

# Joint Annual Operations Monitoring Report 2019



MINISTRY OF WATER,  
SANITATION AND IRRIGATION



## WaterFund

Financing the Water Sector

WATER SECTOR TRUST FUND



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SANITATION AND IRRIGATION



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## Executive Summary

The Water Sector Trust Fund (WaterFund) has developed an operations monitoring framework for assessing the functionality, performance and sustainability of its investments. The investments in water, sanitation and water resources management are aimed at fulfilling the mandate of the WaterFund in providing conditional and unconditional grants to counties and to assist in financing development and management of water services in marginalised or underserved areas as established in Water Act, 2016.

With increased demand for access to clean and safe water, basic sanitation and pressure from negative effects of climate change on water resources, the WaterFund is emphasizing the need to ensure sustainability of its investments so as to increase access to both water and sanitation services as well as mitigate against the negative effects of climate changes. In order to determine the sustainability of the investments, the Fund conducts a Joint Annual Operations Monitoring Exercise (JAOME) with the objectives of: establishing operational status of investments; addressing utility implementation and management issues; updating the WaterFund GIS databases; assessing outcomes and impact of Investments over time and following through; and closing outstanding questioned costs in WaterFund's supported projects resulting from technical and financial audits.

The annual JAOME enabled data collection focus on sampled WSTF-funded projects and investments projects implemented during the previous five years (2014-2019). The data was analysed to determine the sustainability index (SI) of investments using four indicators: (1) Operational status; (2) Revenue collection; (3) Age and success rate, and; (4) Condition of investments. By establishing the operational status of the WSTF-funded infrastructure, the JAOME supports long term planning and robust monitoring through identifying supply and service gaps, highlighting underserved areas and ensuring better controls for future funding based on performance. It also supports learning lessons on what kind of investments work and why, thereby informing future investment planning and priorities. Finally, it allows key stakeholders to monitor coverage and access, ensuring accountability for the past investments.

The JAOME 2019 sampled 533 projects, however, upon review of the sample in terms of accessibility and status from previous JAOME reports, 518 projects were targeted for monitoring with 458 of the targeted sampled projects in 40 Counties being reached representing 88.4% of targeted number. Key challenges of insecurity, vastness of project areas and time allocation per project, impeded access to some of the projects. The 458 projects had 2,027 investments (i.e. individual project components), out of which 49 were under Results Based Financing (RBF), 646 under the Urban Investment Programme (UIP), 894 under Rural Investment Programme (RIP) and 438 under Water Resources Investments. The sampled projects under urban and RBF investments were 100% covered with challenges (unreachable projects) majorly experienced in Water Resources and Rural Investments.

The geo-referenced data on the investments was collected by WaterFund Staff and County Resident Monitors (CRMs) using a mobile application WaSHMIS, analysed and published on a dashboard including geo-referenced maps and graphics on key parameters. In order to enhance transparency, accountability and sustainability, the information is made publicly available by embedding the dashboard in the WaterFund website.

The overall SI for JAOME 2019 sampled projects was **60%** which was evaluated based on the weights assigned to the four indicators and assigned as follows: (1) Operational status (25%); (2) Revenue collection (50%); (3) Age and success rate (15%), and; (4) Condition of facility (10%). Across all investments windows, the analysed results indicated that 75% of the projects as operational at the time of the visit. Revenue was being generated by 25% of the projects, 72% were still operational after two years whereas 60% were in good condition and functional

SI per investment based on the above agreed weights show that under rural investments window the projects achieved SI of 53%, with water supply SI at 51% and sanitation SI at 64% respectively. The urban combined with RBF investments had a SI of 65% with urban water supply SI at 62% and urban sanitation at 82% whereas, water resources investments scored 54%. The SI of Urban investments is slightly higher due to revenue collection, which is higher for urban investments compared to rural and water resources investments.

Out of the top 10 performing counties, six were amongst the top performing counties also in 2018, these were: Baringo, Taita Taveta, Nyandarua, Nandi, Marsabit and Lamu.

However, the exercise had limitations which affected the targeted sampled projects and investments being reached. A key challenge was insecurity especially in the far-flung areas of Arid and Semi-Arid Areas where there existed high alerts in the Counties of Garissa, Wajir, Mandera and Lamu. The other challenge was the limited time allocation to clusters resulting in teams stretching past official working hours and to splitting into sub teams to meet the target due to vast nature of some counties and spread of investments across the project area.

As a lesson learnt going forward, the following key points are emphasized;

- i) Rigorous sampling approach, well-adjusted and drawing reference to previous JAOME data, results and recommendations. Elimination of collapsed and non-functional projects highly recommended.
- ii) The need to seek more support from the CRMs in the planning phase particularly in sampling and detailed field planning with detailed field planning fully informed by the logistical and security conditions of each county.
- iii) There is need for task force for data cleaning, analysis and reporting to enhance timely reporting To improve the visibility of the exercise, an annual release month of the *WaterFund Sustainability Report* should be set so as create the expectation of the report to the sector partners and DPs, and ensure the

much-deserved attention to the report as one of the annual key sector publications.

- iv) The WaterFund management to formulate a follow-up strategy on acute technical, financial, operational or social issues raised during JAOME. Where needed, the implementing partner or the county should be alerted to possible issues found on the ground.
- v) Lessons learnt: Consistent failures in terms of design flaws, inadequacies and errors should be addressed on the management level in order to inform future programme designs and investment decisions. The same applies to highlighting the successes experienced in programmes.

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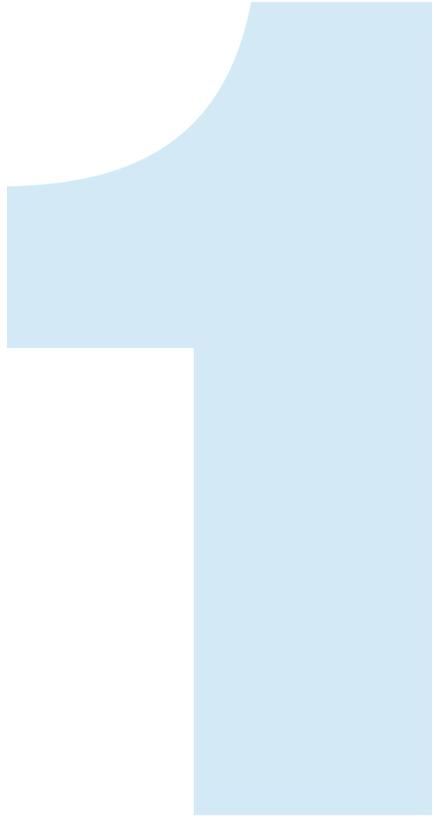
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## List of Abbreviations and Acronyms

ASAL	Arid and Semi-Arid Lands
CBO	Community Based Organisation
CFA	Community Forest Association
CPC	Community Project Cycle
CRM	County Resident Monitor
CSI	County Sustainability Index
DERP	Drought Emergency Response Programme
DPs	Development Partners
DTF	Decentralized Treatment Facility
GESI	Gender Equality and Social Inclusion
IFAD	International Fund for Agricultural Development
J6P	Joint 6 Programme
JAOME	Joint Annual Operations Monitoring Exercise
KWSP	Kenya Water and Sanitation Programme
MHM	Menstrual Hygiene Management
MIS	Management Information System
MTAP	Medium-Term Arid and Semi-Arid (ASAL) Programme
MWS	Ministry of Water and Sanitation
NRW	Non-Revenue Water
OBA	Output Based Aid
PSF	Public Sanitation Facility
RBF	Results Based Financing
RIP	Rural Investment Programme
RWH	Rainwater Harvesting
SI	Sustainability Index
SIP	Systems Integration Project
UBSUP	Upscaling Basic Sanitation for the Urban Poor
UIP	Urban Investment Programme
UPC	Urban Projects Concept
VIP	Ventilated Improved Pit-latrine
WASH	Water, Sanitation and Hygiene
WaSHMIS	Water and Sanitation Hygiene Management Information System
WSPs	Water Service Providers
WASREB	Water and Sanitation Regulatory Board
WRI	Water Resources Investments
WRUA	Water Resource Users Association
WSP	Water Service Provider
WSTF	Water Sector Trust Fund
WU	Water Utility



BACKGROUND

## 1.1 Introduction

The Ministry of Water & Sanitation and Irrigation (MWSI), Water Sector Trust Fund and Development Partners (DPs) are increasingly emphasizing the need to ensure sustainability of investments in the water sector. In response, the Fund conducted a comprehensive and intense Joint Annual Operations Monitoring Exercise (JAOME) in February, 2020 to assess the functionality and performance of WSTF-funded infrastructure implemented and investments made between 1<sup>st</sup> July, 2014 and 30<sup>th</sup> June, 2019. The purpose of the JAOME exercise was to assess the present condition of investments commissioned in the last 5 years.

The JAOME 2019 entailed collection of geo-referenced data and photographic images of investments funded during 2014-2019 period using WaterFund commissioned GIS applications. Seven (7) clusters of projects were visited by teams comprising of the County Resident Monitors (CRMs) and WaterFund programme staff who carried out the nation-wide data collection exercise over a two weeks period. The enumerators received orientation training so as to prepare them for the exercise and to standardise criteria. The training mainly focused on the use of field data collection applications, their scope and limitations; logistical arrangements and schedules as well as on security issues.

The JAOME 2019 was the fourth time the operations monitoring was being conducted. Operations monitoring has been previously conducted in 2016, 2017 and 2018. During JAOME 2019, 533 projects were sampled covering 71% of all projects funded during the review period, however the targeted projects for monitoring were 518. The sample was designed to be representative in terms of the age of the investments, the different investment programmes as well as the counties. The sample was designed so that 100% of 1-year old and 5-year old projects are visited, and that each project is visited three times during the assessment period of 5 years.

The data collection exercise provided up-to-date findings for informing the implementing agents on the operational challenges in order to formulate mechanisms for addressing such issues and for the Fund to continuously improve its systems, thereby maximising impact. JAOME is a key pillar in streamlining and harmonizing strategies that the Fund is currently implementing and its actualization is expected to inform future decision making in the funding of investments. The results of the exercise have been made publicly available on a geo-referenced database embedded on a web platform to enhance transparency, accountability and encourage sustainability. The web portal can be accessed on the following web address: <https://data.waterfund.go.ke>

## 1.2 Rationale for the Joint Annual Operations Monitoring Exercise

The JAOME is a unique approach in which the sustainability of projects is determined using weighted indicators to derive their sustainability index. These indicators are: revenue collection, functionality, operation status and longevity of the projects. Public and private entities continually mobilize resources for investment in the water sectors and after the implementation of the projects is completed, it is imperative to determine whether the outputs and outcomes of the project intervention are being realized post project implementation.

In order to objectively determine the results of the inputs into the projects, the Fund uses JAOME to determine the key outputs and outcomes resulting from the projects interventions under its four investment programmes of rural, urban, water resources and

Results Based Financing (RBF). The results of the exercise is critical in decision support for the Fund as it's a yard stick against which investment performance is measured. Further, the Fund through JAOME addresses some of the outstanding technical and financial audits arising from the implementation of its projects and investments thus ensuring transparency, equity and accountability to stakeholders.

