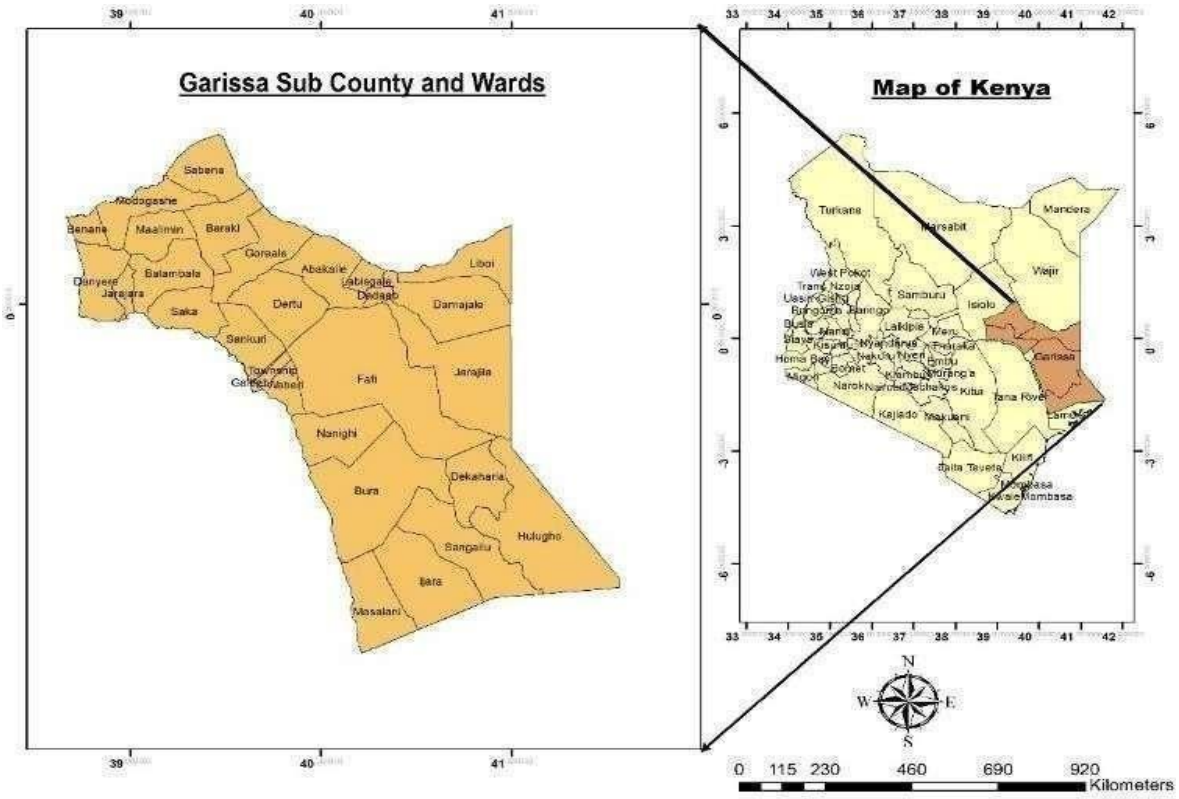
| Capacity & | People | Technology | Culture |
| --- | --- | --- | --- |

# SECTION 1: COUNTY SOCIO-ECONOMIC AND POLITICAL CONTEXT

## 1.1 Socio-Political and Administrative Background

### *1.1.1 Overview of the county's geographic, demographic, and economic context*

Garissa County is located in the northeastern region of Kenya, bordering Wajir, Tana River, Isiolo, and Lamu counties, and sharing an international boundary with Somalia. It covers approximately 44,174.1 square kilometers, making it one of Kenya's largest counties by land area. Administratively, Garissa is divided into 7 sub-counties—Garissa Township, Balambala, Dadaab, Fafi, Hulugho, Ijara, and Lagdera—comprising 30 wards. According to the 2019 Kenya Population and Housing Census, Garissa had a population of 841,353 people, with 52% male and 48% female, and a significant proportion of the population (over 60%) residing in rural and semi-arid settlements. The county hosts one of the world's largest refugee populations in Dadaab, significantly impacting public service demand and infrastructure needs.




Economically, Garissa County's growth remains heavily dependent on the livestock sector, informal trade, and public sector employment. Based on the 2022 Gross County Product (GCP) report by the Kenya National Bureau of Statistics (KNBS), Garissa contributed approximately

KES 66.7 billion to the national GDP, representing about 0.6% of Kenya's total GCP. The GCP per capita stood at KES 79,273, which is below the national average, indicating low income levels and limited formal economic diversification. The urbanization rate is slowly rising, with Garissa Township emerging as a key urban growth node, alongside Dadaab and Modogashe. Growth is also influenced by public investment in infrastructure, cross-border trade, and humanitarian interventions, although insecurity and climate shocks often slow progress.

Garissa's demographic and climatic trends have direct implications for water and sanitation planning. The county has a high population growth rate of 3.1%, driven by both natural growth and climate-induced migration.

As per the 2019 Kenya Population and Housing Census, Garissa County's population distribution by sub-county is as follows:

| Sub-County | Population | No. of Divisions | No. of Locations | No. of Sub locations | Land Area (km²) | wards | Population Density (per km²) |
|---|---|---|---|---|---|---|---|
| Balambala | 32,257 | 4 | 15 | 23 | 3,684 | 5 | 8.8 |
| Dadaab | 185,252 | 2 | 9 | 9 | 6,415 | 6 | 28.9 |
| Fafi | 134,030 | 1 | 3 | 5 | 15,050 | 5 | 8.9 |
| Garissa | 163,914 | 3 | 15 | 25 | 3,318 | 4 | 49.4 |
| Hulugho | 133,984 | 3 | 13 | 21 | 7,737 | 1 | 17.3 |
| Ijara | 141,591 | 5 | 17 | 21 | 2,453 | 3 | 57.7 |
| Lagdera | 50,315 | 3 | 12 | 19 | 6,096 | 6 | 8.3 |
| Total | 841,343 | 27 | 84 | 123 | 44,753 | 30 | 18.8 |

Population projections

| Constituency | 2019 (Census) | | | 2022 (Projections) | | | 2025 (Projections) | | | 2027 (Projections) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| Balambala | 20,277 | 11,979 | 32,257 | 19,772 | 14,335 | 34,701 | 21228 | 15365 | 37224 | 22156 | 16023 | 38835 |
| Fafi | 72,617 | 61,413 | 134,040 | 70,807 | 73,493 | 144,194 | 76024 | 78771 | 154681 | 79347 | 82143 | 161373 |
| Dadaab | 99,059 | 86,185 | 185,252 | 96,590 | 103,138 | 199,285 | 103706 | 110544 | 213780 | 108240 | 115277 | 223028 |
| Lagdera | 25,023 | 25,291 | 50,315 | 24399 | 30266 | 54126 | 26197 | 32439 | 58063 | 27342 | 33828 | 60575 |
| Ijara | 80,458 | 61,129 | 141,591 | 78452 | 73154 | 152317 | 84233 | 78406 | 163395 | 87915 | 81763 | 170464 |
| Township | 83,460 | 80,449 | 163,914 | 81379 | 96274 | 176331 | 87376 | 103187 | 189156 | 91195 | 107605 | 197339 |
| Hulugho | 78,081 | 55,898 | 133,984 | 76135 | 66894 | 144134 | 81744 | 71697 | 154617 | 85318 | 74767 | 161306 |
| Total | 458,975 | 382,344 | 841,353 | 447,533 | 457,554 | 905,087 | 480,508 | 490,409 | 970,917 | 501,515 | 511,406 | 1,012,920 |

These places pressure on already strained WASH services, especially in urban settlements and refugee-hosting areas. Climatically, the county experiences arid and semi-arid conditions, with annual rainfall ranging from 250 to 700 mm, distributed unevenly and becoming increasingly erratic due to climate change. Droughts and floods occur frequently, affecting groundwater recharge, surface water reliability, and the integrity of water, sanitation, and hygiene (WASH) infrastructure. The rising temperatures, recurrent water shortages, and population mobility are expected to escalate demand for climate-resilient water and sanitation services, particularly in informal settlements and livestock corridors.

### *1.1.2 Governance structures roles of county leadership in water and sanitation*

Garissa's county government is primarily responsible for water and sanitation service provision under Kenya's devolved governance framework, as outlined in the Constitution (2010) and the Water Act (2016). The Department of Water, Sanitation, Environment, and Natural Resources leads planning, budgeting, infrastructure development, and regulation of water services across the county. The County Executive Committee Member (CECM) for water oversees policy implementation, while the Directorate of Water Services manages operations, monitors Water Service Providers (WSPs), and supports community-based schemes. On climate resilience, the department works in collaboration with the County Directorate of Climate Change, which coordinates adaptation planning, integrates resilience into WASH programming, and manages the County Climate Change Fund (CCCF) to finance local-level climate-resilient infrastructure projects, including water harvesting, solarization, and drought-proof technologies.

**National Government Team**

National Government (

MoWI, NWSB, WRA, WASREB, WSTF&NDMA

**County Oversight Team**

**Garissa County Government**

**County Intergovernmental forum**

**County Executive Member (water, environment & natural resources)**

**County Legislative Assembly**

**Services of Water**

**Water Sector Monitoring & Evaluation Team**

County sector (education, publi health disaster & irrigation)

**Water Sector Monitoring Committee**

County Strategy Financing and resource mobilization unit

County Interagency coordinating Unit

**Water Sector Strategy implementers & service Providers**

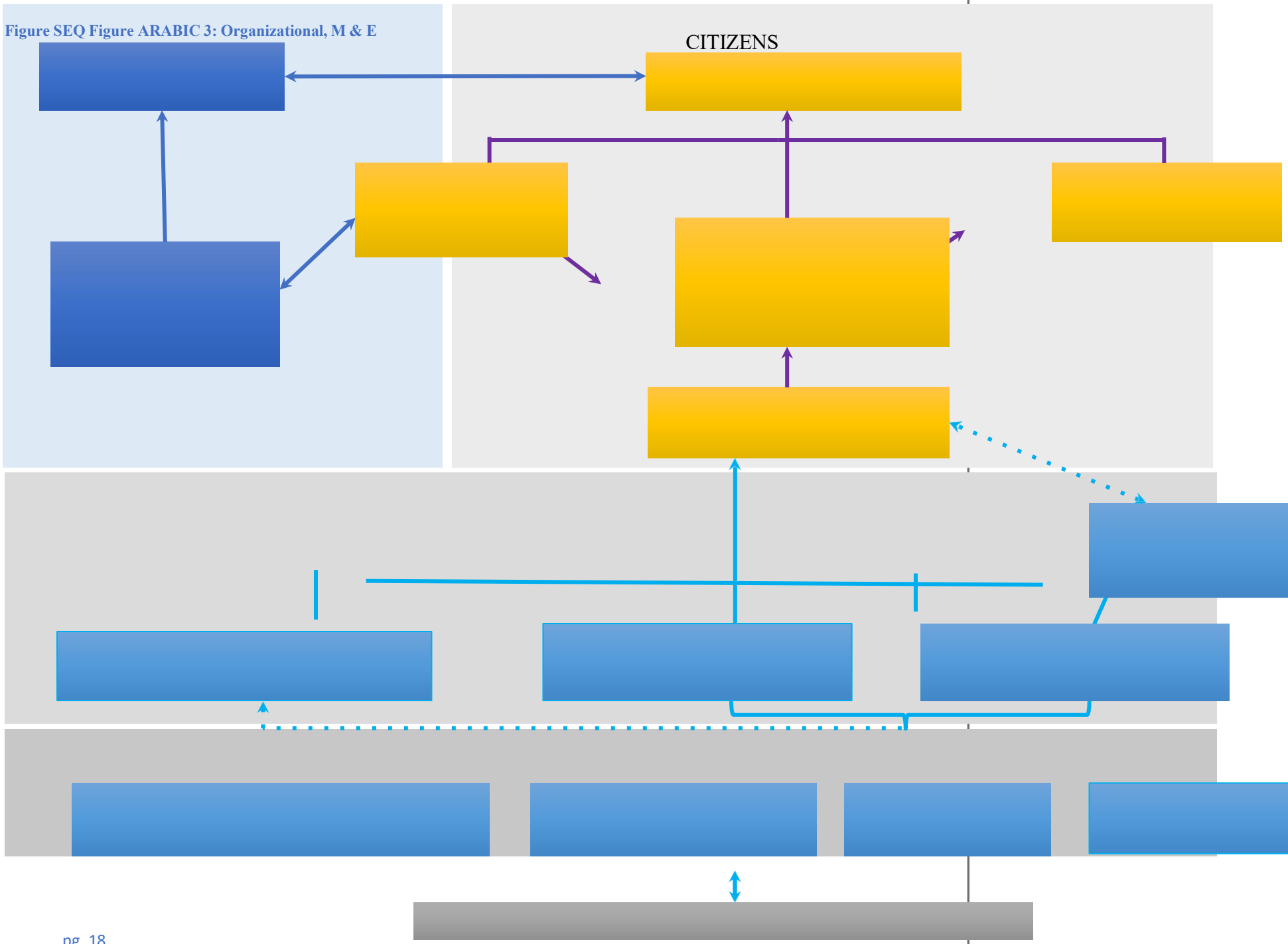
Decentralised County water service delivery units (sub-county, wards, villages)

CSOs (NGO, FBO, CBO, etc) service providers

Private Sector Service providers

Institutions (education, health

Figure SEQ Figure ARABIC 3: Organizational, M & E



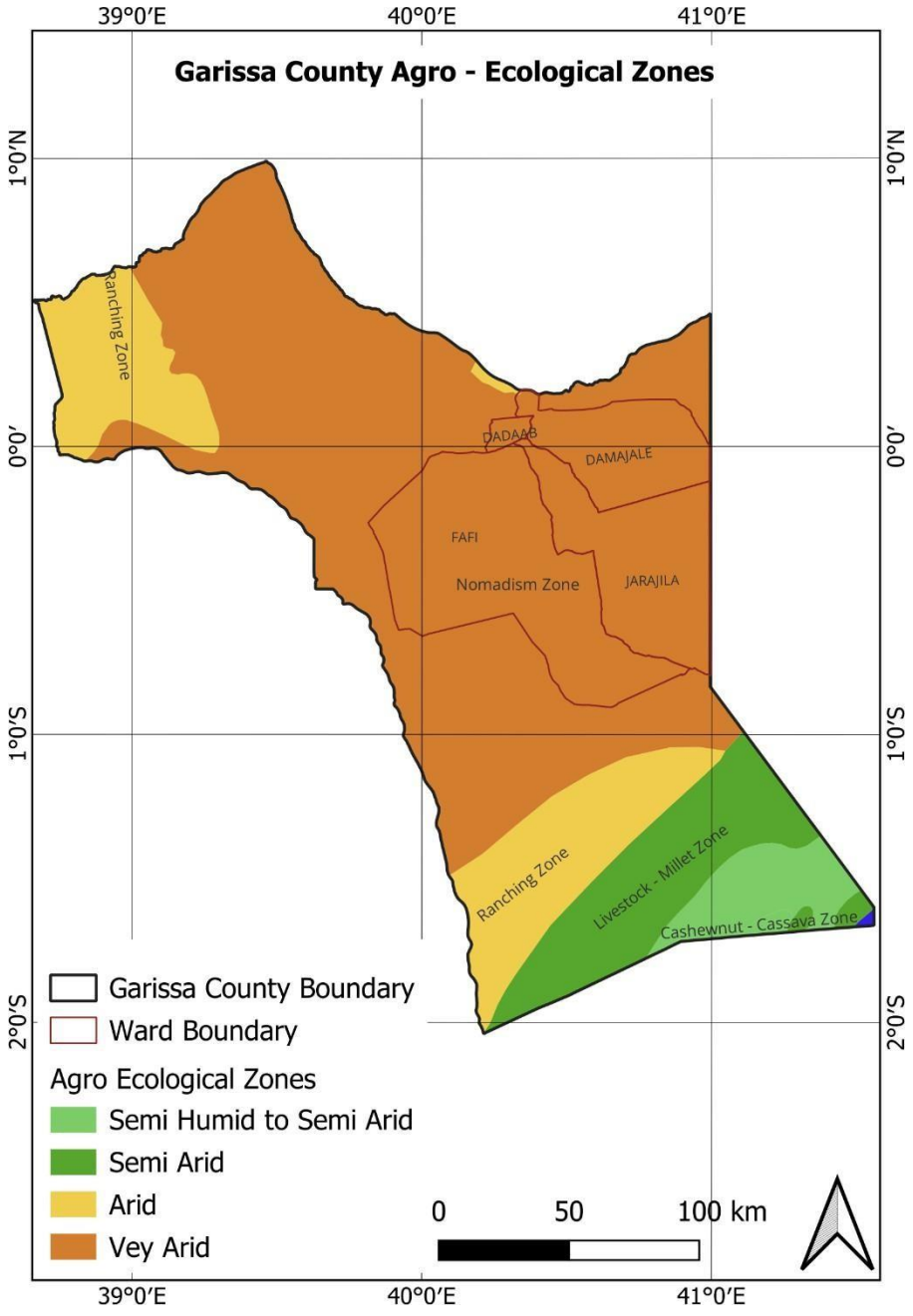
Garissa's water and sanitation sector involves a broad array of stakeholders, requiring strong multi-level coordination mechanisms. The county collaborates with national agencies such as the Ministry of Water, Sanitation, and Irrigation, Water Resources Authority (WRA), WASREB, and Water Sector Trust Fund (WSTF) for technical support, licensing, and funding. Donor-funded programs—like USAID STAWI, UNHCR, UNICEF, and CARE—work closely with both county and community actors, especially in refugee-hosting areas. Coordination platforms such as the County WASH Coordination Forum and Climate Risk Assessment (CRA) workshops provide a space for aligning climate-related interventions. These forums enable shared planning, joint risk mapping, and prioritization of climate-induced challenges like droughts, aquifer depletion, and floods.

Women's leadership plays a growing but still underrepresented role in water and sanitation governance in Garissa. At the community level, women are integral members of Water User Associations (WUAs), often managing tariff collection, hygiene promotion, and borehole maintenance. In several donor-supported schemes, women-led enterprises operate kiosks and sanitation services, especially in informal and peri-urban areas. However, there is a need to strengthen formal inclusion of women in decision-making roles within WSP boards, county planning units, and infrastructure committees. Integrating gender equity into policy frameworks—through inclusive budgeting, targeted capacity building, and gender-disaggregated data—is essential for improving service outcomes and resilience.

The private sector in Garissa plays a limited but expanding role in WASH investments and service delivery, particularly through short-term contracts and informal service provision. Local contractors are engaged in borehole drilling, solar installation, and water trucking—often during drought emergencies. Private water vendors operate metered kiosks and mobile water services, especially in Garissa Township and Dadaab. To enhance private sector participation, the county is developing a Public-Private Partnership (PPP) framework to attract sustainable investments in piped water systems, solar kiosks, fecal sludge management, and smart metering. Strengthening regulatory clarity, offering performance incentives, and de-risking rural investments through blended finance mechanisms will be critical to scaling private sector engagement.

### *1.1.3 Key environmental, socio-political factors affecting water and sanitation service delivery*

Water and sanitation service delivery in Garissa County is influenced by a complex interplay of environmental, political, economic, and social factors. Environmentally, the county lies in an arid and semi-arid region, with highly variable rainfall and frequent climate shocks such as prolonged droughts and flash floods, which disrupt infrastructure functionality and limit water availability. Economically, Garissa faces low income levels, high poverty rates, and weak cost recovery in rural schemes—factors that constrain infrastructure maintenance and user payment compliance. Politically, resource allocation is influenced by competing priorities, clan dynamics, and pressure to respond to emergencies, leading to uneven service distribution and fragmentation of investments. Socially, population displacement, nomadic pastoralism, and rapid urbanization in towns like Garissa and Dadaab strain existing infrastructure, requiring flexible service models that can adapt to shifting population needs.




Community engagement and stakeholder participation play a pivotal role in shaping the effectiveness and sustainability of WASH services. In rural areas, Water User Associations (WUAs) are key actors in managing boreholes and water points, although their capacity varies widely. Development partners often engage communities through participatory assessments, scheme design forums, and WASH committees, though follow-up support is sometimes inconsistent. Public perceptions of service quality are mixed—many communities appreciate

solarized systems and piped connections, but frustration is common where services are unreliable, unaffordable, or poorly maintained. In urban and peri-urban areas, concerns about water rationing, kiosk pricing, and exclusion from planning processes are more pronounced. Building trust and ownership will require regular dialogue, transparent financial reporting, and user feedback mechanisms to ensure services meet the evolving needs of the population.

Gender-specific water and sanitation needs in Garissa are distinct and deeply embedded in cultural, economic, and environmental contexts. Women and girls bear the primary burden of water collection, domestic sanitation management, and hygiene promotion in urban, rural and displaced settings. Long distances to safe water sources expose women and girls to physical strain and protection risks, especially in insecure areas. Inadequate school WASH facilities—particularly the absence of menstrual hygiene management (MHM) units, gender-segregated latrines and PLWD friendly units—negatively affect girls' attendance and dignity. At the policy level, women remain underrepresented in formal decision-making spaces, including WSP boards and county planning structures. Targeted interventions such as women-led WASH enterprises, inclusive facility designs, and gender-responsive budgeting are essential to ensure equitable service delivery and to leverage the leadership and insight of women in building resilient, community-owned systems.

### *1.1.4 Existing legal and policy frameworks governing water and sanitation at the county level*

Water and sanitation service delivery in Garissa County is guided by a robust legal and policy framework at national and county levels, aimed at improving access, promoting sustainability, and ensuring climate resilience. Key national laws include the Constitution of Kenya (2010), which mandates the right to clean and safe water (Article 43), and the Water Act (2016), which establishes the roles of the Water Services Regulatory Board (WASREB), Water Resources Authority (WRA), and Water Sector Trust Fund (WSTF). At the county level, the Garissa County Water Act (2018) provides a legal foundation for water governance, empowering institutions like GARUWASCO and Water User Associations (WUAs), and establishing provisions for licensing, tariffs, and community participation. The county also implements water and sanitation programming through its County Integrated Development Plan (CIDP III), the Garissa Water Sector Strategy (2018), and the Draft County Water Policy (2023), which emphasize climate resilience, equity, and the operationalization of rural and peri-urban service models.

Garissa County's water and sanitation strategies are aligned with national policy frameworks and international commitments, including Kenya Vision 2030, the National Water and Sanitation Investment Plan (NAWASIP), and the Sustainable Development Goals (SDGs)—particularly SDG 6 on clean water and sanitation for all. The county is working toward NAWASIP targets of achieving universal access to basic water and sanitation services by 2030, with a focus on rural reach, affordability, and institutional efficiency. In addition, the county has begun integrating climate action goals from the National Climate Change Action Plan (NCCAP) and County Climate Change Action Plan (CCCAP), which include provisions for green infrastructure, catchment protection, and the use of renewable energy in WASH services. Alignment is also supported by donor-funded programs such as USAID STAWI, UNICEF, and UNHCR, which tailor their investments to national and county priorities and climate resilience frameworks.

To track progress and ensure accountability, Garissa County is gradually strengthening its Monitoring and Evaluation (M&E), data, and information management systems. The County Department of Water and Sanitation coordinates data collection from Water Service Providers (WSPs), WUAs, and development partners. Tools such as WASREB's IMPACT reporting framework, WASH Joint Monitoring Platforms, and STAWI-supported digital dashboards are used to assess functionality, coverage, tariff collection, and customer feedback. However, there remain challenges with data harmonization, disaggregation by gender and vulnerability, and timely reporting, especially at rural scheme level. The county aims to institutionalize a centralized WASH information system, aligned with the National Integrated Monitoring and Evaluation System (NIMES), to enable real-time decision-making, improve investment planning, and fulfill reporting obligations to national bodies and donors. Strengthening community-level M&E and feedback loops is also a strategic priority under the CWSSIP.

## 1.2 Water in the County Economy

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

### Water in Economic Planning and Development in Garissa County

Water is a central pillar in Garissa County's economic planning and development agenda, with direct links to livelihoods, public service delivery, and long-term resilience. Recognizing the arid and semi-arid nature of the region, the County Integrated Development Plan (CIDP III), the Garissa Water Sector Strategy (2018), and the Draft Water Policy (2023) all emphasize investments in water as a driver of inclusive economic growth. The county prioritizes water access in livestock corridors, irrigation zones, emerging urban centers, and underserved rural areas to promote stability, reduce poverty, and unlock economic potential which is very crucial to human health and well being. Additionally, water infrastructure is integrated into the Garissa Integrated Socio-Economic Development Plan (GISEDP) as a cross-cutting enabler for refugee-hosting areas and municipal transition planning for towns like Dadaab and Modogashe.

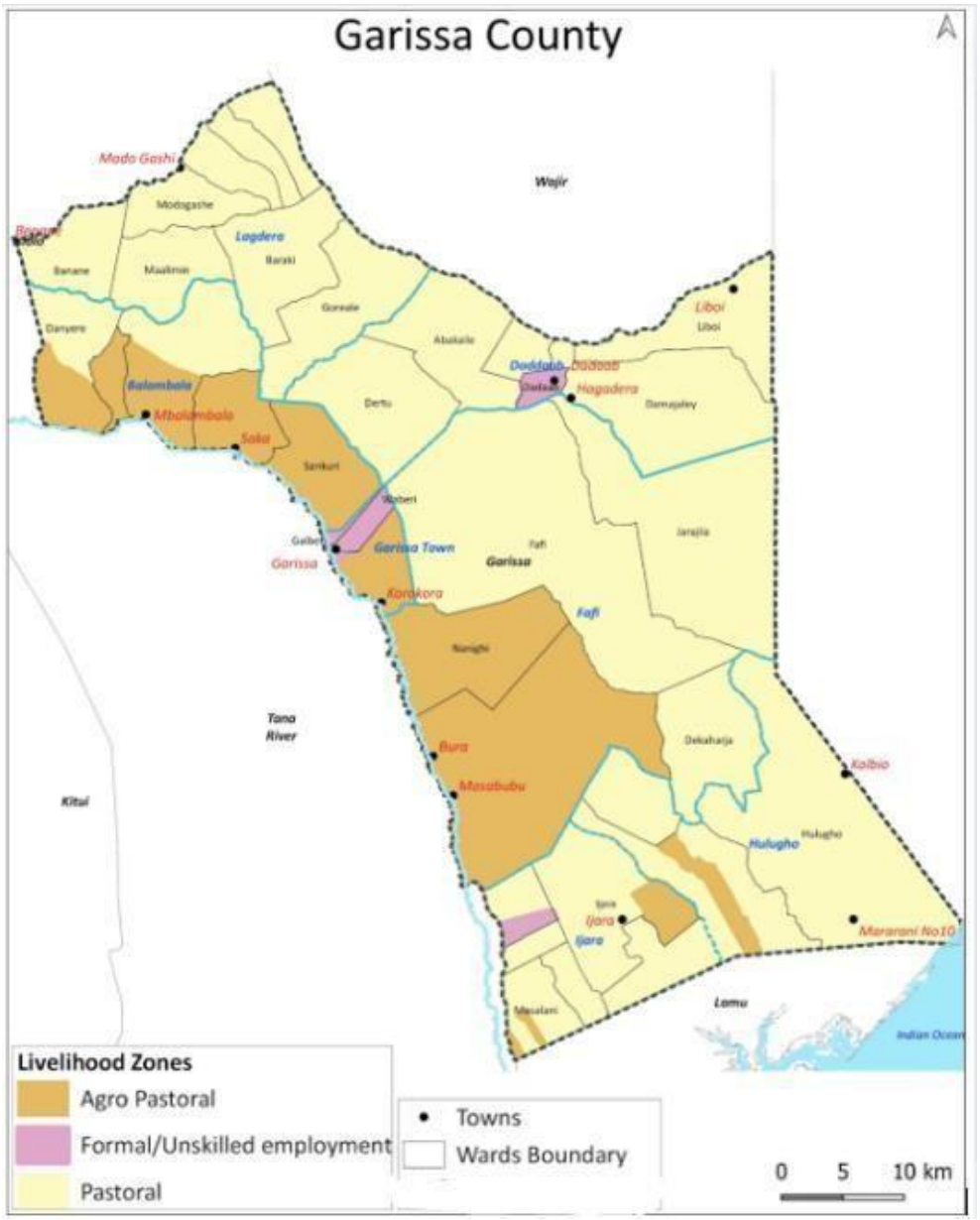



*Figure 4: Garissa County livelihood zones*

Water supports Garissa's economy through its impact on key productive sectors—particularly agriculture, livestock, informal trade, and public services. In the livestock sector, which contributes over 70% of household income, water access determines herd health, migration patterns, market access, and conflict dynamics. Boreholes, troughs, and water pans in pastoralist zones like Fafi and Lagdera are essential for both economic continuity and peacebuilding. In agriculture, access to irrigation—especially along the Tana River in Balambala and Ijara—supports small-scale horticulture and fodder production, enhancing food security and farmer incomes. Urban water systems support service enterprises, food vendors, public institutions, and market centers, where piped water and kiosks improve hygiene, customer reach, and operational efficiency. Health facilities, schools, and local industries depend on reliable water to function effectively, making water infrastructure a fundamental component of public investment planning.

This map below shows the water sources in Garissa County, Kenya, highlighting boreholes and water pans distributed across the county's wards.

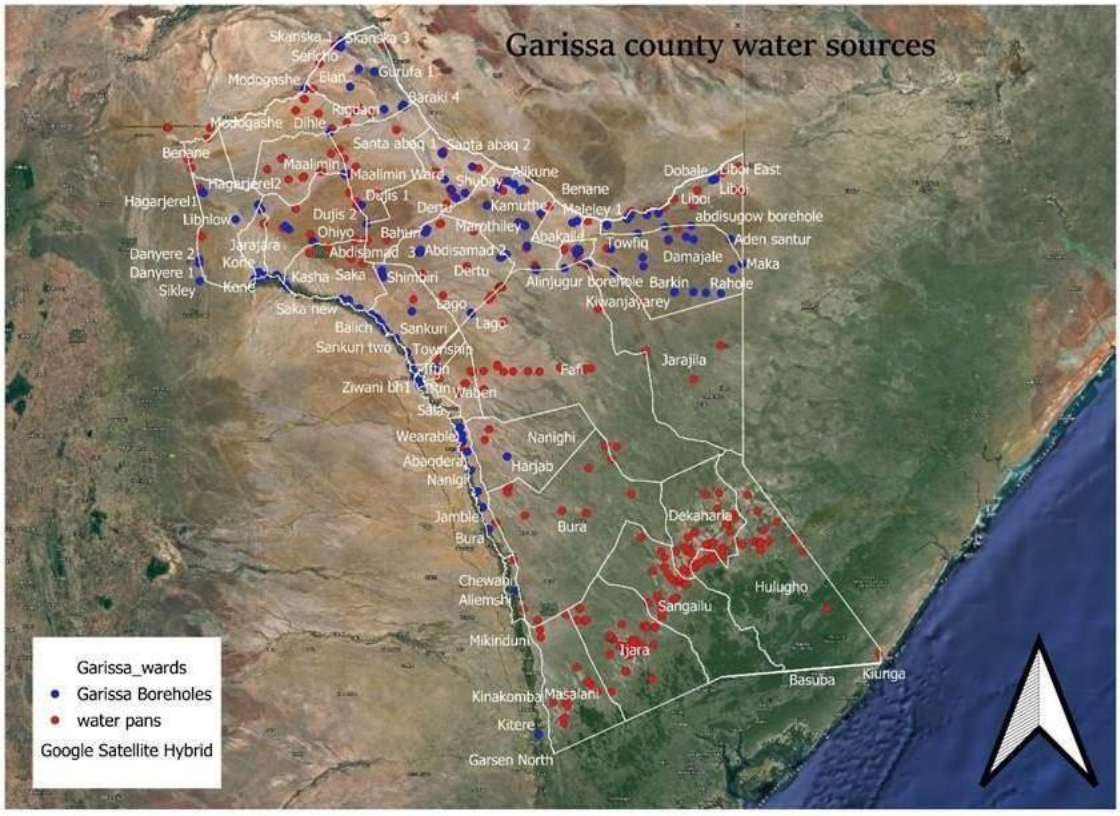


*Figure 3 Distribution of Boreholes & Water pans across the county*

1. Spatial Distribution of Water Sources

The water source distribution across Garissa County reveals significant regional disparities in access and infrastructure. The northwestern areas, including Modogashe, Elan, Danyere, Hagarjer, and Libhlow, exhibit sparse presence of both boreholes and water pans, indicating low water service coverage and heightened vulnerability, especially in the far western zones. In the northeastern region, including Liboi, Dobale, and Damajale, there is moderate borehole coverage but few water pans, suggesting a dependence on boreholes that may be at risk of overuse or groundwater contamination. The central belt—comprising areas like Dadaab, Balich, Dertu, Sankuri, and Bura—shows a dense distribution of both boreholes and water pans, reflecting relatively better service coverage, likely due to proximity to major settlements and development programs. In contrast, the southern region, including Masalani, Hulugho, Sangailu, and Kiunga, relies heavily on water pans with minimal borehole infrastructure, making these areas especially vulnerable during dry seasons when pans often dry up. Lastly, the eastern border areas near Somalia, such as Liboi East and Damajale, display limited water infrastructure, highlighting possible service gaps driven by geographic remoteness and security challenges.

2. Areas with Potential Water Stress or Quality Issues

The distribution and type of water sources across various wards in Garissa County point to specific areas facing water stress and quality challenges. In the western and northwestern wards, such as Modogashe,Benane, Sankuri,Fafi and Danyere, water sources are scarce, indicating a high likelihood of water stress and limited access for communities. The southern and southeastern wards, including Masalani, Hulugho, and Sangailu, are heavily reliant on water pans, which are subject to seasonal variability and tend to dry up during prolonged droughts; these open sources are also prone to contamination due to exposure and use by livestock , human and wildlife, raising concerns about water quality. Meanwhile, in the northern central strip—covering areas like Dertu, Bahuri, and Maalimin—although water service coverage appears better with multiple boreholes, the heavy reliance on groundwater may place stress on aquifers and contribute to salinity problems, which are already a known issue in the region.

Summary of Key Vulnerable Areas

| Region/Ward | Observations | Water Stress/Climate Hazard |
|---|---|---|
| Modogashe, Danyere,Benane | Sparse water points | High water stress |
| Liboi, Dadaab,Fafi | Borehole reliant, few pans | Groundwater quality issues |
| Masalani, Hulugho | Pans dominant | Vulnerable to drought |
| Sankuri, Sabena, Bura, Jarjara, Galbet, Iftin, Nanighi | Moderate coverage | Flood risk from river belt |
| Southern border areas | Few boreholes | Remote + seasonal scarcity |

To ensure long-term water availability, Garissa County has implemented a range of water conservation and sustainability measures. These include the solarization of boreholes to reduce reliance on diesel fuel and lower operational costs, particularly in remote areas. The county also promotes rainwater harvesting by installing rooftop systems in schools, health facilities, and government buildings. Strategic rehabilitation and lining of water pans and sand dams improve seasonal storage and reduce losses due to seepage and evaporation. Community-based catchment protection initiatives—such as reforestation, soil bunds, and gully rehabilitation—are underway to promote aquifer recharge and reduce erosion. Additionally, the county is piloting solar-powered desalination units in saline-affected areas like Balambala and Dadaab to improve potable water access. These efforts are complemented by awareness campaigns promoting water use efficiency, as well as monitoring of groundwater abstraction in the Merti Aquifer, a critical transboundary resource for the county.