### **1.3 Objectives of the Joint Annual Operations Monitoring**

The main objectives of the operations monitoring exercise are to;

- i) Establish the percentage of the WSTF-funded infrastructure which is operational ("as working") and to compare it with the initial project scope ("as planned") and the infrastructure ("as built").
- ii) Enable the Fund to present detailed, reliable and complete geo-referenced data on the operational status of all funded infrastructure. This information is visualized on online platforms and accessible for all stakeholders.
- iii) Identify any problems in order to develop and implement remedial measures and to assess performance of utilities for future possible funding by examining sustainability of past investments.
- iv) Prepare the Fund for the evaluation ("as used") and assess the outcomes and impacts of investments over time.



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2

STUDY  
METHODOLOGY

## **2.1 Consultations and initial planning**

A work plan was initially created in the 4th week of January 2020 for the undertaking of the JAOME 2019 exercise. The work plan was useful in scheduling for the initial planning meetings to formulate the road map, sampling framework, orientation of enumerators and field logistics. An outline for the report was also prepared in the initial planning stage to ensure that the team would take every step necessary as per the reporting requirements.

The purpose of the JAOME exercise is to assess the sustainability, functionality, operations and performance of the funded projects, infrastructure and schemes. During the planning of the 2019 JAOME exercise, the WaterFund's Planning, Monitoring & Evaluation department in coordination with the Investments & Programmes department deliberated on the previously identified implementation challenges. It was necessary to have a clear understanding so as to decide whether the projects with known problems were to be revisited. Where possible, it was recommended that County governments and Water Service Providers need to undertake operation and maintenance of non-functional projects. Consultative meetings were held throughout the planning period to determine the timeframes for the JAOME 2019 exercise as well as the budget of the exercise and how to secure the required budget.

## **2.2 Preparation of Data Collection Tools and Instruments**

The data collection tools used in the previous year were simple and understandable to the enumerators. The main preparation was the finalization of the JAOME 2019 project list for preloading onto the forms to be filled in the WaSHMIS app. There were few comments and suggestions for improvement of the tools. After reviewing the tools, an updated version of the general form and investment monitoring form were uploaded on the WaSHMIS system.

Two forms were completed by the enumerators for each project. The general form includes questions on governance, financial management and beneficiaries of the project and the investment form contained 3 investment categories namely; water supply, sanitation and water resources (Annex 1). The investment form has specific questions on the completion status, condition, maintenance, operational status and operations responsibility of each investment; revenue collection, no. of beneficiaries, service reliability, and specific questions on Gender Equality and Social Inclusion (GESI). The data structure for the investment types in the investment form is presented in Annex 2.

In addition, a nationwide map of the previous data collection exercises was prepared and shared in KML format that could be opened on any device that has a Google Earth application. The map was an additional tool for guiding enumerators in identifying projects and direction as well as in planning of ground logistics. The online JAOME dashboard was also finalised as an instrument to easily visualise and analyse data. (see <https://data.waterfund.go.ke>)

## **2.3 Re-Fresher Training on the JAOME 2019 exercise**

The purpose of the training was orientation of the team comprising of WaterFund programme officers, programme assistants and interns involved in the field data collection. Since most of the enumerators had participated in the previous exercise, the training was shortened to a one day exercise focusing mainly on pertinent areas including;

- i) Technical aspects investments,

- ii) Installation and walkthrough of the WaSHMIS Application,
- iii) Operations field plans and logistics,
- iv) Security precautions, cross-cutting issues and roles of different actors for the JAOME 2019

## 2.4 Field organization and data collection

The organization of the field survey entailed the formation of a team based on roles and responsibilities that were agreed upon as follows: -

- i) **Manager, Planning, Research, Monitoring and Evaluation;** was responsible for overall coordination, final budget, plans, authorizations and official communications to partners.
- ii) **Technical Advisors;** were responsible for technical advice and backstopping at all levels including planning, field data collection, analysis and reporting; support training of field teams; supporting data analysis and final reporting; and publishing of results.
- iii) **Cluster Team Leaders;** were responsible for coordination of field data collection within clusters; directly responsible for data quality, completeness and transmission; overseeing field operations including transport coordination and authorization, team security and communication; data cleaning prior to analysis; ensuring timeliness and adherence to field schedules; simultaneous formulation of issue logs during data collection; conducting orientation training for CRMs; and cluster specific reporting.
- iv) **Field Officers;** participating in formulation of field schedules; data collection and team performance valuation; responsible for provided field equipment; and assisting in data cleaning.
- v) **County Resident Monitors and interns;** liaison and advance communication with projects implementers prior to visits; identification of investments within the cluster; participating in formulation of field schedules; data collection and team performance valuation; and security assessments and advise prior to field visits.

## 2.5 Sampling

All programmes projects funded through the Fund, including Urban and Output Based Aid (OBA), were part of the JAOME 2019 sampling frame. The sampling frame which was first employed in JAOME 2017 and was designed as follows: All projects are monitored when they reached their five-year completion anniversary (sample size of 100%). Also all newly completed projects are monitored within their first year of operation. The 2nd, 3rd, and 4th year-projects are sampled so that each year 33 percent of the projects were visited. The 33% rotates so that all of the projects are visited once within the three years.

Using the sampling criteria shown on the table below, the target sample was calculated as 533 projects. The sample also included projects that were in the sample of JAOME 2018, but were not visited due to insecurity or other challenges at the time and therefore were carried over to JAOME 2019.

**Table 1. Sampling Frame for JAOME 2019**

Year	Completion dates	Total projects	Sampled projects (including carry-overs) per investment window				Target sample	Sampling criteria	
			Rural	Water	Urban	RBF		Sample size	%
1st year	1 <sup>st</sup> July 2018 – 30th June 2019	64	40	12	12	0	64	All	1.0
2nd year	1 <sup>st</sup> July 2017 – 30th June 2018	145	26	14	8	2	50	Sample	0.3
3rd year	1 <sup>st</sup> July 2016 - 30th June 2017	162	22	13	12	1	48	Sample	0.3
4th year	1 <sup>st</sup> July 2015- 30th June 2016	59	8	4	7	0	19	Sample	0.3
5th year	1 <sup>st</sup> July 2014- 30th June 2015	352	303	1	48	0	352	All	1.0
<b>TOTAL</b>		<b>776</b>	<b>399</b>	<b>44</b>	<b>87</b>	<b>3</b>	<b>533</b>		

### Projects monitored

The JAOME 2019 sampled 533 projects, however the targeted projects for monitoring were 518, out of which 458 were reached (88% of targeted number). Factors such as weather, security or difficulty to access impeded the reaching of some projects. For the projects reached 2,027 investment forms were submitted by the enumerators.

### Sampling of investments

Under each project, there are a number of project components or investments. For some investment types, the number of funded investments included such a large number that it was not feasible to visit all of them. These included: Individual connections, institutional connections, consumer meters and household toilets. It was thus agreed that for connections and consumer meters, the team would sample 5-10 per project, with a target of covering all types of connections. For household toilets, a sample of 3-5 toilet blocks per project was agreed upon.

## 2.6 Field organization and logistics

The field teams were organized into 7 geographical clusters with each cluster allocated a team leader. The cluster were based on proximity of the projects to ease movement of the cluster teams. Logistically, the clusters were allocated a vehicle each and wherever there were challenges, a provision for car hire was facilitated. The reporting structure was such that the team members reported to cluster leader whom then reported to the JAOME coordinator through daily reports. The clusters were as per table 2 below

**Table 2. List of Counties in each cluster and actual sampled projects in each County**

CLUSTER 1		CLUSTER 2		CLUSTER 3		CLUSTER 4		CLUSTER 5		CLUSTER 6		CLUSTER 7		TOTAL
County	Projects	County	Projects	County	Projects	County	Projects	County	Projects	County	Projects	County	Projects	
Lamu	64	Wajir	74	Isiolo	64	Nairobi	3	Meru	8	Kericho	1	West Pokot	1	
		Garissa	68	Marsabit	71	Kiambu	5	Tharaka Nithi	7	Bomet	3	Transzoia	2	
		Tana river	43	Laikipia	6	Kajiado	2	Embu	5	Nyamira	1	Elgeyo Marakwet	1	
		Mandera	1			Machakos	7	Kirinyaga	4	Homa bay	2	Baringo	2	
						Makueni	7	Nyeri	14	Migori	5	Nakuru	2	
						Kitui	2	Murang'a	11	Busia	1	Nyandarua	1	
						Taita Taveta	1			Narok	2	Uasin Gishu	1	
						Kwale	6			Nandi	8	Turkana	1	
						Kilifi	4					Kakamega	2	
												Bungoma	3	
												Vihiga	2	
<b>Total</b>	<b>64</b>		<b>186</b>		<b>141</b>		<b>37</b>		<b>49</b>		<b>23</b>		<b>18</b>	<b>518</b>

## 2.7 Data cleaning and screening

The first step of data cleaning and screening was similar to the previous JAOME exercise. All teams were advised to perform data integrity checks prior to submission of data to minimize submission of erroneous data. Each cluster team leader had the responsibility of checking the entries of the entire team and clarifying to ensure the inputs were correct. When the data collection exercise was complete there were 433 records on general project form and 2,068 records in the investment monitoring form. The data was exported from the system for data cleaning and a team was formed for the screening and validation of the data. The team agreed on the approach and criteria to be used for the screening of the data. The cleaned data remained with 428 general project forms and 2027 investment forms.

## 2.8 Data analysis

Prior to the field work an analysis framework was developed in order to clarify the kind of data that was needed and how the data is analysed once it is handed to M&E. The analysis framework mainly focuses on the sustainability of investments and a major part of the analysis was geared towards the ranking of counties based on their Sustainability Index score. The analysis framework work sheet was also uploaded on the WaterFund JAOME dashboard to enable automatic analysis of the data. The credentials for uploading the data was shared and the data was uploaded to have the analysed data online.

### Sustainability Index

The sustainability index (SI) was developed as a key performance metric to facilitate assessment and monitoring of sustainability of each investment that is implemented within a project in the Counties. It is a statistical measure for the purposes of assessing outcomes and outputs of the investments. Sustainability was defined as the ability of an investment to realize the objectives within 5 years of operation.

In addition to the County level assessments, the National Level average was assessed and any County with an index of less than 70% of the National Average was red flagged and considered as a High Risk County.

The Sustainability Index comprises of four categories- the Functionality and Reliability of an investment, Revenue collection, Age and Survival rate, and the Condition of the investment.

The function is specified as:

$$SI=f (FR, RC, AS, GC)$$

Where:

SI is the Sustainability Index

FR is the Functionality of the investment

RC is the Revenue Collection

AS is the Age and Survival (and operational) rate of an investment

GC is whether the investment is in Good Condition (and operational)

The Sustainability Index score is between 0 - 100%, with 100% depicting a high sustainability rate of the investments. The highest weight (50%) was given to revenue collection with the idea that without revenue collection, the investment does not have long term sustainability. Functionality, i.e. the operational status, is a key attribute to describe the status of the services and is given the weight of 25%. The age and survival rate of the investment is given a weight of 15%. The condition of an investment is given a smaller weight (10%) since the condition is, while important, not essential for the usability and sustainability of the facility.

The Indicators, definition, formula and weight are presented in Table 3.

**Table 3. SI indicators, their definitions, formula and weighting.**

Indicator	Definition	Formula	Weighting in Index
1. Revenue Collection	Indicates if water charges are collected.	Calculated as a percentage of investments with revenue collection from total number of investments. This is limited to investments that are expected to collect revenue, namely: Distribution systems; intakes; water resources management structures; livelihoods; Public Sanitation Facilities (PSFs), and; Decentralized Treatment Facilities (DTFs).	50%
2. Functionality of the investment	The percentage of investments that are operational.	Percentage of investments that are fully operational from the total number of investments.	25%
3. Age and Survival (operational) rate of an investment	The percentage of investments that are still operational after 2 years since completion.	Percentage of investments that are operational and are over 2 years old out of all the investments of the age over 2 years.	15%
4. Condition of an Investment (that is also operational)	The percentage of operational investments that are also in good condition.	Investments that are in good condition and operational divided by total number of investments.	10%
<b>Total</b>			<b>100%</b>

The other various kinds of analysis undertaken can be found in this report on Chapter 3 under Study Findings.

# 3

## STUDY FINDINGS

### 3.1 Monitored projects and investments

The JAOME 2019 targeted to monitor 518 projects, out of which 458 were reached (88% of targeted number). Factors such as weather, security or difficulty to access impeded the reaching of some projects. The 458 projects covered 2,027 investments (i.e. individual project components), out of which 49 were under Results Based Financing (RBF), 646 under the Urban Investment Programme (UIP), 894 under Rural Investment Programme (RIP) and 438 under Water Resources Investments (WRI) (Figure 1). In addition, 1,083 of the investments were of water supply category, 552 of sanitation and 392 of Water Resources category.

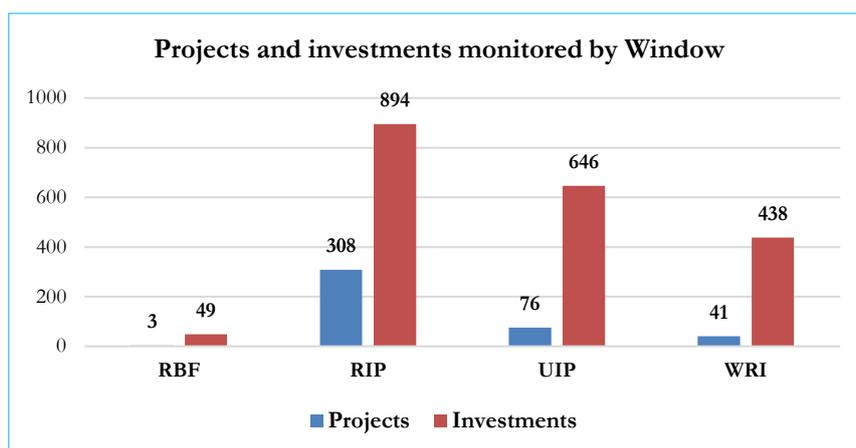


Figure 1. Total number of projects and investments monitored by investment window

The largest number of monitored projects were under the MTAP I Programme with 243 projects covering 558 visited investments, followed by UPC with 57 projects covering 509 visited investments, and J6P with 21 projects covering 320 visited investments (Figure 2).

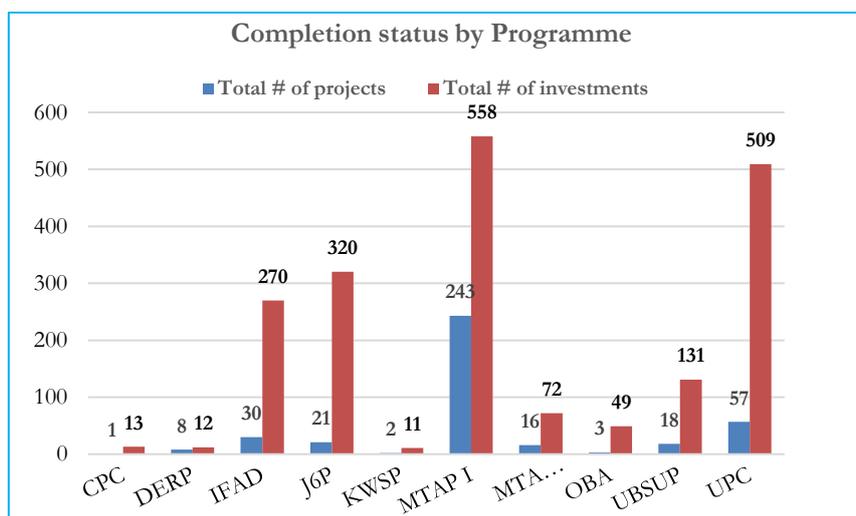


Figure 2. Total number of projects and investments monitored by Programme.

Figure 3 presents the locations of the monitored investments by investment window. Most of the water supply and sanitation investments are located towards the north-eastern and coastal part of the country, whereas the investments under the water resources investments (WRI) are largely located around the Mount Kenya region. The investments under the urban investments (UIP) spread from the coast to the central



**Table 4. Number of investments monitored during JAOME 2019**

COUNTY:	% Completed	# Completed	Total	RBF	RIP	UIP	WRI
Baringo	100%	12	12	0	0	12	0
Bomet	94%	17	18	0	0	18	0
Bungoma	100%	7	7	0	0	7	0
Busia	100%	10	10	0	0	10	0
Elgeiyo Marakwet	100%	7	7	0	0	7	0
Embu	95%	54	57	0	0	11	46
Garissa	95%	75	79	0	73	6	0
Homa Bay	100%	9	9	0	0	9	0
Isiolo	98%	179	183	0	153	30	0
Kajiado	100%	7	7	0	0	7	0
Kakamega	100%	18	18	0	0	18	0
Kericho	100%	3	3	0	0	3	0
Kiambu	96%	72	75	0	13	62	0
Kilifi	82%	18	22	0	7	15	0
Kirinyaga	97%	37	38	0	0	17	21
Kitui	100%	22	22	0	0	22	0
Kwale	94%	30	32	0	17	5	10
Laikipia	100%	85	85	0	10	16	59
Lamu	99%	149	151	0	139	5	7
Machakos	100%	19	19	0	0	19	0
Makueni	100%	46	46	16	0	26	4
Marsabit	94%	148	157	0	149	0	8
Meru	95%	75	79	0	0	21	58
Migori	98%	92	94	0	36	34	24
Muranga	99%	116	117	33	0	43	41
Nairobi	100%	16	16	0	0	16	0
Nakuru	100%	12	12	0	0	12	0
Nandi	99%	148	149	0	112	1	36
Narok	100%	16	16	0	0	1	15
Nyamira	100%	18	18	0	0	18	0
Nyandarua	100%	5	5	0	0	5	0
Nyeri	100%	129	129	0	0	66	63
Taita Taveta	100%	18	18	0	0	18	0
Tana River	98%	89	91	0	88	3	0
Tharaka Nithi	95%	79	83	0	1	40	42
Transzoia	100%	6	6	0	0	6	0
Uasin Gishu	94%	16	17	0	0	17	0
Vihiga	100%	10	10	0	0	10	0
Wajir	99%	103	104	0	96	4	4
West Pokot	100%	6	6	0	0	6	0
<b>TOTAL</b>	<b>98%</b>	<b>1978</b>	<b>2027</b>	<b>49</b>	<b>894</b>	<b>646</b>	<b>438</b>

### 3.2 Completion status of Projects

Out of all the investments, 98% of the projects visited were found completed. All the projects that were sampled are those that are reported as complete projects but on the ground the monitoring teams found a few with some pending issues. The Result Based Financing (RBF) projects and the Water Resources Investments (WRI) projects recorded a completion rate of 98% while the Urban Investments (UIP) projects and the Rural Investments projects had a completion rate of 99% and 97% respectively as illustrated in Figure 5 below. If categorised by year of completion, clear majority of investments (98%) were completed for 1- and 2-year old projects, while the older projects had a slightly lower, though negligible, completion rate (Figure 6).

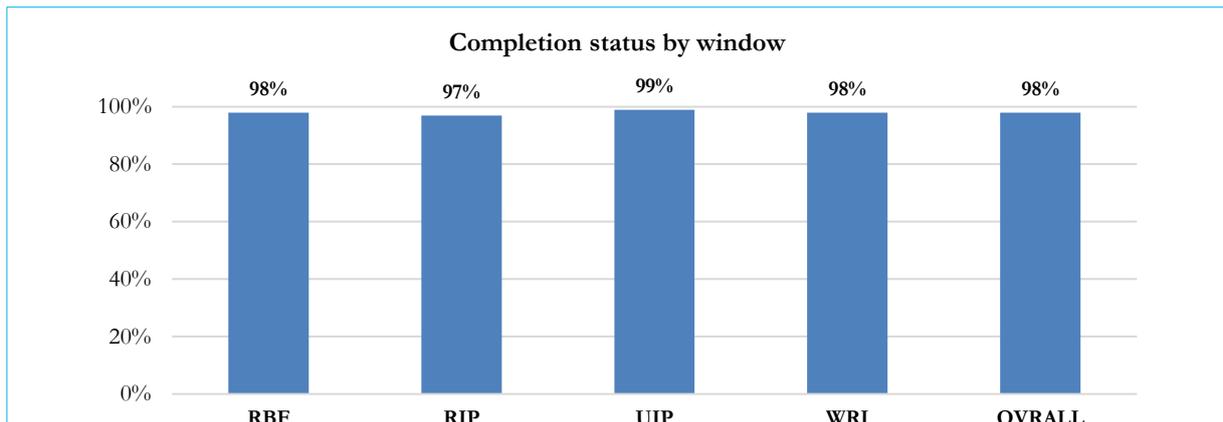


Figure 5. Completion status by investment window

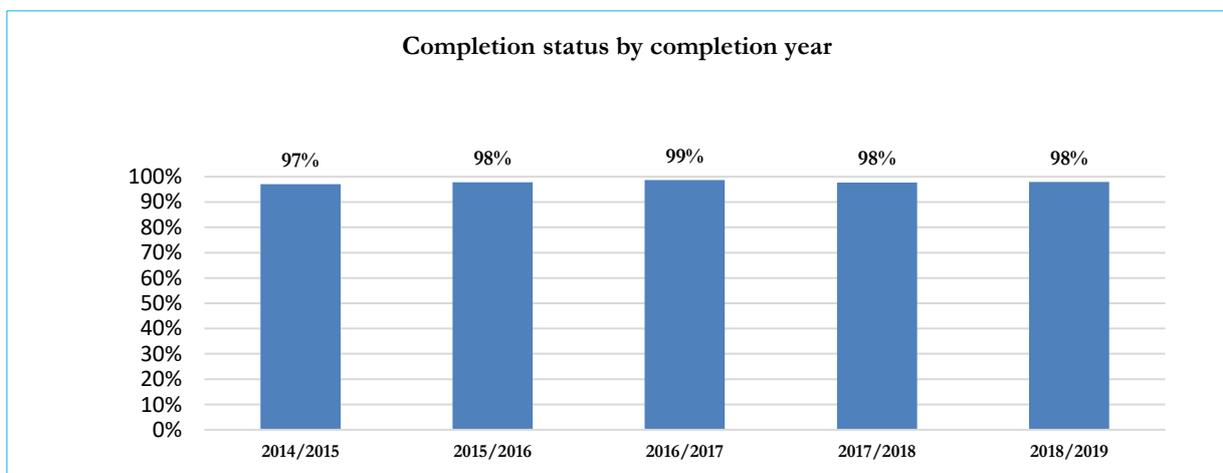


Figure 6. Completion status by completion year

### 3.3 Operational Status of the Projects

The various operational levels of investments are explained in the footnote below. It was expected that 95% of all infrastructure would still be fully operational and in good technical and operational condition by the end of 5 years. This sections examines the operational status of investments across investment windows, category, programmes and class.