### *1.2.2 Key economic activities dependent on water (e.g., agriculture, industry, tourism & trade*

## Water Usage by Key Economic Sectors and Impact on Economic Sustainability in Garissa County

Garissa County's economy is deeply water-dependent, with sectors such as livestock production, small-scale agriculture, informal trade, and public service delivery all relying on reliable and sustainable water access. An analysis of water use patterns indicates that over 80% of the county's water demand is linked to economic activities, particularly in rural and semi-arid zones. The livestock sector is the largest consumer of water, requiring year-round supply for herd

management, especially during dry seasons when animals converge around key boreholes, pans, and troughs. Critical nodes within this sector include pastoral corridors in Lagdera, Fafi, and Balambala, where seasonal movements and conflict sensitivity demand strategic placement of high-yield boreholes and watering points. In agriculture, smallholder farmers along the Tana River belt (Ijara, Balambala) depend on shallow wells and river abstraction to irrigate

horticultural crops and fodder. Informal economic sectors—including markets, food vendors, butcheries, and mobile kiosks in urban areas like Garissa Town and Dadaab—also require dependable piped water and sanitation services for daily operations and compliance with public health standards.

The availability,accessibility and quality of water directly influence productivity, livelihoods, and economic resilience in the county. In the livestock sector, insufficient or unreliable water supply during drought seasons leads to herd losses, reduced market weight, and migration-related conflicts, undermining household incomes and local peace. Access to water also determines the success of small-scale irrigation and kitchen gardening, which support women's economic empowerment and household nutrition. For urban and peri-urban businesses, service reliability affects operating hours, hygiene standards, and customer flow, with frequent service interruptions or high tariffs reducing competitiveness. Public institutions such as schools and health centers face service delivery disruptions when water is not available, affecting both labor productivity and community trust in government services. In refugee and host communities, water trucking and rationed supplies create logistical challenges that inflate service costs and limit social-economical impacts activities dependent on water.

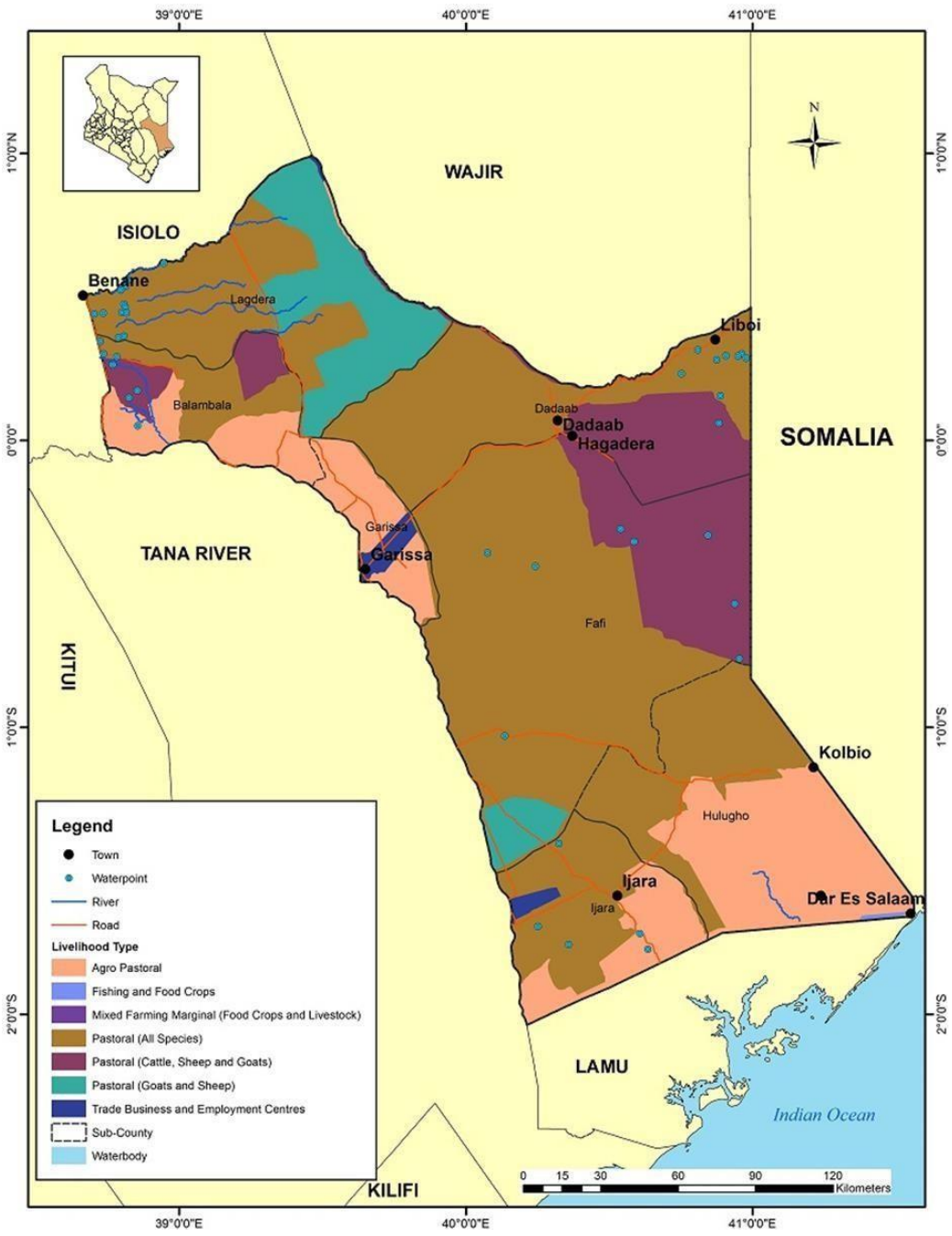



*Figure 1 Livelihood zones*

To optimize water use for sustainable economic growth, Garissa County is prioritizing climate-resilient, multiple-use water systems (MUS) that cater to both domestic and productive uses. The county is also mapping high-impact water-economy nodes—such as livestock markets, health

hubs, and irrigation clusters—to guide future infrastructure investments and resource allocation. Emerging technologies like smart metering, water ATMs, solarization and desalination are being piloted to improve efficiency and access in areas where water is either scarce or saline. Strategic integration of water planning with the County Integrated Development Plan (CIDP III) and the Garissa Integrated Socio-Economic Development Plan (GISEDP) aims to ensure that infrastructure development aligns with key economic priorities, enhances value chains, and builds resilience in both rural and urban economies.

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

## Barriers to Economic Growth Due to Inadequate Water Services in Garissa County

Despite its recognition of water as a critical enabler of economic growth, Garissa County faces persistent barriers that undermine service delivery and constrain economic potential across sectors. One of the most pressing systemic challenges is infrastructure deficit—many rural and peri-urban areas lack functional water systems, while existing infrastructure is often dilapidated, poorly maintained, or not climate-resilient. The STAWI WASH dataset (2023/24) shows that only 64% of water schemes are fully functional, while 24% are non-functional, largely due to mechanical breakdowns, overuse, and lack of maintenance capacity. These infrastructure gaps are especially acute in pastoralist zones and emerging growth centers, where economic activities depend heavily on water for livestock, small-scale irrigation, and informal trade.

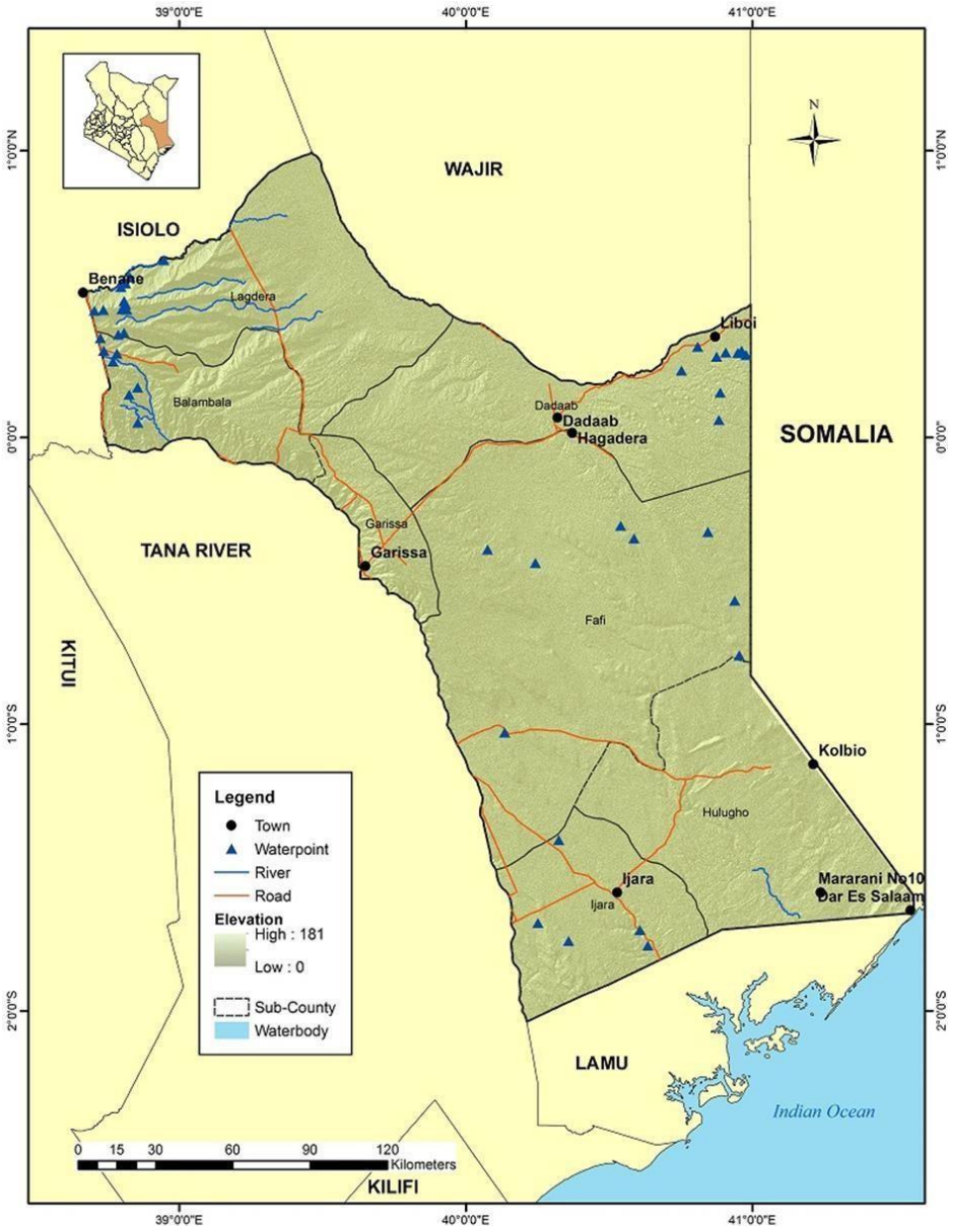



*Figure 2 Water points*

Another significant constraint is inefficient water management at both institutional and community levels. Most Water User Associations (WUAs) operate with limited technical capacity, weak financial systems, and irregular tariff enforcement, resulting in poor cost recovery and unreliable services. Urban service providers like GAWASCO face challenges with non-revenue water (NRW) due to illegal connections, faulty meters , theft, vandalism and leakages/burst, which reduce revenue and impair service reliability. At the regulatory level, the Garissa County Water Management Act (2018) remains partially implemented due to delayed development of supporting regulations, resulting in unclear mandates, weak licensing, and fragmented oversight and also corruption. Additionally, the absence of a county-wide sanitation

policy and fecal sludge management framework has left sanitation services underdeveloped, exposing communities and businesses to public health risks and environmental degradation.

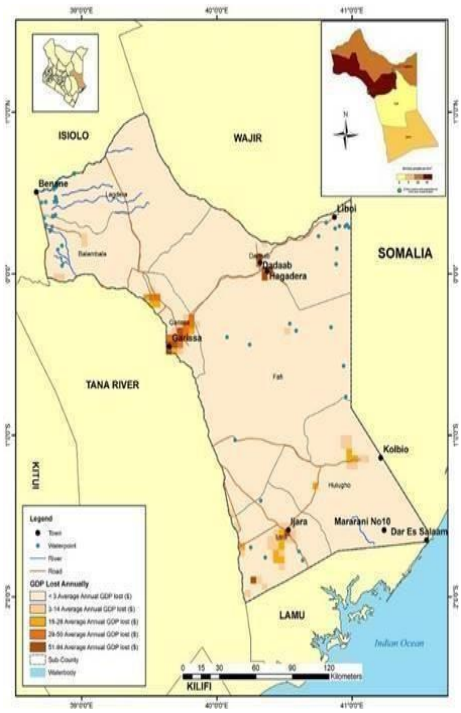
Service quality is further affected by water scarcity, contamination, and inequitable distribution. The county is highly vulnerable to prolonged droughts, which deplete surface water sources and reduce borehole yields—particularly in the Merti Aquifer zone, which is being over-abstracted without regulated recharge. On the other hand, floods introduce contamination into shallow wells and unprotected sources, undermining water quality. The salinity of groundwater in areas such as Balambala and Dadaab further limits access to potable water for domestic and economic use. Distribution systems are often designed for single-use or short-term humanitarian contexts, making them ill-suited for long-term, multi-purpose service delivery. The lack of integrated planning and reliable supply deters private investment, hampers industrial growth, and increases operational costs for businesses and public institutions.

### *1.2.4 Risks and opportunities related to water resource availability and climate variability*

## 1. Climate Risk Matrix: Water Source vs. Climate Risk

| Water Source | Vulnerability | Primary Climate Risks | Severity | Frequency | Service Impact |
|---|---|---|---|---|---|
| Boreholes (Shallow) | High | Drought, salinity, heatwaves floods | Severe | Frequent | Drying wells, rising salinity, pump strain contamination |
| Boreholes (Deep/Merti) | Medium | Drought, over-abstraction | High | Moderate | Aquifer depletion, lower yields |
| Surface water (Rivers) | High | Flooding, drought, erosion | High | Seasonal | Source contamination, access disruption |
| Water pans/sand dams | High | Drought, evaporation, siltation | High | Frequent | Drying out, loss of storage capacity |
| Rainwater harvesting | Medium | Erratic rainfall, roof damage, asbestos exposure | Medium | Seasonal | Reduced harvesting opportunities Cancer |
| Vendor/trucked water | Low | Floods (access disruption) | Moderate | Intermittent | Increased cost, limited coverage contamination |

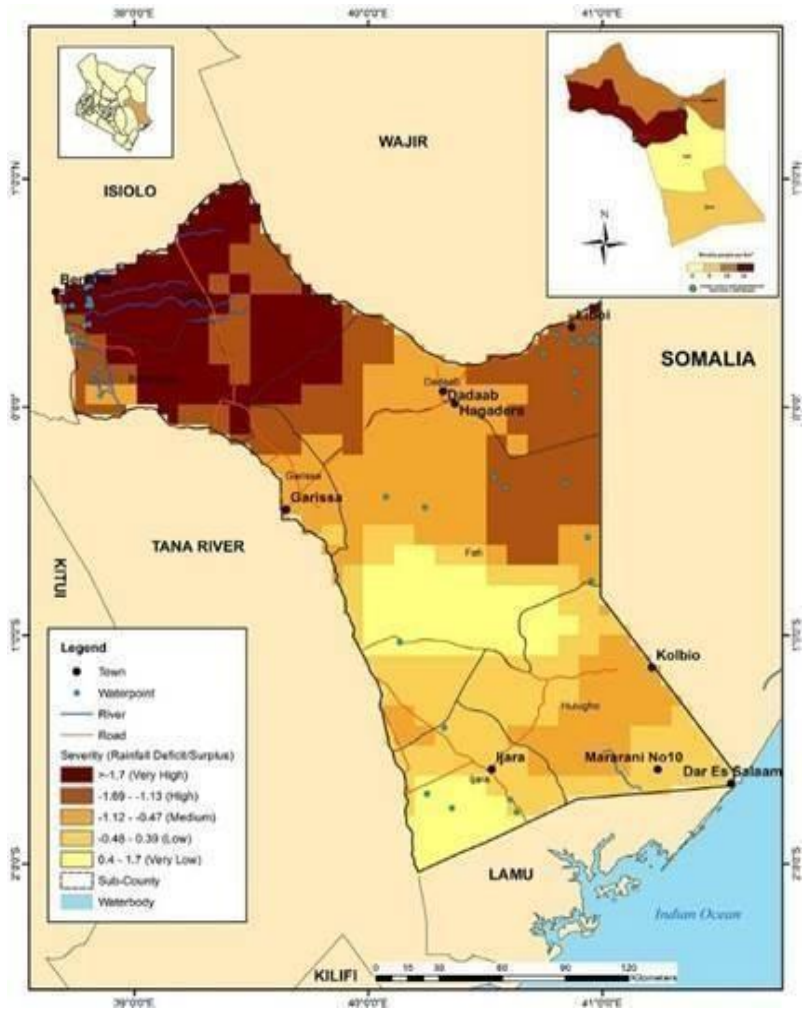
## 2. Gender-Specific Climate-Induced Vulnerabilities




Climate change disproportionately affects women and girls in Garissa County, especially in pastoralist and displaced settings. During droughts, women walk longer distances to collect water, exposing them to physical exhaustion, gender-based violence, and reduced time for productive activities. Water scarcity at home compromises menstrual hygiene, childcare, and food preparation, which are primarily women's responsibilities. In times of flooding, overcrowded shelters lack gender-sensitive WASH facilities, increasing protection risks and disease exposure. Climate-induced migration also disrupts girls' school attendance, particularly where WASH services are damaged or inadequate. Despite bearing these burdens, women are underrepresented in climate and WASH planning, leading to gaps in equitable service design and resource allocation.

## 3. Ranking of Climate Risks and Economic Impact

| Climate Risk | Likelihood | Economic Impact | Affected Sectors |
|---|---|---|---|
| Prolonged Drought | Very High | Severe | Livestock, irrigation, health, education |
| Flash Flooding | High | High | Infrastructure, trade, public services |
| Rising Temperatures | High | Medium | Water storage, energy for pumping |
| Erratic Rainfall | Medium | Medium | Rain-fed farming, catchment recharge |
| Strong Winds/Storms | Low | Low | Roof damage (rainwater systems), mobility |




Drought poses the most severe economic risk, causing loss of livestock, food insecurity, water system failure, and high emergency response costs. Flooding is equally disruptive—damaging infrastructure, spreading disease, and cutting off trade routes. Temperature extremes intensify evaporation and strain pumping systems, while rainfall variability undermines water planning.

## 4. Sector-Specific Adaptation and Mitigation Measures (Prioritized by Cost-Benefit Analysis)

| Measure | Sector | Type | Cost | Benefit |
|---|---|---|---|---|
| Solarization of boreholes | Water supply | Adaptation | Medium | Reduces O&M costs, ensures service continuity during droughts |
| Borehole rehabilitation + preventive O&M | Livestock/domestic | Adaptation | Medium | Extends asset life, improves reliability &sustainability |
| Catchment reforestation + soil bunds | Environment/agriculture | Mitigation | Low | Improves recharge, reduces erosion |
| Roof rainwater harvesting systems | Schools/Health | Adaptation | Low | Low-cost, improves resilience in institutions |

| Measure | Sector | Type | Cost | Benefit |
|---|---|---|---|---|
| Construction of sand dams/water pans | Agro-pastoral | Adaptation | High | Enhances seasonal water storage, supports livelihoods |
| Flood-resilient sanitation (raised latrines) | WASH infrastructure | Adaptation | Medium | Reduces health risks during floods |
| Smart metering & water use monitoring | Urban utilities | Mitigation | Medium | Promotes efficiency and reduces water loss |
| Gender-responsive climate planning | Governance/WASH | Cross-cutting | Low | Improves equity/ dignity and service uptake |

### *1.2.5 Overview of planned and ongoing interventions aimed at enhancing water's role in the economy*

## Water-Driven Economic Development: Current Programs, Climate-Resilient Interventions, and Opportunities

Garissa County is currently benefiting from a range of donor-supported and county-led programs that aim to enhance the role of water in supporting economic development. Notable among these is the USAID programs, which supports the rehabilitation of rural water schemes, promotes solarization of boreholes, and strengthens Water User Associations (WUAs) for improved governance and cost recovery. The UNHCR-WASH program in Dadaab and surrounding host communities focuses on large-scale borehole development, piped water systems, and inclusive WASH services, directly supporting public health and small-scale trade. County-funded water infrastructure projects—including borehole drilling, water pan construction, and water trucking—have supported livestock and informal economic activities, especially during drought periods. Through the Garissa County Water Sanitation Strategy & Investment Plan and County Integrated Development Plan (CIDP III), the county continues to prioritize water as a pillar of resilience and livelihoods.

To address growing climate risks, Garissa is scaling up climate-resilient and economically impactful interventions that can be replicated across other counties and sectors. These include the solarization of strategic boreholes, which reduces fuel dependency and enhances year-round service reliability, particularly in livestock corridors. Multiple-Use Water Systems (MUS) are being introduced to combine domestic use, livestock watering, and small-scale irrigation—improving water efficiency while supporting diversified livelihoods. Sand dams and lined water pans are being rehabilitated to provide seasonal storage in flood-prone and drought-prone zones. The county is also piloting solar-powered desalination units in saline-prone areas like Dadaab and Balambala to make groundwater suitable for domestic and productive use. These solutions, supported by partners such as UNICEF, WFP, and Water Sector Trust Fund (WSTF), are low-cost, scalable, and adaptable to other ASAL (Arid and Semi-Arid Lands) regions across Kenya.

Looking ahead, there is significant potential to strengthen the water-economy nexus through new projects and partnerships. Key opportunities include the expansion of bulk water supply systems to serve new economic hubs such as Modogashe and Dadaab (now proposed for municipal status); the development of PPP frameworks for water kiosks, metering, and mobile water vending services; and value-chain-linked WASH services that support livestock markets, food vendors, and agro-processing zones. Strategic partnerships with Equity Bank, SACCOs, and microfinance institutions could unlock credit for rural water enterprises and WUA-managed schemes. The county also intends to co-develop projects with development partners under GISEDP, aligning with national investment platforms such as NAWASIP and the Kenya Climate Smart Agriculture Strategy. These partnerships will be instrumental in scaling innovations, closing service gaps, and maximizing the economic returns of water investments.

# 2.0 WATER, SANITATION, AND HYGIENE SERVICES COVERAGE STATUS

## 2.1 County Water Resources Endowment – Water abstraction and usage patterns

### *2.1.1 Overview of Available Water Sources (Surface Water, Groundwater, Rainfall)*

Garissa County possesses a diverse and strategically important mix of surface water, groundwater, and rainwater harvesting systems. However, their accessibility, quality, and sustainability are unevenly distributed across the county's geography, and are increasingly challenged by climate variability, population growth, and institutional limitations.

Groundwater Resources

The Merti Aquifer, a transboundary fossil aquifer shared with Isiolo, wajir and Garissa and counties, remains the backbone of Garissa's water supply. It supports over 70% of water needs in sub-counties such as Dadaab, Fafi, and Lagdera. Despite its high yields, growing abstraction—particularly in refugee-hosting and peri-urban zones—has raised concerns about sustainability and groundwater drawdown. Lack of regulation and the absence of formal abstraction caps have exacerbated stress on the aquifer, prompting WRA to initiate a Catchment Management Strategy for long-term sustainability.

Other existing aquifer systems include the Garissa and Hola sub-basins, which serve Garissa Township, Balambala, and parts of Ijara. These sources present varied water yields and quality, with high fluoride and salinity levels in several boreholes. As a response, solar-powered desalination units and fluoride removal technologies have been piloted in Balambala and Dadaab in partnership with development partners

A new promising resource is the Neogene Aquifer, located in the southern parts of Garissa County, particularly spanning areas around Ijara, Hulugho, and Masalani. The aquifer is currently under scientific study through the Horn of Africa Groundwater for Resilience Programme (HOAGW4RP). Preliminary hydrogeological investigations suggest it may hold substantial untapped reserves. If validated, the Neogene Aquifer could provide long-term resilience for the region's vulnerable pastoral and agro-pastoral communities. Future investment planning must factor in findings from HOAGW4RP to guide sustainable development of this resource.

## Surface Water Resources

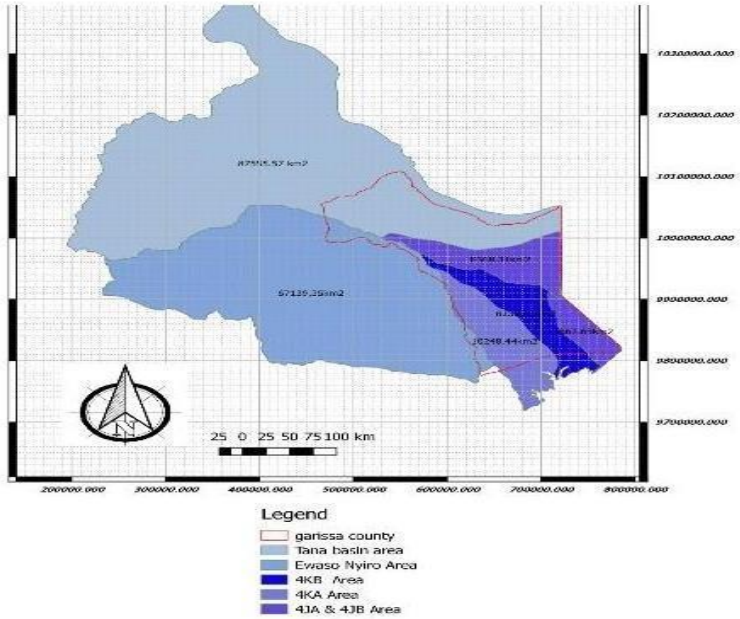



**Figure 5: Garissa Drainage Basin**

The Tana River, Kenya's longest river, flows through Balambala, Township, Bura-East and Ijara sub counties offering significant potential for irrigation, domestic supply, and livestock watering. Yet, its use remains underutilized due to limited abstraction infrastructure, seasonal variability, and coordination gaps in the enforcement of riparian rights and permits.

In addition, the county has several seasonal rivers (laghas), including Lagha Tula, Lagha Lagdera, and Lagha Danyere, which support livestock and temporary floodwater harvesting. These are prone to rapid siltation, contamination, and dryout during prolonged droughts.

## Rainwater and Surface Storage Systems

Rainwater harvesting, although practiced across schools, health facilities, and administrative centers, remains underutilized. Most roof catchments and water tanks are under capacity or poorly maintained. Seasonal water pans and sand dams—especially in Hulugho, Masalani, and Fafi—play a critical buffer role during dry seasons. However, challenges such as evaporation losses, animal fouling, and unlined pans reduce their long-term viability. Increasing rainfall unpredictability underscores the urgency for multi-season storage and integrated catchment protection.

## Spatial Distribution and Infrastructure Disparities

Water access remains highly uneven. Urban areas like Garissa Township and Dadaab benefit from high borehole density, piped networks, and support from utilities (GARUWASCO, GAWASCO) and humanitarian agencies. In contrast, rural sub-counties such as Liboi, Benane, Modogashe, and Hulugho suffer from limited infrastructure, long water-fetching distances, and vulnerability to borehole breakdowns. An overlay of borehole and water pan distribution shows that central zones have the highest coverage, while the northeast and southeast lag behind, posing significant implications for equity, school attendance, and gender-based water burdens.

Transboundary and Inter-County Water Sharing

Garissa's dependence on shared aquifers and surface water demands greater inter-county and inter-agency coordination. The Merti Aquifer is shared with Wajir, Isiolo, and Garissa, yet there is no formalized water-sharing framework, raising concerns over over-extraction, especially near high-yield boreholes in Dadaab,Fafi, Balambala and Lagdera. Similarly, Garissa shares the Tana River with Tana River and Kitui counties, though abstraction regulation is weak due to limited enforcement of WRA's permit and licensing system.

The Water Resources Authority (WRA), under its Catchment Strategy, is leading efforts to streamline abstraction licensing, monitoring, and aquifer protection, which CWSS&IP aligns with through planned metering and digital borehole monitoring.

Climate Risks and Seasonal Variability

Garissa's bimodal rainfall (March–May, October–December) is erratic and spatially inconsistent, exposing the water sector to both drought and flooding cycles. Key risks include:

- Drought-induced borehole dry-outs or collapse
- Flash floods contaminating shallow wells and water pans.
- Latrine and sanitation system overflow in flood-prone settlements and collapse.

Climate resilience is therefore central to CWSS&IP, with emphasis on aquifer recharge, flood-resilient borehole siting, and seasonal water trucking mapping.

Water Quality and Sustainability Challenges

Persistent quality concerns include:

- Salinity and fluoride in Balambala, Lagdera Fafi, and Garissa Township.
- Unprotected/Unregulated livestock access to pans and boreholes leading to animal droppings contamination.

- Pollution from open defecation and solid waste in urban fringes.
- Limited water treatment capacity, especially in peri-urban areas and institutions.

### *2.1.2 Current water abstraction and usage patterns*

## Assessment of Water Extraction, Utilization, and Demand Trends in Garissa County

Garissa County relies primarily on groundwater extraction through boreholes and, to a lesser extent, surface water abstraction from the Tana River, seasonal pans, and rainwater harvesting. Over 70% of the county's domestic and productive water supply comes from boreholes, most of which are solar- or diesel-powered. There are over 600 water points across the county, including boreholes, shallow wells, pans, and kiosks—though only around 64% are fully functional. Key extraction hotspots include Dadaab, Garissa Township, Balambala, and parts of Lagdera, where groundwater yields are highest. Water abstraction is often unregulated, especially in the Merti Aquifer zone, where overuse by both humanitarian and host community systems raises concerns of long-term aquifer depletion. Surface water utilization remains limited due to variability and contamination risks, though there is growing interest in reviving irrigation along the Tana River belt in Balambala and Ijara sub-counties.

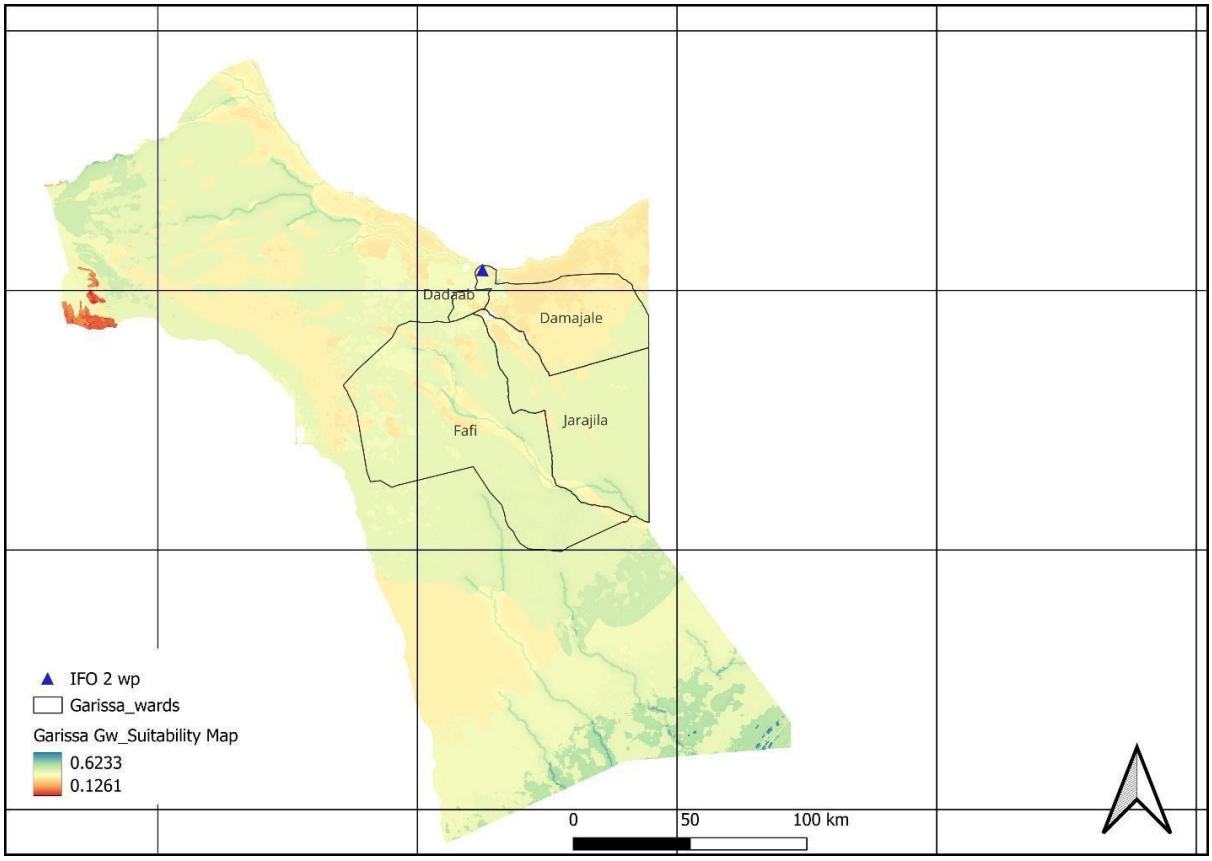



*Figure 5 Ground water suitability map of Garissa County*

Water consumption in Garissa is driven by sectoral demand from households, livestock, small-scale agriculture, institutions, and informal businesses. The livestock sector accounts for the largest share of water demand—estimated at over 60% of total daily usage during dry seasons—due to the scale of pastoralist activity and herd sizes. Domestic consumption ranges between 15–25 liters per capita per day in rural areas, often below national minimum service levels due to access constraints. In urban and peri-urban areas like Garissa Town, usage is higher due to piped water and institutional connections. Irrigation demand is concentrated in Tana River-adjacent farms, where horticulture and fodder production are expanding. Institutions—such as schools, health centers, and mosques—consume water intermittently but depend on reliable supply for sanitation and hygiene.

There are marked disparities in access and water use based on social status, gender, and geography. Women and girls, particularly in rural and pastoralist households, bear the primary burden of water collection, often walking long distances to reach boreholes or pans—especially in sub-counties like Fafi and Lagdera. In low-income and refugee communities, families may consume significantly less water than the county average due to affordability issues and rationed supply, while higher-income households and institutions enjoy better access and quality. Gender-disaggregated data shows that women-headed households face additional vulnerabilities during droughts and water shortages due to limited decision-making power and restricted mobility. Addressing these inequalities will require targeted investments in inclusive infrastructure,

equitable tariff models, and gender-responsive service planning to ensure water utilization contributes to both economic empowerment and public health.

### *2.1.3 Seasonal variations and climate-related vulnerabilities affecting water supply*

Garissa County experiences significant seasonal variations in water availability due to its arid and semi-arid climate. The county receives two short rainy seasons—the long rains (March–May) and the short rains (October–December)—but these are increasingly unpredictable in both timing and volume. During the dry seasons, especially between January–March and June–September, many traditional water sources such as pans, shallow wells, and laghas (seasonal streams) dry up within weeks, leading to widespread water shortages.

These fluctuations directly impact service delivery across sectors:

- Water pans and natural ponds are seasonal and typically evaporate rapidly, disrupting livestock watering and forcing migration.
- Shallow wells and springs near the Tana River exhibit reduced yield, affecting irrigation and domestic supply.
- Boreholes experience increased pressure during dry seasons, leading to mechanical breakdowns and source depletion.
- Health and education services are disrupted when facilities lack water for hygiene and sanitation, especially during school terms that coincide with dry seasons.
- Water trucking becomes the fallback solution in many sub-counties, increasing operational costs for both government and households.

Climate Risks and Source-Based Impacts Matrix

The table below presents key climate risks, their severity, impacted water sources, and estimated effects on households and infrastructure—based on CRA findings and sectoral data.

| Climate Risk | Impacted Water Source(s) | Severity | Seasonality | Estimated Impact |
|---|---|---|---|---|
| Prolonged Drought | Boreholes, pans, shallow wells | Very High | Jan–Mar, Jun–Sep | - Borehole yield reduction by up to 40% - 60,000+ households face reduced supply - High livestock mortality and migration |
| Aquifer Depletion | Merti Aquifer (deep boreholes) | High | Year-round | - Declining static water levels - Increased pump failure and energy costs - Affects 40% of schemes in Fafi, Dadaab, Lagdera |
| Flash Flooding | River Tana, pans, laghas | Medium–High | Mar–May, Oct–Dec | - Damage to 30% of pans - Contamination of open water points - Disruption of school and health services ,Destruction of |

| Climate Risk | Impacted Water Source(s) | Severity | Seasonality | Estimated Impact |
|---|---|---|---|---|
| | | | | infrastructures i.e roads , buildings and water intakes.<br>destruction of farms etc. |
| Extreme Heat | Pans, shallow wells, River | Medium | Feb–Mar, Sept | - High evaporation rates (up to 60%)<br>- Water stress in over 50 schools and dispensaries.<br>-the water level in shallow wells declines over time eventually leading to depletion .. |
| Increased Salinity | Boreholes in Balambala, Dadaab and lagdera | Medium | Year-round | - Reduced water quality - Livelihood and health impacts (especially women and children)<br>- Need for treatment technologies |

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## Key Vulnerable Zones and Population Groups

- Most affected sub-counties: Lagdera, Balambala, and Fafi experience compounded impacts due to poor recharge, limited storage, and lack of backup sources.
- Vulnerable groups: Women-headed households, elderly, children, and persons with disabilities face the highest exposure due to dependence on communal access points and mobility barriers.
- Critical institutions: Over 100 public schools and health centers operate without reliable water backup systems and are highly exposed to supply disruptions.

### *2.1.4 Water resource challenges, such as pollution, over-extraction, climate change and watershed degradation*

Key Threats to Water Quality and Sustainability

Garissa County faces multiple threats to the sustainability and quality of its water resources, many of which are being exacerbated by climate change and weak resource governance. These include:

- Over-abstraction of groundwater: The Merti Aquifer, a key transboundary resource, is under increasing stress due to unregulated pumping, especially around Dadaab and Fafi. There is no systematic monitoring of abstraction rates or recharge capacity.
- Pollution and contamination: Water quality is compromised by poor sanitation practices, open defecation, and unregulated waste disposal. Livestock frequently share water points

with humans, increasing the risk of fecal contamination. Open pans and shallow wells are particularly vulnerable.
- Salinity and mineral intrusion: Certain boreholes in Balambala and parts of Lagdera yield brackish or saline water, posing health risks and reducing water usability for drinking and irrigation.
- Climate-induced degradation: Prolonged droughts reduce recharge of both shallow and deep aquifers. Flash floods contribute to siltation of pans and erosion of riverbanks, especially along the Tana River.
- Lack of protection of recharge zones: Degradation of vegetation cover and soil erosion in upland and wetland areas reduces natural infiltration and aquifer recharge, increasing runoff and water loss.

Strategies for Conservation and Sustainable Management

- Rainwater harvesting: Ongoing installations in public institutions (schools, dispensaries) have improved short-term storage but need to be scaled to households and markets.
- Solarization of boreholes: More than 50% of boreholes are now solar-powered, improving operational sustainability and reducing costs.
- Water Users Associations (WUAs): Community-based management exists but lacks strong governance, legal registration, and enforcement powers. Most do not practice preventative maintenance or conservation measures.
- Catchment protection: Some sub-counties (e.g., Ijara, Balambala) have piloted nature-based solutions such as:
    - Sand dams and check dams
    - Tree planting near pans and boreholes
    - Gully rehabilitation using soil bunds

  These efforts remain donor-driven and small-scale, with limited county budget allocation or monitoring frameworks in place.

- Integrated planning: The County Climate Change Action Plan (CCCAP) and CIDP III now include water and ecosystem protection targets, but inter-agency coordination and enforcement remain a challenge.

Potential Climate Change Impacts on Water Resources

Climate change is projected to worsen existing vulnerabilities in Garissa County's water sector:

- Increased frequency and duration of droughts will reduce surface flows, dry up pans earlier, and reduce recharge of shallow aquifers.
- Higher temperatures will increase evaporation from water pans and tanks, requiring more investment in closed or lined storage systems.
- Intensified flash floods may damage infrastructure, increase siltation, and overwhelm unprotected shallow wells and surface points.

- Groundwater recharge will become increasingly unpredictable, threatening the viability of borehole-reliant systems unless recharge mapping and aquifer protection measures are institutionalized.

### *2.1.5 Climate Change Vulnerability Assessment*

## Climate Change Vulnerability Assessment

1. Identification of Climate Hazards Affecting Water and Sanitation

Garissa County is among Kenya's most climate-vulnerable regions, with increasing exposure to extreme weather events that directly impact water availability, quality, and infrastructure functionality. The main climate hazards affecting the county's water and sanitation systems include:

- Prolonged and recurrent droughts, reducing groundwater recharge, drying up pans and shallow wells , and increasing reliance on a limited number of boreholes.
- Flash floods, often following short and intense rainfall events, which damage water infrastructure (pans, shallow wells, pipelines,sanitation facilities) and contaminate open sources.
- Rising temperatures, accelerating evaporation from water pans,rivers,Lagha and tanks, increasing water demand, and degrading the integrity of plastic-based storage infrastructure.
- Rainfall variability, both in terms of timing and intensity, disrupting seasonal planning, catchment recharge, and water infrastructure performance.

2. Characterization of Climate Change Impacts in Garissa County

Based on county-level meteorological data and CRA findings:

- Droughts have increased in frequency from once every 5 years to nearly every 2–3 years, affecting both shallow and deep groundwater sources. During droughts, water tables drop, boreholes dry up, and demand for water trucking surges.
- Rainfall patterns have become erratic, with unpredictable onset and cessation of rains. Annual rainfall ranges between 250–400 mm, but intensity is often concentrated in short bursts, increasing runoff and reducing infiltration.
- Temperature trends show consistent warming, with daytime temperatures often exceeding 38°C, particularly between February and April. This raises evaporation losses and affects human and livestock health.

3. Exposure of WASH Infrastructure and Water Resources

The CRA Workshop mapped key areas of infrastructure exposure, highlighting that:

- Over 60% of WASH infrastructure is exposed to climate hazards, especially boreholes and pans in Fafi, Lagdera, and Balambala.
- Most water pans are unlined, open to siltation ,infiltration, and situated in low-lying areas prone to flooding.
- Shallow wells and surface sources (e.g., laghas) are highly exposed to contamination from runoff and animal waste during floods.
- Schools and health centers lack climate-resilient designs: many do not have rainwater harvesting infrastructure, protected pipelines, or backup storage systems, making service delivery vulnerable during dry spells and rainy seasons.
- Community-managed schemes lack redundancy or emergency plans, meaning that system failure during climate shocks often leads to prolonged outages

4. Analysis of Climate Risks Based on Hazards and Exposure

The table below summarizes climate risks in relation to hazard intensity, exposure, and impact on WASH systems:

| Climate Hazard | Exposure | Risk Level | Impact |
|---|---|---|---|
| Prolonged droughts | Boreholes, shallow wells, public institutions | Very High | Borehole failure, livestock migration, school water shortages |
| Flash floods | Pans, shallow wells, urban drains | High | Infrastructure damage, contamination, latrine collapse |
| Extreme heat | Open pans, plastic tanks, rainwater harvesting | Medium–High | Accelerated evaporation, storage loss, rising household demand |
| Erratic rainfall | Seasonal pans, irrigation systems, catchments | Medium | Poor recharge, runoff, silting of pans, irrigation failure |

## 2.2 Water Supply Services Coverage and Gaps

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

**Overview of Water Supply Systems and Service Levels**

Garissa County's water supply infrastructure comprises a mix of piped schemes, motorized boreholes, shallow wells, pans, and rainwater harvesting systems, serving both urban and rural populations. Urban centers—such as Garissa Township, Dadaab, and Modogashe—are primarily served by piped water supply networks operated by licensed water service providers like GAWASCO, while rural and peri-urban areas rely on community-managed boreholes and water pans.

- In urban areas, service levels are higher but not universal. GAWASCO and GARUWASCO provide piped connections to institutions, households, and commercial

users, though pressure and reliability vary. Most urban systems include chlorination and storage, but water rationing is common due to high demand and limited capacity.
- In rural areas, water services are delivered through solar or diesel-powered boreholes, small piped schemes, and seasonal pans. These systems are often managed by Water Users Associations (WUAs), many of which operate informally without formal training or legal backing.

According to the recent survey conducted on 2023/24 WASH data:

- Only 64% of water schemes are fully functional
- About 29% of schemes provide continuous supply, while the rest are intermittent or rely on scheduled access
- Less than 20% of water points are equipped with water quality treatment or monitoring systems

Water Quality Considerations

- Most urban systems chlorinate water and conduct sporadic testing, though consistent compliance with WASREB standards remains a challenge.
- Rural systems, especially those using pans and shallow wells, are prone to contamination from animal waste, poor sanitation practices, and open defecation. There is limited community awareness on water safety.
- Salinity and fluoride levels exceed acceptable limits in boreholes located in Balambala and parts of Lagdera, rendering some sources unsuitable for drinking without treatment.

Infrastructure Gaps and Capacity Constraints

- Aging Infrastructure: Urban pipelines suffer frequent breakages and leakages, leading to high levels of non-revenue water (NRW).
- Limited Coverage: Rural areas, especially in Lagdera, Balambala, and southern Ijara, lack piped infrastructure entirely and depend on one or two communal boreholes that serve hundreds of households.
- Inadequate Storage: Few schemes have elevated or ground tanks, making it difficult to regulate supply during peak hours or droughts.
- Lack of Technical Capacity: Most rural WUAs do not have trained technicians or access to spare parts, leading to delays in repairs and long downtimes.
- Financial Constraints: Only 27% of rural schemes have accounting systems or collect regular tariffs, limiting their ability to cover operations and maintenance (O&M).

- Lack of ownership and security leading to vandalism and theft cases.

Gender and Vulnerability Considerations

Women, girls, and other vulnerable groups (elderly, persons with disabilities, and displaced populations) are disproportionately affected by inadequate water supply:

- Women and Girls:
  - Bear the primary responsibility for water collection, especially in rural areas, often walking over 5 km during dry seasons.
  - Face safety risks when accessing distant or unlit water points, particularly early in the morning or late at night.
  - Experience reduced economic participation and school attendance due to time spent on water collection and hygiene-related challenges.
  - Women-headed households often struggle to afford water from private vendors during droughts or supply interruptions.
- Vulnerable Populations:
  - Households in informal settlements, refugee-hosting areas, and pastoral communities experience greater water insecurity due to overcrowding, system breakdowns, or seasonal depletion.
  - Persons with disabilities face mobility constraints and often lack accessible water infrastructure (e.g., ramps, taps at reach level).

## Key Issues Identified

- Unequal access between urban and rural areas, and between genders and social groups
- Weak O&M systems and lack of redundancy in rural schemes
- High exposure to climate risks and seasonal depletion
- Low coverage of water quality monitoring, especially in community-managed schemes

### *2.2.2 Percentage of the population with access to improved water services*

Coverage Levels Based on National and Global Standards

According to the 2023/24 WASH dataset and aligned with definitions from WHO/UNICEF Joint Monitoring Programme (JMP) and Kenya's WASREB guidelines, an "improved water service" refers to a source that is:

- Protected from contamination,
- Available when needed, and
- Accessible within a reasonable distance (≤500 meters in rural areas and ≤250 meters in urban settings).

As of 2024, it is estimated that only 36–40% of Garissa County's population has access to improved water services, far below the national average (~59% rural, ~82% urban according to KNBS 2022) and the SDG 6.1 target of universal and equitable access by 2030.

- Urban areas such as Garissa Township and Dadaab have better coverage, with piped water reaching approximately 60–70% of households, though reliability and quality remain inconsistent.
- Rural areas show significantly lower access levels, with most communities relying on communal boreholes or pans, which do not meet the JMP definition of improved sources due to seasonal unreliability, poor maintenance, and exposure to contamination.

Disparities in Access Across Regions and Communities

Water access across Garissa is unevenly distributed shaped by: geography, infrastructure development, population density, and conflict exposure:

- Best-served areas include Garissa Township, Modogashe, and Dadaab refugee complex—benefiting from external investments, public water utilities, and donor-supported systems.
- Underserved regions include vast parts of Lagdera, Balambala, Fafi, and southern Ijara, where communities depend on seasonal pans or single boreholes for thousands of users.
- Refugee-hosting areas have higher coverage due to humanitarian support, but host communities adjacent to camps often lag behind, exacerbating tensions over perceived inequities.

Coverage Gaps by Income and Gender

- Low-income households, particularly in rural areas, are more likely to rely on unimproved sources such as open pans or water vendors, paying up to 10 times more per liter than those connected to piped networks. This contributes to chronic water insecurity and vulnerability to price shocks during droughts.
- In informal urban settlements, unregulated water vendors often serve the poorest households, but with little guarantee of quality or fair pricing.
- Gender disparities persist in access and experience:
    - Women and girls in rural areas walk long distances daily to fetch water—limiting time for income generation, schooling, and self-care.
    - Most improved water systems lack gender-sensitive design features (e.g., lighting, privacy, and safe access paths), deterring use or posing safety risks.
    - School-aged girls are especially affected when schools lack clean, reliable water—affecting attendance and menstrual hygiene management.

## Summary of Coverage and Gaps

| Indicator | Urban | Rural | County Average |
|---|---|---|---|
| Access to improved water sources (%) | 60–70% | 20–35% | ~36–40% |
| Households within 500m of a water point | ~60% | ~38% | ~46% |
| Households with continuous supply | <40% | <20% | ~27% |
| Water systems with water quality treatment | ~60% (urban) | <15% (rural) | ~28% |

To achieve SDG 6 and Kenya's Vision 2030 water access goals, Garissa County must address the structural inequalities in water service delivery, prioritize investments in underserved zones, and ensure that gender and income-based disparities are fully integrated into water planning and budgeting.

*2.2.3 Service delivery challenges (e.g. non-revenue water, maintenance issues)*

## Service Delivery Challenges in Garissa County

### Operational Inefficiencies and Their Impact on Service Provision

Water service delivery in Garissa County is constrained by infrastructure limitations, inadequate operations and maintenance (O&M) systems, and institutional capacity gaps. Many water schemes—especially in rural and peri-urban areas—are community-managed and face operational inefficiencies that undermine the reliability, equity, and sustainability of services.

Key inefficiencies include:

- High breakdown frequency of boreholes due to poor preventive maintenance, lack of spare parts, and minimal technical capacity.
- Limited storage capacity, particularly in rural areas, which leads to water shortages during peak hours or pump failures.
- Inconsistent tariff collection, which undermines financial sustainability and leads to frequent service disruptions when funds for fuel or repairs are unavailable.
- Lack of performance monitoring and asset management plans, especially in Water User Associations (WUAs), making it difficult to track service levels or schedule routine maintenance.

### Non-Revenue Water (NRW) and Reliability Issues

Non-revenue water remains a major challenge, particularly in urban piped networks managed by GAWASCO and GARUWASCO. Key contributors to NRW include:

- Leakages in aging distribution pipelines
- Illegal connections and vandalism
- Lack of consumer metering and volumetric billing
- Unmetered institutional use and delayed payments from public entities

Although accurate NRW levels are not consistently reported, WASREB estimates suggest that Garissa's NRW could exceed 45%, far above the national acceptable benchmark of 25%.

In rural systems, while volumetric losses are less formalized, non-functional meters and flat-rate tariffs hinder cost recovery and lead to inequitable access.

### Water Service Providers and Operational Efficiency

- GAWASCO is the primary urban WSP, serving Garissa Township. While licensed, it struggles with underfunding, non-payment from institutional users, and aging infrastructure. Service is intermittent, and coverage does not reach informal settlements.

- GARUWASCO, a rural utility, was established to manage community schemes but remains under-resourced and has limited geographical reach. It has yet to scale up professional operations or fully engage with WUAs.
- Community-managed schemes, which serve over 60% of rural populations, operate with limited governance, weak financial systems, and no formal oversight.

Challenges in Engaging Public and Private Water Providers

- Public WSPs face delayed budget disbursements, weak internal auditing systems, and limited technical staff, particularly at sub-county levels.
- Private sector engagement remains minimal due to:
    - Unclear licensing and regulatory frameworks at the county level
    - Lack of incentives for investment in low-revenue areas
    - Weak PPP models and poor coordination between county and national agencies
- Community resistance to formal tariff structures or metering systems further limits uptake of private participation.

Opportunities to Strengthen Service Delivery Models

To improve efficiency and equity, the following reforms are proposed:

- Digitalize scheme monitoring, including pump uptime, tariff collection, and repair schedules through mobile applications or SMS-based dashboards.
- Standardize WUA training on financial management, O&M, and governance, and formalize them under GARUWASCO's coordination.
- Develop and enforce a county-wide Service Delivery Framework, clarifying mandates of GAWASCO, GARUWASCO, and WUAs.
- Roll out PPP pilots, including solar-powered water kiosks, delegated management models, and prepaid meters in high-traffic areas.
- Integrate NRW reduction plans into urban system rehabilitation, including leak detection programs, meter calibration, and asset replacement.

Climate Change Vulnerability and Its Impact on Service Reliability

Climate hazards compound service delivery challenges. For example:

- Droughts strain boreholes, reduce aquifer recharge, and increase system demand—causing pressure drops and accelerated wear.
- Flash floods damage water infrastructure (pumps, pans, shallow wells), distraction of pipelines and contaminate open sources.
- Rising temperatures increase evaporation from storage tanks and water pans, forcing more frequent pumping and increasing O&M costs.

WSPs currently lack climate-responsive service continuity plans, leaving systems exposed to prolonged outages during shocks. Strengthening resilience measures—such as solarization, water

storage expansion, and redundancy—will be essential to maintaining reliable water services in the face of a changing climate.

## 2.3 Sanitation Services Coverage and Service Gaps

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

1. Existing Sanitation Infrastructure, Access Levels, and Service Options

Sanitation access in Garissa County remains severely limited, especially in rural areas and informal settlements. The county lacks a centralized sewerage system, and non-sewered sanitation options dominate across both urban and rural settings.

- In Garissa Township, limited sewer infrastructure exists, primarily for institutional and government buildings. Most urban households rely on on-site systems such as:
  - Pit latrines (unlined or lined)
  - Septic tanks (in middle-income areas)
  - Shared or communal latrines (especially in densely populated settlements)
- In rural areas, pit latrines (often without slabs) are the most common form of sanitation, with widespread practice of open defecation in some pastoral zones where latrines are considered culturally unfamiliar or impractical.

According to sector estimates and WASH field assessments:

- Less than 25% of households in Garissa County have access to improved sanitation (defined as private, hygienic facilities not shared with other households).
- Approximately 35–40% rely on basic pit latrines, often shared and poorly maintained.
- Open defecation is practiced by up to 30% of households in remote rural wards, particularly in Ijara, Fafi, and Lagdera.

2. Rural–Urban Disparities and Informal Settlement Challenges

Sanitation access shows strong disparities between urban and rural settings:

- Urban areas (Garissa Town, Modogashe, Dadaab):
  - Moderate to high use of septic tanks and communal latrines
  - High pressure on shared facilities in informal settlements
  - Occasional flooding leads to pit collapse and environmental health risks
- Rural areas:
  - Limited latrine coverage due to cultural resistance, cost, and lack of enforcement
  - Pastoral communities are highly mobile, making fixed sanitation options less practical
  - Seasonal rivers (laghas) and open bushland are still commonly used

In informal settlements, particularly around Garissa Town and refugee-hosting areas, sanitation infrastructure is overwhelmed or nonexistent. Many of these informal clusters have been formed or expanded by climate-induced migration, as pastoral families move into peri-urban areas after losing livelihoods during prolonged droughts or flood events.

3. Service Provision and Gaps in Refugee Camps

In Garissa, the Dadaab refugee complex houses over 300,000 refugees, making it one of the largest protracted refugee settlements in the world. Sanitation in the camps is managed by humanitarian agencies under UNHCR coordination.

- Sewerage systems do not exist; sanitation is provided through:
  - Shared latrines (family blocks)
  - Pour-flush and pit latrines with communal emptying services
- Challenges include:
  - Aging infrastructure with high maintenance needs
  - Limited sludge disposal infrastructure or treatment plants
  - Gaps in service equity between refugees and adjacent host communities
  - Overuse of facilities and lack of investment in upgrades due to shifting donor priorities

4. Social and Gender Disaggregated Sanitation Access

Access to sanitation is highly gendered, with significant implications for women, girls, and other vulnerable groups:

- Women and girls:
  - Face safety risks when using distant or shared latrines, especially at night
  - Often avoid eating or drinking to reduce toilet visits, which increases risk of UTIs
  - Lack of privacy and menstrual hygiene facilities in schools leads to absenteeism
  - Bear disproportionate burden for caring for children and elderly during sanitation-related illness
- Vulnerable groups:
  - Persons with disabilities often lack access to latrines that are physically accessible or equipped with supportive features
  - Older adults and caregivers face challenges in using poorly designed or unsanitary communal facilities
  - Low-income households in informal settlements cannot afford to construct private latrines or pay for desludging services

## Summary of Key Sanitation Challenges and Opportunities

- Absence of sewerage networks and treatment infrastructure
- High rates of shared latrines and open defecation
- Cultural resistance and mobility constraints in rural/pastoralist settings
- Inadequate gender-sensitive sanitation facilities in schools and public spaces

- Urgent need for inclusive, climate-resilient, and locally appropriate sanitation solutions

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

1. Availability and Adequacy of Public Sanitation Services

Public and shared sanitation facilities in Garissa County are limited in both coverage and quality, especially in high-density areas such as market centers, bus stations, mosques, schools, and informal settlements.

- In Garissa Town, a few formal public toilets exist within major markets (e.g., Suq Mugdi), but these are often overused, poorly maintained, and lack water or hygiene supplies. Public latrines at transit hubs and town centers often operate on a pay-per-use basis (Ksh 5–10), which can be unaffordable for low-income users.
- In peri-urban and informal settlements, such as those emerging on the fringes of Garissa Township and Modogashe, there is virtually no access to formal public sanitation. Residents either rely on open defecation, shared family latrines, or unsafe makeshift options.
- Places of worship and some large mosques have invested in shared latrines, but these often lack proper waste disposal mechanisms and are rarely sensitive to persons living with disabilities.
- Schools and health facilities have varying levels of sanitation coverage, with less than 50% reported to have gender-segregated and functional latrines.

2. Infrastructure Gaps and Investment Needs

There are critical infrastructure gaps in public and shared sanitation across all sub-counties:

- Market centers and public spaces lack permanent sanitation blocks with sufficient stalls for men, women, and people with disabilities.
- Public institutions often lack handwashing stations, soap, or water connection, reducing hygiene and usability.
- Bus parks and roadside trading areas (e.g sub-counties headquaters) have no sanitation provisions, forcing travelers and vendors to use open areas.
- Informal settlements, including those formed due to climate-induced migration, have received minimal investment in sanitation. These areas lack access roads, drainage, and sanitation planning, making infrastructure provision more complex.

Estimated investment needs include:

- Construction of at least 25 new public sanitation blocks across key towns and markets
- Rehabilitation and expansion of existing facilities in Garissa Township, Dadaab, and Modogashe
- Provision of gender-segregated, disability-inclusive, and climate-resilient designs
- Installation of handwashing infrastructure with soap and water access

3. Operation and Maintenance (O&M) Modalities

Where public facilities exist, their operation and maintenance face the following challenges:

- Informal O&M arrangements: Most market toilets are managed by youth groups or individuals contracted by county authorities, but these arrangements are rarely formalized or monitored for hygiene compliance.
- Revenue gaps: Pay-per-use models generate some revenue but are inadequate for major repairs or restocking of supplies. Many facilities lack financial transparency.
- County capacity gaps: County governments often lack dedicated budget lines or staff for sanitation facility maintenance, leading to neglect and poor responsiveness when facilities break down.
- Lack of private sector participation: There are few examples of formal public-private partnerships for sanitation in Garissa, despite the potential for private operators to improve service quality and accountability.

## Opportunities for Improvement

- Establish a public sanitation investment plan with clear targets by sub-county
- Formalize O&M contracts with trained community groups or SMEs, including monitoring and financial reporting
- Pilot PPP models for managing public toilets in busy commercial centers
- Leverage climate and WASH funding to build resilient, solar-powered, and inclusive public toilets
- Integrate public sanitation into market upgrading, urban planning, and public health strategies

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

1. Behavioral, Cultural, and Logistical Constraints

Garissa County faces multiple interlinked challenges that limit progress in sanitation access and uptake:

- Behavioral and cultural norms: In many rural and pastoralist communities, there is a longstanding cultural resistance to latrine use. Open defecation is still considered acceptable in some areas, particularly for children and elders. In mobile pastoral settings, fixed latrines are impractical.
- Low awareness and hygiene practices: Handwashing with soap after defecation is not consistently practiced, especially in households without designated handwashing stations. Hygiene education is often limited to NGO interventions during emergencies.
- Shared sanitation stigma: In urban and peri-urban areas, shared latrines—especially when not well-maintained—are seen as undignified or unsafe, particularly for women and adolescent girls.

- Logistical constraints: Many remote areas lack access roads or equipment needed for latrine construction, desludging, or delivery of sanitation materials. The absence of a functional fecal sludge management system further limits sustainability.
- Affordability barriers: Many low-income households cannot afford to construct improved latrines or maintain existing ones. In informal settlements and rural zones, families prioritize food and water over sanitation investments.

2. Climate Change Impacts on Sanitation Infrastructure

Sanitation systems in Garissa are highly vulnerable to the effects of climate change:

- Flooding damages pit latrines and communal sanitation blocks, especially in low-lying areas and informal settlements. Floodwaters frequently cause collapse of latrines, creating serious public health risks during rainy seasons.
- Rising water tables, particularly in areas near the Tana River and seasonal laghas, increase the risk of groundwater contamination from unlined or shallow latrines.
- Droughts affect the availability of water for sanitation and hygiene, especially in schools and health facilities, leading to reduced handwashing and latrine usage.
- High temperatures accelerate the decomposition of waste in shallow latrines, causing odors and flies infestations

The combination of these hazards compromises sanitation reliability, increases disease risks, and accelerates infrastructure degradation.

3. Potential Strategies for Improving Sanitation Uptake

To address the sanitation gaps and challenges, Garissa County will need a coordinated, multi-pronged approach that combines infrastructure, behavior change, and governance:

Behavior Change and Social Mobilization

- Scale up Community-Led Total Sanitation (CLTS) with localized messaging that respects cultural contexts and pastoralist lifestyles.
- Partner with religious leaders, women's groups, and youth champions to shift norms around open defecation and promote shared sanitation models where feasible.
- Integrate hygiene education in schools, madrassas, and health clinics.

Infrastructure and Design Innovations

- Promote climate-resilient sanitation technologies, including raised latrines, lined pits, and bio-digesters suited for flood-prone and water-scarce environments.
- Encourage use of locally available materials and incentivize low-cost designs for vulnerable households.
- Pilot mobile or relocatable sanitation units for semi-nomadic pastoralist communities.

Service Delivery and Governance

- Develop a fecal sludge management plan, including designated dumping points, vacuum trucks, and decentralized treatment units.
- Provide subsidies or micro-financing to support latrine construction among poor households.
- Enforce sanitation by-laws and integrate sanitation planning into urban development and land allocation frameworks.

Climate Resilience and Risk Reduction

- Map sanitation flood risk zones and incorporate mitigation measures into facility design and siting.
- Invest in elevated toilets and sealed containment systems in flood-prone informal settlements and institutions.
- Include sanitation in County Climate Change Action Plan (CCCAP) and disaster risk reduction strategies.

### *2.3.4 Assessment of fecal sludge and wastewater management and existing treatment facilities*

1. Status of Sludge and Wastewater Containment, Collection, Treatment, and Disposal

Garissa County currently lacks a formalized and centralized fecal sludge or wastewater treatment system. Both sewered and non-sewered sanitation systems face major operational and regulatory gaps, leading to widespread environmental and public health risks.

- Containment: Most households and institutions rely on on-site sanitation systems such as pit latrines, VIP latrines, and septic tanks. However, many of these facilities are shallow, unlined, and built in close proximity to homes or water points, increasing the risk of leakage and groundwater contamination.
- Collection and Emptying: Sludge emptying is carried out informally, often using manual methods or contracted private vacuum trucks. There are no designated dumping sites, and sludge is often disposed of indiscriminately into open fields, quarries, or seasonal riverbeds, posing a major environmental hazard.
- Treatment: There is no functional fecal sludge treatment plant in Garissa County. While septic tanks are common in urban and peri-urban areas, sludge is not treated or reused in any formal way. Similarly, greywater from institutions, households, and businesses is not managed, contributing to waterlogging and mosquito breeding in some neighborhoods.
- Disposal: Wastewater disposal is largely unmanaged, with untreated effluent from some hotels, car washes, and informal industries discharged into open drains, fields, or seasonal streams. In refugee camps, agencies manage limited sludge containment and safe disposal through contracted services, but long-term sustainability remains a concern.

2. Climate Risks Affecting Wastewater and Fecal Sludge Management

Garissa's sanitation systems are highly vulnerable to climate-related hazards:

- Flooding events can lead to collapse of pit latrines, overflow septic systems, and carry untreated waste into water bodies. Informal settlements, especially those along laghas (seasonal riverbeds), are particularly exposed.
- Rising water tables during heavy rainfall seasons increase the risk of infiltration and groundwater contamination from shallow pits and unlined septic systems.
- Extreme heat and drought reduce the availability of water for cleaning and flushing, leading to poor hygiene and overuse of existing sanitation facilities.
- Poorly planned infrastructure lacks resilience features, such as elevated toilet blocks, lined pits, or ventilated slabs—leading to faster degradation and reduced usability during shocks.

3. Opportunities for Investment in Climate-Resilient Sanitation Services

To address these challenges and promote safe, sustainable sanitation, the following opportunities for investment and innovation are proposed:

A. Fecal Sludge Management (FSM) System Development

- Establish a decentralized fecal sludge treatment facility (FSTP) with support from partners (e.g., UN-Habitat, UNICEF, Water Sector Trust Fund).
- Designate authorized sludge disposal sites, including properly engineered drying beds or composting pits.
- Pilot low-cost sludge treatment solutions like bio-digesters or vermifiltration in schools, health centers, and markets.

B. Sanitation Infrastructure Upgrades

- Promote climate-resilient designs, including raised and lined latrines in flood-prone zones.
- Upgrade existing public and institutional toilets with features like:
    - Elevated containment chambers
    - Solar-powered water pumps for flushing and handwashing
    - Gender-sensitive and inclusive amenities

C. Sewerage and Greywater Management Pilots

- In urban centers like Garissa Township, pilot small-scale sewer networks for high-density neighborhoods or public institutions.
- Support constructed wetlands or green filters for treating greywater from health facilities and informal industries (e.g., butcheries, car washes).

D. Private Sector and Public-Private Partnerships (PPP)

- Formalize private vacuum truck operators through licensing, training, and designated routes.
- Attract SMEs to manage FSM service chains, including collection, transport, treatment, and reuse (e.g., sludge-to-compost initiatives).

E. Policy and Regulation

- Enforce the County Sanitation Bylaws to regulate containment standards, faecal sludge transport, and disposal practices.
- Develop FSM and Wastewater Management Guidelines in line with Kenya Environmental Sanitation and Hygiene Policy (KESHP).

## 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*

1. Existing WASH Infrastructure and Service Levels

WASH infrastructure in public institutions across Garissa County—especially in schools and health facilities—remains inadequate, with wide disparities in coverage, functionality, and quality of services.

- Water supply in schools is primarily sourced from rainwater harvesting tanks, nearby boreholes, or community taps. However, only about 40% of public schools have reliable access to year-round water.
- In healthcare facilities, water access is uneven. While larger facilities (e.g., sub-county hospitals) are more likely to be connected to piped systems or boreholes, many dispensaries and health posts rely on seasonal sources, water trucking, or neighbor-sharing arrangements.
- Sanitation infrastructure in institutions is predominantly pit latrines, with some VIP latrines or septic systems in urban centers. Functional, clean, and gender-segregated toilets are available in only about 45–50% of schools, and even fewer meet national quality standards.
- Handwashing facilities are inconsistent, with soap and water frequently unavailable, especially during dry seasons.

2. Disparities in Access Across Different Institutions

- Urban schools and health centers (e.g., in Garissa Township and Modogashe) generally have better WASH coverage, including rainwater harvesting, elevated tanks, and latrines with concrete slabs.
- Rural and pastoralist-area institutions, particularly in Lagdera, Balambala, and Fafi, face serious WASH deficits:
    - No water source within compound
    - Shared or collapsed latrines

    - Lack of menstrual hygiene facilities for adolescent girls
- Boarding schools, special needs schools, and maternity units in health centers are particularly affected by water scarcity, often resorting to rationing or sourcing water through informal means during dry seasons.

3. Assessment of Operation and Maintenance (O&M) Modalities

Operation and maintenance of WASH infrastructure in schools and healthcare facilities is typically ad hoc and reactive, with no standard maintenance schedules or dedicated technical support:

- Schools rely on Boards of Management (BoMs), Parent-Teacher Associations (PTAs), or head teachers to oversee minor repairs or hire casual workers for cleaning and pit emptying.
- Health facilities are managed under sub-county health departments, but most do not have dedicated WASH officers or budgets for ongoing maintenance. Repairs are delayed due to procurement bottlenecks and staff shortages.
- Rainwater tanks and taps are often non-functional due to lack of cleaning, gutter repairs, or first-flush system upkeep.
- There is limited coordination between health/WASH and infrastructure departments at the county level, leading to fragmented interventions and poor asset tracking.