75% of projects and 71% of the investments were found to be operational<sup>1</sup> at the time of visit. (Figure 7 and 8). Figure 9 presents the reasons for the investments not being fully operational, the most common ones being: Issues related to operational responsibility (29% of cases); Water source / connection being unreliable or lacking (19% of cases), vandalism (15% of cases), natural / climatic causes (10% of cases), poor structural integrity (5% of cases); and community conflicts (5% of cases).

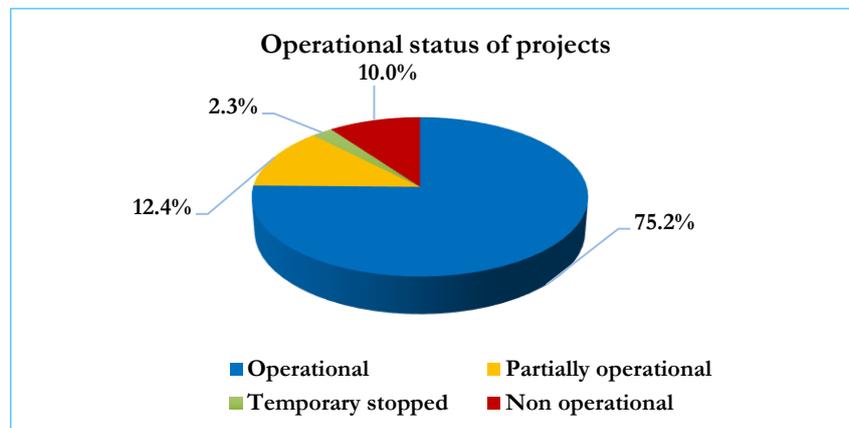


Figure 7: Operational status of projects funded during 2014 – 2019

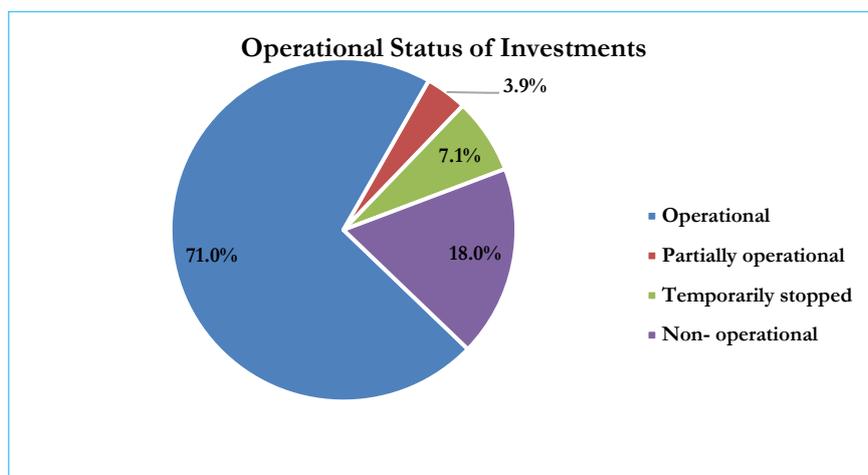


Figure 8. Operational status of all investments funded during 2014 – 2019

<sup>1</sup> An investment was considered operational if it was fully operating and in use at the time of visit; temporarily stopped if the structure was functional but for example the water source was temporarily dry, partially operational if some of the investment was operating while some components were not, and non-operational if the investment was completely non-functional, it was not being operated or used or the water source permanently dry.

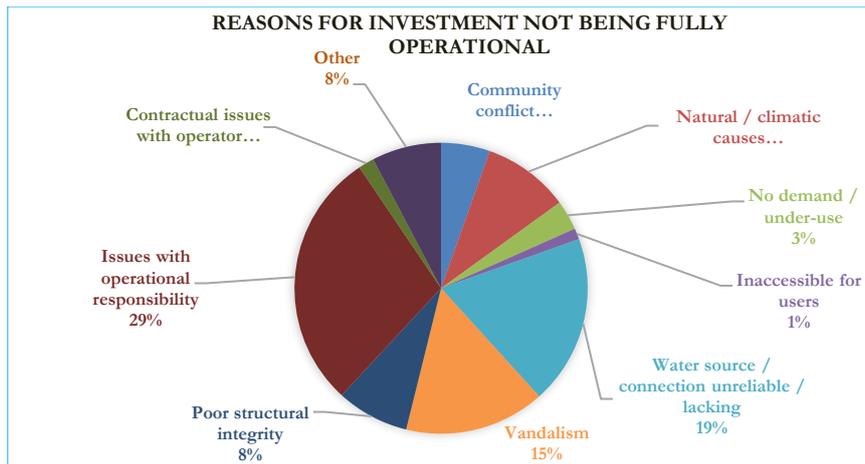


Figure 9. Reasons for investments not being fully operational.

Result Based Financing Investments were found to have the most operational investments with 86% of its investments being operational (Figure 10). The Water Resources Investments had 73%, Urban Investments had 74%, while Rural Investments had 66% operational investments.

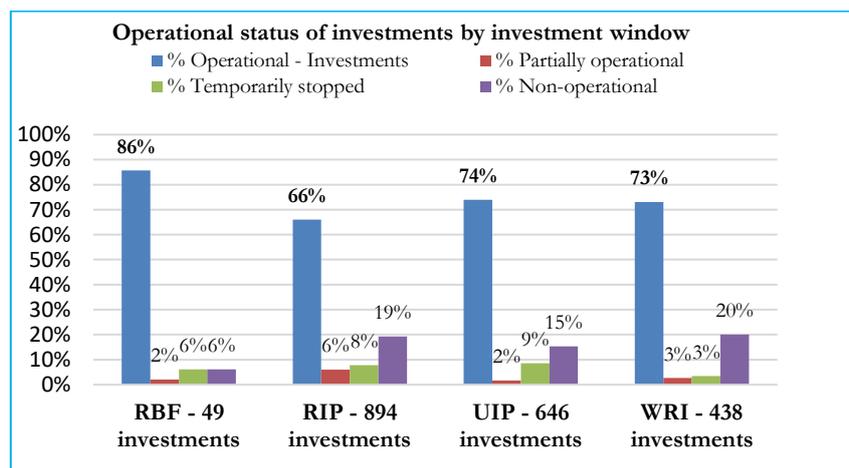


Figure 10. Operational status by investment window

When comparing investment categories, sanitation category was the most successful one with 78% of investments operational at the time of visit, whereas 72% of Water Resources Investments and 66% of water supply investments were found to be operational (Figure 11). This could be attributed to the fact that the sanitation projects are commonly VIP latrines, which are technically simpler to maintain as compared to other investment options.

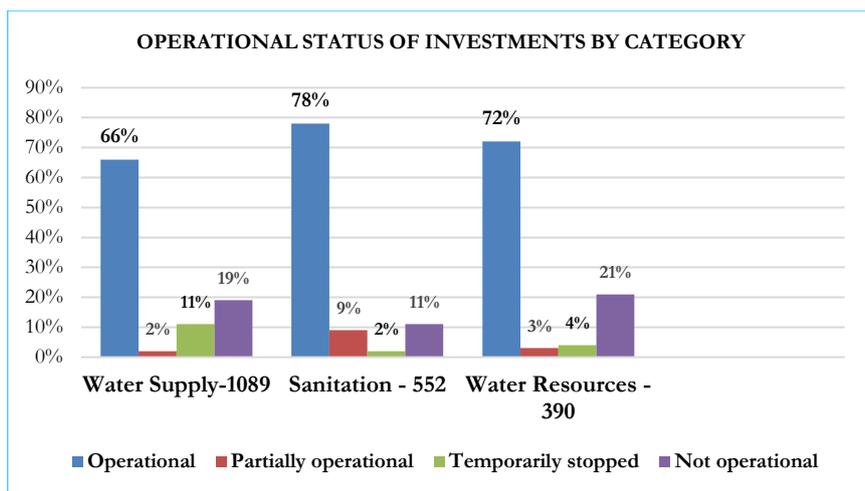


Figure 11. Operational status by investment category<sup>2</sup>

## Programmes

The performance of the individual programmes in terms of operational status are presented in Figure 12, for both the projects as well as the individual investments. With an exception of CPC, investments all investments recorded functionality levels of below the expected 95% level. However, it should be noted that only 1 project with 13 investments was observed under CPC.

- i) **Community Project Cycle (CPC) programme;** funded by Government of Finland had 1 project with 13 investments monitored with all investments found to be fully operational. The project was funded in 2013/14 and 2014/15.
- ii) **Upscaling Basic Sanitation for the Urban Poor (UBSUP);** was one of the best performing programmes in the WaterFund, with 89% of the projects (18 in total) and 92% of the investments (131 in total) found operational at the time of visit. 91% of the pour flush toilets and 100% of the cistern flush toilets were working at the time of visit. Seven (7) out of the nine (9) Decentralized Treatment Facilities (DTFs) are also working.
- iii) **Urban Project Cycle (UPC) projects;** are implemented through conventional Water Service Providers (WSPs). During JAOME 2019, 57 projects and 509 investments under the Urban Projects Concept programme were monitored with 68% of the projects and 69% of the individual investments found to be operational. Out of the 509 UPC investments monitored, 491 investments were water supply and 18 Public Sanitation Facilities (PSFs). Of the total water supply investments, 341 were found to be operational while 14 PSFs were found to be operational at the time of visit. The monitored water supply investments included: 171 consumer meters (sampled), of which 80% were operational; 83 water kiosks, of which 39% were operational; 95 pipelines of which 75% were operational; 4 individual connections (sampled), of which all were operational, and; 70 yard taps, of which 57% were operational at the time of visit.