4. Assessment of Financing Modalities

- School WASH financing is minimal and inconsistent. Funding depends on:
    - Capitation grants (which often prioritize tuition and feeding programs)
    - Support from NGOs or donor-funded projects (e.g., UNICEF, Save the Children, STAWI)
    - Parental contributions, which are unreliable and inequitable across income groups
- Healthcare WASH financing suffers from:
    - Lack of ring-fenced budgets for WASH in Annual Work Plans (AWPs)
    - Heavy dependence on development partner interventions for facility upgrades and borehole drilling
    - No systematic budgeting for water trucking during droughts or emergencies
- There is no dedicated county WASH-in-institutions financing framework, and coordination with national WASH-in-schools (WinS) or WASH-in-healthcare (WiHC) programs is weak.

## Summary of Challenges and Opportunities

- Challenges: Infrastructure deficits, unreliable supply, lack of O&M funding, weak accountability, and climate vulnerability.

- Opportunities:
    - Develop a County WASH in Institutions Strategy
    - Prioritize climate-resilient WASH infrastructure in schools and dispensaries
    - Integrate WASH indicators into education and health performance monitoring tools
    - Establish county-level maintenance funds and technical response teams
    - Strengthen PPPs and NGO partnerships to deliver low-cost, inclusive WASH systems in high-need areas

### *2.4.2 Hygiene promotion programs in educational and health care facilities*

1. Current Health and Hygiene Awareness Initiatives

Hygiene promotion in Garissa County's schools and health facilities has been largely driven by development partners, particularly during emergency responses to disease outbreaks (e.g., cholera, COVID-19) and during drought-related WASH interventions.

- In schools, hygiene promotion is often delivered through ad hoc sessions led by visiting NGO teams or health personnel. Key messages typically cover handwashing, menstrual hygiene, and latrine use, but the frequency and consistency of these programs vary widely.
- Health facilities conduct hygiene education through community health volunteers (CHVs), who engage patients and caregivers on safe water handling, personal hygiene, and sanitation practices. However, these efforts are limited by staff shortages, poor supervision, and low motivation due to irregular stipend payments.
- Hygiene messaging has occasionally been integrated into school health clubs and religious platforms, but these structures lack formal support, supervision, and integration into the education or health sector performance frameworks.
- There is limited use of behavior change communication (BCC) materials, and most facilities lack posters, handwashing demonstrations, or culturally relevant educational tools.

2. Potential Areas for Improvement and Expansion

To achieve sustained impact, hygiene promotion must be institutionalized, scaled up, and linked to infrastructure and service delivery. Key areas for improvement include:

- Curriculum integration: Strengthen hygiene education within the formal school curriculum and teacher training programs, including locally relevant topics such as water conservation, climate risks, and menstruation.

- School WASH clubs revitalization: Provide structured toolkits, incentives, and supervision for student-led WASH activities, including inter-school competitions and peer-to-peer campaigns.
- Community and parent engagement: Link hygiene promotion to parenting programs, madrassa teachings, and local leaders' forums to challenge taboos and reinforce behavior change across age groups.
- Health worker capacity building: Train CHVs, nurses, and facility staff in participatory hygiene methods, including disability-sensitive messaging, gender awareness, and emergency WASH preparedness.
- Mass media and technology: Use radio, SMS, and social media platforms to reach wider audiences with behavior change messages, especially during disease outbreaks or climate emergencies.

3. Assessment of Climate-Adaptive and Inclusive WASH Infrastructure

While some progress has been made, most institutional WASH infrastructure in Garissa is not climate-adaptive or inclusive:

- Climate resilience:
  - Less than 30% of schools and health facilities have functional rainwater harvesting systems.
  - Few sanitation units are designed to withstand flooding, leading to pit collapse and service interruption during rainy seasons.
  - Most tanks are exposed, leading to high evaporation losses, especially during extreme heat spells.
- Inclusivity:
  - The majority of toilets lack features for people with disabilities, such as ramps, grab rails, or wide doors.
  - Menstrual hygiene facilities are scarce—many schools do not provide privacy, disposal bins, or emergency sanitary pads.
  - Separate sanitation for male and female users is lacking in over 40% of institutions, discouraging use, particularly for adolescent girls.

## Recommendations for Expansion

- Develop and roll out a Hygiene Promotion Toolkit tailored to pastoralist and refugee-hosting contexts.
- Construct inclusive WASH facilities with elevated platforms, drainage, and privacy features in at least 75% of institutions by 2027.
- Integrate WASH in Education and WASH in Health into County Sector Plans, Annual Work Plans, and budgeting processes.

- Collaborate with partners (UNICEF, AMRE to expand climate-proof WASH pilots and document learning for scale-up.

### *2.4.3 Challenges and gaps in service provision*

1. Menstrual Hygiene Management (MHM) Approaches

Menstrual hygiene management (MHM) remains a largely underserved and culturally sensitive component of WASH in Garissa County, particularly in schools and rural communities:

- Most schools lack dedicated washrooms or safe spaces for girls to manage menstruation privately and hygienically.
- Access to menstrual hygiene products is limited due to cost, taboos, or supply shortages. Only a few schools distribute pads, often through donor-funded programs.
- There is limited awareness and education on MHM for both girls and boys, and many female students report missing school during menstruation due to fear of leakage, shame, or discomfort.
- Disposal systems for used pads are mostly t, leading to improper disposal (e.g., in latrines or open fields), which contributes to latrine blockages and environmental pollution.

2. Medical Waste Management Approaches

Healthcare facilities across the county face significant challenges in managing medical and hazardous WASH-related waste:

- Most dispensaries and health centers lack proper segregation, treatment, and disposal systems for infectious, sharps, and pharmaceutical waste.
- Burning and burial are the most common methods used at facility level, often in shallow pits or open grounds—posing health and environmental risks.
- Incinerators, where available (mainly in hospitals), are often outdated or non-functional, and facilities lack trained staff for waste classification and handling.
- The absence of a county-level medical waste management policy or standard operating procedures (SOPs) exacerbates these challenges.

3. Barriers to Access: Affordability and Social Norms

Numerous economic, social, and cultural barriers hinder equitable access to WASH services:

- Affordability: Low-income households often cannot afford to build latrines, purchase water from vendors, or pay desludging fees. In rural areas, pit construction is constrained by the cost of materials and labor.
- Social norms: Deep-rooted cultural beliefs affect sanitation and hygiene practices:
    - Open defecation is still normalized in some pastoral communities.
    - Menstrual issues are taboo, limiting open dialogue and product access.

    - Gender roles reinforce that water collection and latrine cleaning are the responsibility of women and girls, which limits male participation in sanitation-related decisions and maintenance.
- Stigma and discrimination: Persons with disabilities and older adults are often excluded from planning and lack physically accessible facilities. Shared facilities may not be welcoming or safe for all genders.

4. Strategies for Improving Inclusivity and Sustainability

To address these gaps, Garissa County should adopt a holistic, inclusive approach to WASH service planning and delivery. Recommended strategies include:

A. Menstrual Hygiene and Gender-Sensitive WASH

- Construct gender-segregated, lockable, and private sanitation blocks with disposal bins and water access in all schools and public institutions.
- Integrate MHM education into school health programs, targeting both students and teachers.
- Promote local production and distribution of affordable, reusable menstrual products with support from women's groups and social enterprises.

B. Medical Waste and Institutional WASH

- Develop and enforce county-level medical waste management guidelines, including SOPs for waste segregation, handling, and incineration.
- Rehabilitate or install eco-friendly incinerators in major health centers, and train health workers on safe disposal.
- Include waste management in the County Health and WASH budgets and facility performance indicators.

C. Financial Inclusion and Subsidy Mechanisms

- Create targeted WASH subsidy programs or voucher schemes for low-income households to build latrines and access water during droughts.
- Integrate WASH financing into County Social Protection Programs to ensure vulnerable households aren't left behind.

D. Inclusive Design and Participation

- Ensure that all new WASH infrastructure is inclusive of persons with disabilities, women, and older adults.
- Include vulnerable populations in WASH planning, budgeting, and monitoring forums, and support them through tailored capacity building.

E. Behavioral Change and Social Norm Shifting

- Partner with religious leaders, elders, and community-based organizations to promote positive WASH behaviors and challenge harmful taboos around sanitation, menstruation, and disability inclusion.

## 2.5 WASH Plus/Multiple Use Water (MUS) Services

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

1. Assessment of Multi-Use Water Demands

In Garissa County, water serves a range of non-domestic livelihood needs, including pastoralism, small-scale irrigation, micro-enterprises, and public institutions. However, the majority of water systems were designed with domestic use as the primary or sole function, leaving productive uses underserved or unmanaged.

- Livestock Watering: Livestock is the county's main economic activity, and watering needs often exceed domestic consumption, especially during dry seasons. A camel consumes 30–50 liters/day, while a cow requires 20–30 liters. Many boreholes serve thousands of animals per day but lack separate watering troughs, leading to crowding, infrastructure strain, and water quality issues.
- Irrigation and Agriculture: Smallholder farmers near the Tana River corridor and in peri-urban gardens use water from shallow wells, river abstraction points, and informal furrow systems. However, irrigation is limited in coverage and seasonal in nature. The STAWI dataset and Water Strategy highlight that only ~5% of available water infrastructure is adapted for irrigation.
- Small-Scale Industry: Garissa's urban centers (e.g., Garissa Town, Modogashe, Dadaab) support water-dependent enterprises such as food vendors, butcheries, hair salons, and brick making. These businesses rely on piped supply or private vendors. Water disruptions negatively affect productivity, income, and sanitation.
- Institutions (Schools, Health, Markets): These institutions also have multi-use demands—including cleaning, sanitation, gardening, and cooking—yet are often left out of system design and water budgeting.

2. Strategies for Integrated Water Service Delivery (WASH + Livelihood Use)

To ensure sustainability and maximize return on investment, Garissa County must move toward integrated water service delivery, especially in climate-vulnerable and livestock-reliant communities.

Key strategies include:

- Design and retrofitting of multi-use infrastructure (MUS):
  - Equip boreholes with separate livestock troughs and community taps.
  - Install drip irrigation-ready outlets at water pans or tanks near smallholder farms.

    - Build elevated storage and gravity-fed off-take points to serve both institutions and productive users.
- Policy integration:
    - Embed MUS planning into county water policies, investment plans, and borehole siting protocols.
    - Ensure MUS designs are incorporated into procurement and construction standards for all new schemes.
- Community-level water use planning:
    - Train Water User Associations (WUAs) to manage water scheduling and allocation across uses (e.g., domestic, livestock, school).
    - Promote equitable participation of women and youth in MUS governance and decision-making.
- Monitoring and reporting:
    - Track multi-use demand through digital pump monitors, mobile surveys, and water point audits.

3. Role of Climate-Smart Agriculture and Water-Efficient Irrigation

Climate-smart agriculture (CSA) and water-saving technologies present major opportunities to strengthen the MUS model and enhance climate resilience:

- Drip and sprinkler irrigation systems are being piloted in the Tana River corridor and have shown potential to increase yields while reducing water use by over 50%.
- Greenhouse farming in schools and women-led cooperatives (e.g., in Balambala and Modogashe) demonstrates that small-scale farming can thrive with minimal water if properly supported.
- Agroforestry and fodder cultivation supported by shallow wells and lined pans reduce pressure on boreholes while boosting food security.
- Rainwater harvesting and water reuse (greywater) from institutions can support micro-gardening and tree planting—especially in health facilities and boarding schools.

## Summary of Opportunities

- Enhance borehole and pan designs to accommodate multi-use with clear allocation schedules
- Formalize MUS planning frameworks at county level
- Train WUAs and farmers on efficient irrigation and livestock-water balance
- Promote inclusive MUS systems to reduce gender inequality and improve food and income security
- Incentivize private sector involvement in MUS infrastructure and maintenance through PPPs

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

1. Community-Led Management and Governance Models for MUS

Water User Associations (WUAs) play a central role in Garissa County's rural and peri-urban water management, particularly in areas not served by formal utilities like GAWASCO. Over 60% of borehole schemes and water pans are managed by WUAs, with communities responsible for operations, tariff collection, basic maintenance, and access control. These associations are often the first responders in times of drought or system failure.

In the context of Multiple-Use Services (MUS)—which include domestic supply, livestock watering, irrigation, and institutional use—community governance models vary in effectiveness. While the Water Act (2018) and the draft County Water Policy recognize WUAs as key service providers, most operate without formal registration, legal recognition, or structured guidelines for managing MUS demands.

Where governance is strong, WUAs have:

- Developed user access rules for livestock vs. domestic use
- Established rotation schedules during water stress periods
- Maintained separate livestock troughs to reduce conflict at water points
- Used locally agreed tariffs to fund operations

2. Strategies to Enhance Resilience in MUS Systems

Given Garissa's climate vulnerability and dependence on water for livelihoods, enhancing the resilience of MUS systems is crucial. Strategies to support WUAs and communities in adapting to climate risks and sustaining MUS services include:

- Infrastructure-Based Adaptation:
  - Design MUS schemes with redundant storage (e.g., dual tanks, lined pans) to buffer seasonal fluctuations.
  - Separate infrastructure points for domestic and livestock use to prevent overloading taps and ensure water quality.
- Water Use Prioritization and Scheduling:
  - Establish community-led water allocation plans that prioritize domestic, institutional, and vulnerable users during drought periods.
  - Introduce usage logs and rotational schedules to reduce conflict and over-abstraction.
- Early Warning and Emergency Preparedness:
  - Train WUAs to use seasonal forecasts, early warnings, and mobile alerts to prepare for shortages.
  - Develop emergency water trucking protocols for critical institutions and underserved settlements.
- Recharge and Source Protection:
  - Support WUAs in protecting recharge areas through gully rehabilitation, tree planting, and fencing.
  - Promote rainwater harvesting and runoff management to supplement borehole supply during dry spells.

3. Best Practices and Capacity-Building Needs in MUS Implementation

While promising examples of MUS management exist in Garissa—particularly in Fafi, Modogashe, and Balambala—scaling up effective community-led MUS governance requires systematic support.

Best Practices Identified:

- Co-management arrangements between county government and WUAs to monitor performance and co-finance repairs
- Use of solar-powered boreholes with gravity-fed distribution, reducing operational costs and enabling off-grid services
- Establishment of livestock-specific kiosks and troughs to separate watering systems and protect hygiene

Capacity-Building Needs:

- Training WUAs on MUS planning, budgeting, and record-keeping
- Legal registration and orientation on their roles under the County Water Act
- Technical training on pump maintenance, minor repairs, and climate-resilient design principles
- Development of community charters or MUS bylaws with clear water use rules and conflict resolution mechanisms
- Support to access digital tools for scheme monitoring, billing, and fault reporting

# 3: WATER AND SANITATION SERVICES INSTITUTIONAL STRUCTURE AND FINANCING

## 3.1 Sector Governance and Service Delivery Models

### *3.1.1 Overview of institutions responsible for water and sanitation service provision*

1. Key Policies and Regulations

Water and sanitation service provision in Garissa County is governed by a mix of national legislation, county-level policies, and customary arrangements. The legal and policy framework provides for a decentralized, multi-actor model of service delivery, though implementation remains uneven.

Key guiding documents include:

- Kenya Constitution (2010) – Assigns water and sanitation services as a devolved function under county governments.
- Water Act (2016) – Establishes institutions like the Water Resources Authority (WRA), Water Sector Trust Fund (WSTF), and Water Services Regulatory Board (WASREB) to oversee water resource management and service delivery.
- Garissa County Water Act (2018) – Provides a legal framework for county-specific service delivery, including delegation to water service providers (WSPs) and Water Users Associations (WUAs).
- Garissa Draft County Water Policy (2018) – Lays out principles for integrated water management, public-private partnerships, and climate-resilient services.
- Kenya Environmental Sanitation and Hygiene Policy (2016–2030) – Offers guidance on national sanitation programming, including fecal sludge management.

2. Key Government Agencies and Their Mandates

National Level:

- Ministry of Water, Sanitation, and Irrigation: Provides policy direction, technical guidelines, and coordination with counties.
- Water Services Regulatory Board (WASREB): Regulates licensed WSPs, sets service standards, and monitors performance.
- Water Resources Authority (WRA): Oversees water resource use, abstraction permits, and catchment protection, including the Merti Aquifer.
- Water Sector Trust Fund (WSTF): Channels financing to pro-poor water and sanitation projects, particularly in underserved counties like Garissa.
- National Drought Management Authority (NDMA): Leads drought response coordination, early warning, and water trucking support during emergencies.

County Level:

- Department of Water, Sanitation, and Irrigation (Garissa County): Leads planning, budgeting, infrastructure development, and supervision of rural water schemes.
- Garissa Water and Sewerage Company (GAWASCO): A licensed urban WSP managing piped systems in Garissa Township and environs.
- Garissa Rural Water and Sewerage Company (GARUWASCO): Manages select rural schemes and is tasked with supervising WUAs and supporting rural infrastructure development.
- Public Health Department (County Health): Oversees sanitation regulation, hygiene promotion, and health-related water quality monitoring.
- Education and Health Sectors: Responsible for WASH facilities in schools and healthcare centers, in coordination with the water department.

3. Informal Arrangements and Community Structures

Beyond formal government systems, informal and community-based actors play a central role in water and sanitation service delivery across the county:

- Water User Associations (WUAs): Manage over 60% of rural water schemes, especially boreholes and pans. These associations are often formed organically or by NGO support, and operate without formal registration, relying on community contributions and volunteer labor.
- Religious and local leaders: Involved in resolving water-related disputes, mobilizing communities for sanitation campaigns, and influencing hygiene behaviors.
- Private vendors and water cart operators: Particularly active in Garissa Town, Dadaab, and during drought emergencies. These actors fill service gaps but operate largely without regulation or quality assurance.
- NGOs and UN agencies: Play a critical role in refugee-hosting areas (e.g., Dadaab), where agencies like UNHCR, CARE, and NRC deliver water and sanitation services with county coordination. In rural host communities, partners like USAID STAWI and UNICEF support infrastructure, governance, and behavior change initiatives.

## Summary of Challenges and Opportunities

- Challenges:
  - Overlap of mandates and limited coordination across departments
  - Weak enforcement of regulatory standards and licensing
  - Underfunding of county water agencies and rural WSPs
  - Limited formal recognition of community managers (WUAs)
- Opportunities:

- Fast-track operationalization of the County Water Act and Policy through development of county water regulations
- Strengthen PPPs and professionalize rural service delivery
- Create a county WASH coordination platform for all actors
- Build capacity of WUAs and integrate them into formal county systems

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

1. Responsibilities of County Governments in Water and Sanitation Service Delivery

Under the Constitution of Kenya (2010) and the Water Act (2016), water and sanitation services are a devolved function. The Garissa County Government bears the primary responsibility for planning, developing, and regulating water and sanitation service delivery. As per the Water Services Regulations (2021), the County Executive Committee Member (CECM) for water is mandated to:

- Formulate county-specific water and sanitation policies and strategies;
- Oversee development and delivery of water services through public investments, partnerships, and coordination with national actors;
- Mobilize resources for water infrastructure, especially in underserved areas;
- Monitor and report on the status of water and sanitation services;
- Ensure progressive realization of the right to water and sanitation, and mainstream equity and climate resilience in planning.

Supporting the CECM, the County Director of Water and Sanitation is responsible for technical implementation, WSP oversight, WUA support, regulation enforcement, and data management. Counties are also tasked with gazetting a County Water and Sewerage Services Strategy every five years and aligning it with local development needs and national policy.

2. Formal and Informal Service Provision Mechanisms

The County uses a hybrid model for service delivery that includes formal public utilities, licensed community providers, informal groups, and private operators:

A. Formal Service Providers

- Garissa Water and Sewerage Company (GAWASCO): Licensed to serve Garissa Township and nearby areas. Manages piped supply systems, public taps, and wastewater services where infrastructure exists.
- Garissa Rural Water and Sewerage Company (GARUWASCO): Oversees selected rural schemes and collaborates with Water Users Associations (WUAs) on community-level service delivery. It is envisioned to scale operations countywide and integrate smaller schemes under formal oversight.

B. Community-Based Organizations and Water User Associations (WUAs)

- WUAs manage the majority of rural boreholes and pans. Their responsibilities include daily operations, tariff collection, basic maintenance, and minor expansions. They often rely on community goodwill and donor support.
- Despite their importance, most WUAs remain unregistered, untrained, and operate outside formal regulatory frameworks. According to the Garissa County Water Management Act (2018), county is encouraged to support, formalize, and monitor these community-based water providers and integrate them through sub-contracting or partnership arrangements with licensed WSPs.

C. Private Operators and Informal Providers

- In urban and peri-urban areas, private water vendors and tanker operators provide a significant portion of supply, especially during dry seasons or system breakdowns. These actors operate outside the licensing regulations, leading to quality, safety and pricing concerns.
- The Regulations empower counties and WSPs to regulate water vending, including setting tariffs, designating supply points, and licensing vendors to ensure consumer protection and fair pricing.

## Opportunities and Gaps

- Strengthening institutional capacity: There is a need to invest in the operational and technical capabilities of GARUWASCO and integration with WUAs, including registration, training, and digital reporting systems.
- Policy enforcement: Many community schemes operate without clear accountability. Fast-tracking the implementation of Garissa's Water Act and developing regulations to operationalize it will be key.
- Partnerships: Counties can leverage PPPs and donor support to build a professionalized rural service network that links WUAs, NGOs, and formal WSPs.
- Equity and inclusion: Service provision models should incorporate gender equity, social inclusion, and climate adaptation into their mandates, especially in fragile and underserved areas.

- Community involvement: For the purpose of ownership and sustainability.

- Frequency of turn over:The trained personnel is not frequently available to the community.

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

1. Community Engagement and Management Role

In Garissa County, community organizations—especially Water User Associations (WUAs)—are central to the management of rural and peri-urban water systems. These entities are

responsible for operating and maintaining boreholes, water pans, shallow wells, and small-scale piped systems in areas not covered by formal utilities. Their role includes:

- Daily management of water points and kiosks
- Tariff collection and record-keeping (where structures exist)
- Mobilizing community contributions for maintenance and security
- Coordinating seasonal usage, particularly for livestock and drought response

These community-led systems provide services to more than 60% of the county's rural population, often in areas where state and market systems are absent. Community ownership has allowed for contextualized management, local participation, and responsiveness in times of crisis.

2. Assessment of Consultations and Feedback Mechanisms

Community involvement in water planning and service management is largely informal, localized, and episodic:

- Community consultations are typically held during project inception, especially for donor-funded boreholes and pan construction. However, long-term engagement in monitoring and planning is limited.
- Feedback mechanisms (e.g., public meetings, suggestion boxes, or reporting hotlines) are rare or non-existent in most WUA-managed schemes.
- Where present, committee structures within WUAs (chairperson, treasurer, etc.) act as focal points for complaints, but these processes are not standardized or documented.
- In more formal schemes (e.g., GAWASCO), customers may lodge complaints through offices or call lines, but access is limited in rural areas.

3. Compliance and Enforcement Mechanisms

Compliance and enforcement of standards in community-managed water systems remain a significant challenge:

- Most WUAs operate without formal licenses, and there is no enforcement of minimum service levels, tariffs, or quality controls.
- The Garissa Water Act (2018) provides a framework for formalizing WUAs and enabling delegated service provision, but enforcement mechanisms and regulations (e.g., for registration, audit, or performance monitoring) are not yet operationalized.

- There is limited county-level capacity for inspection, auditing, or conflict mediation in rural water governance.
- Disputes within WUAs—such as tariff disagreements or leadership wrangles—are often referred to local elders, chiefs, or religious leaders, indicating reliance on customary governance in the absence of formal legal structures.

To strengthen compliance, Garissa County should:

- Fast-track the development of regulations under the County Water Act, including guidelines for WUA registration, service delegation, and reporting
- Build the capacity of the Water Directorate, GARUWASCO and WUAs to support and monitor community-managed schemes
- Promote community-led audits, public disclosure of financial reports, and grievance redress mechanisms at water points.( watch groups to oversee the activities by the WUA)

- Initiate routine water quality testing and improvement mechanisms including monitoring and evaluation of stds

- Develop user friendly by laws that guide water usage, maintenance of water points and penalties for non-compliance

- Installation of smart meters,Gis mapping and mobile reporting tools for better enforcement

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

1. Successful Case Studies and Lessons Learned

Though limited in scale, Garissa County has seen emerging examples of public-private collaboration in water service delivery, especially through:

- Private water vendors and trucking services supplying Garissa Township and most of other sub counties including refugee-hosting sub-counties during droughts;
- Solar-powered water kiosks constructed in partnership with NGOs and managed by local youth or women groups;
- Delegated management models piloted in peri-urban areas where local entrepreneurs operate kiosks or manage maintenance on behalf of Water User Associations (WUAs).

- WUAs purchase spare parts from private vendors and are given a guarantee of certain duration through contractual agreement.

Key lessons from these cases include:

- Flexible financing models work best, where public infrastructure (e.g., boreholes) is supported by private O&M or retail services (e.g., kiosks, vendors).
- Incentives for private partners—such as user fees, performance bonuses, or cost-sharing—are vital to ensure sustainability.
- Public actors benefit from risk-sharing in operations, maintenance, and customer service, while private actors face risks like delayed payments or seasonal demand fluctuation.
- Gaps in legal frameworks—especially unclear delegation agreements and lack of licensing for informal vendors—create regulatory uncertainty.
- Equity and sustainability safeguards (e.g., tariff caps, pro-poor targeting, service level monitoring) are often weak or absent.

- Establishment of formal agreement reduces the risk of financial loss from defective or low quality spare parts.

2. Strategies for Mobilizing Private Sector Participation

To attract and retain responsible private sector actors, Garissa County should strengthen enabling conditions through the following strategies:

A. Policy and Regulatory Reforms

- Fast-track implementation regulations under the Garissa County Water Act (2018) that allow delegation of services to private actors or community groups through formal contracts.
- Incorporate PPP guidelines into the upcoming CWSSIP and investment plans, aligned with the Water Services Regulations (2021) that allow PPPs for both piped and non-sewered sanitation services.

B. Stakeholder Engagement Processes

- Establish a WASH PPP taskforce or steering committee to review proposals, provide approvals, and monitor compliance.
- Conduct regular private sector forums to engage SMEs, technology providers, financial institutions, and NGOs in identifying opportunities and clarifying roles.

C. Targeted Public Investments to Leverage Private Finance

- Prioritize last-mile infrastructure (e.g., borehole drilling, elevated tanks and pipe extension) and invite the private sector to operate or manage downstream distribution.
- Provide public guarantees or subsidies for operations in underserved areas (e.g. Lagdera, Ijara, Dadaab, Fafi and balambala), where market incentives are weak.

3. Potential for Private Sector Involvement

Garissa has high potential for private sector participation in several domains:

- Infrastructure Development:
  - Solarization of boreholes, construction of commercial kiosks, mini-grids for water pumping.
  - Expansion of urban sewer networks through design-build-operate (DBO) or leasing arrangements.
- Technology and Innovation:
  - Introduction of smart metering, mobile payment, and digital water monitoring for tariff collection and performance tracking.
  - Decentralized sanitation solutions (e.g., container-based toilets, micro-treatment units).
- Operations and Maintenance (O&M):
  - O&M contracts for borehole maintenance, metering services, and fecal sludge transport.
  - Franchise models for latrine servicing or hand pump maintenance at the ward level.

4. Potential in Blended Finance and Innovative Funding Approaches

Blended finance—combining public, donor, and private resources—offers untapped potential in Garissa's water and sanitation sector. Opportunities include:

- Output-Based Aid (OBA) models, where private actors pre-finance service delivery and are reimbursed based on performance.
- Microfinance for household sanitation: In partnership with local SACCOs or mobile lenders to enable low-income households to build improved latrines.
- Social impact bonds or climate resilience funds: To support infrastructure in drought-prone areas, with returns tied to service delivery outcomes.
- Results-Based Financing (RBF) through WSTF or development partners like USAID STAWI or World Bank KWASH II.

## 3.2 Sector Funding Arrangements

### *3.2.1 Sources of funding*

1. Analysis of Current Funding Sources

Garissa County's water and sanitation sector is primarily financed through county budget allocations, development partner support, humanitarian contributions, and limited private sector engagement.

According to the Water Interventions 2022–2024 report, the total investment in water interventions during this period reached Kshs 831 million, with the county government contributing Kshs 611 million (~74%), and development partners contributing Kshs 219 million (~26%).

Key funding streams include:

- County Government Allocations: Focused on borehole drilling, pipeline extensions, water trucking, and solarization. Lagdera sub-county received the highest allocation (Kshs 667 million), indicating a strong focus on underserved and drought-affected areas.
- Development Partners and NGOs: Organizations such as IRK, UNICEF, Peace Winds Japan, Save the Children, CARE, and DRC contributed financially and technically to over 60 water projects across all wards. Their involvement mainly supported borehole rehabilitation, solarization, water pan desilting, and emergency response.
- Emergency Water Trucking: The county also undertook water trucking to 162 centers in the county in 2024 and 2025, funded by the county, NDMA and partners in response to prolonged drought.

2. Analysis of the Trend of Private Capital Mobilization

Private sector financing remains minimal and largely limited to:

- Installation and maintenance contracts for solar-powered pumps and borehole equipment
- Water vending in urban centers such as Garissa Town and Dadaab
- Short-term service agreements (e.g., trucking and construction)

Despite the rising need for diversified funding, there is no evidence of structured PPPs or private equity involvement in long-term WASH infrastructure. This reflects:

- Weak regulatory frameworks at the county level
- Lack of formal PPP models and incentive structures
- Perceived financial risk due to low revenue potential in rural water schemes

- Huge capital required for initial investment

3. Trends in Public Financing Relative to Gross County Product (GCP)

While exact figures on Garissa's Gross County Product (GCP) are not published annually, estimates suggest that the water and sanitation sector receives between 3.5% and 4.2% of the county's total annual budget—falling short of the recommended 5–10% by AMCOW.

Given Garissa's heavy dependence on public and humanitarian funding for WASH services, increased budget prioritization and sustainable financing strategies are urgently needed to close the gap.

4. Assessment of Water Sector Debt (Concessional and Private Financing)

Garissa County currently carries minimal water sector debt:

- Most infrastructure is financed through grants from donors and humanitarian agencies (e.g., UNICEF, WSTF, and UNHCR)
- There is no record of outstanding concessional loans or private loans directly tied to the county's water infrastructure.
- O&M payments are often funded through county recurrent budgets or community contributions, with no long-term debt financing arrangements in place.

5. Adequacy of County Funding for NAWASIP-Aligned Projects to 2030

The National Water and Sanitation Investment Plan (NAWASIP) projects substantial investment requirements for underserved counties like Garissa. The current level of annual funding—both county and partner-driven—falls significantly short of what's needed to:

- Achieve universal access by 2030
- Build climate-resilient infrastructure
- Operationalize rural WSPs and sanitation treatment systems

Projections based on recent investments show that:

- At current expenditure rates (~Kshs 400M–500M/year), Garissa will cover only 30–35% of the estimated water sector investment needs by 2030
- Without additional financing through blended models, PPPs, or performance-based grants, progress will be slow, especially in sanitation

### *3.2.2 Revenue generation models, including tariffs and user fees*

1. Existing Pricing Structures and Their Effectiveness

Revenue for water service operations in Garissa County is primarily generated through user fees and water tariffs set by community Water User Associations (WUAs), urban Water Service Providers (WSPs), and, in some cases, informal water vendors. The pricing structures vary widely across rural and urban systems:

- Urban Systems (GAWASCO):
  - Follow a tiered tariff system approved by the Water Services Regulatory Board (WASREB), with charges based on consumption brackets (e.g., per cubic meter).
  - Public institutions and commercial users pay higher rates than domestic consumers.
  - Metered connections are more common in Garissa Township, but non-revenue water remains high, and billing is often inconsistent due to meter failures and illegal connections.
  - WSP in urban charges connection on a flat rate thus disadvantageous to either party leading to misappropriation of quantity usage.
- Rural Schemes (WUAs and GARUWASCO-managed systems):
  - Use flat-rate tariffs or charge per jerrycan (usually Ksh 2–5), particularly at water kiosks or animal troughs.

    - A few WUAs apply monthly household charges (Ksh 100–300), but this is inconsistent and largely depends on community enforcement.
    - Only 27% of schemes have basic accounting systems or structured financial reporting (STAWI WASH dataset, 2024).
    - Poor accountability of revenue collected by WUAs
    - Internal conflict among WUAs because of the revenue generated.

- Private Vendors and Tankers:
    - Operate in areas with frequent service disruption or no piped supply (e.g., Dadaab, peri-urban Garissa).
    - Prices are unregulated, ranging from Ksh 10–20 per 20-liter jerrycan, often exceeding the affordability threshold for low-income households.

    - The cost of water boozers which ranges from Ksh 6000 - 10,000 in Garissa township

2. Challenges in Affordability and Willingness to Pay

Multiple systemic and socio-economic factors affect the ability and willingness of residents to pay for water services:

- Affordability:
    - Households in rural Garissa county earn irregular incomes and often cannot sustain payments, especially during droughts or economic shocks.
    - During dry seasons, households may spend up to 15–20% of their income on water alone, far exceeding the recommended threshold of 5%. show reference on the recommendations
    - In areas reliant on vendors or trucked water, the cost is significantly higher, particularly for vulnerable groups (e.g., women-headed households, refugees, and persons with disabilities).
- Willingness to Pay:
    - Inconsistent service delivery, frequent system breakdowns, and poor water quality reduce trust in providers and discourage payment.
    - Community perception is that water is a "gift" or public good, especially in areas where donors and government historically offered free emergency water services.
    - Many WUAs lack transparency or accountability in fee collection, leading to community resistance or conflict over funds.
- Enforcement and Cost Recovery:
    - Most schemes lack effective tariff enforcement, and disconnection for non-payment is rarely applied in rural systems.
    - Administrative capacity to manage billing, meter reading, and revenue tracking is weak, particularly in GARUWASCO and unregistered WUAs.

## Recommendations for Strengthening Revenue Models

- Standardize tariff structures across rural and peri-urban schemes, incorporating both flat-rate and volumetric pricing, with WASREB alignment where applicable.
- Introduce digital payment systems and mobile billing in urban and larger rural schemes to improve collection and tracking.
- Implement pro-poor tariff models, such as lifeline tariffs or targeted subsidies for vulnerable households.
- Build capacity of WUAs in financial management, revenue planning, and accountability through structured training.
- Improve service reliability and water quality to increase willingness to pay and community ownership of schemes.
- Develop pilot performance-based maintenance contracts linked to revenue retention incentives.

- Install smart meters and mobile tools reporting for proper enforcement and accountability

### *3.2.3 Challenges in financial sustainability and cost recovery for water and sanitation services*

1. Issues Affecting Long-Term Financial Viability

Despite significant investments in infrastructure, Garissa County's water and sanitation services face persistent challenges in achieving financial sustainability and effective cost recovery. These challenges span across technical, institutional, and socio-economic dimensions:

- Low and Irregular Revenue Streams:
  - Most rural water schemes generate barely enough income to cover routine operation and maintenance, with little or no surplus for capital replacement, expansion, or preventive maintenance.
  - In many community-managed schemes, revenue collection is voluntary, irregular, and highly dependent on seasonal demand and the strength of local leadership.
- Lack of Tariff Rationalization and Enforcement:
  - Tariffs are often set without cost-recovery analysis and are not adjusted to reflect inflation or rising O&M costs.
  - Enforcement of payments is weak. WUAs rarely disconnect defaulters or track arrears systematically, and there is no formal mechanism for subsidy or payment recovery.
- High Non-Revenue Water (NRW):
  - In urban schemes managed by GAWASCO, NRW is estimated to exceed 40%, driven by leakages, illegal connections, and unmetered consumption, which leads to significant financial loss.
- Dependency on External Funding:
  - Most capital projects are donor-financed or implemented by NGOs, creating a culture of dependency and reluctance to pay for services post-project.

    - There is minimal investment in sanitation financing, especially for fecal sludge management (FSM) and institutional latrine maintenance, resulting in poor cost planning and frequent service breakdowns.
- Inadequate Financial Systems and Oversight:
    - A majority of WUAs operate without basic accounting systems, audits, or financial reporting tools, making cost tracking and budget planning difficult.
    - GARUWASCO and county institutions have limited capacity to provide financial oversight, performance monitoring, or mentoring to WUAs.

2. Strategies for Improving Revenue Collection

To address these structural gaps and enhance cost recovery, Garissa County can pursue the following strategic actions:

A. Strengthen Financial Management at Scheme Level

- Provide structured training to WUAs on bookkeeping, tariff setting, budget forecasting, and expenditure tracking.
- Develop and roll out standardized financial reporting templates, with quarterly submission requirements to GARUWASCO.

B. Modernize Payment Systems

- Introduce digital and mobile payment options for rural and urban water users, especially through M-Pesa integration, to enhance collection efficiency and transparency.
- Deploy smart meters and pre-paid card systems in larger piped schemes to minimize revenue leakage and improve user accountability.

C. Implement Incentive-Based Cost Recovery Models

- Develop a performance-based O&M subsidy scheme, where well-performing WUAs or WSPs can access matching grants or revolving funds for reinvestment.
- Support the piloting of community co-financing models, where capital contributions are tied to consistent tariff collection.

D. Tariff Reform and Social Protection

- Introduce tiered tariffs that balance financial sustainability with affordability, including lifeline tariffs for vulnerable households.
- Institutionalize county-level subsidy mechanisms for high-cost areas (e.g., remote pastoral zones) or institutions serving public goods (e.g., schools, health centers).

E. Improve Service Quality and User Trust

- Enhance service reliability and customer care through targeted investments in spare parts, technician availability, and user engagement forums.
- Conduct awareness campaigns to link tariff payments to improved service delivery, repairs, and community development.

# 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*

1. Trends in Sector Investments (2022–2024)

Between 2022 and 2024, Garissa County saw a notable increase in investments in the water sector, largely driven by drought response, infrastructure rehabilitation, and solarization of boreholes. According to the *Water Interventions 2022–2024* presentation:

- The county implemented water projects worth a total of Ksh 831 million, out of which:
  - Kshs 612 million (74%) came from the County Government, and
  - Kshs 219 million (26%) came from development partners.

Disaggregation by sub sector:

- Water Supply: The bulk of investments (~90%) were in water supply. This included borehole drilling, equipping and solarization, water trucking, extension of water pipelines, and desilting of pans.
- Non-Sewered Sanitation: A limited number of sanitation interventions were implemented—mostly school latrine construction or rehabilitation under donor projects. The share of total expenditure on sanitation remained below 5%.
- Sewered Sanitation: No major investment in sewered systems was recorded during this period, reflecting Garissa's lack of urban sewerage infrastructure outside of institutional setups.

2. Breakdown of Investments: CapEx, OpEx, and Subsidies

Capital Expenditure (CapEx):

- Comprises the majority of total spending (~85–90%), focused on:
  - New borehole drilling and equipping
  - Solar installations
  - Construction of storage tanks(elevated and masonry tanks)
  - Extension of pipelines
  - Construction of water pans and desilting works

Operational Expenditure (OpEx):

- Accounted for a smaller share (~8–10%) and included:

- Water trucking during drought emergencies
- Purchase of fuel and spare parts for boreholes and truckers
- Technicians' wages and minor repairs

Subsidies and Social Support:

- Informal subsidies were provided through:
  - Free water trucking to over 150 centers, particularly in Lagdera, Balambala,fafi, and Dadaab sub-counties
  - Zero-fee access to certain boreholes during droughts, subsidized by the county
- However, no formal subsidy frameworks or social protection-linked funding mechanisms were documented during this period.

3. Budgeted vs. Actual Expenditures

A comparison of budgeted versus actual expenditures, based on available public finance records and the *Water Interventions 2022–2024* data, reveals:

- Underspending in some years due to:
  - Procurement delays
  - Late disbursement of county development funds
  - Challenges in project implementation in remote or insecure areas
- Over-execution in drought years (e.g., 2023), driven by emergency funding reallocations, water trucking, and donor-supported borehole rehabilitation

Example:

- In FY 2022/23, the county water department had budgeted Kshs 260 million, but actual expenditures rose to Kshs 290 million, supported by emergency funding from NDMA and the Ministry of Water due to prolonged drought.

### *4.1.2 Assessment of efficiency in resource utilization*

1. Evaluation of How Funds Have Been Spent

Over the period 2022–2024, Garissa County invested approximately Kshs 831 million in the water sector, with 74% of this financed by the county and the rest by development partners. A significant proportion of this funding was directed toward capital-intensive projects, especially borehole drilling, solarization, water pan desilting, and pipeline extensions.

Key achievements include:

- Completion of over 60 water projects across sub-counties;
- Water trucking over 150 centers during drought emergencies;
- Desilting and rehabilitation of key water pans, especially in drought-prone areas like Lagdera,ijara and Balambala;
- Increased use of solar-powered boreholes, which reduced fuel costs and improved reliability.

2. Identification of Inefficiencies and Areas for Improvement

Despite visible outputs, several inefficiencies in resource utilization have been observed:

A. High Capital Expenditure, Low Operational Sustainability

- While capital infrastructure has increased, operation and maintenance (O&M) systems remain weak. Many boreholes break down due to lack of skilled operators ,poor maintenance , overuse of the pumping system and remain non-operational due lack of standby spare parts, or trained technicians.
- There is minimal investment in monitoring systems, water quality testing, or spare parts logistics—leading to service interruptions and increased dependency on emergency responses like water trucking.

B. Inconsistent Project Execution and Geographic Inequities

- Some projects experience delays or underperformance due to weak contractor oversight, procurement challenges, or security concerns in remote areas.
- Investment is unevenly distributed, with sub-counties that are highly affected by droughts receiving significantly more investment compared to the rest, raising concern over equity.

C. Underfunding of Sanitation and Software Components

- Sanitation services—including school latrines, FSM, and hygiene promotion—received less than 10% of the total sector funding, despite growing needs.
- Soft components like behavior change communication, community training, and governance systems were not prioritized in budgeting or project design.

D. Limited Tracking and Financial Reporting

- Community-managed schemes often lack basic accounting tools and do not submit regular financial reports, making it difficult to track efficiency at the grassroots level.
- There is no centralized performance dashboard to evaluate cost per beneficiary, per cubic meter of water delivered, or per facility constructed.

E. Fragmentation Between Actors

- Donor, county, and community interventions often operate in silos, leading to duplication of efforts or parallel systems without shared performance indicators or joint reviews.

- Weak alignment between sector planning (CWSSIP), county budgeting, and development partner programming limits collective impact.

## Recommendations for Improving Efficiency

- Strengthen planning and coordination by aligning CWSSIP targets with annual budget cycles, donor programs, and performance indicators.
- Institutionalize O&M budgeting at project inception, including lifecycle cost planning and preventive maintenance systems.
- Establish a WASH Expenditure Tracking Tool to monitor fund flows, unit costs, and budget absorption rates across all levels.
- Promote equity in resource allocation using climate vulnerability and service coverage data to guide sub-county prioritization.
- Invest in software components, including WUA training, water safety planning, and behavior change programming.
- Explore value-for-money audits and use of mobile technology for real-time scheme monitoring and reporting.

### *4.1.3 Trends in investment compared to service delivery outcomes*

1. Relationship Between Financial Investment and Access Improvements

Between 2022 and 2024, Garissa County invested over Kshs 831 million in water interventions across all sub-counties, with Kshs 611 million funded by the county government and the remainder by development partners and NGOs. These investments led to noticeable improvements in infrastructure and access—particularly for emergency response and climate-vulnerable populations.

Key access-related outcomes include:

- Over 60 water projects completed, covering new boreholes, solarization, pipeline extensions, and water pan rehabilitation;
- Over150 centers served through emergency water trucking, ensuring short-term access during prolonged droughts;
- Increased solar-powered infrastructure, which reduced service downtimes and long-term O&M costs;
- Expanded rural water access in areas like Lagdera, Dadaab,Modogashe and Balambala, which had previously high water stress.

However, despite the capital investment, gains in long-term, sustained access to improved water and sanitation services remain modest due to recurring service interruptions, weak O&M, and slow sanitation progress.

According to the 2023/24 WASH dataset:

- Only 36–40% of the county population has reliable access to improved water sources (compared to a national average of ~59%);
- Functional coverage remains uneven, with rural and pastoralist areas still underserved despite infrastructure presence;
- Less than 25% of schools and health facilities meet minimum WASH standards.

2. Impact Assessment of Previous Funding Initiatives

### Water Sector

- Investments in borehole solarization and pipeline extensions have improved operational reliability and reduced fuel dependency;
- Donor-funded efforts (e.g., USAID STAWI, UNICEF, UNHCR) introduced innovations like:
    - Smart water point monitoring,
    - Community water audits, and
    - Stakeholder coordination platforms;
- However, many community-run systems still face challenges due to limited training, accountability gaps, and weak financial systems, limiting the long-term benefits of these projects.

### Sanitation Sector

- Despite growing need, investment in sanitation remains disproportionately low—less than 10% of total WASH financing. This has resulted in:
    - Persistently low latrine coverage;
    - High open defecation rates in rural areas;
    - Weak institutional FSM systems (no treatment plants or structured emptying protocols).

### Public-Private Initiatives

- There have been early successes in solar water systems and vendor-based distribution in peri-urban areas. For example:
    - Informal vendors have filled gaps during system breakdowns;
    - Small-scale contractors have installed and maintained solar units for GARUWASCO-managed boreholes;
- However, structural PPPs remain weak due to lack of clear legal frameworks, incentive models, coordination mechanisms and trust between the community and the PPPs.
- Where engaged, private players often operate under short-term, emergency or donor-funded contracts, with minimal integration into long-term service delivery models.

#### *4.1.4 Key Insights and Strategic Implications*

- Infrastructure development has outpaced service sustainability: While more infrastructure has been added, functionality, water quality, and consistent access remain lagging due to limited O&M systems.
- Service gains have been Significantly improved in some sub-counties e.g., Lagdera, Balambala, Ijara and Dadaab.
- Sanitation outcomes remain disconnected from investments: Lack of structured financing, coordination, and community-led approaches has minimized sanitation impact despite growing health risks.
- Public-private potential is emerging but untapped: With clear frameworks, risk-sharing models, and financing instruments, private sector contributions could play a greater role in operations, monitoring, and sanitation services.

## 4.2 WASH Service Coverage Scenarios, Investments, and Reform Needs

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

1. Expected Changes in Demand Due to Demographic Shifts and Climate Change Impacts

Garissa County's water and sanitation service demands are expected to increase significantly over the next decade, driven by rapid population growth, urban expansion, refugee inflows, and the intensifying impacts of climate change.

- Population Growth: According to Kenya National Bureau of Statistics (KNBS), Garissa's population is projected to rise from approximately 841,000 in 2019 to over 1.2 million by 2030, with some wards experiencing growth rates above 3% annually.
- Urbanization: Garissa Township, Modogashe, Dadaab, Masalani, Bura and other market centers are witnessing rural-urban migration, including climate-induced displacement, resulting in increased demand for piped water, public sanitation, and solid waste management in dense settlements.
- Climate Change:
    - More frequent and prolonged droughts are increasing pressure on already over-abstracted boreholes and seasonal sources.
    - Flooding and rising water tables are damaging latrines and shallow wells, and increasing demand for resilient infrastructure.
    - Pastoralist families migrating due to climate shocks are forming new informal settlements, often unplanned and unserved by water and sanitation systems.

2. Infrastructure Needs Based on Projected Population Trends

To meet the basic water and sanitation needs of Garissa's growing and shifting population by 2030, the county will need to scale up and climate-proof infrastructure significantly:

Water Supply Infrastructure Projections:

- Expand piped water systems in urban and peri-urban areas to serve an estimated over 250,000 additional people;
- Drill and equip at least 150 new boreholes in rural and pastoralist areas, supported by solar systems, storage tanks e.g elevated steel and masonry tanks and water kiosks.
- Rehabilitate and solarize over 300 existing schemes, as many will reach the end of their design lifespan;
- Construct additional water pans and sand dams in seasonal catchments to support both domestic and livestock needs;
- Develop water kiosks and water ATM systems in informal settlements to ensure equitable access.

Sanitation Infrastructure Projections:

- Construct over 1,200 new institutional latrines (schools, health centers, water points and markets), with a focus on gender inclusivity and menstrual hygiene;
- Roll out FSM (fecal sludge management) systems in urban centers, including disposal sites and mobile desludging services;
- Introduce climate-resilient and relocatable sanitation technologies for mobile and vulnerable populations;
- Establish public toilets and bathing facilities in high-density urban and transit locations.

3. Adequacy of Existing Resources for Projected Service Demand

The current water and sanitation systems in Garissa are inadequate to meet projected service demands. Challenges include:

- Insufficient infrastructure coverage: Only ~40% of the current population has access to improved water, and sanitation coverage remains below 25%.
- Overstretched groundwater resources: The Merti Aquifer, a major groundwater source, is facing declining yields and quality issues due to over-abstraction and poor recharge.
- Limited capacity for capital investment: At current financing levels (~Ksh 400–500 million per year), the county can only meet 30–35% of projected WASH investment needs by 2030, leaving a substantial financing gap.
- Weak systems for resilience planning: Few schemes are designed for climate shocks, and there are no existing frameworks to integrate disaster preparedness into infrastructure development.

## Strategic Implications

To meet rising demand and prevent future crises, Garissa County must:

- Develop a climate-smart infrastructure roadmap aligned with CWSSIP and the County Climate Change Action Plan (CCCAP);
- Create a spatial service delivery model based on growth centers, migration patterns, and climate risk mapping;
- Mobilize resources through blended finance, PPPs, and development partner alignment;
- Institutionalize early warning-linked planning and build flexibility into infrastructure design and water allocation systems.

### *4.2.2 Policy and institutional reforms needed for effective service expansion*

To sustainably scale water and sanitation service delivery in Garissa County, bold and targeted policy and institutional reforms are required. These reforms should address sector fragmentation, funding inefficiencies, private sector engagement, and weak monitoring systems.

1. Key Policy Changes Required

(i) Water Service Delivery

- Operationalize the Garissa County Water Act (2018) by developing and gazetting accompanying regulations and bylaws (e.g., WUA licensing, water tariffs, and performance contracts).
- Institutionalize multiple-use water services (MUS) by revising planning and design norms to integrate domestic, livestock, and productive use needs.
- Introduce cost-reflective and pro-poor tariff guidelines, with provisions for subsidies and lifeline rates.
- Formalize roles and responsibilities of Water User Associations (WUAs) under GARUWASCO, supported by technical and financial supervision systems.

(ii) Non-Sewered Sanitation Service Delivery

- Develop a County Sanitation Policy or Strategy, with an emphasis on:
  - Fecal sludge management (FSM) frameworks
  - Minimum design standards for institutional and public latrines
  - Behavioral change and hygiene promotion integration
- Introduce permits and guidelines for pit emptying, transportation, and disposal, aligned with NEMA and Ministry of Health protocols.
- Promote gender-responsive and inclusive sanitation programming, with MHM infrastructure in schools and public institutions.

(iii) Sewered Sanitation Service Delivery

- Although Garissa currently lacks formal sewerage systems, future expansion in Garissa Town, Masalani, Modogashe and Dadaab will require:
  - County Urban Sanitation Master Plan, linked to urban development and environmental planning
  - Policies enabling small-scale sewer networks (e.g., for hospitals, markets) and safe greywater reuse
  - Clear mandates for GAWASCO and urban WSPs to operate sewerage services under licensing by WASREB

(iv) Private Sector Participation

- Develop a County WASH PPP Framework, identifying viable entry points for private actors in:
  - Solar pumping systems
  - Water kiosks and ATMs
  - Fecal sludge transport and treatment
  - Smart metering and mobile billing platforms
- Review and harmonize procurement and service contract templates to ensure transparency, performance monitoring, and accountability
- Introduce risk-sharing mechanisms and financial incentives to encourage private investment in low-revenue and high-risk areas

2. Institutional Adjustments to Improve Governance and Accountability

- Clarify roles and coordination mandates across the Department of Water, GAWASCO, GARUWASCO, Public Health, and Education to reduce overlaps and enhance service integration.
- Strengthen GARUWASCO's operational capacity through phased onboarding of rural schemes, staff recruitment, and performance-based budgeting.
- Establish a WASH Coordination and Accountability Forum, involving development partners, WUAs, private sector, and community leaders for joint planning and resource tracking.
- Create a Monitoring and Evaluation (M&E) Unit within the Water Directorate to centralize data collection, service delivery reporting, and performance tracking.
- Formalize and digitize customer grievance redress systems, allowing citizens to report faults and feedback on water services.

3. Key Regulatory Performance Indicators to Be Tracked

To guide reform implementation and service expansion, the following core performance indicators should be tracked and reported quarterly/annually:

| Category | Indicator |
|---|---|
| Water Access | % population with access to improved water within 500m |
| Sanitation Access | % population with access to improved sanitation (sewered + non-sewered) |
| Service Functionality | % of functional water points (rural and urban disaggregated) |
| Non-Revenue Water (NRW) | % NRW in GAWASCO and Urban WSP-managed schemes |
| O&M Cost Recovery | % of schemes covering their O&M costs through user fees |
| Revenue Collection Efficiency | % of billed revenue actually collected (urban/rural breakdown) |
| Private Sector Involvement | % of PPP contracts signed and operational in WASH sector |
| FSM Service Coverage | % of FSM service coverage in urban/peri-urban areas |
| School/Health Facility WASH | % of schools and health centers with adequate WASH services |
| Customer Satisfaction | % of users reporting satisfaction with water and sanitation services |

## Summary of Strategic Priorities

- Fast-track regulatory instruments to operationalize the Water Act (2018) and introduce sanitation-specific policy frameworks;
- Build institutional capacity and clarify mandates to strengthen WASH governance;
- Formalize private sector participation and WUA engagement through contracts and training;

- Adopt a results-driven M&E framework to inform planning, budgeting, and performance reviews.

### *4.2.3 Investment needs to close service gaps and improve sustainability*

Garissa County faces a significant investment gap in achieving universal access to safe water and sanitation by 2030, as envisioned in the Sustainable Development Goals (SDGs), Kenya's Vision 2030, and the National Water and Sanitation Investment Plan (NAWASIP). While over Kshs 831 million was invested between 2022 and 2024, current coverage levels—below 50% for water and under 25% for sanitation—underscore the urgent need for scaled and strategic investments.

1. Investment Estimates: Infrastructure, Policy, and Institutional Reforms

To close existing service gaps and build resilience, Garissa will require a balanced investment approach that includes both infrastructure development and systemic reforms.

A. Infrastructure Investment Needs (2024–2030)

| Category | Estimated Units Required | Indicative Cost (KES) |
|---|---|---|
| New rural boreholes | 150 (solarized, elevated storage, livestock troughs) | 2.25 billion |
| Borehole rehabilitation | 300 systems (with O&M kits) | 1.5 billion |
| Water pipeline extension | 500+ km in high-density areas | 1.2 billion |
| Institutional WASH | 1,500 school/health facility blocks | 960 million |
| Public toilets & kiosks | 60 facilities (urban & peri-urban) | 180 million |
| Water pans & sand dams | 80 new + 120 rehabilitated | 1.1 billion |
| FSM systems | Sludge trucks, disposal points, pilot FSTPs | 750 million |
| Small-scale sewerage | Pilot networks for Garissa Town & Dadaab | 950 million |
| Digital metering & billing | Smart meters, mobile platforms | 250 million |

Subtotal Infrastructure (2024–2030): ~9.14 billion KES

B. Policy, Institutional & Regulatory Reform Costs

| Area | Estimated Cost (KES) |
|---|---|
| Operationalizing the Water Act | 100 million |
| County Sanitation Strategy + FSM | 120 million |
| Capacity building (GARUWASCO/WUAs) | 90 million |
| County PPP framework development | 50 million |

| Area | Estimated Cost (KES) |
|---|---|
| Sector M&E systems and tools | 60 million |

Subtotal (Reforms & Systems Strengthening): ~420 million KES

2. Required Financial Resources by Sub-Sector for Universal Access (By 2030)

| Service Area | Target Population Coverage (Est.) | Required Investment (KES) |
|---|---|---|
| Water Supply | 800,000 additional users | 5.2 billion |
| Sewered Sanitation | 120,000 urban users | 950 million |
| Non-Sewered Sanitation | 400,000 rural/informal users | 1.6 billion |
| Reforms & Capacity | Countywide | 420 million |

Total Estimated Investment (2024–2030): ~8.2–8.5 billion KES

This investment will allow Garissa to achieve:

  - 90% access to safe and reliable water
  - 80% access to basic sanitation
- Functionality of >85% of water schemes
- Institutional and community capacity to sustain service levels

3. Priority Sustainable and Climate-Resilient Investments

To ensure service reliability and adaptability to climate shocks, the following are identified as high-impact, climate-resilient priorities:

Infrastructure:

- Solarization of water systems to reduce O&M costs and fuel dependency
- Elevated storage and gravity-fed designs to withstand flooding
- Climate-resilient latrines with raised platforms and lined pits
- Green infrastructure such as water pans, sand dams, and riparian buffers
- Rainwater harvesting systems in schools and dispensaries

Reform and Institutional Priorities:

- Strengthen GARUWASCO and digitize WSP performance management
- Develop a climate-smart county sanitation roadmap
- Establish a county water financing and investment coordination unit
- Operationalize the County Climate Change Fund to finance resilient WASH systems
- Mainstream WASH into climate adaptation planning and early warning systems

## Strategic Financing Recommendations

- Develop a blended financing strategy, combining:
    - County allocations
    - Performance-based transfers (e.g., WSTF, NDMA)
    - Development partner grants
    - Concessional finance and private capital via PPPs
- Create WASH investment dashboards to track resource flows and promote donor alignment
- Prioritize funding to underserved areas based on poverty, climate vulnerability, and service coverage data

# 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*

**Vision**

To realize sustainable, adequate, and quality water and sanitation services for improved health, dignity, and socio-economic well-being of all residents in Garissa County, including vulnerable and marginalized populations, by 2030.

This vision acknowledges water and sanitation as basic human rights and enablers of inclusive development, resilience, gender equality, and economic transformation in a climate-vulnerable, resource-scarce context.

*Long-Term Goals for Water and Sanitation Service Provision*

The County's long-term goals are aligned with Kenya's Vision 2030, SDG 6, and the National Water and Sanitation Investment Plan (NAWASIP). They also reflect local priorities outlined in the Garissa County Integrated Development Plan (CIDP III) and Climate Change Action Plan (CCCAP).

The goals are:

1. Universal Access to Basic Water Services:
    - Ensure that 100% of the county population has access to at least a basic level of safe, affordable, and reliable drinking water by 2030, with at least 80% having access to safely managed services.
    - Expand rural and peri-urban water infrastructure to eliminate long travel distances and reduce water-fetching burdens, especially for women and children.
2. Elimination of Open Defecation and Universal Sanitation Access:
    - Achieve Open Defecation Free (ODF) status countywide by 2027.
    - Provide safe, inclusive, and affordable sanitation options for households, schools, health facilities, and public spaces.
    - Establish functional fecal sludge management systems in major towns and refugee-hosting areas.
3. Institutionalized Hygiene and Behavior Change Practices:
    - Institutionalize hygiene promotion in public health and education systems.
    - Ensure that 100% of schools and health facilities have handwashing stations, menstrual hygiene management (MHM) units, and regular hygiene education programs.

4. Climate-Resilient and Environmentally Sustainable WASH Systems:
    - Build resilient infrastructure that can withstand droughts, floods, and rising temperatures.
    - Promote nature-based solutions and green infrastructure for catchment protection, water conservation, and aquifer recharge.
5. Governance, Accountability, and Service Quality Improvements:
    - Fully implement the Garissa County Water Act (2018) and ensure all service providers are regulated and monitored.
    - Strengthen data systems for monitoring service coverage, equity, functionality, and customer satisfaction.

*Strategic Priorities Aligned with County Development Plans*

The CWSSIP identifies six core strategic priorities that align with Garissa's County Integrated Development Plan (CIDP III) and the Garissa Integrated Socio-Economic Development Plan (GISEDP):

1. Expand and Modernize Water Infrastructure
    - Invest in piped water systems, boreholes, water pans, and kiosks, focusing on underserved sub-counties.
    - Solarize rural schemes and deploy smart metering technologies to improve efficiency and cost recovery.

2. Strengthen Urban and Peri-Urban WASH Service Delivery
    - Upgrade utility systems managed by GARUWASCO and GAWASCO.
    - Support integrated WASH solutions in refugee-hosting areas (e.g., Dadaab) with linkages to health and housing programs.

3. Promote Inclusive Sanitation and Hygiene Solutions
    - Build gender-sensitive and climate-resilient sanitation facilities in schools, health centers, markets, and informal settlements.
    - Scale community-led sanitation and hygiene behavior change campaigns targeting both rural and urban populations.

4. Enhance Resilience through Climate-Smart Planning
    - Integrate climate adaptation into all infrastructure planning using CRA tools and catchment conservation mapping.
    - Promote water harvesting, recharge techniques, and sustainable groundwater management—especially in saline and drought-prone areas.

5. Institutionalize Governance and Performance Monitoring

- Formalize Water User Associations (WUAs) and strengthen capacity for operations and maintenance.
- Establish performance monitoring platforms and public feedback systems to ensure transparency and accountability.

6. Mobilize Sustainable Financing

- Increase county budget allocations to meet NAWASIP and SDG 6 targets.
- Attract private investment through PPP frameworks and incentivize micro-enterprise models for rural and urban WASH delivery.
- Leverage blended finance options and donor partnerships to fund infrastructure and innovation.

### *5.1.2 Alignment with Kenya's National Water Strategy, National Water and Sanitation Investment Plan (NAWASIP), and Sustainable Development Goal 6 (SDG 6)*

Strategic Framing

Garissa County's Water, Sanitation Strategy and Investment Plan (CWSSIP) is formulated within the strategic intent of achieving policy coherence, investment coordination, and programmatic synergy with both national and global frameworks. This alignment is imperative for unlocking fiscal flows, leveraging technical partnerships, and ensuring system-wide accountability in service delivery.

The CWSSIP is purposefully aligned with:

- The Kenya National Water Policy and Water Act (2016) as instruments guiding institutional roles and sectoral governance;
- The National Water and Sanitation Investment Plan (NAWASIP), which provides Kenya's strategic and investment blueprint for achieving universal WASH access by 2030;
- The Kenya Environmental Sanitation and Hygiene Policy (KESH) and the National Climate Change Action Plan (NCCAP);
- The Vision 2030 development blueprint and the Big 4 Agenda, particularly on Universal Health Coverage and Manufacturing; and
- The global Sustainable Development Goals (SDGs)—with SDG 6 (Clean Water and Sanitation) as the central axis, and strong co-benefits with SDGs 3, 5, 11, 13, and 17.

Strategic Alignment with National Policy and Legal Frameworks

1. Constitutional and Legal Anchoring

The CWSSIP operationalizes Article 43 of the Constitution of Kenya (2010), which guarantees the right to clean and safe water and reasonable sanitation. In line with the Fourth Schedule, the county government assumes a devolved mandate in the provision and regulation of water and sanitation services.

2. Operationalization of the Water Act (2016)
The CWSSIP recognizes and integrates the roles of statutory institutions—WASREB, WRA, WSTF, and Water Works Development Agencies (WWDAs)—while reinforcing the county's coordination responsibilities through legally designated Water Service Providers (GARUWASCO, GAWASCO) and community-based Water User Associations (WUAs).

3. Alignment with the Kenya National Water Policy (2021 Draft)
The strategy reflects national priorities in:

- Decentralized, demand-responsive service delivery;
- Climate-resilient infrastructure design;
- Targeted pro-poor interventions and subsidy frameworks;
- Community empowerment and participatory governance.

4. Conformity with Environmental and Sanitation Policies
The CWSSIP adheres to the Kenya Environmental Sanitation and Hygiene Policy (KESH) by committing to:

- County-wide Open Defecation Free (ODF) status by 2027;
- Inclusive and gender-sensitive sanitation models;
- Integrated hygiene promotion strategies across sectors.

5. Integration with the National Climate Change Action Plan (NCCAP)
Garissa CWSSIP integrates:

- Climate risk screening of all infrastructure investments;
- Nature-based solutions (e.g., sand dams, afforestation of watersheds);
- Green energy (solar) deployment in water pumping and treatment.

Investment-Level Alignment with NAWASIP (2023–2030)
Garissa County CWSSIP translates the strategic investment objectives of NAWASIP into actionable and location-specific initiatives. The county's investment portfolio directly aligns with NAWASIP's six thematic pillars:

| **NAWASIP Pillar** | **Garissa CWSSIP Response** |
|---|---|
| 1. Infrastructure Development | Scaling up of piped water systems, boreholes, and decentralized sanitation infrastructure in rural and peri-urban areas. |
| 2. Climate Resilience and Adaptation | Deployment of solarized schemes, aquifer recharge projects, and flood mitigation infrastructure. |

| NAWASIP Pillar | Garissa CWSSIP Response |
|---|---|
| 3. Financial Sustainability | Design of tariff structures that ensure cost recovery while safeguarding affordability for the poor. |
| 4. Institutional Strengthening | Operationalization of the Garissa County Water Act (2018), including regulatory oversight of service providers and capacity-building for WUAs. |
| 5. Monitoring and Evaluation Systems | Alignment with WASREB's IMPACT metrics, NIMES, and integration into STAWI's digital performance dashboards. |
| 6. Inclusion and Equity | Focused investments in marginalized areas, gender-disaggregated service planning, and inclusive public sanitation access. |

Programmatic Alignment with the Sustainable Development Goals (SDGs)
Garissa County CWSSIP demonstrates a measurable and strategic contribution to SDG 6 targets as outlined below:

| SDG Target | Strategic Contribution of CWSSIP |
|---|---|
| 6.1 – Universal and equitable access to safe drinking water | 100% access to at least basic water services through boreholes, piped systems, and rainwater harvesting. |
| 6.2 – Adequate and equitable sanitation and hygiene | ODF Garissa by 2027, inclusive sanitation in schools and healthcare facilities, MHM investments. |
| 6.3 – Water quality and wastewater management | Pilots for fecal sludge treatment and reuse in Dadaab and Garissa Town. |
| 6.4 – Water-use efficiency and sustainability | Promotion of smart metering, water conservation awareness, and multi-use water services (MUS). |
| 6.5 – Integrated water resources management | Mapping and regulation of the Merti Aquifer, catchment rehabilitation, and inter-county coordination. |
| 6.6 – Protecting water-related ecosystems | Afforestation of riparian zones, spring protection, and eco-sanitation technologies. |

Interconnected SDGs

- SDG 3 – Strengthened disease prevention through WASH access in health centers.
- SDG 5 – Gender-inclusive WASH governance, menstrual health, and labor-saving water access.
- SDG 11 – Sanitation upgrades in refugee settlements and informal urban zones.
- SDG 13 – Mainstreaming of climate adaptation in infrastructure planning.
- SDG 17 – Strategic partnerships with UN agencies, NGOs, and the private sector for financing and implementation.

Strategic Value of Alignment
1. Leveraging Resource Flows

- Enhanced access to national financing instruments (e.g., WSTF, Equalization Fund).

- Improved eligibility for external financing under STAWI, UNICEF, KWASH, and Green Climate Fund windows.

2. Strengthening Governance Legitimacy
   - Coherence with national legal and policy frameworks enhances predictability and transparency.
   - Regulatory alignment enables effective performance audits and consumer protection.

3. Enhancing Multi-Level Coordination
   - Aligns county and national mandates, fostering intergovernmental collaboration on cross-border water issues, including shared aquifers.

4. Enabling Investment Partnerships
   - Legal and institutional coherence facilitates structured PPP engagements and blended finance innovations.
   - Increases the attractiveness of WASH investment for climate and development financiers.

### *5.1.3 Cross-Sectoral Integration, Climate Resilience, and Environmental Conservation*

Garissa County recognizes that sustainable water and sanitation outcomes depend on robust cross-sectoral collaboration, integrated climate adaptation planning, and active environmental conservation. The CWSSIP adopts a multi-sectoral approach to align water, sanitation, and hygiene (WASH) development with broader goals in public health, food security, environmental management, disaster risk reduction, and climate resilience. The strategy builds on the institutional mandates and synergies across county departments, national agencies, and development partners to mainstream water within Garissa's socio-economic development agenda.

*A. Role of Water in Environmental Sustainability*
Water is a keystone resource for sustaining Garissa County's fragile ecosystems, including wetlands, dry riverbeds, groundwater aquifers (e.g., Merti Aquifer), and rangelands. In an arid and semi-arid landscape, judicious water resource management is essential for:

- Preserving biodiversity and migratory corridors,
- Maintaining soil productivity,
- Reducing land degradation and erosion, and
- Sustaining aquifer recharge zones and water tables.

The CWSSIP advances sustainable environmental stewardship by integrating:

- Watershed protection (e.g., catchment reforestation, erosion control),
- Promotion of nature-based solutions (e.g., sand dams, soil bunds, buffer strips),
- Groundwater quality monitoring and pollution prevention, and

- Partnerships with the Water Resources Authority (WRA) and the County Environment Department for joint management of shared water resources.

*B. Sectoral Coordination: WASH, Health, Agriculture, Environment, and Climate Change*
Garissa CWSSIP adopts a "One County, Many Sectors" coordination framework to ensure WASH planning complements other service delivery sectors:
1. Health Sector Integration
- WASH is embedded within the county's Universal Health Coverage (UHC) efforts, with joint programming on:
    - WASH in healthcare facilities (WinHCF),
    - Infection prevention and control (IPC),
    - Nutrition-sensitive hygiene,
    - Disease outbreak mitigation (e.g., cholera, typhoid, COVID-19).

2. Agriculture and Livestock
- WASH infrastructure supports water for:
    - Livestock corridors and troughs
    - Small-scale irrigation schemes in the Tana River basin & dry lands
    - Farmer-managed water harvesting (rooftop systems, lined pans),
- Promotes Multiple-Use Water Services (MUS) combining domestic, livestock, and productive uses.