<sup>2</sup> Data for 2 Investments missing for this variable

- iv) **Output Based Aid (OBA) projects**; were visited with a total of 49 investments out of which 86% were found to be operational at the time of visit. The non-operational investments comprise of 3 water kiosks, all located in Nol Turesh project in Makueni County.
- v) **International Fund for Agricultural Development (IFAD) Programme**; also performed well, with 90% of the 30 monitored project found operational and 73% of the 270 individual investments fully operational. Most of the investments were either rainwater harvesting tanks (202 No.), spring protection (33 No.) or tree planting (29 No.), which had an operational status of 77%, 94% and 83%, respectively. This demonstrates, that while there is generally a low success rate for rainwater harvesting tanks and tree planting across the country, in the Mount Kenya region there is substantial potential to succeed with the investments if implemented by a well performing Water Resource Users Association (WRUA) or a Community Forest Association (CFA), as the technologies are more appropriate for that specific climate.
- vi) **Drought Emergency Response Programme (DERP)**; had 88% of the projects operational and 69% operational investments. All the projects for this programme were funded in 2017/18 and majority of the investments were intakes or storage tanks. Eight (8) projects and 13 investments were monitored.
- vii) **Medium-Term Arid and Semi-Arid (ASAL) Programme (MTAP II)**; 59% of the investments were under water supply category, 30% under sanitation and 11% under water resources. The MTAP II programme had 23 monitored sanitation investments, of which 74% were operational. Out of the 8 monitored water resources investments under the MTAP II programme, 50% were found operational while out of the 45 water supply investments, 64% were found to be operational.
- viii) **Joint Six Programme (J6P)**; had 21 projects with 341 investments monitored during the 2019 JAOME. Out of the 341 investments monitored, 20 were under sanitation category, 132 were under water resources and 189 were under water supply. 95% of the sanitation investments were found to be operational, while 76% of the water resources investments and 54% of the water supply investments were operational at the time of visit. The water supply investments included for example: 45 consumer meters (sampled), of which 24 were operational; 47 pipelines, of which 23 were operational, and 23 water kiosks, of which 12 were operational.
- ix) **Kenya Water and Sanitation Programme (KWSP)**; 2 projects were visited. One of the projects was a water supply project, Friends of Hope in Kilifi County which had offtake connections, pump, pump house, rising main, 2No. 50m<sup>3</sup> masonry tank, distribution lines, 6No. Water kiosks, & VIP latrines. The other project was a water resources project, Itetani WRUA in Makueni County which had SCMP Implementation, protection of 1 spring (Kyeng'athi), and construction of 3 sand dams (Itooni, Matiani, Kwa Mulili).
- x) **Medium-Term Arid and Semi-Arid (ASAL) Programme (MTAP I)**; funded between 2012-2014, had a total of 253 projects and 561 investments monitored. 72% of the

projects and 65% of the investments were found operational. Majority (199 out of 253) of the MTAP I investments were under sanitation, with an operational status of 75%, while water supply investments with 54 investments had an overall operational status of 61%.

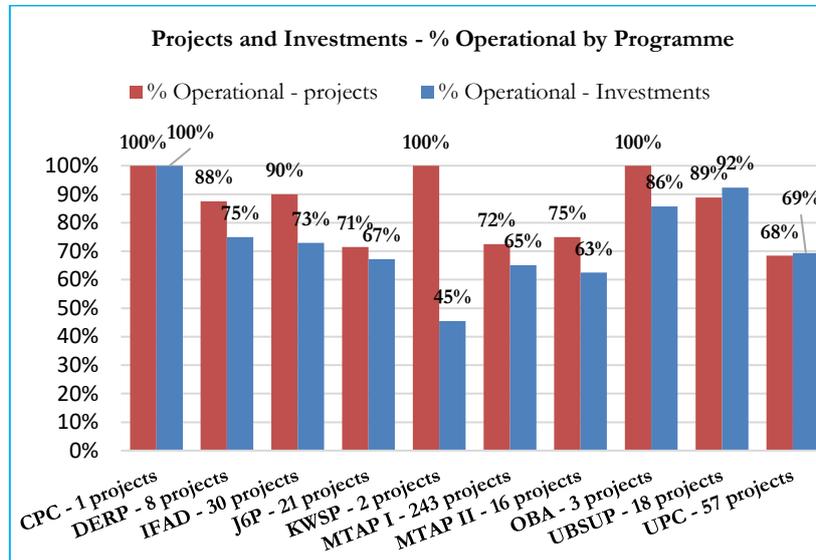


Figure 12. Operational status by programme

### Water supply investments

Nearly half (50.1%) of the monitored 1,083 water supply investments were in the category of distribution systems, (including water kiosks, yard taps, animal troughs and consumer meters) (Figure 13). Other common investment types were pipelines (13.9% of total number), rainwater harvesting (12.6%) and storage tanks (12.5% of total number). 66% of all the water supply investments were found to be operational (Figure 14), against the institutional target of 95%.

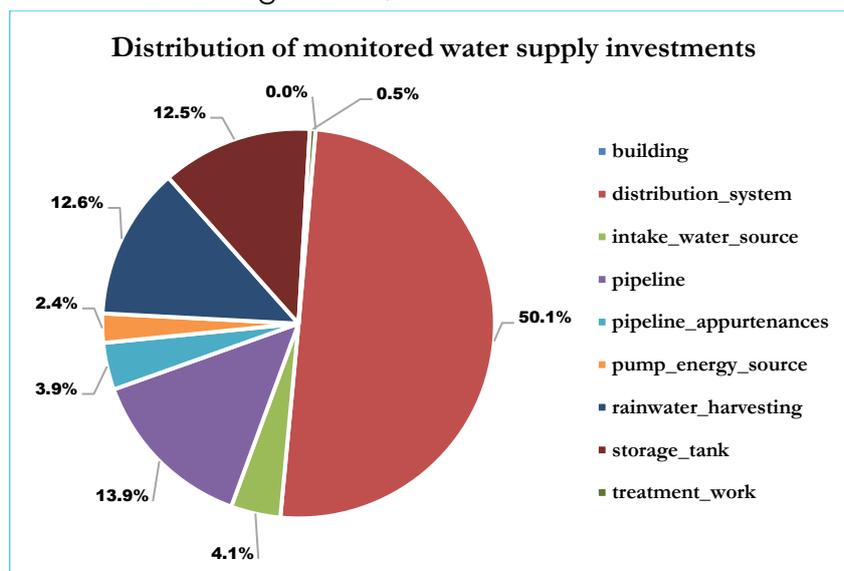


Figure 13. Distribution of monitored water supply investments

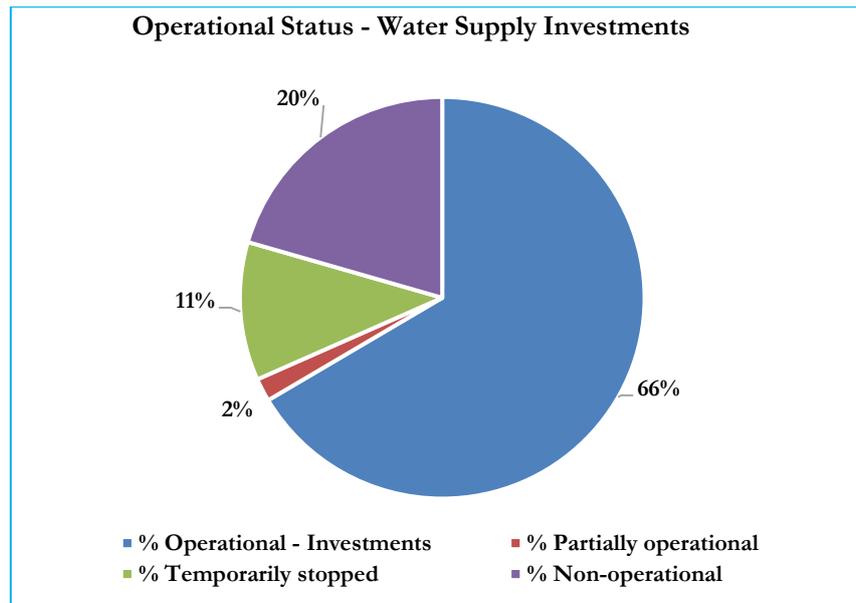


Figure 14. Operational status of water supply investments

The pipeline appurtenances were found to be the most commonly operational among the water supply investments classes (80%), followed by pipelines (77%) and intake water source (70%) (Figure 15). The lowest success rates were with Pump energy source and distribution system.

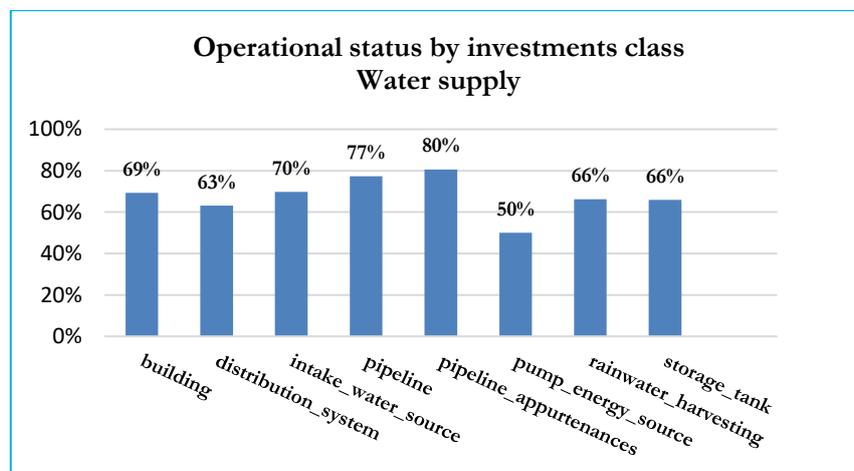


Figure 15. Operational status by water supply investment class.

Of the individual investment types (Figure 16), the springs were found to be the most operational (100% of 1 investments visited), bulk meters (90% of 10 monitored investments), water pans (87% operational of 15 monitored investments), and consumer meters (77% operational of monitored 245 investments).

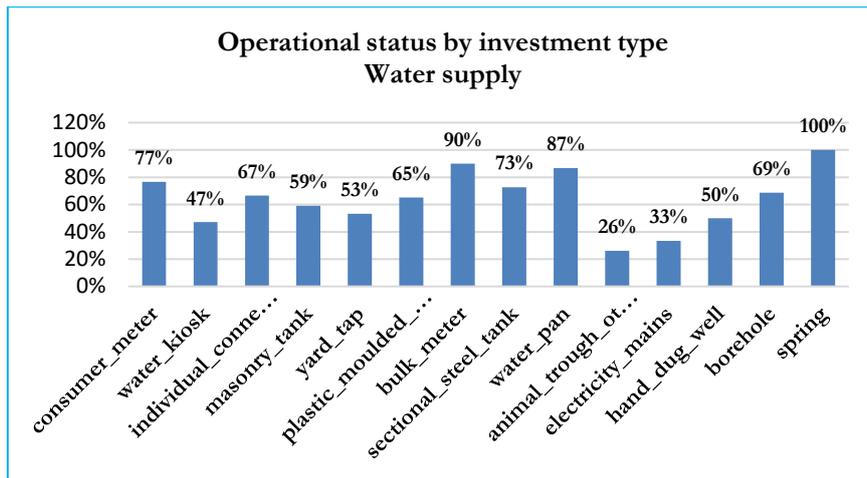


Figure 16. Operational Status by most common water supply investment types.