3. Education
- Collaborates with the County Department of Education to improve WASH infrastructure in schools, menstrual hygiene management (MHM), and hygiene promotion through health clubs.

4. Climate Change and Disaster Management
- Aligns with the County Climate Change Action Plan (CCCAP) and leverages the County Climate Change Fund (CCCF) to finance adaptation infrastructure.
- Joint risk mapping and emergency response with the National Drought Management Authority (NDMA) and County Directorate of Climate Change.

*C. Climate Adaptation and Resilience Building Measures*
Garissa County faces acute climate vulnerabilities, including:
- Recurrent droughts,
- Flash floods,
- Rising temperatures, and

- Increasing water demand due to population growth and displacement.

To address these, the CWSSIP adopts a resilience-first WASH planning model anchored in the following interventions:

1. Infrastructure Adaptation
   - Solarization of boreholes to reduce operational costs and ensure off-grid functionality during droughts.
   - Flood-resilient sanitation (e.g., raised latrines) to maintain hygiene in disaster-prone settlements.
   - Water pans and sand dams to enhance seasonal water retention and groundwater recharge.
   - Smart metering and leak detection in urban utilities to reduce non-revenue water and optimize resource use.

2. Policy and Governance Reforms
   - Integration of climate risk assessments in all new infrastructure planning.
   - Establishment of a County Climate-WASH Taskforce for cross-departmental coordination.
   - Adoption of gender-responsive climate strategies, addressing the disproportionate burden on women and girls.

3. Nature-Based and Low-Cost Solutions
   - Catchment reforestation and soil bunding in erosion-prone zones.
   - Rainwater harvesting in public institutions.
   - Groundwater protection zones and pollution control.

4. Innovation and Community-Based Resilience
   - Piloting of solar desalination units in saline-prone areas (e.g., Balambala, Dadaab).
   - Empowerment of Water User Associations (WUAs) to monitor and manage climate risks at the community level.
   - Development of early warning systems and community drought protocols.

*D. Institutional Mechanisms for Cross-Sectoral Integration*

To operationalize integration, the CWSSIP strengthens:

- The County WASH Coordination Forum, including representatives from water, health, education, agriculture, environment, finance, and development partners.
- Joint planning frameworks (e.g., Annual Development Plans, Climate Action Plans).

- Shared Monitoring and Evaluation systems, using tools like CIMES, WASREB's IMPACT framework, and WASH dashboards.

This approach ensures policy coherence, efficient resource use, and synchronized response to climate shocks, displacement, and infrastructure needs.

## 5.2 Water Supply Infrastructure Investment Plan

The County's future water security hinges on the accelerated expansion, rehabilitation, and climate-proofing of water supply infrastructure. The county faces chronic water stress, rising demand due to population growth, urbanization, and refugee inflows, alongside intensifying climate shocks—including recurrent droughts, flooding, and rising temperatures. This infrastructure investment plan aligns with national targets under NAWASIP, Vision 2030, and SDG 6, while responding to local priorities defined in CIDP III and the County Climate Change Action Plan (CCCAP).

### 5.2.1 Priority Infrastructure Investments (2024–2033)

The CWSSIP identifies both new construction and rehabilitation priorities, focusing on areas with high vulnerability and low service coverage.

| RESOURCE AND IMPLEMENTATION PLAN, 2025-2035 | | | | | | |
|---|---|---|---|---|---|---|
| Task | | | Project | Approx. Period | Lead Agency(ies) | Budget |
| 1. protection and conservation of water resources | WR1: Increase availability and promote equitable, efficient exploitation of water resources | | | | | |
| | WR1.1. | Implement water allocation plan and efficiency plans | Consultancy: Develop Water Allocation and Efficiency plan.( work plans, assessment and baseline survey, stakeholder engagement in all sub-counties.) | Q1 2026 | WRA, DoW | 50,000,000 |
| | WR1.2. | Develop surface water storage and groundwater source for multi-purpose water uses | Large water storage dams- Total capacity 20 million cubic in flood prone areas i.e Lagdera, Shanta-abak, Balambala, Dadaab, Fafi, Hulugho. | Q4 2025-Q4 2030 | DoW,NWWDA, NDMA. MoW | 12,000,000,000 |
| | | | Map existing and potential surface and ground water.( inventory of water source, Gis mapping, hydrological data collection, human and environmental use, risk and vulnarability assessment, data integration and visulization.) | Q3 2025-Q2 2027 | DoW/WRA and partners | 50,000,000 |
| | | | Develop Strategic water source/Boreholes (10 Nos) Abaikale in Dadaab, Hagarbul in fafi, Saka in Balambala( extension of pipeline from the river), Afweine in lagdera(faaan village), Canal in Hara(ijara), an extra water treatment plant in Garissa township. | Q1 2026-Q4 2027 | DoW,NWWDA, NDMA. MoW | 3,000,000,000 |
| | WR1.3. | Combat impacts of aridity, climate change and variability | Medium size dams and water pans of minimum 200,000 m3 (30 Nos) one in each ward | Thro'out - 8 per Year | DoW,NWWDA, NDMA. MoW | 4,200,000,000 |
| | | | Rehabilitate and maintain all existing small water storage pans. | Thro'out - 10 per year | DoW,NWWDA, NDMA. MoW | 6,000,000,000 |
| | | | Rainwater harvesting tanks of minimum 250 $m^3$ in schools, hospital and county offices (100 Nos) | Thro'out - 10 per year | DoW,NWWDA, NDMA. MoW | 750,000,000 |
| | | | Develop water boreholes, kiosks, (50 Nos ) | Thro'out - 5 per year | DoW,NWWDA, NDMA. MoW | 525,000,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | Rehabilitate dry Boreholes (100 Nos) | Thro'out - 20 per year | DoW | 250,000,000 |
| | | | County climate risk and aridity management guidelines | Q4 2025-Q4 2026 | DoW/MoE, DoCC | 25,000,000 |
| | WR2. Protect and rehabilitate riparian and catchment area to enhance water quality | | | | | |
| | WR2.1. | Manage water salinity | Technical Assistance (TA)- GW salinity assessment and treatment guidelines | Q1 2026-Q4 2026 | DoW/MoE/WRA | 150,000,000 |
| | | | Desalination plants for strategic GW sources (3 Nos) | Q12029 | DoW,NWWDA, NDMA. MoW, DP | 300,000,000 |
| | | | Small desalination plants (50Nos) | Q2 2026-Q2 2028 | DoW | 250,000,000 |
| | WR2.2. | Delineate, rehabilitate and protect riparian and degraded areas | Consultancy: County physiographic assessment map work plans, assessment and baseline survey, stakeholder engagement in all sub-counties.) | Q2 2026-Q2 2027 | DoW, DP, MoW, DoP | 20,000,000 |
| | | | Consultancy: soil and water conservation regulations | Q32027 | DoW, DoA, DoCC | 20,000,000 |
| | | | Protect and rehabilitate riparian, catchment and recharge areas (2,000 ha) | Q3 2026-Q4 2033 | DoW,NWWDA, NDMA. MoW, DP /WRUAs | 1,000,000,000 |
| | | | | | | 10,730,000,000 |
| 2. improve access to adequate, safe and | WS 1: Develop and maintain adequate water treatment, storage and delivery infrastructure | | | | | |
| | WS 1.1 | Develop water sources and distribution to match present and future demand | Consultancy: Integrated Water and Sanitation Development Master plan (2025-2035) | Q1-Q4 2026 | DoW,NWWDA, NDMA. MoW, DP | 40,000,000 |
| | | | Construct Water supply transmission and distribution lines (500 km) | Thro'out - 50km per year | DoW,NWWDA, NDMA. MoW, DP | 3,500,000,000 |
| | | | Demand balancing storage (7500m3) | Thro'out - 1500 m3 per year | DoW,NWWDA, NDMA. MoW, DP | 262,500,000 |
| | WS 1.2 | Safeguard the quality of new and existing infrastructure | Consultancy: Standard Operations Procedures for water supplies | Q1-Q2 2026 | DoW | 10,000,000 |
| | | | Consultancy: Water supplies infrastructure maintenance plan | Q1-Q2 2026 | DoW | 10,000,000 |
| | WS 1.3 | Adoption of technological | Install solar and wind pumping on existing water supplies (150 installations) | Thro'out - 15 per year | DoW/Dept Env & Energy | 375,000,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| reliable water services | | innovation to support in water supplies | Water efficient technology retrofit (2000 Households and Institutions) | Q3 2026-Q3 2027 - 200 per year | DoW,NWWDA, NDMA. MoW, W/DP | 100,000,000 |
| | WS 2: Develop viable water service provision mechanisms for urban and rural water supply, schools and health institutions. | | | | | |
| | WS 2.1 | Ensure easily accessible and safe drinking water supplies in rural areas | 100 mini-grids on existing BHs | 2024-2033 | DoW,NWWDA, NDMA. MoW, W/DP/ private/ CBOs | 350,000,000 |
| | WS 2.2 | Ensure minimum safe drinking water to school and health facilities | Basic water access in ALL schools and health facilities (250 Nos) | Thro'out - 25 per year | DoW,NWWDA, NDMA. MoW, DP, MoE | 1,250,000,000 |
| | WS 3: Ensure Effective and sustainable O&M for urban and rural water supply, schools and health institutions | | | | | |
| | WS 3.1 | Develop skills and appropriate models of maintenance and access to good quality spares | Train 1000 artisans and technology retailers | Thro'out - 100 per year | DoW,NWWDA, NDMA. MoW, W/DP/ Vocatoional Training | 100,000,000 |
| | WS 3.2 | Lower operations cost | Support institutional development and strengthen the capacity of WUAs for operation and maintenance | Thro'out | DoW,NWWDA, NDMA. MoW, W/DP | 100,000,000 |
| | | | | | | 6,747,500,000 |
| 4. reduce the risk of flood and drought to water | WD 1: To build resilience to climate and disaster risk in water infrastructure | | | | | |
| | WD 1.1 | Drought proofing of water and sanitation infrastructure | Consultancy: Assessment of hazard and infrastructure vulnerability | Q1-Q4 2026 | DoW/NDMA/WRA | 5,000,000 |
| | | | Disaster risk communication | Q4 2025-Q4 2033 | SP/DoW/NDMA | 50,000,000 |
| | | | Flood protection to critical water Mku infrastructure | Q4 2025-Q4 2033 | DoW/WRA/DoCC | 750,000,000 |
| | WD 2: To improve preparedness for water related disasters response and post-disaster recovery of community functioning | | | | | |
| | WD 2.1 | Develop strategic surface and ground water sources for emergency | Consultancy: Drought and flooding contingency plan | Q3-Q4 2026 | DoW/WRA/NDMA/SP | 7,500,000 |
| | WD 2.2 | Deploy drought and flooding contingency plan | Develop strategic emergency GW sources (10Nos) | Q1 2026 - Q4 2033 | DoW/WRA/NDMA/SP | 125,000,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| supplies | WD 3To ensure continued water production and availability during drought periods | | | | | |
| | WD 3.1. | Mitigate the impact of drought on water sources | waste Water Recycle (2 No) for Domestic and irrigation use. | 2025-2027 | DoW/.NWWDA | 20,000,000 |
| | | | | | | 957,500,000 |

These investments aim to serve 800,000 additional users by 2030, raising water access levels to 90% and ensuring functionality of over 85% of water schemes.

5.2.2 Climate-Informed Prioritization

The CWSSIP is informed by a county-wide Climate Risk Vulnerability Assessment, which identifies areas of critical exposure and proposes priority infrastructure that meets both immediate water needs and long-term resilience goals:
Climate Resilient Investment Criteria:

- Solarization to reduce operational costs and ensure energy security in remote areas.
- Elevated and gravity-fed designs to prevent damage from flooding and support low-energy operation.
- Lined water pans and sand dams in flood-prone areas to reduce evaporation and enhance aquifer recharge.
- Rainwaterand rock catchment harvesting systems in public institutions to supplement borehole supply.
- Smart metering and digital payment systems to minimize water loss and optimize cost recovery.
- Use of GIS for monitoring and ensuring system functionality
- Capacity strengthened for technical and managerial staff.
- investing in modern technological tools and equipment in water management.

Priority zones include:

- Fafi, Lagdera, and Balambala – highly exposed to drought and reliant on overstressed boreholes.
- Dadaab, Modogashe and Masalani– are experiencing rapid urbanization and are planned for municipal upgrades.
- Ijara and Hulugho – where water pans dominate but dry up early due to siltation and evaporation.

5.2.3 Timelines and Phasing
The investment program is structured in three phases, aligned with the county's planning and financing cycles:

| **Phase** | **Years** | **Key Outputs** |
|---|---|---|
| Phase I | 2024–2026 | 75 new boreholes, 150 rehabilitations, 250 km pipeline extensions, 20 pans |

| Phase | Years | Key Outputs |
|---|---|---|
| Phase II | 2026–2028 | Remaining boreholes, institutional WASH, digital metering roll-out, kiosks |
| Phase III | 2028–2035 | Completion of water pans/dams, smart water systems, scale-up of PPP models |

### *5.2.4 Multiple-Use Water Systems (MUS) and Design Integration*

Garissa CWSSIP emphasizes the implementation of Multiple-Use Water Systems (MUS), especially in pastoral and agro-pastoral zones. These systems are designed to simultaneously serve:

- Domestic use
- Livestock watering
- Small-scale irrigation

This design approach maximizes water productivity, reduces conflict around water points, and strengthens economic resilience.
Water kiosks and mobile water ATMs will be piloted in urban informal settlements to ensure inclusive access. All projects incorporate WASH+ components—ensuring latrine access, hygiene promotion, and water safety plans are embedded at source level.

5.2.5 Environmental, Social, and Gender Considerations
All infrastructure projects will undergo:

- Environmental and Social Impact Assessments (ESIAs), following NEMA guidelines;
- Gender-sensitive design protocols, including separate male/female facilities, and involvement of women in project governance;
- Climate resilience screening, using tools supported by the County Climate Change Fund (CCCF) and partner organizations like USAID STAWI and UNICEF.

5.2.6 Strategic Financing and Delivery Models
To implement this investment plan, Garissa County will:

- Mobilize county own-source revenue and conditional grants;
- Engage development partners through aligned frameworks (e.g., WSTF, STAWI, UNHCR);
- Introduce PPP models for water kiosks, solar-powered schemes, and vendor-based water distribution;

- Strengthen GARUWASCO and GAWASCO's project delivery and O&M capabilities.

A County WASH Investment Coordination Unit will be operationalized to:

- Track budget absorption and project status,
- Serve as a single-window interface for donors and PPP investors,
- Monitor results through digital dashboards aligned with the National Integrated M&E System (NIMES).

### *5.2.1 Integration of Multiple-Use Water Services (MUS) and WASH+ Approaches*

Strategic Rationale

Where climate variability, economic livelihoods, and public health are closely intertwined—water infrastructure must go beyond single-purpose service provision. The CWSSIP embraces a Multiple-Use Water Services (MUS) and WASH+ approach to optimize water investments, address cross-cutting needs, and enhance the sustainability and impact of WASH systems. This means designing infrastructure to serve domestic, productive, institutional, and environmental needs simultaneously, while embedding hygiene and sanitation components to maximize public health benefits.

A. Integrated Planning for Climate-Resilient Multiple-Use Water Systems (MUS)

Assessment of Multi-Use Water Demand

Water in Garissa serves not only drinking and hygiene functions, but also underpins livelihoods:

- Livestock watering—especially critical in dry seasons—often exceeds domestic consumption.
- Smallholder irrigation in the Tana River corridor and peri-urban gardens supports food security and women's economic activities.
- Informal urban enterprises (e.g., food vendors, salons, butchers) depend on consistent piped supply.
- Institutions—schools, health centers, mosques—require water for cleaning, gardening, cooking, and sanitation.

Despite this, more than 60% of current infrastructure was not designed for multi-use, leading to strain, conflict, and inefficiency.

Design and Retrofitting Strategies

To operationalize MUS at scale, CWSSIP includes the following interventions:

- Equip new and rehabilitated boreholes with:
    - Separate livestock troughs
    - Public taps for domestic users

    - Gravity-fed off-take points for institutions and farms
- Construct drip irrigation-ready storage tanks near water pans for farmer cooperatives
- Design dual-purpose elevated storage for improved water pressure and multi-point access
- Prioritize solar-powered systems to support energy efficiency and 24/7 access

Policy and Institutional Integration
CWSSIP commits to institutionalizing MUS through:

- Embedding MUS criteria in project design templates, siting protocols, and procurement standards
- Updating the County Water Policy and Garissa Water Act regulations to recognize MUS infrastructure norms
- Supporting legal recognition and capacity-building of Water User Associations (WUAs) to oversee MUS schemes

B. Inclusion of Hygiene and Sanitation Components in Water Projects (WASH+)
WASH+ Design Principles
The WASH+ model integrates water supply with sanitation and hygiene infrastructure and programming, particularly in schools, health centers, markets, and refugee camps.
CWSSIP mandates that all water projects include:

- Institutional latrines and handwashing stations
- Menstrual Hygiene Management (MHM) facilities (e.g., private, lockable spaces with water access and disposal bins)
- Greywater reuse systems for school gardens and health center landscaping
- Sanitation education, hygiene promotion, and health-clinic collaboration in roll-out plans

Examples of WASH+ Projects

- School WASH Packages: 1,200 planned units to include latrines, rainwater tanks, MHM kits, and hygiene clubs
- Health Center Packages: Handwashing stations, piped water, placenta pits, and greywater diversion units
- Markets and Urban Nodes: Inclusive toilets with solar lighting, water access, and accessible design for persons with disabilities

C. Climate-Smart Agriculture and Productive Water Use
The MUS framework is bolstered by the promotion of climate-resilient agriculture:

- Drip irrigation, greenhouse farming, and fodder production supported by shallow wells and lined pans

- Women-led farming initiatives in Balambala and Modogashe
- Agroforestry and micro-gardening using institutional greywater
- Targeted support for pastoralist cooperatives through livestock water hubs

These approaches reduce reliance on single-use systems, support food security, and enable water to act as a driver of livelihood diversification and drought resilience.

D. Community-Led MUS Governance and Resilience
CWSSIP strengthens the role of Water User Associations (WUAs) in managing MUS services:

- Over 60% of rural boreholes and pans are WUA-operated
- WUAs develop:
    - User schedules (domestic vs. livestock)
    - Rotational water plans during drought
    - Local tariffs for sustainability

Support includes:

- Legal registration of WUAs
- Capacity-building on climate risk, budgeting, and pump maintenance
- Tools for digital monitoring, conflict resolution, and gender inclusion

E. Opportunities for Scale-Up and Private Sector Engagement
CWSSIP identifies opportunities to expand MUS/WASH+ through:

- PPP models for water ATMs, livestock kiosks, irrigation systems
- Microfinance partnerships (e.g., with Equity Bank, SACCOs) to finance MUS schemes
- Scaling solar-powered desalination units in saline-affected zones like Dadaab and Balambala

5.2.2 Project Portfolio: Financial, Social, and Environmental Analysis
Overview
The CWSSIP's investment framework is grounded in cost-effectiveness, climate resilience, equity, and social inclusion. The plan outlines specific priority projects—spanning water supply, sanitation, climate adaptation, and governance—with detailed estimates on financial outlays, expected beneficiaries, and identified risks. These investments are aligned with national priorities under NAWASIP, Vision 2030, and the Kenya Climate Change Action Plan, as well as the localized resilience agenda in Garissa CIDP III and the County Climate Change Action Plan (CCCAP).

B. Social Impact Analysis

| Project Type | Positive Social Impacts | Social Risks |
|---|---|---|
| Solar boreholes, water pans | Reduced travel for women/girls; Improved food security; Women's cooperatives | Gender exclusion in WUA management; Resource conflict in livestock corridors |
| Institutional WASH | Improved school attendance (girls); Hygiene equity in health centers | Cultural resistance to MHM topics; Lack of inclusive design for disabilities |
| FSM and sanitation systems | Cleaner urban environments; Job creation (sludge collection, treatment) | Odor, stigma, land access issues; Public resistance to user fees |
| Smart metering | Transparent billing; Potential for lower bills through efficiency | Risk of digital exclusion (elderly, low-literacy users); affordability of meter retrofitting |

C. Environmental Risks and Mitigation Strategies

| Intervention | Environmental Risks | Planned Mitigation Measures |
|---|---|---|
| Boreholes (new and rehab) | Over-abstraction; aquifer depletion | Licensing by WRA, groundwater recharge initiatives, smart metering |
| Water pans and sand dams | Sedimentation, vector breeding | Lining and fencing, community-based maintenance, integrated vector control |
| Sanitation facilities/FSM | Fecal contamination, odor, sludge mismanagement | Lined pits, proper FSTP siting, EIA licensing, use of sealed trucks |
| Construction activities | Deforestation, siltation, land degradation | Environmental Impact Assessments (EIA), reforestation, soil bunds |

D. Climate Risk and Resilience Profile of Investments

| Project | Climate Risk Addressed | Resilience Features |
|---|---|---|
| Solar boreholes | Recurrent drought, fuel shortages | Solarization, remote monitoring, elevated tanks |
| Raised latrines and FSTPs | Flooding | Elevated platforms, lined pits, flood risk screening in site selection |
| Rainwater harvesting in schools | Erratic rainfall, water scarcity | Roof catchment, ferro-cement tanks, dual-purpose use in hygiene and irrigation |
| Water pans and sand dams | Drought and runoff loss | Flood spillways, soil bunds, catchment reforestation |
| Smart metering and leak detection | Resource stress and overuse | Digital monitoring, real-time data for adaptive management |

E. Risk Mitigation and Safeguard Measures
CWSSIP incorporates a full Environmental and Social Management Framework (ESMF) with the following elements:

- EIA and ESIA: All large-scale infrastructure projects to be screened through NEMA regulations;
- Grievance Redress Mechanisms: Community-level complaints and escalation systems;
- Gender-Safeguarded Procurement: Inclusive consultation and representation in project selection;
- Land Use Agreements: MOUs for communal land and schools;
- Climate Screening Tools: Prioritized by CCCAP and aligned with County Climate Change Fund (CCCF).

## 5.3 Sanitation and Hygiene Services Investment Plan

Sanitation in Garissa County remains one of the most underdeveloped components of WASH, with access below 37% and open defecation persisting in many areas. Climate vulnerability, weak enforcement of regulations, low affordability, and infrastructural neglect have contributed to poor public health outcomes, particularly among women, children, and displaced populations. This section outlines a comprehensive investment and service delivery strategy across the sanitation value chain, from household latrines to fecal sludge treatment and inclusive public facilities.

### 5.3.1 Priority Sanitation Projects and Value Chain Strengthening

To transition toward universal and climate-resilient sanitation, the CWSSIP identifies the following high-priority, costed investment area

| RESOURCE AND IMPLEMENTATION PLAN, 2024-2033 | | | | | | |
|---|---|---|---|---|---|---|
| Task | | | Project | Approx. Period | Lead Agency(ies) | Budget |
| 1. safe, adequate and sustainable sanitation and hygiene | WSH 1: Develop, maintain and sustain waste water management and feacal sludge management infrastructure. | | | | | |
| | WSH 1.1 | Develop and implement onsite and centralized sanitation infrastructure, master plan and standards in health facilities | Wastewater and Sanitation infrastructure masterplan | Q1 2026-Q4 2026 | DoW | 50,000,000 |
| | WSH 1.2 | Ensure adequate operation and maintenance of effluent and feacal sludge | 2 medium sized sewerage system | Q1 2027-Q4 2030 | DoW | 3,000,000,000 |
| | | | Feacal sludge disposal and treatment facilities in small centres with >2000 people, 20 nos | Q1 2027-Q4 2030 2 per year | DoW | 300,000,000 |
| | | Support in Sanitation and hygiene promotion | provide toilets and hand washing facilities in all schools and health facilities | Q1 2026-Q4 2033 | DoW/Public Health/ Education | 125,000,000 |
| | WSH 2: Ensure minimum basic sanitation and support hygiene in homes, schools, health institutions and public facilities | | | | | |
| | WSH 2.1 | Provide basic improved sanitation in schools, health facilities and other public facilties | WASH infrastructure inventory and condition assessment and Maintenance guidelines | Q1 2026-Q4 2026 | DOW/Health and Education | 25,000,000 |
| | | Capacity Building on WASH FIT | Training of Health care workers on Wash FIT<br><br>Training of support staff cleaners of health facilities on WASH FIT environmental cleaning<br><br>Training of facility health management commitee | Q1 2026-Q4 2026 | Health | 50,000,000 |
| | | WASH assessment in all schools and health facilities | Conduct WASH-Fit assessment in all health facilities<br><br>Carry out WASH assessment in schools | Q1 2026-Q4 2026 | Health and Education | 50,000,000 |
| | | Improvement Plan | Implement the improvement plans and the gaps in all HCF | QI 2026- Q4 2028 | Health | 800,000,000 |
| | | Monitoring and Evaluation | Monitor and evaluate the improvement plan in HCF and schools | QI 2026- Q4 2033 | Health and education | 50,000,000 |
| | WSH 2.2 | Ensure minimum sanitation and water supply for hand washing | Construction and maintenance of toilets and hand washing in ALL schools and health facilities (225 Nos) | Q1 2026-Q4 2033 | DOW/Health and Education | 450,000,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | in school, health facilities and other public facilities | Public Toilets in centres with >500 persons | Q1 2027-Q4 2033 | DoW/ Urban Dev | 1,250,000,000 |
| | | | Construction of standard modern incinerator in health facilities | Q1 2026-Q4 2027 | Health | 50,000,000 |
| | | School and Community Led Total Sanitation | Conduct school led total sanitation in all schools Conduct CLTS 1000 villages across the county | Q1 2026-Q4 2026 | Health | 250,000,000 |
| | | School Health promotion | Training of teachers on school health hygiene programs | Q1 2026-Q4 2026 | Education/ Health | 100,000,000 |
| | | School Health clubs | Formation and strethening of school health clubs | Q1 2026-Q4 2026 | Education/ Health | 50,000,000 |
| | WSH 3: Develop new and manage existing storm water infrastructure | | | | | |
| | WSH 3.1. | Capture, convey and discharge storm water from built environments and road reserves | Consultancy: Storm water drainage master plan | Q1 2026-Q4 2026 | DoW/ Urban Dev | 60,000,000 |
| | | | Construct urban storm water drainage (50 km) | Q1 2027-Q4 2033 | DoW/ Urban Dev | 625,000,000 |
| | | | Construction of cross drainage/Culverts (1500 m), 10 No/year @average 15m each | Q1 2027-Q4 2033 | DoW/ Urban Dev | 75,000,000 |
| | | | Rural drainage Maintenance (500km) | Thro'out - 50 km per year | DoW/ Urban Dev | 125,000,000 |
| | WSH 3.2 | Enforce minimum quality standards for storm water | Consultancy: Storm water drainage standards and regulations | Q1 2027 -Q4 2027 | DoW/ Urban Dev | 15,000,000 |
| | | | | | | 6,100,000,000 |

5.3.2 Household and Public Sanitation Improvement Strategy

a) Urban and Peri-Urban Sanitation

- Construct shared sanitation blocks in informal settlements using flood-resilient, gender-sensitive designs.
- Promote sludge-safe pit latrines and double-vault urine-diverting toilets.
- Enforce sanitation bylaws and require developers to include private or shared sanitation.

b) Rural and Pastoralist Areas

- Scale up subsidized latrine programs, coordinated through WUAs and health promoters.
- Deploy mobile sanitation units and relocatable toilets for nomadic communities.

c) Institutional Sanitation (WASH+)

- Build gender-separated latrines with handwashing and MHM amenities in all new school blocks.
- Include ramps, grab bars, and lighting for accessibility and dignity.

5.3.3 Fecal Sludge Management (FSM) and Wastewater Innovations

Garissa currently lacks a centralized sewer or fecal sludge treatment facility. To close this gap:

a) FSM Infrastructure

- Develop a decentralized FSTP using bio-digesters or drying beds.
- Procure and operate vacuum trucks with licensed operators.
- Designate safe sludge disposal and composting sites outside flood zones.

b) Sewerage and Greywater Pilots

- Construct mini sewer lines serving dense neighborhoods and hospitals in Garissa and Dadaab.
- Pilot constructed wetlands and biofiltration systems for greywater reuse.

5.3.4 Climate-Resilient and Sustainable Sanitation Design

The CWSSIP integrates climate adaptation measures throughout the sanitation system:

| **Risk** | **Resilient Solution** |
|---|---|
| Flood-prone areas | Raised toilets, sealed pits, and watertight septic tanks |
| Water-scarce zones | Dry or low-flush toilets, handwashing with tippy taps |
| Informal settlements | Mobile toilets, elevated blocks, climate-proof drainage |
| Urban waste accumulation | Decentralized treatment, reuse in agriculture, composting of biosolids |

These designs will be mainstreamed into urban development plans, refugee-hosting area upgrades, and disaster risk reduction strategies.

5.3.5 Implementation Modalities and Risk Mitigation
Governance and Regulation

- Finalize and enforce the County Sanitation Policy and Bylaws;
- Operationalize licensing of FSM providers;
- Build capacity of public health officers to monitor compliance.

Private Sector Participation

- Enable PPP models for FSM chain services (collection, treatment, reuse);
- Incentivize local SMEs for production of prefabricated latrines and desludging services.

Social and Gender Equity

- Prioritize public sanitation access in refugee camps, markets, and transit hubs;
- Subsidize sanitation for vulnerable groups—especially women-headed households and PWDs.

Monitoring and Evaluation

- Integrate FSM and sanitation data into CWSSIP's M&E dashboard;
- Align indicators with WASREB's IMPACT metrics and SDG 6.2 reporting.

5.3.2 Behavioral Change and Market-Based Sanitation Initiatives
Achieving universal access to sanitation in Garissa County is not merely a function of infrastructure—it also demands a transformation of social norms, user behaviors, and service delivery models. Recognizing the cultural, economic, and environmental barriers to sanitation uptake, the CWSSIP prioritizes behavior change communication (BCC) and market-based sanitation (MBS) approaches as twin pillars of a sustainable sanitation strategy. These efforts seek to drive demand for improved sanitation, promote hygiene practices, and unlock the potential of private sector and community actors in the sanitation economy.

A. Strategies for Promoting Improved Sanitation Practices
1. Community-Led Behavior Change Interventions

- Scale-up Community-Led Total Sanitation (CLTS): Mobilize villages through participatory mapping, defecation path analysis, and action planning to eliminate open defecation. Special focus will be placed on pastoralist communities where cultural resistance to fixed latrines is strongest.
- Leverage influencers: Engage religious leaders, elders, teachers, and youth champions to promote dignified sanitation, menstrual hygiene, and handwashing practices.

- Integrate hygiene messaging into education and health systems: Roll out age-appropriate WASH modules in schools, madrassas, and health clinics.

2. Targeted Sanitation Marketing Campaigns
   - Design culturally relevant, multilingual BCC materials promoting sanitation as aspirational, safe, and cost-effective.
   - Use local FM radio, WhatsApp groups, and mobile loudspeakers to reach remote and nomadic populations.
   - Establish "Model WASH Villages" that serve as peer learning and replication hubs across the county.

3. Gender-Responsive Behavior Change
   - Promote menstrual hygiene management (MHM) through awareness drives, MHM clubs in schools, and partnerships with women's groups for pad production and distribution.
   - Address shared sanitation stigma by improving privacy, cleanliness, and lighting in communal facilities, particularly in peri-urban settlements.

B. Strategies for Promoting Private Sector Participation in Sanitation Services
1. Formalize Public-Private Partnership (PPP) Frameworks
   - Fast-track implementation of the Garissa County Water Act (2018) provisions on private delegation of sanitation services.
   - Develop sanitation-specific PPP guidelines in line with national regulations (e.g., Water Services Regulations 2021).
   - Pilot PPPs for management of public toilets, fecal sludge transport, and decentralized treatment units.

2. Enable Sanitation Micro-Enterprises and SMEs
   - Provide startup toolkits, technical training, and seed capital to youth and women entrepreneurs offering:
     - Latrine construction services
     - Pit emptying (manual or mechanized)
     - Hygiene product sales (soap, pads, disinfectants)
   - Promote franchise models for toilet servicing, sludge transport, or mobile sanitation units at ward level.

3. Leverage Blended Finance and Incentives

- Introduce Results-Based Financing (RBF) mechanisms where SMEs receive performance-linked payments for sanitation delivery.
- Partner with SACCOs and mobile lenders to enable household sanitation loans, especially in informal settlements.
- Use Output-Based Aid (OBA) to de-risk investments in low-revenue zones like Ijara, Fafi, and Hulugho.

4. Promote Innovation and Digital Sanitation Services

- Roll out mobile sanitation kiosks, waterless toilets, and solar-powered handwashing stations in dense urban areas.
- Integrate digital payment and feedback platforms for users to access services and file complaints.
- Use geotagging and GIS-enabled sanitation mapping to track access, coverage, and demand hotspots.

C. Institutional and Policy Support Measures

To enable effective behavior, change and sanitation market development, the CWSSIP will:

- Establish a Sanitation Marketing Unit within the County Department of Public Health.
- Set up a County Sanitation Innovation Fund to support pilots, research, and enterprise incubation.
- Mainstream hygiene promotion indicators into the CWSSIP M&E framework, aligned with SDG 6.2 and WASREB reporting metrics.

5.3.3 WASH Investments for Schools and Healthcare Facilities

Schools and healthcare facilities are the backbone of public service delivery in Garissa County. However, their WASH conditions remain substandard—undermining health outcomes, learning environments, and patient care. With only ~40% of public schools and health facilities having year-round access to reliable water and less than 50% meeting national sanitation standards, institutional WASH has emerged as a top investment priority under this CWSSIP.

The CWSSIP seeks to ensure inclusive, climate-resilient, and circular WASH systems in all schools and health facilities by 2030, aligned with the Kenya WASH-in-Schools (WinS) and WASH-in-Healthcare Facilities (WiHC) standards.

A. Institutional WASH Infrastructure Development

1. Inclusive Water and Sanitation Systems

- Construct or rehabilitate 1,200 school and health center WASH blocks with:
    - Gender-segregated, private latrines

    - Rainwater harvesting systems
    - Handwashing stations with soap
    - Drainage and flood-proofing measures
- Design infrastructure to include ramps, wide doors, and grab rails for persons with disabilities.

2. Toilet Loss Prevention Strategies

- Introduce preventive maintenance funds at school and facility levels to avoid latrine collapse or closure due to disrepair.
- Train BoMs, PTAs, and sub-county health officers on basic repair protocols.
- Mandate periodic inspection and functionality audits through education and health performance frameworks.

B. Menstrual Hygiene and Health Management (MHM)

1. MHM Infrastructure and Supplies

- Install private MHM rooms in 75% of public schools by 2027, equipped with:
    - Water access
    - Emergency sanitary pads
    - Disposal bins and incinerators.

2. MHM Education and Community Awareness

- Integrate MHM into school curricula and teacher training colleges.
- Conduct community-based campaigns to de-stigmatize menstruation, especially in pastoralist settings.
- Partner with women's cooperatives to support production and distribution of reusable menstrual products.

C. Circular Economy Approaches in Institutional Sanitation

Garissa County will pilot circular economy models in sanitation management for schools and HCFs to reduce waste, generate resources, and promote sustainability.

Key Circular Sanitation Interventions

- Bio-digesters to convert toilet waste into biogas for school kitchens.
- Composting units to reuse sludge and organic waste as fertilizer for school gardens.
- Greywater reuse for irrigation and cleaning purposes.

Target Outcomes by 2030

- 100 schools to implement sanitation-to-energy or sludge-to-fertilizer innovations.
- 50 health centers to adopt waste segregation and greywater recycling protocols.

D. Safe Sanitation Access for Vulnerable Groups
1. Priority Populations
- Children with disabilities
- Girls in puberty
- Maternity patients and caregivers
- Elderly and immunocompromised patients

2. Inclusion Strategies
- Design all new institutional WASH facilities using universal design standards.
- Introduce WASH dignity audits led by user groups to review accessibility and safety.
- Develop facility-specific WASH access plans with provisions for refugees and mobile populations.

E. Financing, Partnerships, and Delivery Modalities
1. Financing Strategy
- Allocate ring-fenced WASH budgets in Education and Health Annual Work Plans.
- Mobilize donor support through UNICEF, STAWI, and Gavi to target high-need institutions.
- Encourage public-private partnerships for climate-resilient school WASH packages.

2. Capacity and Governance
- Establish a County WASH-in-Institutions Taskforce to coordinate planning, budgeting, monitoring, and partner alignment.
- Train WASH focal persons in schools and HCFs on O&M, hygiene promotion, and emergency preparedness.

Annex: Project Details, Cost Estimates, and Risk Mitigation Strategies
1. Overview
This annex provides a detailed breakdown of prioritized WASH investments in Garissa County from 2024 to 2030, with a focus on:
- Capital outlay and unit costs
- Expected reach and impact
- Climate resilience features

- Environmental and social safeguards
- Measures to reduce gender-specific vulnerabilities

All figures are drawn from existing costing models, vulnerability assessments, and program data embedded in the CWSSIP and related county frameworks.

2. Detailed Project Matrix

| **Project Type** | **Units/Scope** | **Total Cost (KES)** | **Key Resilience & Gender Considerations** | **Expected Beneficiaries** |
|---|---|---|---|---|
| Solarized Boreholes | 150 boreholes (elevated tanks, livestock troughs) | 2.25 billion | Solarization reduces O&M cost; gender-friendly water points reduce burden on women | 500,000 rural residents and herders |
| Borehole Rehabilitation + O&M Kits | 300 rural boreholes | 600 million | Extends system life; reduces reliance on emergency water trucking | 150,000 |
| Water Pipeline Extension | 500+ km in peri-urban areas | 1.2 billion | Reduces travel distance and wait time, especially for women in informal areas | 200,000 urban dwellers |
| Institutional WASH Blocks | 1,200 schools and healthcare facilities | 960 million | Includes handwashing, MHM spaces, and disability ramps | 180,000 students, patients |
| Public Sanitation Blocks | 60 market and transit center toilets | 180 million | Gender-segregated with solar lighting and MHM disposal bins | 100,000 commuters and traders |
| Water Pans & Sand Dams | 80 new, 120 rehabilitated | 1.1 billion | Recharge-focused design with flood spillways; reduces water-fetching risks | 100,000 agro-pastoralists |
| FSM Systems | 1 FSTP, 3 sludge trucks, 5 disposal points | 750 million | Minimizes open defecation and sludge exposure in informal areas | 120,000 urban households |
| Small-scale Sewer Pilots | Dadaab & Garissa urban neighborhoods | 950 million | Flood-resilient sewers; supports institutional hygiene access | 120,000 |
| Smart Metering & Billing Platforms | Mobile-enabled smart water management | 250 million | Digital inclusion programs for women vendors; enhances transparency | 75,000 WSP users |

3. Climate Resilience Justification

Each project in the CWSSIP is assessed using a Climate Vulnerability and Impact Matrix. The following table summarizes the resilience rationale:

| **Project** | **Primary Risk Addressed** | **Resilience Design Elements** |
|---|---|---|
| Solarized Boreholes | Drought, energy insecurity | Renewable power, elevated tanks, community O&M training |
| Raised Institutional Latrines | Flooding, disease spread | Flood-proof foundations, watertight pits, ventilation pipes |
| Water Pans & Sand Dams | Erratic rainfall, siltation | Silt traps, vegetation cover, and soil bunds |
| FSM Treatment Facilities | Waste accumulation, flooding | Sealed digesters, elevated platforms, lined disposal zones |
| Rainwater Harvesting in Schools | Water scarcity | Gutter systems, sediment traps, covered ferro-cement tanks |
| Smart Metering | Overuse, leakage | Leak detection, real-time alerts, consumption accountability |

4. Environmental and Social Safeguards
All investments will undergo Environmental and Social Impact Assessments (ESIAs), structured under the Garissa ESMF, with key safeguards as follows:
Environmental Safeguards

- Site-specific screening to avoid encroachment on protected ecosystems.
- Sludge management plans for FSM projects with biosafety guidelines.
- Catchment conservation integrated into water pan and borehole siting.

Social Safeguards

- Free, Prior, and Informed Consent (FPIC) for community projects on shared land.
- Gender Action Plans for all WASH projects to ensure equitable benefit sharing.
- Disability inclusion audits for institutional WASH investments.

5. Gender Vulnerability Mitigation Measures
Garissa CWSSIP addresses key risks faced by women and girls, especially during climate shocks:

| **Vulnerability** | **Mitigation Strategy** |
|---|---|
| Long distances to water sources | Install boreholes near settlements; introduce mobile distribution points |
| Lack of MHM facilities in schools | Construct dedicated MHM rooms with water, soap, bins, and reusable pads |
| Exposure to GBV at night | Provide lighting and security in sanitation blocks |

| Vulnerability | Mitigation Strategy |
|---|---|
| Underrepresentation in WASH planning | Mandate 30% gender representation in Water User Associations and WSP boards |
| Water burden during droughts | Introduce household-level rainwater systems and water-saving technologies |

6. Risk Monitoring and Adaptive Management
The CWSSIP includes an integrated Risk Management Framework, which mandates:

- Annual project reviews using the County Climate Screening Tool
- Grievance Redress Mechanisms (GRMs) for all WASH projects
- Use of real-time monitoring platforms for service continuity and environmental compliance

These tools are supported by Garissa's alignment with the National Integrated Monitoring and Evaluation System (NIMES) and SDG reporting frameworks.

5.4 Water Resources Management and Catchment Conservation Investment Plan

The County's water resources—particularly the Merti Aquifer, Tana River, seasonal pans, and laghas—are under severe threat from over-extraction, pollution, siltation, climate variability, and weak governance. Over 85% of Garissa's water supply depends on groundwater, yet recharge zones are degraded, monitoring is weak, and salinity and yield reduction are worsening.
To ensure long-term water security, Garissa's CWSSIP lays out a strategic investment plan targeting watershed protection, aquifer recharge, nature-based solutions, and pollution control. These investments prioritize climate resilience, safeguard community water needs, and support intergenerational sustainability.

A. Strategic Water Resource Investments

| Investment Area | Scope (2024–2030) | Cost Estimate (KES) | Climate Resilience/Impact Focus |
|---|---|---|---|
| Catchment Reforestation & Soil Bunds | 2,000 ha in Ijara, Balambala, and Lagdera | 350 million | Reduces erosion, enhances aquifer recharge |
| Gully Rehabilitation | 50 major gullies near pans and laghas | 180 million | Prevents siltation, increases infiltration |
| Groundwater Recharge Mapping & Zoning | Countywide assessment, GIS-based aquifer zoning | 75 million | Guides borehole placement, regulates abstraction |
| Riparian Protection and Buffering | Tana River riparian belts (60 km) | 220 million | Reduces flood damage, conserves biodiversity |

| Investment Area | Scope (2024–2030) | Cost Estimate (KES) | Climate Resilience/Impact Focus |
|---|---|---|---|
| Pollution Control Pilots | Pans/wells sanitation fencing, waste traps | 60 million | Reduces human and animal contamination at open sources |
| Community Tree Planting Programs | 500,000 trees near water points and schools | 90 million | Livelihood co-benefits, shade for boreholes |
| Rainwater Harvesting Expansion | 4,000 institutional and household systems | 210 million | Reduces pressure on groundwater, supports schools/clinics during droughts |

B. Priority Projects for Sustainable Water Resource Management

1. Aquifer Management Plan for the Merti System
    - Cross-county coordination with Wajir, Isiolo, and Tana River
    - Establishment of permitted abstraction levels
    - Installation of remote monitoring sensors at 50 boreholes
2. Community-Based Catchment Protection (CBCP)
    - Expand WUA mandates to include reforestation and spring protection
    - Develop bylaws for grazing controls and riparian encroachment
    - Pilot WUA-led payment-for-ecosystem-services (PES) models
3. Integrated Tana River Floodplain Management
    - Build riparian buffers (vegetative and structural)
    - Relocate at-risk shallow wells; elevate storage infrastructure
    - Collaborate with KFS and WRMA on flood zone zoning

C. Conservation Initiatives to Protect Water Sources

Garissa CWSSIP promotes nature-based and community-driven conservation approaches to protect groundwater and surface water resources. These include:

- Soil and water conservation bunds in erosion-prone hillslopes
- Catchment fencing and signage for boreholes and pans
- Tree planting agreements between schools and WUAs with co-ownership incentives
- Watershed co-management plans incorporating elders, women's groups, and herder associations

D. Climate Risk Considerations and Social Vulnerabilities

| Climate Hazard | Impacted Areas | Risk Mitigation Measures |
|---|---|---|
| Drought | Entire county, esp. Fafi, Lagdera, Hulugho | Aquifer protection, rainwater harvesting, multi-use water systems |
| Flash floods | Ijara, Galbet, Bura | Riparian buffer zones, check dams, gully rehabilitation |
| Aquifer salinization | Balambala, Dadaab | Groundwater quality monitoring, desalination units, regulated abstraction |
| Evaporation losses | Pans, shallow tanks | Pan lining, shade structures, roof-based water harvesting |

Socially vulnerable groups—especially women, the elderly, and PWDs—face high exposure due to reliance on contaminated open sources or long-distance collection. Conservation projects will include:

- Local labor hiring quotas for women/youth
- Gender-responsive community training on catchment protection
- MHM facilities and latrines near protected pans

E. Governance, Collaboration, and Enforcement

To operationalize this investment plan:

- Formalize collaboration with Water Resources Authority (WRA) for joint permit enforcement
- Establish a Garissa Catchment Forum to coordinate conservation stakeholders
- Enforce environmental licensing and Strategic Environmental Assessments (SEAs) for large infrastructure
- Create a Climate-WASH Safeguards Desk under the County Department of Water and Sanitation

5.4.2 Collaborative Initiatives with WRA and Other Stakeholders

Effective and sustainable water resource management in Garissa County cannot be achieved in isolation. Given the transboundary nature of key water sources such as the Merti Aquifer and Tana River, and the complex socio-ecological systems within the county, multi-stakeholder partnerships are essential. Garissa's CWSSIP promotes an integrated water governance approach—anchored in collaboration with national agencies like the Water Resources Authority (WRA), conservation entities, development partners, and community-based institutions—to address shared water risks, regulatory needs, and climate threats.

A. Partnerships for Integrated Water Resource Management (IWRM)
1. Water Resources Authority (WRA)
Garissa collaborates with WRA on:

- Catchment planning and sub-catchment management strategies, particularly for the Merti Aquifer and Tana River riparian areas.
- Water abstraction permits and monitoring across public and private boreholes to regulate extraction and avoid overuse.
- Joint data collection and remote monitoring through sensor installations on key boreholes.
- Capacity building of county officials and WUAs on regulatory compliance and source protection.

2. Ministry of Water, Sanitation and Irrigation (MoWSI)

- Policy harmonization with the National Water Master Plan.
- Technical guidance on water quality surveillance and infrastructure standardization.

3. Water Sector Trust Fund (WSTF)

- Co-financing of rural and pro-poor urban water and sanitation schemes.
- Implementation of Result-Based Financing (RBF) for FSM, boreholes, and institutional WASH.

B. Coordination with Environmental and Climate Stakeholders
Garissa County works in tandem with conservation and climate actors to ensure water source protection and resilience-building.

Key Environmental Coordination Platforms:

| **Agency/Actor** | **Role in Water Resource Management** |
|---|---|
| Kenya Forest Service (KFS) | Reforestation of degraded micro-catchments, especially along seasonal laghas |
| NEMA | Oversight of EIAs, SEAs, and sanitation waste management licenses |
| County Directorate of Climate Change (CDCC) | Mainstreams climate risk screening into WASH planning |
| Kenya Wildlife Service (KWS) | Coordination in wildlife conflict zones near water points (e.g., Balambala) |
| NDMA | Climate hazard early warning, water trucking coordination during drought |

C. Multi-Stakeholder Governance Platforms
To institutionalize coordination, Garissa has operationalized the following mechanisms:

- County WASH Coordination Forum (WASH FORUM): Brings together WRA, MoWSI, WSTF, NGOs, WSPs, CSOs, and user groups to align investments, data, and compliance.
- Climate Risk Assessment (CRA) Workshops: Multi-agency forums for drought/flood risk mapping and resilience planning.
- Interagency Coordination Units within the County Government to align sectors like water, health, education, and disaster management.

D. Development Partner Engagement
Garissa collaborates closely with key donor and humanitarian partners:

- USAID: Supports data systems, borehole solarization, and CRA rollouts.
- UNHCR & CARE: Lead FSM and urban WASH services in refugee camps and host communities.
- UNICEF: Co-invests in institutional WASH and hygiene promotion in schools and health centers.

These partners work under agreed MoUs with Garissa County, reinforcing alignment with CWSSIP and ensuring transparency and sustainability.

E. Opportunities for Strengthening Partnerships

1. Formalize joint catchment management plans with WRA and neighboring counties for Merti Aquifer and Tana River.
2. Establish a Garissa Catchment Coordination Committee to oversee joint planning and data-sharing.
3. Expand PPPs for regulated water vending, FSM, and smart metering in collaboration with WASREB and private actors.
4. Create a GIS-based shared dashboard hosted by the County M&E Unit to track stakeholder investments and WASH performance.

5.4.3 Integrated Approach to Water Resource Planning Across Different Sectors
The County's water security is inextricably linked to developments in agriculture, livestock, urbanization, health, and environmental management. To optimize resilience and resource efficiency, this CWSSIP promotes a multi-sectoral water resource planning model, integrating climate change adaptation, land use planning, and cross-sector investments in water infrastructure. The approach ensures that water interventions deliver maximum economic, social, and environmental returns, while safeguarding the county's fragile ecosystems and aquifer systems.

A. Climate Change Impacts and Adaptive Water Planning

Garissa is highly vulnerable to climate extremes—frequent droughts, flash floods, rising temperatures, and erratic rainfall patterns threaten water supply, recharge, and infrastructure. This plan adopts a climate-smart approach by integrating risk-informed design, redundancy, and ecosystem-based adaptation across all sectors.

**Key Climate Adaptation Measures**

| **Hazard** | **Integrated Adaptive Action** |
|---|---|
| Drought | Promote Multiple-Use Water Systems (MUS) for livestock, irrigation, and household use |
| Flooding | Elevate borehole platforms, latrines, and water tanks; build flood defenses around pans |
| Salinity and over-abstraction | Deploy solar-powered desalination, regulate abstraction permits, protect recharge zones |
| Evaporation loss | Line pans, install shade structures, promote rainwater harvesting |

These actions are aligned with the County Climate Change Action Plan (CCCAP) and informed by vulnerability assessments from CRA workshops held with stakeholders from health, agriculture, and education sectors.

B. Cross-Sectoral Linkages and Resource Efficiency
Water's role in Garissa's development is cross-cutting. The CWSSIP ensures that interventions in one sector support outcomes in others, enabling efficient resource use and system-wide resilience.

Cross-Sector Linkages:

| **Sector** | **Water Nexus** |
|---|---|
| Agriculture | Promote water-efficient irrigation (drip), protect riparian zones, use treated wastewater as input |
| Livestock | Develop boreholes and water pans in grazing corridors with integrated watering troughs |
| Health | Ensure continuous water supply and hygiene infrastructure in all health facilities |
| Education | Invest in WASH+ blocks, MHM units, and rainwater systems for schools |
| Environment | Enforce land-use zoning to protect aquifers, restore vegetation in recharge zones |
| Urban Development | Integrate water infrastructure into spatial plans and new urban housing settlements |

By co-financing shared-use infrastructure (e.g., MUS systems, public sanitation markets), the county reduces redundancy and maximizes return on investment.

C. County Strategies for Coordinated Land Use and Water Resource Management
Garissa is embedding water planning into broader land-use strategies and policy frameworks to prevent land degradation, regulate abstraction, and protect critical recharge zones.

Integrated Planning Strategies:

1. County Spatial Planning: Align borehole and irrigation siting with land use zoning, drought maps, and settlement patterns.
2. Catchment Protection Protocols: Enforce buffer zones along the Tana River, laghas, and wetland recharge areas.
3. Cross-Departmental Coordination: Mandate joint planning between Water, Agriculture, Lands, Environment, and Urban Development departments.
4. Sustainable Livelihood Hubs: Cluster water investments around economic nodes (e.g., livestock markets, agro-processing zones) to improve service delivery and economic returns.

## 5.5 Institutional Reforms and Service Delivery Models (SDMs)

### A. Current Service Delivery Models and Operational Challenges

Garissa County employs a diverse array of service delivery models (SDMs), reflecting its dual urban-rural context, arid terrain, and humanitarian presence. These include:

- Urban piped networks managed by the Garissa Water and Sewerage Company (GAWASCO).
- Rural water schemes under the Garissa Rural Water and Sewerage Company (GARUWASCO).
- Community-managed systems led by Water User Associations (WUAs).
- Humanitarian-operated services in Dadaab refugee complex.
- Informal water vendors and private tanker operators in peri-urban settlements.

Key Challenges:

- High non-revenue water (NRW) (>45%) in GAWASCO's systems due to leakages, illegal connections, and weak metering.
- Limited financial autonomy and delayed disbursements hinder timely operations and preventive maintenance.
- WUAs lack formal registration, technical capacity, and performance monitoring systems.
- Minimal private sector participation due to unclear contracting frameworks, low profitability in rural areas, and regulatory uncertainty.
- Weak cross-sector coordination, particularly for sanitation and multi-use services.

### B. Assessment of Applicable SDMs Based on Settlement Typologies

Urban Areas (e.g., Garissa Town, Dadaab, Modogashe):

- Preferred Model: Public Utility (GAWASCO)

- Reform Priorities:
    - Introduce prepaid meters and smart billing platforms.
    - Reduce NRW through leak detection and pipeline replacement.
    - Roll out delegated management contracts for kiosks and communal points.
    - Integrate franchise-based FSM service providers.

Peri-Urban and Informal Settlements:

- Preferred Model: Mixed model—utility oversight + informal/private operators
- Reform Priorities:
    - Formalize water vendors and truckers via registration and service zones.
    - Establish public standpipes with mobile payment options.
    - Pilot container-based sanitation (CBS) and micro-treatment units.

Rural Settlements and Livestock Corridors:

- Preferred Model: Community-Managed + Rural Utility Oversight (GARUWASCO)
- Reform Priorities:
    - Digitize scheme monitoring and reporting via mobile dashboards.
    - Provide structured training and audit support for WUAs.
    - Institutionalize O&M subsidy funds to reduce scheme failure rates.
    - Introduce performance-linked grants for maintenance and expansion.

Refugee Camps and Host Communities (e.g., Dadaab):

- Preferred Model: NGO-operated under county oversight + transitioning to local utility
- Reform Priorities:
    - Transfer asset ownership to GARUWASCO or hybrid utility.
    - Establish FSM systems with revenue-sharing between NGOs and county.
    - Align humanitarian investments with CWSSIP objectives and WASREB KPIs.

Financing, O&M, and Institutional Capacity Considerations

| **Element** | **Key Recommendation** |
|---|---|
| Financing | Introduce blended financing: output-based aid, donor grants, county budget, and user tariffs. |
| O&M Models | Standardize service contracts for borehole maintenance, sanitation blocks, and FSM units. |

| Element | Key Recommendation |
|---|---|
| Tariff Setting | Align rural tariffs with affordability studies; introduce volumetric billing in urban zones. |
| Capacity Building | Train WSP boards, WUAs, and CBOs on governance, asset management, and customer service. |

D. Lessons from Best Practices in Water Governance
Garissa CWSSIP draws on national and international best practices to enhance SDMs:

1. Delegated Management Models: Proven effective in Makueni and Kitui, where private operators manage water kiosks under utility regulation. Garissa is piloting similar models in peri-urban centers.
2. Franchise-Based Sanitation Services: Youth-run latrine servicing in Kisumu and Mukuru (Nairobi) show potential for replication using ward-level sanitation enterprises.
3. Digital Utility Management: Counties like Nakuru use mobile platforms for meter readings, complaint tracking, and real-time fault reporting—technologies that Garissa plans to adopt under USAID STAWI support.
4. WUA Reform Pathways: Structured capacity-building and registration, as implemented in Turkana and Kajiado, show that community models can be professionalized with the right support.

E. Institutional Reform Roadmap

1. Enforce the Garissa County Water Act (2018):
    - Develop regulations on delegation, licensing, and asset management.
    - Formalize WUA registration and audit requirements.
2. Strengthen GARUWASCO and GAWASCO:
    - Introduce KPIs aligned with WASREB guidelines.
    - Provide capital support for infrastructure and digitalization.
3. Public-Private Partnership (PPP) Framework:
    - Draft service delegation contracts and tariff sharing models.
    - Incentivize rural entrepreneurs via performance-linked grants.
4. Service Delivery Framework Rollout:
    - Clarify roles of WSPs, NGOs, and informal providers.
    - Institutionalize joint planning and performance tracking systems.

5.5.2 Governance and Accountability Mechanisms for Water Service Providers

A. Strengthening Oversight and Performance Monitoring

Garissa County's decentralized WASH service delivery landscape includes formal public utilities (GAWASCO, GARUWASCO), community-managed schemes (WUAs), and informal/private actors. Ensuring effective oversight and performance across this spectrum requires a structured and transparent governance framework.

Strategic Governance Actions:

1. Operationalize the Garissa County Water Act (2018) by developing regulations that:
    - Define roles and responsibilities of each WSP type
    - Mandate licensing and registration of all service providers
    - Outline performance contracts, service level benchmarks, and penalty frameworks
2. Establish a County Water Regulatory Unit within the Department of Water to:
    - Monitor compliance with licensing, tariffs, and service standards
    - Conduct annual performance reviews of WSPs using indicators adapted from WASREB's IMPACT framework
    - Track Non-Revenue Water (NRW), customer complaints, and functionality status of water systems
3. Institutionalize Community-Led Monitoring mechanisms such as:
    - Public audit meetings at scheme level
    - Social accountability scorecards for WUAs and kiosks
    - Grievance redress mechanisms at water points and via SMS platforms

B. Role of Regulatory Agencies in Ensuring Compliance

1. Water Services Regulatory Board (WASREB):
    - Mandate: Sets service provision standards, licenses urban WSPs (e.g., GAWASCO), and monitors utility performance through the IMPACT report.
    - Proposed Actions:
        - Extend technical support to rural oversight via GARUWASCO
        - Review and approve cost-reflective tariffs submitted by licensed WSPs
        - Facilitate benchmarking and peer learning among ASAL utilities

2. Garissa County Government:
    - Through the Water Directorate and County M&E Unit, responsible for:
        - Oversight of GARUWASCO, WUAs, and informal providers

- Development of a centralized WASH data system
- Quarterly service delivery assessments and publication of performance scorecards

4. Supporting Institutions

| **Institution** | **Compliance Role** |
|---|---|
| NEMA | Environmental licensing and sanitation waste regulation |
| County Public Health | Hygiene and water quality monitoring |
| County Assembly | Budget oversight and legislative approval for regulations and tariff policies |

C. Key Accountability Reforms and Innovations

1. Digitize Performance Tracking:
    - Deploy mobile-enabled dashboards to monitor uptime, O&M incidents, water quality, and customer satisfaction
    - Utilize WASREB-aligned KPIs (e.g., service continuity, complaint resolution time, O&M cost recovery)
2. Establish Transparent Tariff Systems:
    - Introduce pro-poor and lifeline tariffs, approved through public consultation
    - Integrate mobile payment systems with real-time billing and audit trails
3. Formalize WUA Accountability:
    - Require registration, financial reporting, and annual performance audits for all WUAs
    - Introduce incentive grants for well-performing schemes (linked to tariff compliance, functionality, and gender equity)
4. Grievance Redress and Citizen Engagement:
    - Create SMS- and app-based feedback channels linked to County M&E Unit
    - Mandate quarterly community forums where WSPs present financial and performance reports

D. Strategic Goals for Governance Enhancement by 2030

| Target | Status (2023) | Goal (2030) |
|---|---|---|
| Licensed WSPs operating with formal service contracts | 2 | 100% |
| Functional community complaint channels | <20% | 75% |
| WUAs with audited financial records | <30% | 80% |
| Schemes reporting on KPIs via digital dashboards | <15% | 90% |

5.5.3 Strategies for Improving Financial Viability and Operational Efficiency

Achieving sustainable, equitable water and sanitation services in Garissa County hinges on financial resilience and operational efficiency. Despite notable capital investments, persistent challenges—including high non-revenue water (NRW), poor tariff enforcement, dependency on donor financing, and weak operations and maintenance (O&M) systems—undermine service sustainability.
This section outlines actionable strategies to:

- Reduce operational costs
- Improve cost recovery
- Enhance utility performance
- Institutionalize smart management practices

These reforms are aligned with WASREB regulatory benchmarks and the National Water and Sanitation Investment Plan (NAWASIP) for improved service efficiency and sustainability.

B. Approaches to Reduce Operational Costs
1. Solarization of Infrastructure

- Scale-up solar-powered pumping across rural and peri-urban boreholes to cut diesel and grid electricity costs.
- Transition high-energy urban pumping stations to hybrid solar-grid systems, especially in Garissa Town and Modogashe.
- Target a 50% reduction in energy O&M expenditure by 2027.

2. Preventive Maintenance and O&M Reforms

- Institutionalize lifecycle costing in project design to budget for repairs, spares, and technician deployment.
- Develop preventive maintenance schedules and spare parts banks for GARUWASCO-managed and community schemes.
- Introduce performance-based maintenance contracts tied to revenue recovery and uptime metrics.

3. Improve Tariff Collection and Enforcement

- Strengthen customer databases and introduce user registration systems for all piped and kiosk-based schemes.
- Implement tiered tariff structures that combine affordability for vulnerable groups with cost recovery for high-volume users.
- Enforce penalties for non-payment, including disconnection protocols and public arrears disclosure for institutions.

C. Increasing Efficiency Through Technology and Management Innovations

1. Digitalization of Utility Management
   - Introduce smart meters and pre-paid systems in high-density areas to reduce NRW and improve billing transparency.
   - Deploy mobile-based billing platforms linked to M-Pesa for all urban and larger rural schemes.
   - Integrate real-time dashboards for scheme performance monitoring, including alerts for pump failure, leakage, and storage levels.

2. Centralized Asset Management Systems
   - Map all county water assets using GIS and implement asset lifecycle management software to track depreciation, repairs, and investment needs.
   - Link asset data to county M&E systems for budgeting and performance planning.

3. Training and Professionalization
   - Build technical capacity of GARUWASCO and WUA staff in:
     - Bookkeeping and financial management
     - Tariff modeling and revenue forecasting
     - Infrastructure diagnostics and repair
   - Partner with STAWI, WSTF, and development partners to roll out modular training programs.

D. Financial Sustainability Reforms

| **Challenge** | **Strategic Response** |
|---|---|
| Weak revenue collection | Digital payments, metering, pro-poor subsidy models |
| High dependency on donor grants | Develop PPP models, pilot revolving funds and output-based aid (OBA) contracts |
| Poor financial oversight | Standardize reporting formats; mandate quarterly financial submissions from WUAs |

| Challenge | Strategic Response |
|---|---|
| Minimal sanitation investment | Allocate dedicated county budget lines; introduce sanitation service tariffs (FSM) |
| Inequitable cost burden | Introduce lifeline tariffs and targeted subsidies for low-income and high-cost zones |

E. Results-Based Financing and Private Sector Engagement
Results-Based Financing (RBF) Mechanisms:

- Link O&M subsidies and grants to verifiable outcomes (e.g., reduction in breakdown frequency, improved tariff compliance).
- Launch competitive RBF grants for WUAs achieving >85% uptime and >70% revenue collection efficiency.

Private Sector Leverage:

- Develop PPP frameworks for smart meter installation, kiosk management, and fecal sludge transport.
- Offer performance bonuses and risk-sharing for operators in underserved or fragile areas.

F. Strategic Targets by 2030

| Indicator | Baseline (2024) | Target (2030) |
|---|---|---|
| Average O&M cost recovery rate | <40% | ≥85% |
| Non-Revenue Water (NRW) rate | >45% (urban) | ≤25% |
| Utility billing through digital systems | <15% | ≥75% |
| Schemes with functioning maintenance plans | <20% | ≥80% |
| Private operators engaged in service delivery | <10% | ≥30% |

5.6 Sector Financing Requirements and Sourcing Plan

A. Financial Projections for Sector Development (2024–2030)
Garissa County aims to achieve universal access to safe and affordable water and sanitation services by 2030, in alignment with SDG 6, NAWASIP, and Kenya Vision 2030. To meet this ambitious target, the CWSSIP estimates that the county requires an investment of KES 8.5 billion between 2024 and 2030. This figure covers both capital infrastructure and systemic reforms.

Infrastructure Investment Projections

| Category | Estimated Units (2024–2030) | Indicative Cost (KES) |
|---|---|---|
| New rural boreholes | 150 solarized systems | 2.25 billion |
| Borehole rehabilitation | 300 systems (with O&M kits) | 600 million |
| Water pipeline extension | 500+ km in high-density areas | 1.2 billion |

| Category | Estimated Units (2024–2030) | Indicative Cost (KES) |
|---|---|---|
| Institutional WASH | 1,200 WASH blocks (schools, HCFs) | 960 million |
| Public toilets and kiosks | 60 facilities | 180 million |
| Water pans and sand dams | 200 structures (80 new + 120 rehab) | 1.1 billion |
| FSM systems | Trucks, disposal sites, FSTP pilots | 750 million |
| Small-scale sewerage | Pilot networks (Garissa Town, Dadaab) | 950 million |
| Digital metering and billing | Smart meters, mobile platforms | 250 million |
| Subtotal – Infrastructure | | ~8.2 billion |

Policy, Institutional, and Regulatory Reform Costs

| Component | Estimated Cost (KES) |
|---|---|
| Operationalizing the Water Act | 100 million |
| County Sanitation Strategy + FSM | 120 million |
| Capacity building for WUAs/WSPs | 90 million |
| County PPP framework development | 50 million |
| Sector M&E systems | 60 million |
| Subtotal – Reforms | ~420 million |

B. Budgetary Needs: Short-, Medium-, and Long-Term Outlook

| Timeframe | Focus Areas | Budget Estimate (KES) |
|---|---|---|
| Short Term (2024–2026) | Emergency resilience, O&M system setup, pilot FSM, borehole rehabilitation | 2.4 billion |
| Medium Term (2026–2028) | Institutional WASH, sewerage pilots, digitalization, capacity building | 3.1 billion |
| Long Term (2028–2030) | Scaling MUS systems, universal sanitation, PPP operationalization, recharge and green infrastructure | 3.0 billion |

C. Sources of Financing

1. County Government Allocations
   - Historically contributed 74% of sector funding (KES 611 million from 2022–2024).
   - Needs to scale to ≥5% of annual county budgets to align with AMCOW benchmarks.

2. Development Partners and NGOs
   - Key funders include UNICEF, UNHCR, USAID STAWI, Peace Winds Japan, Save the Children, etc.
   - Strategic alignment with donor funding through investment dashboards is proposed.

3. National Government and Special Funds
   - Leverage NDMA, WSTF, and MoWSI for performance-based financing.

- Tap into County Climate Change Fund (CCCF) for green infrastructure investments.

4. Private Sector and PPPs
   - Introduce structured PPPs in:
     - Solar-powered water systems
     - Smart metering and mobile payments
     - Fecal sludge transport and treatment
   - Pilot Output-Based Aid (OBA) and Results-Based Financing (RBF) with risk-sharing incentives.

5. Households and User Contributions
   - Institutionalize co-financing for household sanitation (micro-loans via SACCOs)
   - Promote volumetric tariffs with subsidies for low-income users

D. Financing Gaps and Strategic Recommendations
Gap Analysis:
- Current investment pace (~KES 400–500 million/year) covers only ~35% of required capital needs by 2030.
- Sanitation remains heavily underfunded (<10% of WASH financing).
- Weak private capital mobilization due to regulatory and risk barriers.

Strategic Recommendations:
1. Blended Financing Framework: Combine county, donor, and private funding with performance-linked disbursements.
2. County Water Financing Coordination Unit: To harmonize donor programs, track flows, and facilitate PPP onboarding.
3. Climate-Smart Budgeting: Integrate WASH into climate adaptation finance instruments (e.g., GCF, resilience bonds).
4. Equity-Based Resource Allocation: Prioritize sub-counties based on poverty, climate vulnerability, and WASH coverage data.

5.6.2 Strategies to Mobilize Funding from Public, Private, and Donor Sources

A. Strategic Imperative
Achieving Garissa's CWSSIP investment target of approximately KES 8.5 billion by 2030 requires a bold and diversified financing approach. Relying solely on county allocations and donor grants will not be sufficient to bridge the infrastructure and service delivery gaps. Instead, the county must aggressively pursue blended financing, leverage public-private partnerships

(PPPs), and align with national funding mechanisms to ensure universal, climate-resilient, and sustainable WASH coverage.

B. Exploring Blended Financing Mechanisms

Blended finance combines public, private, and development capital to catalyze investments where market risks are too high or revenue streams are weak. Garissa CWSSIP proposes the following models:

1. Output-Based Aid (OBA)
   - Private operators pre-finance water or sanitation services and are reimbursed by public/donor funds upon achieving defined outcomes (e.g., number of functional water points, FSM trips, household connections).
   - Pilot OBA schemes can be launched for rural water kiosks, FSM services in Dadaab, and school sanitation blocks.

2. Results-Based Financing (RBF)
   - Link disbursement of grants from development partners (e.g., WSTF, USAID STAWI) to indicators such as uptime, coverage, or revenue collection.
   - Performance-based contracts to be developed with GARUWASCO and WUAs.

3. Microfinance for Household Sanitation
   - Collaborate with SACCOs and mobile lenders to offer loans for household latrine construction, with repayment linked to water bills or mobile money.

4. Social Impact and Climate Bonds
   - Explore climate adaptation finance via resilience bonds that reward long-term outcomes (e.g., aquifer recharge, flood prevention).
   - Introduce a County WASH Resilience Fund with contributions from CCCF, Green Climate Fund (GCF), and philanthropic partners.