### Sanitation investments

Out of the 552 monitored sanitation investments, 68% were institutional sanitation facilities in schools, hospitals and other institutions (Figure 17). The second most visited sanitation projects were the household sanitation projects with 22%. As per figure 18, 78% of all the sanitation projects were operational, which was higher than water supply (66%) but lower than water resources which has 72% Investment operational. This could be attributed to the fact that most sanitation projects require low maintenance costs compared to the water projects.

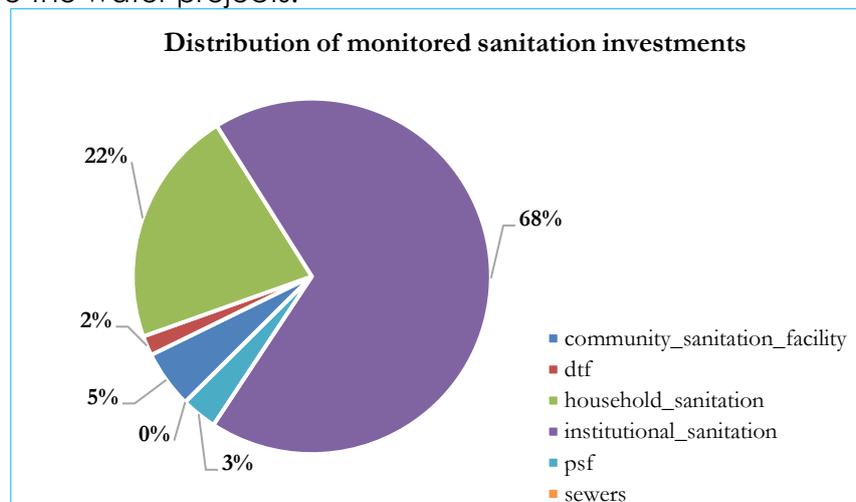
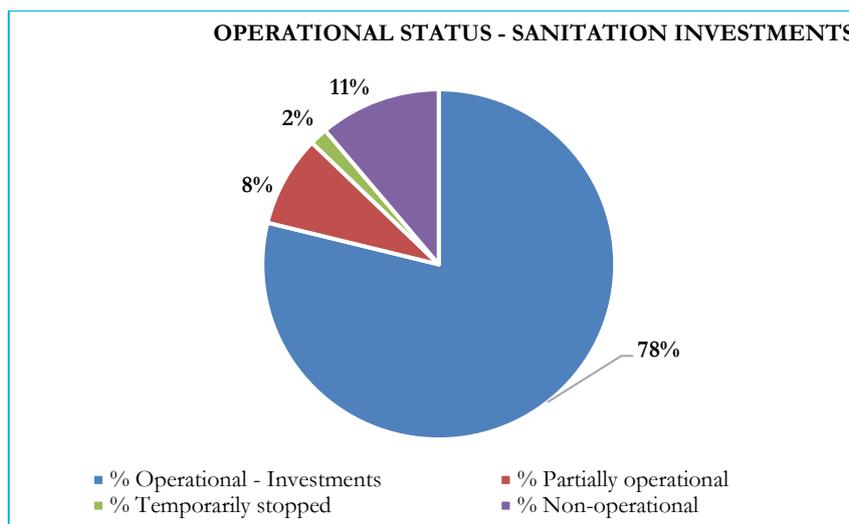
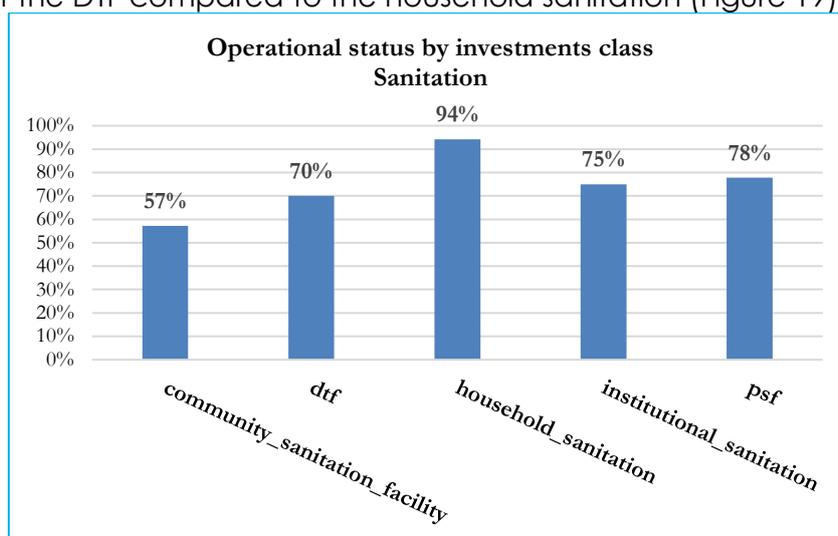


Figure 17. Distribution of monitored sanitation investments.



**Figure 18. Operational status of sanitation investments.**

The household sanitation investments had the highest success rate of 94% being operational compared to 75% of institutional sanitation. Meanwhile, 78% of the DTF projects were found to be operational. This can be attributed to the complexity of the operations of the DTF compared to the household sanitation (Figure 19)



**Figure 19. Operational status by sanitation investment class.**

### Water resources investments

Water resources management and catchment protection measures are a crucial part of ensuring the long-term sustainability of the watersheds, and also to secure a sustainable water source for the water supply projects. Out of the 390 water resource investments monitored, 65% were water resources management structures. (Figure 20). These include the rainwater harvesting structures, such as pans, dams, djabias and tanks, as well as spring protection and livestock troughs. The second biggest group was the catchment management structures, such as tree planting, wetland rehabilitation, check dams, gabions, opening of malkas, waste disposal pits, riparian pegging, and energy saving jikos, fire breaks, and installation of early warning systems, pruning and grass strips. These constituted 30% of the monitored investments. Finally, both regulation

(common intakes, self-regulating weirs, and bulk meters) and livelihood activities covered 5% of the monitored investments.

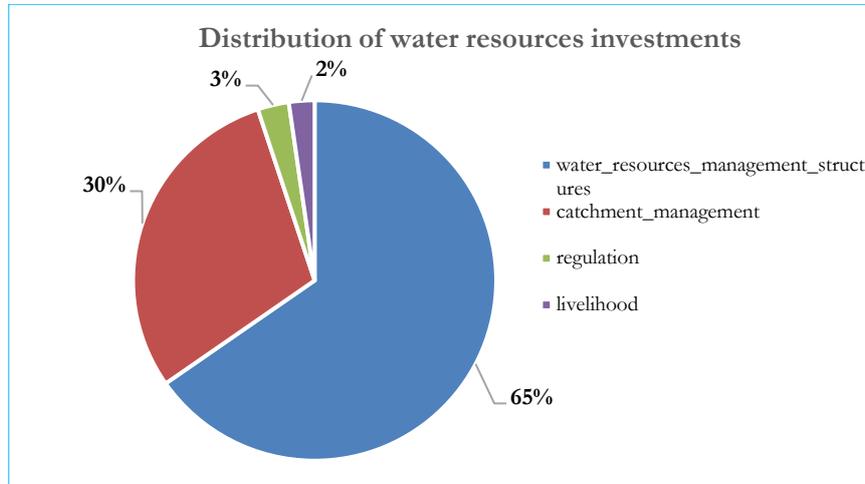


Figure 20. Distribution of the water resources investments.

72% of all the Water Resources Investments were found to be operational (Figure 21) with livelihood activities having the highest success rate of 89% being fully operational, followed by Water Resource Management structures with 76% and regulation activities having the lowest, with 55% being fully operational at the time of visit (Figure 22).

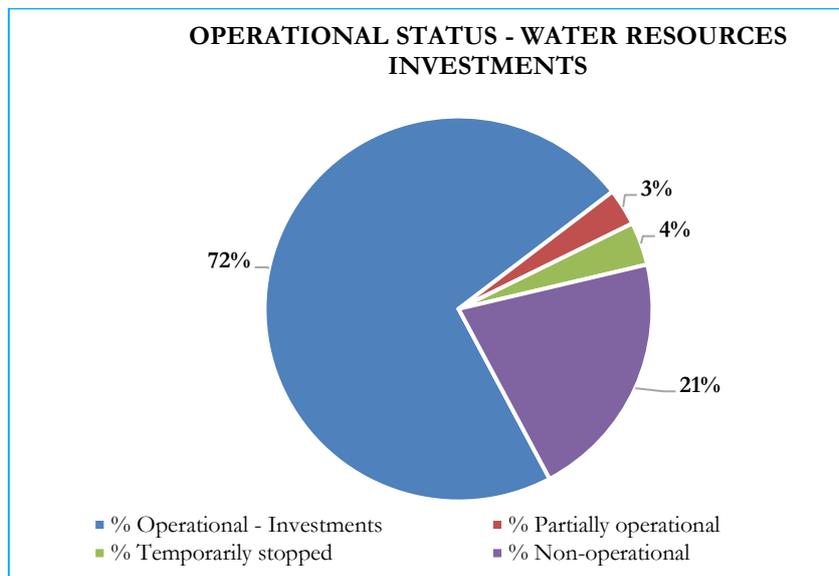
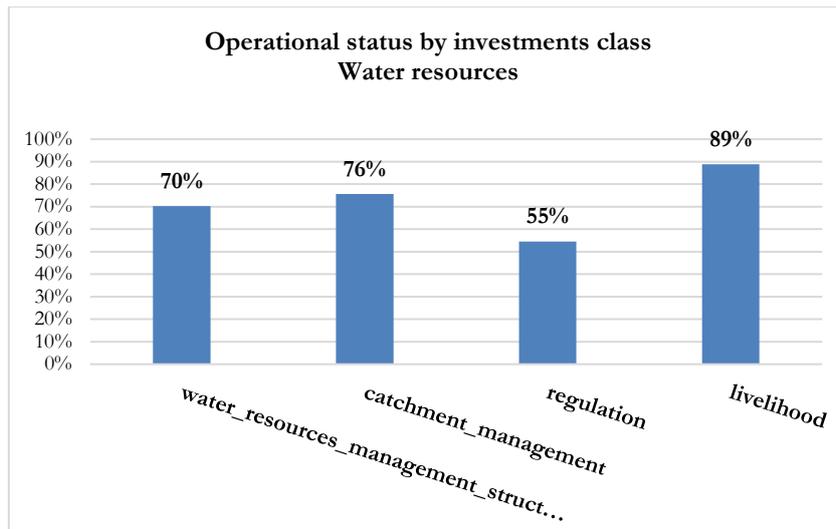


Figure 21. Operational Status of the water resources investments.



**Figure 22. Operational status by water resources investment class.**

Of the water resources investment types, the most successful ones have been the energy saving jikos, water pan rehabilitation, sub-surface dams and fencing of catchment areas all with 100% operational status. Annex 4 presents a pictorial of the Jikos, water pans, sub surface dams and catchment fencing monitored under the water supply and water resources investment windows.

Out of the 33 protected spring and 18 gabions monitored, 94% of each was found to be fully operational while tree planting transplanted had 83% fully operational of the 29 monitored ones and rainwater harvesting tanks had 77% operational of the 201 monitored investments (Figure 23).