C. Public-Private Partnership (PPP) Models and Investment Strategies

Garissa is actively developing a county-level PPP framework to de-risk private investments in water and sanitation services. Opportunities are categorized as follows:

1. Water Supply Investments

| **Type** | **PPP Strategy** |
|---|---|
| Urban piped systems | Design-Build-Operate (DBO) with private firms managing billing and O&M |
| Rural kiosks | Delegated management to community entrepreneurs under GARUWASCO oversight |
| Solar water systems | Vendor-financed solar installation + O&M contracts, with county co-financing |

| Type | PPP Strategy |
|---|---|
| Water ATMs | Franchise models in peri-urban centers, managed by youth/women enterprises |

2. Sewered Sanitation

| Type | PPP Strategy |
|---|---|
| Urban sewer expansions | DBO or lease-based models with revenue-sharing via tariffs |
| Treatment plants | Joint public-NGO-operator models, where NGOs finance capex and private sector manages ops |

3. Non-Sewered Sanitation

| Type | PPP Strategy |
|---|---|
| FSM collection and transport | Vehicle leasing or franchise-based O&M with route-based licensing |
| Public toilets and MHM units | Joint financing with youth/women groups operating facilities under performance contracts |
| Container-based sanitation | Lease-to-own or vendor-managed systems in dense informal settlements |

D. Enabling Policy and Regulatory Reforms

To attract and retain investment, Garissa County must address systemic risks and unlock regulatory clarity:

1. Fast-track implementation of the Garissa County Water Act (2018)—including service delegation, licensing, and tariff rules.
2. Develop standardized PPP templates and MoUs to govern roles, incentives, and performance obligations.
3. Establish a County WASH PPP Taskforce to vet proposals, coordinate stakeholders, and monitor compliance.
4. Incentivize private participation through:
    - Performance bonuses
    - Partial risk guarantees
    - Subsidized connection packages
    - Preferential procurement for local firms and CBOs

E. Strategic Engagement with Development Partners

Garissa County seeks to align donor efforts through a WASH Investment Coordination Platform, with the following actions:

- Develop WASH investment dashboards tracking all partner funding, timelines, and locations.

- Harmonize reporting using WASREB's IMPACT framework and national M&E standards.
- Align partner support with CWSSIP priority areas (e.g., FSM, institutional WASH, climate resilience).
- Prioritize longer-term, system-building support over short-term emergency projects.

F. Investment Targeting and Equity
To ensure fair and impactful financing, Garissa County will:

- Use climate vulnerability and WASH coverage maps to guide sub-county investment prioritization.
- Introduce pro-poor subsidies (e.g., lifeline tariffs, fee waivers) in high-poverty or fragile areas.
- Monitor gender and social inclusion metrics in all PPP and financing contracts.

5.6.3 Financial Sustainability Plans, Including Tariff Adjustments and Subsidy Mechanisms
A. Strategic Imperative
Ensuring the long-term financial viability of Garissa's water and sanitation sector is essential to achieving universal access, maintaining service quality, and reducing dependency on donor subsidies. However, most rural and peri-urban water schemes operate with weak cost recovery, informal tariff enforcement, and limited financial oversight. Many services are perceived as humanitarian relief, which undermines willingness to pay and depletes system sustainability. The CWSSIP outlines targeted reforms that balance affordability with revenue generation, introducing flexible tariff structures, inclusive subsidy schemes, and robust financial governance for Water Service Providers (WSPs) and Water User Associations (WUAs).

B. Existing Challenges in Cost Recovery and Service Affordability

- Low and irregular revenue streams: Many WUAs rely on flat fees or voluntary contributions, generating insufficient income for O&M or reinvestment.
- Unrealistic tariffs: Most pricing structures are disconnected from actual costs or inflation trends, especially in high-cost rural schemes.
- Weak enforcement: Payment defaults go largely unpenalized, and non-payment from institutions further weakens cash flow.
- Affordability constraints: In drought seasons, some households spend over 15% of their income on water, far exceeding the 5% benchmark.

C. Strategic Reforms for Tariff Rationalization and Affordability
1. Tiered and Volumetric Tariffs

- Implement WASREB-aligned tiered pricing models in urban and peri-urban schemes to reward efficient use and recover costs.

- Introduce volumetric billing through smart meters in high-consumption zones to curb non-revenue water and align pricing with use.

2. Lifeline Tariffs for Vulnerable Households
   - Offer low or zero-cost consumption bands for poor households (e.g., first 3–6 cubic meters/month).
   - Pilot voucher-based water access for informal settlements and refugees relying on vendors.

3. Targeted Subsidy Mechanisms
   - Formalize county-funded WASH subsidies for high-cost service areas and institutions (e.g., schools, health centers).
   - Deploy performance-linked grants for rural WUAs that achieve >70% collection and uptime, supporting cost-sharing and reinvestment.

D. Strengthening Financial Management and Governance
To institutionalize accountability and transparency, the CWSSIP proposes the following:

| **Measure** | **Strategic Purpose** |
|---|---|
| Financial training for WUAs and rural WSPs | Improve budgeting, tariff forecasting, and reporting |
| Standardized accounting templates | Ensure consistent financial tracking and quarterly submissions |
| Mobile billing and payment integration | Increase transparency and customer convenience (via M-Pesa) |
| Smart metering in urban zones | Reduce NRW and increase volumetric tariff implementation |
| Financial audits and performance scorecards | Build community trust and regulatory accountability |

E. Building Willingness to Pay Through Service Reliability
- Increase service reliability (fewer breakdowns, better water quality) to restore trust in WSPs and WUAs.
- Use awareness campaigns to link tariff compliance with visible service improvements and local reinvestment.

F. Planning Scenarios and Financial Impact

| **Scenario** | **Tariff Strategy** | **Impact** |
|---|---|---|
| Low-income rural zone | Lifeline + flat fee + county subsidy | Protects poor, maintains minimum O&M viability |
| Urban metered area | Tiered + volumetric tariff | Encourages conservation, funds reinvestment |
| Kiosk-based settlement | Per-jerrycan fee + prepaid card + franchise O&M | Improves predictability and user control |

| Scenario | Tariff Strategy | Impact |
|---|---|---|
| Refugee and host camp | NGO-financed capital + regulated user fee | Supports transition to sustainable operations |

G. Monitoring and Adjustment Mechanisms

- Annual Tariff Reviews: Adjust rates based on inflation, operational costs, and service feedback.
- Subsidy Impact Assessment: Measure how pro-poor subsidies affect access, sustainability, and equity.
- User Satisfaction Surveys: Include affordability perception in county WASH M&E platforms.

# CHAPTER 6: ENVIRONMENTAL AND SOCIAL ASSESSMENT

## 6.1 Environmental, Health, and Safety in the WASH Sector

Water, sanitation, and hygiene services have significant environmental and social implications, particularly in a fragile ecosystem like Garissa County's arid and semi-arid environment. As the county continues to scale up WASH investments, environmental, occupational, and public health risks must be addressed through integrated safeguards.

### 6.1.1 Situational Analysis: Key Environmental and Health Risks

The following environmental, health, and safety (EHS) risks have been identified across the water and sanitation sub-sectors:

- Groundwater Over-Abstraction: Increased borehole drilling, especially into the Merti Aquifer, without regulation, poses risks to long-term water availability.
- Flood and Drought Extremes: Seasonal flooding contaminates shallow water sources, while drought increases reliance on emergency water trucking, which lacks EHS oversight.
- Inadequate Sanitation Management: Unreinforced latrines, open defecation in peri-urban areas and rural areas and absence of fecal sludge treatment pose public health and environmental risks.
- Pollution and Vector Breeding: Stagnant water in pans and open drains contributes to vector-borne disease outbreaks (e.g., cholera, malaria).
- Occupational Hazards: Sanitation workers operate without protective equipment or proper training, leading to exposure to pathogens and physical injuries.

### 6.1.2 Mitigation Measures and Integrated Safeguards

CWSSIP incorporates environmental and social safeguards at planning, construction, and operational stages:

- Site Selection and Design:
    - Use of environmental screening tools during project siting.
    - Preference for flood-safe locations and water pans with adequate catchment protection.
- Climate-Smart Infrastructure:

    - Use of nature-based solutions: sand dams, soak pits, bio-digesters, and tree planting around facilities.
    - Rainwater harvesting designs to reduce reliance on groundwater.
- Sanitation Safety:
    - Rollout of reinforced VIP latrines and urine-diversion toilets.
    - Controlled fecal sludge collection, transportation, and treatment with safe reuse where feasible.
- Waste Management:
    - Construction waste disposal plans and protocols for managing sludge, greywater, and wastewater.
- Vector and Pest Control:
    - Larvicide and environmental cleaning in high-risk areas, especially around water pans and toilets.
    - Conducting Mass insecticide residual spraying (IRS)
    - Proper use of LLITNs
- Community Awareness:
    - Behavior changes campaigns on hygiene and environmental stewardship.
    - Public forums for identifying and addressing community-level environmental concerns.
    - Conducting Community led total sanitation

### 6.1.3 Water Abstraction Permit Strategy

CWSSIP ensures that all abstraction complies with Water Resources Authority (WRA) regulations:

- Inventory and Audit:
    - Comprehensive assessment of existing boreholes and open wells.
    - Classification of abstraction points (public, institutional, community, emergency).
- Registration and Permitting:
    - Fast-tracked WRA registration for high-use boreholes.
    - Licensing of county and partner-managed water supply points.

- Capacity Building:
    - Training WUAs and sub-county officers on permit requirements and groundwater management.
- Monitoring:
    - Inclusion of abstraction data into the County GIS platform.
    - Installation of meters in high-yield systems to support water budgeting and sustainability.

### 6.1.4 Environmental and Social Licensing Plan

All large and environmentally sensitive WASH investments will be subject to national licensing under NEMA:

- Environmental Impact Assessment (EIA):
    - Required for piped water systems, water pan construction, and fecal sludge treatment plants.
    - Simplified Environmental Project Reports (EPRs) for small community schemes.
- Social Impact Considerations:
    - Stakeholder engagement plans to ensure Free, Prior, and Informed Consent (FPIC) especially in pastoralist areas.
    - Gender-sensitive consultations and inclusive design reviews.
- Documentation and Compliance:
    - Budgeting for licensing within project designs.
    - Reporting of EIA progress and conditions to NEMA and other regulators.

### 6.1.5 Environmental, Health, and Safety Monitoring Framework

CWSSIP includes a dedicated EHS monitoring system to be managed by the Department of Water Services, in collaboration with Health and Environment units:

- Monitoring Tools:
    - Digital dashboards (linked to STAWI/NIMES) tracking environmental indicators and incidents.
    - Risk scoring for each WASH investment based on location, design, and environmental sensitivity.

- Inspections and Audits:
    - Quarterly inspections by a multi-sectoral team from Water, Health, and Environment departments.
    - Use of community scorecards and phone-based feedback systems.
- Performance Indicators:
    - % of functional facilities with valid abstraction permits
    - % of WASH projects with NEMA clearance
    - Number of sanitation workers trained and equipped with PPE
    - Number of water points located outside flood-prone zones

## 6.2 Social Assessment for the County

### 6.2.1 Situational Analysis of Social Risks in the WASH Sector

The implementation of water and sanitation programs in Garissa County is influenced by complex social dynamics, including land tenure, community engagement, governance, and affordability. Vulnerable groups such as women, pastoralist communities, persons with disabilities (PWDs), and refugees often face disproportionate barriers to accessing WASH services.

Key social risks in the county's WASH sector include:

- Land tenure insecurity, especially in informal settlements and rangelands, affects water and sanitation infrastructure.
- Weak grievance mechanisms, leading to unresolved community disputes around access, construction impacts, or service prioritization.
- Low levels of user participation, especially in marginalized areas.
- Gender-based disparities in water collection burden, sanitation access, and participation in WASH governance structures.
- Potential resistance to new tariffs or reforms due to limited ability to pay and lack of awareness.

### 6.2.2 Social Risk Mitigation Measures

CWSSIP proposes the following strategies to mitigate social risks and enhance social sustainability:

Land Ownership and Documentation

- All WASH investments will be preceded by due diligence on land tenure, supported by local administrators and the Lands Department.
- Community land agreements and MoUs will be signed for shared water infrastructure.
- Priority will be given to public land or land donated by communities with formal documentation.

Grievance Redress Mechanism (GRM)

- The County will strengthen the WASH-specific GRM system, building on existing County Public Complaints infrastructure.
- Grievances can be submitted through:
    1. Community barazas
    2. Ward offices
    3. SMS/phone platforms
    4. Local administrators and WUAs
- All grievances will be recorded, tracked, and responded to within defined timeframes.

Operation and Infrastructure Management

- Water User Associations (WUAs) and licensed service providers (GARUWASCO, GAWASCO) will receive capacity-building on:
    - Transparent fee collection
    - Asset maintenance
    - User engagement
- Inclusive WUA structures will promote women, youth, and PWD participation.

Community Health Management

- During project implementation, contractors will be required to:
    - Conduct Health and Safety Inductions
    - Ensure community protection around construction sites
    - Work closely with public health officers to mitigate sanitation-related health risks
- Hygiene promotion campaigns will be integrated into all rollout phases.

6.2.3 Willingness-to-Pay and Tariff Acceptance

CWSSIP recognizes the need for progressive, inclusive tariffs that reflect users' ability and willingness to pay:

- Household surveys conducted in recent WSTF and UNICEF projects indicate that most residents are willing to pay for improved water services, provided reliability and quality are ensured.
- Low-income and vulnerable users will be cushioned through:
    - Social tariffs
    - Lifeline blocks for basic consumption
    - Flexible billing cycles and mobile payment options

### 6.2.4 Institutions Managing Social Issues

Garissa County's social issues in WASH are addressed through a multi-institutional approach:

| **Institution/Body** | **Social Role in WASH** |
|---|---|
| Department of Water Services | Coordination of WASH infrastructure and community engagement |
| Department of Social Services | Oversight of social inclusion and vulnerable group targeting |
| Department of Public Health | Hygiene promotion, sanitation campaigns, and community health outreach, WASH in HCF, schools and tertiary institutions.Community Led Total sanitation |
| County Land Office | Resolution of land ownership and documentation issues |
| WUAs and Service Providers | Frontline user engagement and local dispute management |
| Local Administration (chiefs, elders) | Community buy-in, dispute mediation, and mobilization |

### 6.2.5 Environmental and Social Integration Unit

- Currently, the County has no formal integrated Environmental and Social Unit within the Water Department.

- CWSSIP recommends establishing a dedicated Environmental and Social Safeguards Desk, with trained officers and a clear mandate to:
    - Screen projects
    - Monitor compliance
    - Liaise with NEMA, WRA, and affected communities
- This unit will also serve as the focal point for donor coordination on safeguards.

#### 6.2.6 Budget Provision and Capacity Building

The County will allocate dedicated budget lines in future WASH investments to support:

- Stakeholder consultations and FPIC processes
- Safeguards training for county officers, contractors, and WUAs
- Community capacity-building on user rights, grievance handling, and accountability
- Behavior change and hygiene promotion campaigns
- WASH in Health care facilities
- WASH in schools

# 7: IMPLEMENTATION ROADMAP, MONITORING AND EVALUATION, AND COMMUNICATION PLAN

## 7.1 Strategy and Investments Implementation Plan

Garissa County's Water, Sanitation, and Hygiene Strategy and Investment Plan (CWSSIP) shall be implemented through a phased and structured approach, ensuring timely delivery, accountability, and alignment with institutional capacities. A multi-sectoral, inclusive governance framework will be adopted to coordinate actors, investments, and performance monitoring throughout the plan period.

### *7.1.1 Phased Implementation Approach*

The CWSSIP will be executed in three key phases:

*Phase I: Foundation and Institutional Setup (Years 1–2)*

- Dissemination of the CWSSIP to internal and external stakeholders.
- Establishment of a formalized County WASH Coordination Forum.

- Completion of baseline data collection, infrastructure mapping, and social/environmental assessments.
- Fast-track implementation of ready-to-go projects, especially borehole rehabilitation, solarization, and institutional sanitation.

*Phase II: Infrastructure Rollout and Capacity Strengthening (Years 3–5)*

- Expansion of piped water systems, water pans, and fecal sludge management facilities.
- Full rollout of WASH programs in schools and health care facilities (WinHCF, MHM).
- Launch of digital metering and billing systems for GAWASCO and GARUWASCO.
- Operationalization of real-time GIS-based WASH performance monitoring systems.
- Institutionalization of grievance redress mechanisms (GRMs) across all WASH investments.

*Phase III: Consolidation and Sustainability (Years 6–7)*

- Scale-up of climate resilience initiatives (aquifer recharge, flood mitigation, drought-proof infrastructure).
- Strengthening of PPP arrangements for FSM, O&M, and sanitation service delivery.
- Conducting the mid-term CWSSIP review, public performance reporting, and re-prioritization of investment pipelines.

*7.1.2 Key Milestones*

| **Milestone** | **Target Timeline** |
|---|---|
| Adoption and launch of CWSSIP | Year 1 |
| Completion of WASH infrastructure baseline and ESIA screening | Year 2 |
| 50% physical infrastructure targets achieved | Year 4 |
| Operationalization of digital monitoring systems | Year 4 |
| Midterm performance review | Year 5 |
| Universal basic water and sanitation coverage | Year 7 |

*7.1.3 Responsibilities of Key Institutions and Stakeholders*

CWSSIP implementation will be led by the Department of Water Services, with coordination support from a multi-agency WASH Coordination Forum. The roles of the key actors are as follows:

| **Stakeholder** | **Roles and Responsibilities** |
|---|---|
| Department of Water Services | Lead planning and implementation agency; oversees interdepartmental coordination, budgeting, M&E. |
| GAWASCO / GARUWASCO | Responsible for operational management of water supply and sanitation systems in Urban and rural setup, customer billing, metering, and reporting. |
| Water User Associations (WUAs) | Manage and oversee community-run schemes; facilitate fee collection, local governance, and minor O&M. |
| Department of Health | Responsible for hygiene promotion, sanitation oversight, and public health surveillance related to WASH services. |
| Department of Education | Implement and monitor WASH infrastructure and hygiene programs in schools. |
| Department of Finance and Planning | Coordinates public investment budgeting and fiscal tracking of sector spending. |
| Department of Environment / NEMA | Oversees environmental compliance, ESIA licensing, and pollution control enforcement. |
| Water Resources Authority (WRA) | Manages groundwater abstraction permits and integrated water resource management. |
| WSTF / WASREB / MoWSI | Provide performance monitoring, financing, regulatory enforcement, capacity-building support. and investment in underserved areas |
| Development Partners and NGOs | Support innovation pilots, capacity-building, and co-financing of WASH projects. |
| Private Sector | Participates in O&M contracts, FSM, sanitation services, and metering supply chains. |
| Local Administration (chiefs, elders) | Community engagement, land conflict mediation, grievance redress at grassroots level and address insecurity issues. |

*7.1.4 Stakeholder Coordination Mechanism*

CWSSIP recommends formalization of the existing WASH Technical Working Group into a County WASH Coordination Forum, which will:

- Meet quarterly and be chaired by the Chief Officer, Water.
- Include representation from all WASH-relevant departments, service providers, NGOs, private sector, and WUAs.
- Review quarterly performance dashboards and troubleshoot delivery bottlenecks.
- Host an annual stakeholder forum for accountability and joint planning.
- establish a central data system for ease of reference and documentation.
- jointly monitor and evaluate all WASH projects from design to completion stages.

*7.1.5 Capacity-Building Requirements*

CWSSIP identifies the following capacity-building priorities to support implementation:

| **Target Group** | **Capacity Needs** |
|---|---|
| County Department of Water Services | GIS mapping, M&E, safeguards, PPP negotiation, digital systems management, Technical and managerial skills |
| GAWASCO / GARUWASCO | NRW reduction, customer care, asset management, smart metering, technical skills. |
| Water User Associations | Governance, financial tracking, maintenance planning, community mobilization, sustainability of facilities. |
| Health and Education Officers | PHAST, WinHCF, menstrual hygiene management, hygiene promotion |
| County WASH Coordination Forum | Inter-sectoral planning, performance monitoring, adaptive management |

Capacity-building will be delivered through:

- An annual WASH Training Calendar integrated into the sector budget.
- Development partner-supported field exchanges and mentorship programs.
- Tailored digital training modules and in-person workshops with translation into Somali where necessary.
- standard operating procedures(SOP) and technical manuals.

## 7.2 Implementation Timeline and Performance Benchmarks

This section outlines the planned schedule for implementing the Water, Sanitation and Hygiene Strategy and Investment Plan (CWSSIP), with defined milestones, performance indicators, and timelines for short-, medium-, and long-term delivery. The implementation horizon runs from 2025 to 2035, aligned with the County Integrated Development Plan (CIDP 2023–2027) and national investment frameworks such as NAWASIP.

### *7.2.1 Clear Implementation Schedule*

The plan will be delivered through three distinct phases, each associated with strategic goals, programmatic activities, and investment rollouts.

*Short-Term Milestones (Years 1–2: 2025–2026)*

Focus: Institutional readiness, baseline data, quick wins, and high-priority infrastructure

- Finalization and dissemination of the CWSSIP
- Establishment of the County WASH Coordination Forum
- Asset mapping and GIS inventory of WASH infrastructure
- Rehabilitation of 180 boreholes and solarization of 50 sites
- Initial rollout of sanitation programs in 30 schools and 15 HCFs
- Land verification and permitting (ESIA/WRA) for large projects
- Community sensitization and grievance redress mechanism rollout
- Training of WUAs and baseline citizen feedback mechanisms

*Medium-Term Milestones (Years 3–5: 2027–2029)*

Focus: Infrastructure scale-up, institutional WASH, and performance tracking

- Construction of new piped water systems (minimum 300 km pipeline extensions)
- Development of 60 fenced and climate-proofed water pans
- Implementation of FSM pilots in Garissa Town and Dadaab
- Rollout of smart metering and billing systems in GAWASCO service areas
- Expansion of institutional sanitation to 800+ schools and 100 HCFs
- Commissioning of public sanitation blocks and water kiosks in markets
- Operationalization of digital M&E and GIS dashboard system
- Midterm performance review and strategy adjustment

*Long-Term Milestones (Years 6–7: 2029–2030)*

Focus: Sustainability, resilience building, and universal basic access

- Expansion of MUS systems with integrated irrigation/livelihood components
- Upgrade and expansion of borehole networks based on climate risk mapping
- Consolidation of PPPs for FSM and borehole O&M
- Aquifer recharge and flood mitigation investments implemented
- Mid- and endline evaluations conducted and published
- County attains 100% access to basic water services and ODF status

*7.2.2 Performance Benchmarks & KPIs*

The CWSSIP includes clearly defined indicators and benchmarks to guide progress and enable monitoring by County authorities, service providers, and development partners.

| **Strategic Component** | **Key Performance Indicators (KPIs)** | **Baseline (2023)** | **Target by 2027** | **Target by 2030** |
|---|---|---|---|---|
| Water Access | % of population with access to basic water | 44% | 85% | 100% |
| Sanitation Access | % of households with improved sanitation | 37% | 70% | 90% |
| Hygiene in Institutions | % of schools with functional WASH | 45% | 80% | 100% |
| Service Functionality | % of boreholes operational | 65% | 90% | 95% |
| FSM | # of operational FSTPs | 0 | 2 | 5 |
| Digital Monitoring | % of WASH assets mapped in GIS | 10% | 75% | 100% |
| Regulation | % of service providers reporting to WASREB | 10% | 50% | 100% |
| Environmental Compliance | % of investments with ESIA/permits | <30% | 80% | 100% |

| Strategic Component | Key Performance Indicators (KPIs) | Baseline (2023) | Target by 2027 | Target by 2030 |
|---|---|---|---|---|
| Equity & Inclusion | % of projects reaching vulnerable groups | 30% | 70% | 90% |
| Feedback Mechanisms | % of complaints resolved through GRM | - | 70% | 95% |

Benchmarking will be reviewed bi-annually and aligned with the County Annual Progress Reports (APRs), County Integrated Monitoring and Evaluation System (CIMES), and national reporting tools such as NIMES and County dashboards.

## 7.2 Monitoring and Evaluation Plan

A robust Monitoring and Evaluation (M&E) system is central to the successful implementation of the CWSSIP. This system will ensure that planned investments are delivered efficiently, progress is tracked transparently, and decisions are informed by timely and reliable data. The M&E framework is designed to align with the County Integrated Monitoring and Evaluation System (CIMES), national frameworks (NIMES, WASREB, WSTF), and donor-supported platforms such as M-Water and UNICEF monitoring tools.

### *7.2.1 Monitoring and Evaluation Framework*

The M&E framework is structured around the CWSSIP's strategic objectives and investment components. It will support:

- Regular tracking of service coverage, infrastructure functionality, institutional performance, and community satisfaction.
- Evidence-based decision-making for policy adjustments, resource allocation, and mid-course corrections.
- Harmonized reporting across departments and development partners.
- Transparency and accountability, especially to service users and oversight institutions.

Monitoring will be conducted on a quarterly and annual basis, with mid-term and end-line evaluations to assess overall impact.

### *7.2.2 Data Collection, Reporting, and Evaluation Roles*

Effective performance monitoring depends on the coordinated efforts of multiple actors at county, sub-county, and community levels.

| Institution / Role | Responsibilities |
|---|---|
| Department of Water Services | Lead M&E coordination; maintain central dashboard; consolidate quarterly and annual reports. |
| GAWASCO / GARUWASCO | Provide utility-level data on service delivery, billing, functionality, and consumer feedback. |
| Department of Health and Education | Track hygiene and sanitation in public dwellings, business schools, health facilities, and public institutions. |
| Department of Environment | Monitor ESIA compliance, water safety, and environmental indicators. |
| Sub-county WASH Officers | Collect primary field data; verify infrastructure status; support WUA reporting. |
| Water User Associations (WUAs) | Report on local scheme performance; participate in community scorecard exercises. |
| Monitoring and Evaluation Unit (CIMES Desk) | Ensure alignment with countywide M&E framework; link with NIMES. |
| Development Partners | Support data systems, independent evaluations, and capacity-building. |
| WASREB / WSTF / WRA | Validate national compliance data and performance benchmarking. |

## MONITORING INDICATORS

| Objective | Indicator | Base | 24 | 25 | 26 | 27 | 8 | 29 | 30 | 31 | 32 | 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Water sources of acceptable quality | % of sources passing set quality criteria | nd | 10 | 15 | 20 | 25 | 0 | 35 | 30 | 40 | 50 | 60 |
| Increased water storage | Per capita water storage | nd | 2 | 4 | 6 | 8 | 0 | 11 | 12 | 13 | 14 | 15 |
| TARGET : IMPROVED POTABLE WATER SUPPLIES | | | | | | | | | | | | |
| Objective | Indicator | Base | 24 | 25 | 26 | 27 | 8 | 29 | 30 | 31 | 32 | 33 |
| Access to adequate potable water supplies | Per capita access to drinking water supplies | 65 | 67 | 70 | 75 | 80 | 5 | 95 | 100 | 1000 | 100 | 100 |
| Access to good quality drinking water supplies | % of water samples meeting quality criteria | nd | 40 | 45 | 50 | 55 | 0 | 65 | 70 | 85 | 90 | 100 |
| Reliable water supplies | % of water supply points functional | nd | 40 | 50 | 60 | 70 | 0 | 90 | 95 | 96 | 97 | 98 |
| TARGET: IMPROVED SANITATION SERVICES | | | | | | | | | | | | |
| Objective | Indicator | Base | 24 | 25 | 26 | 27 | 8 | 29 | 30 | 31 | 32 | 33 |
| Safe disposal of wastewater and faecal sludge | % of wastewater generated collected and treated | nd | 10 | 15 | 20 | 30 | 0 | 50 | 60 | 70 | 80 | 90 |
| Access to safe sanitation | % of population with access to improved sanitation | nd | 50 | 60 | 70 | 80 | 0 | 100 | 100 | 100 | 100 | 100 |
| Improved urban storm water drainage | % of urban area covered by storm water drainage | nd | 10 | 12 | 14 | 20 | 0 | 50 | 60 | 70 | 80 | 90 |
| TARGET : REDUCED RISK OF FLOOD AND DROUGHT TO WATER SUPPLIES | | | | | | | | | | | | |
| Objective | Indicator | Base | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
| Climate resilient water infrastructure | % water points are functional during drought | | | | | | | | | | | |
| Availability of water during drought | Per capita water as ratio of normal supplies | | | | | | | | | | | |
| TARGET : AVAILABILITY OF WATER FOR ECONOMIC GROWTH | | | | | | | | | | | | |

| Objective | Indicator | Target | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Improved water availability for economic production | % of water provided for Irrigation, livestock and industrial production | nd | 15 | 17 | 20 | 25 | 30 | 40 | 50 | 50 | 50 | 50 |

## TARGET : RAISING OPERATING EFFICIENCY AND GOVERNANCE

| Objective | Indicator | Base | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Effective sector coordination and participation | % of water investment validated through a coordinated and participatory mechanism | nd | 20 | 40 | 60 | 80 | 100 | 100 | 100 | 100 | 100 | 100 |
| Operating Efficiency | Ratio of operating cost to source revenue | nd | 50 | 60 | 70 | 80 | 90 | 100 | 105 | 110 | 115 | 120 |
| | Number of people engaged in management/operation per 100 $m^3$ water produced daily | nd | 5 | 4 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Non Revenue water (%) | nd | 40 | 35 | 30 | 28 | 25 | 22 | 20 | 18 | 16 | 15 |
| Increased water sector Financing | % of water strategy implemented | 0 | 5 | 10 | 20 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| Develop water data, information and knowledge | % of water data updated within 3 months | 0 | 20 | 50 | 75 | 90 | 100 | 100 | 100 | 100 | 100 | 100 |

### *7.2.3 Evaluation and Learning Mechanisms*

To measure impact and adapt strategy over time:

- A mid-term evaluation will be conducted in Year 4 to assess implementation progress and recommend adjustments.
- An endline impact assessment will be carried out in Year 7, focusing on service coverage, equity, sustainability, and resilience.
- Annual WASH Performance Scorecards will be developed and published, with public input and response mechanisms.
- Learning reviews and innovation labs will be convened to document lessons and replicate successful models.

## *7.3 Communication and Advocacy Plan*

Effective communication and advocacy are critical to the success of the County Water, Sanitation and Hygiene Strategy and Investment Plan (CWSSIP). This section presents a structured framework to promote transparency, enhance stakeholder ownership, drive behavior change, and secure political and financial commitment at all levels.

### *7.3.1 Strategies for Stakeholder Engagement and Public Awareness*

CWSSIP recognizes that sustainable WASH service delivery must be rooted in community trust and inclusive participation. Stakeholder engagement will be anchored on the following principles:

- Inclusivity and Equity: Engage marginalized groups—women, youth, PWDs, and nomadic communities—through accessible and culturally relevant platforms.
- Two-Way Communication: Promote dialogue, not just dissemination, to capture feedback and improve implementation.
- Localization: Tailor messaging to local contexts using local languages (e.g., Somali), visual aids, and community networks.

Key Engagement Approaches:

- Community barazas and public forums to sensitize citizens on rights, service standards, and planned projects.
- Participatory planning workshops at ward level for project siting, design review, and tariff consultations.

- WASH education campaigns integrated into health outreach, school programs, and market days.

### *7.3.2 Mechanisms for Information Dissemination*

CWSSIP will employ a combination of traditional and digital channels to ensure broad reach across all sub-counties:

| **Channel** | **Purpose** | **Target Audience** |
|---|---|---|
| Radio programs (vernacular) | Hygiene promotion, tariff education, alerts | Rural households, pastoralists |
| Community posters, murals, and flyers | Visual hygiene messaging, rights awareness | General public |
| WhatsApp and SMS broadcasts | Project updates, grievance alerts, service disruptions | Youth, WUAs, urban residents |
| County website and digital dashboards | Policy documents, progress reports, complaint tracking | Partners, media, CSOs |
| School clubs and health talks | Child-focused behavior change | Pupils, caregivers |
| Stakeholder bulletins and newsletters | Quarterly updates on CWSSIP milestones | Government and donors |

Each dissemination channel will be supported by a communication calendar coordinated by the Department of Water Services.

### *7.3.3 Advocacy Initiatives for Political and Financial Support*

To sustain momentum and attract resources, CWSSIP includes advocacy actions targeting elected officials, national institutions, donors, and private investors:

Political Advocacy:

- Annual WASH Performance Briefing to the County Assembly and Cabinet.
- Joint field visits by legislators and CECMs to flagship WASH projects.
- Inclusion of WASH indicators in County Annual Progress Reports (APRs) and CIDP reviews.

Resource Mobilization Advocacy:

- Donor Roundtables to showcase bankable projects and funding gaps.

- Private sector engagement forums to identify PPP opportunities in FSM, water kiosks, and billing technology.
- Documentation of success stories for use in fundraising pitches and grant proposals.

Institutional Advocacy:

- Lobby for inclusion of WASH priorities in:
    - County budget ceilings and Annual Development Plans (ADPs)
    - Inter-county water sharing protocols
    - National sector working group agendas

### *7.3.4 Communication Monitoring and Feedback Mechanisms*

To track communication effectiveness, the CWSSIP will:

- Monitor reach and engagement across channels (e.g., radio listenership, flyer distribution, GRM traffic).
- Conduct quarterly stakeholder satisfaction surveys on service awareness and participation.
- Use community scorecards and baraza feedback to improve messaging content and delivery.
- Report back to the WASH Coordination Forum on communication outcomes and needed adjustments.

This communication and advocacy strategy ensures that CWSSIP is not only well understood, but also actively supported by stakeholders at all levels—creating the foundation for sustained impact, citizen accountability, and long-term financing.

# 8. Annex

| No | Document type | Attachment |
|---|---|---|
| 1 | Merti aquifer study report |  TR1 ARIGA-Hydrological Assessm |
| 2 | Garissa County boreholes data |  |

| | | |
|---|---|---|
| | | Garissa_County_all_boreholes.xlsx |
| 3 | Garissa County water pans data | Garissa_county_water_pans_updated_xlx.xl |
| 4 | Garissa county integrated development plan | Final 2 CIDP 2023-27 (1).pdf |
| 5 | Garissa county water management act 2018 | GarissaCountyWaterManagementAct2018 |
| 6 | Garissa County CRA report | Garissa County CRA report.pdf |
| 7 | Garissa County CCAP | Garissa County CCAP .pdf |
| 8 | Garissa County climate change policy | Garissa County Climate Change Polic |
| 9 | Wash assessment report by REACH | WASH Assessment Report - Garisa and T |
| 10 | Garissa WASH assessment dashboard | https://impact-gis.maps.arcgis.com/apps/dashboards/7f2c712c814941fba06f812c6be95df7 |
| 11 | Garissa County annual development plans | https://bajetiyetu.treasury.go.ke/documen t-libraries/list?ctid=7&cat=21&doc=ANNUAL %2BDEVELOPMENT%2BPLANS%2B%2528A DP%2529 |