Out of the 21 tree planting nurseries monitored, 12 (57%) were fully operational. The least successful investments were bulk meters with only three (3) out of the seven (7) monitored investments being fully operational and livestock troughs with one (1) out of the two (2) monitored being fully operational at the time of visit

67% of the rain water harvesting tanks were found operational, however, the success rates have largely depended on the location of the tanks. Rainwater harvesting tanks were captured both under water supply and water resources investments. The rain water harvesting tanks were the least operational mostly in the Arid and Semi-Arid Lands (ASALs). Under the water resources categories, 67% of the 48 monitored RWH tanks were found operational. The low success rate in the ASALs is mostly due to the lack of reliable rainfall in the areas, rendering the tanks less effective. Further studies on the performance of this investment option in both ASALs and non ASAL areas are recommended for the purpose of guiding future investment decision.

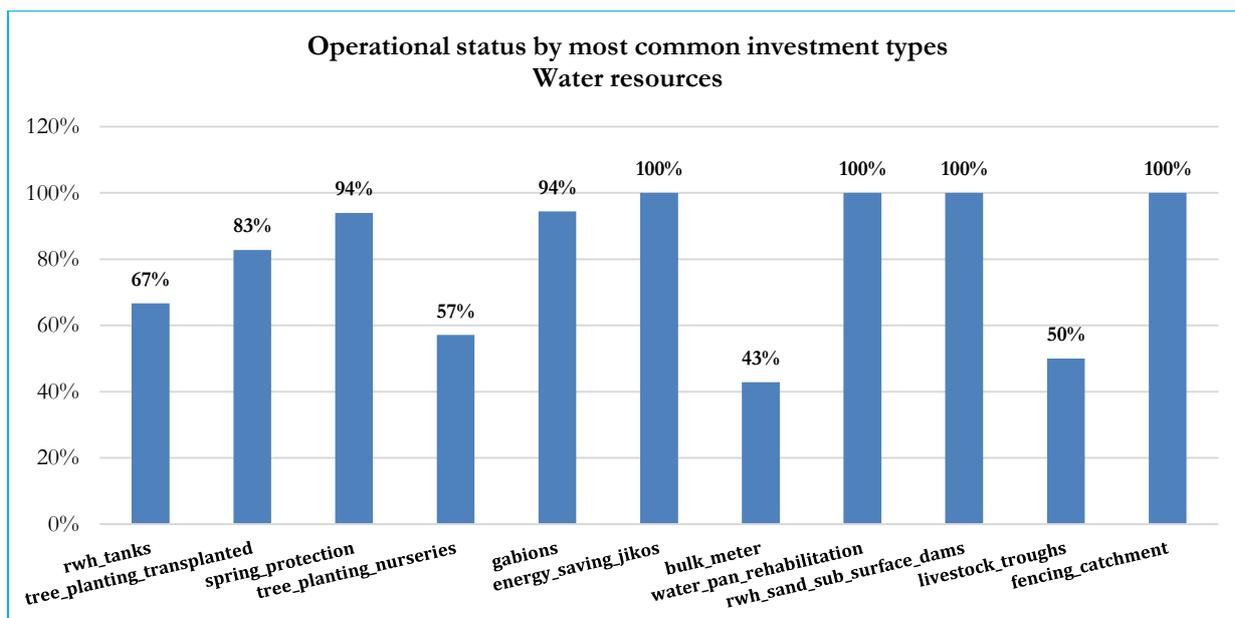


Figure 23. Operational Status by most common water resources investment types.

### 3.4 Technical Verification of the Schemes

This chapter looks at the technical and physical aspects of the monitored investments, with a focus on the following:

- i) Technical quality of the schemes;
- ii) Branding;
- iii) Perceived water quality and quantity at intakes, storage tanks, distribution systems and water resources management structures, and;
- iv) Hygiene levels and hand washing at sanitation facilities.

#### Technical quality of schemes

The JAOME 2019 exercise assessed four parameters for the technical quality of the schemes. These were: (1) Condition; (2) Quality of works; (3) Need of repair, and (4) Reliability of all the investments. 60% of the monitored investments were in good condition, a drop from the 68% recorded by JAOME 2018. While 65% of the investments had good quality of works, which results in only 24% of the investments in need of repairs. 56% of all the investments were found to be regularly reliable, 29% seasonal, 2% erratic and 12% rarely reliable or unreliable (Figure 24).

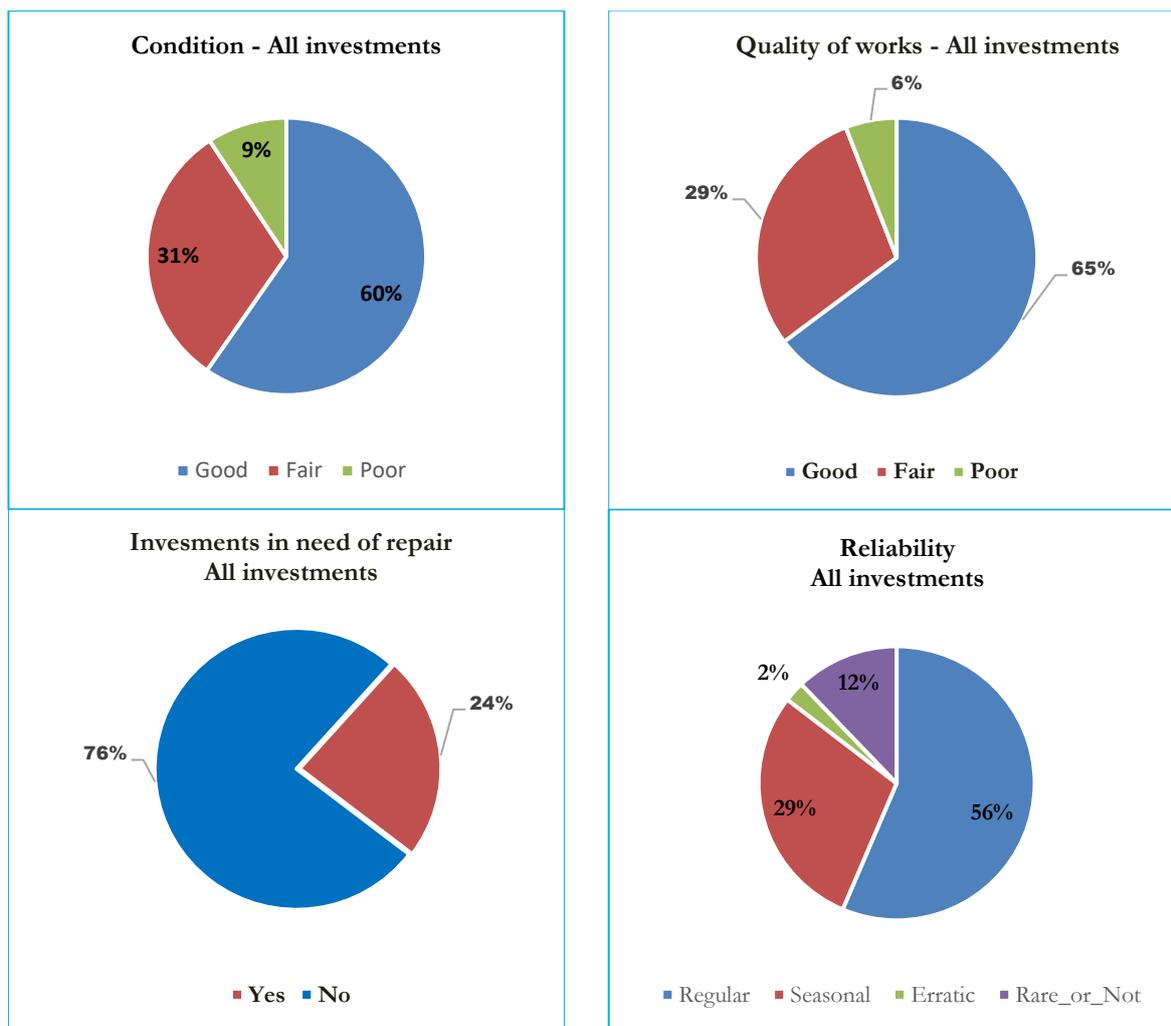


Figure 24. Condition, Quality of works, Need of repair and Reliability of all monitored investments 2019.

### Technical condition

When comparing the different investment windows (RBF, RIP, UIP, WRI), the urban and the water resources have been the most successful ones in terms of condition (Figure 25). The success of the water resources investments could be resulting from the fact that 60% of the monitored investments were completed between June 2017 and June 2019, and had therefore been operational less than 2 years. Also, 61% (272) of the water resources investments are under the IFAD programme in the Mt Kenya area, which has performed well for the water resources investments, in comparison to other programmes. The better success rate in technical quality for urban investments is linked to the implementation partners being the more established WSPs instead of communities or rural Water Utilities (WUs).

Notable is that when comparing the different investment categories, the sanitation facilities had the poorest condition (Figure 26), though they were most commonly operational (Figure 11). This could be attributed to the fact, that the facilities can remain operational even when the condition is not of high standard. Meanwhile, if a pipeline or a tank is in poor condition such as leaking, most likely it is also non-operational.

CPC, J6P and IFAD investments monitored were most commonly in good condition compared to the other programmes, with 92%, 75%, and 71% respectively found in good condition (Figure 27). Meanwhile, the KWSP and the MTAP I programmes had only 45% and 32% of the projects in good condition respectively.

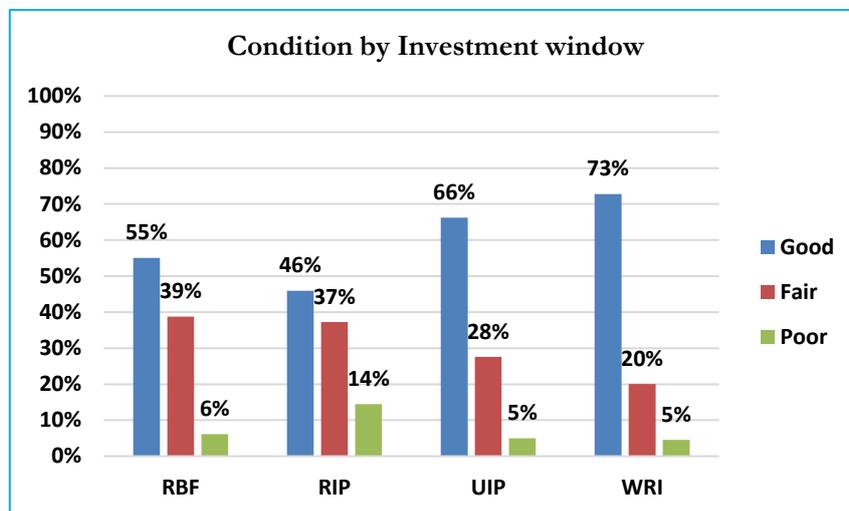


Figure 25. Condition of investments by investment window.

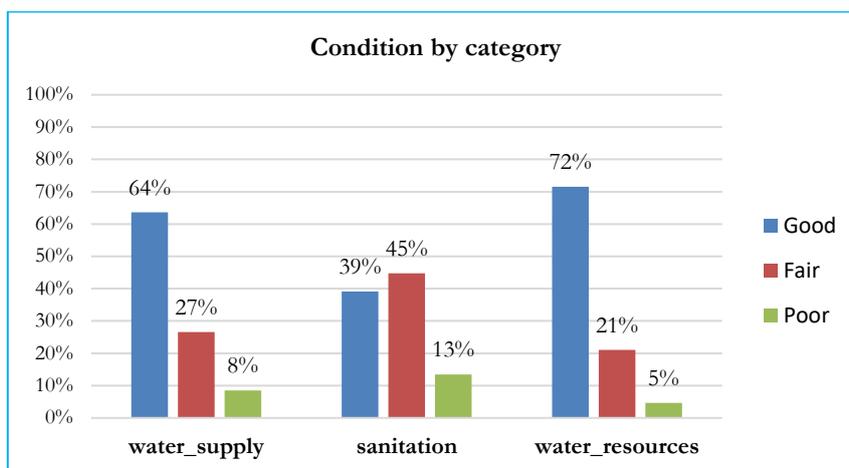


Figure 26. Condition of investments by category

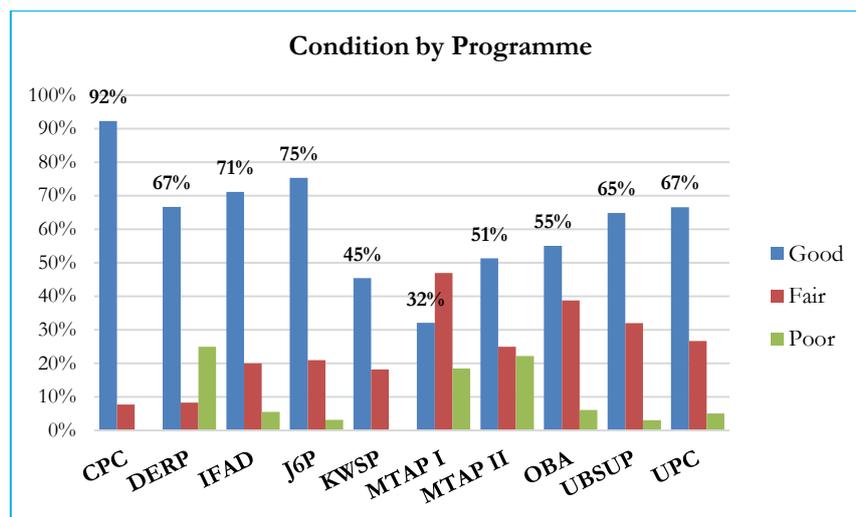


Figure 27. Condition of investments by programme.

### Quality of works

The UIP and WRI investments had the highest quality of works (Figure 28), along with the investments under the CPC programme (Figure 30). While this makes sense in terms of the approach of the programme, where beneficiaries were involved throughout the programme cycle management, it is in contradiction with the slightly poorer condition of the investments (Figure 24).

If comparing the different investment categories, the quality of works was higher for the Urban investments (71%), followed by water resources (68%). Result based Financing had 59% while Rural investments category had the lowest with 54% of the investments having good quality of works. (Figure 29)

Of the programmes, the best quality of works was found to be with CPC, UPC, J6P, UBSUP and IFAD (Figure 30). The lowest quality of works was encountered with KWSP, MTAP I and MTAP II.

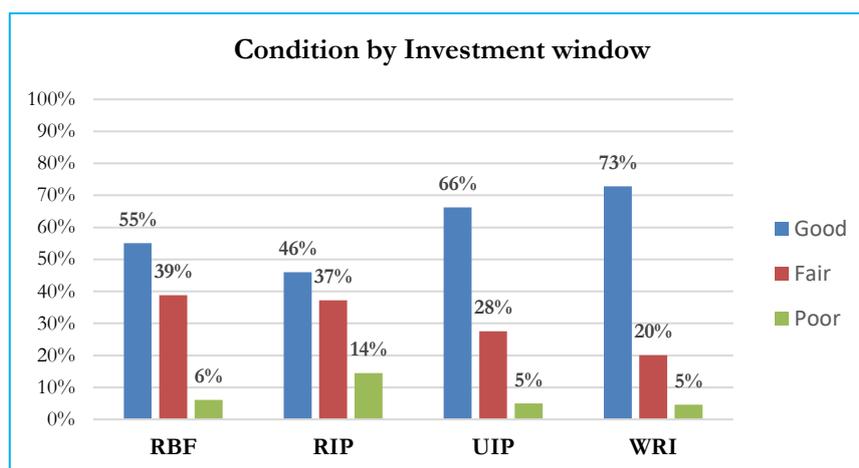


Figure 28. Quality of works by Investment window.

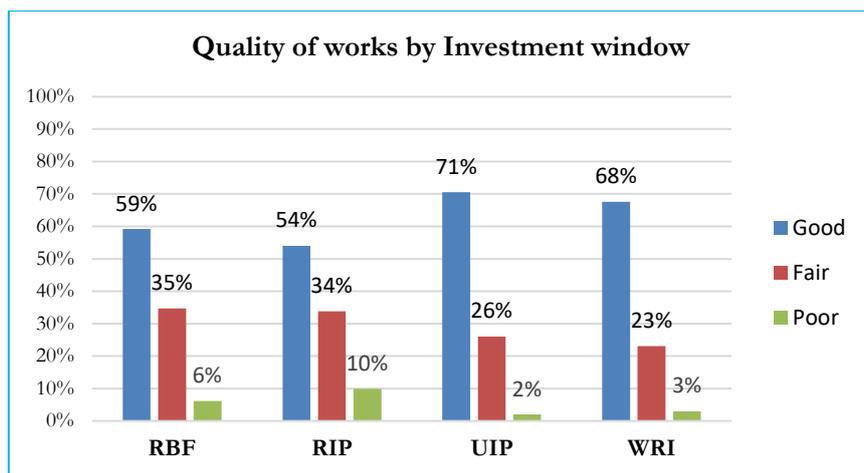


Figure 29. Quality of works by investment category

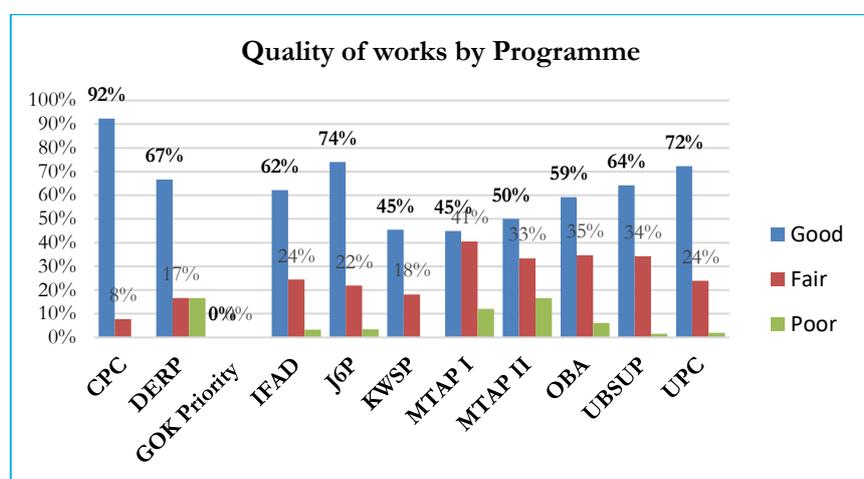


Figure 30. Quality of works by Programme.

### Investments in need of repair

During the exercise 36% of rural investments, 13% urban investment, 12% of water resources investments, and 10% of RBF investments were found to be in need of repair. (Figure 31).

The sanitation investments most commonly require repairs (Figure 32). These are mostly sanitation investments in the ASAL areas that are usually affected by the strong winds prevalent in those areas (causing damage to the doors) and poorly maintenance. Of the programmes monitored, MTAP I, MTAP II and DERP had the highest percentages of investments in need of repair, 46%, 49% and 33%, respectively (Figure 33).

In contrary to a common misconception, follow-up and responsibility on repairs are however not with WSTF but with the implementing partners and asset owners, as the WaterFund has no budget for repairs and once the projects have been finalized, they are handed over to the institutions, Community Based Organisations (CBOs), WUs, WSPs, WRUAs or CFAs. In reality though, the situation in most cases is such that the owner of the facility either lacks funds to make repairs or do not plan for facility repairs and maintenance. For example with school sanitation, it has been observed that when a facility deteriorates to poor condition, it is abandoned, even if it would have required

simple repairs, such as change of doors. Lack of ownership on the care of the facilities as well as non-collection of funds for maintenance leads to a low level of sustainability in most cases.

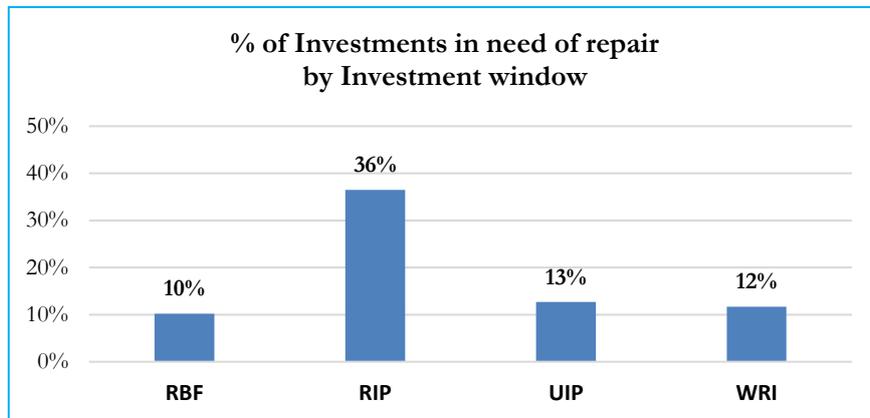


Figure 31. Percentage of investments in need of repair by investment window

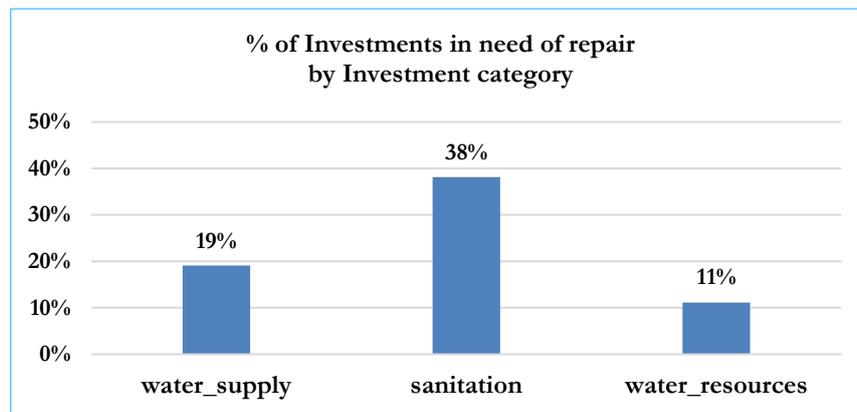


Figure 32. Percentage of investments in need of repair by investment category

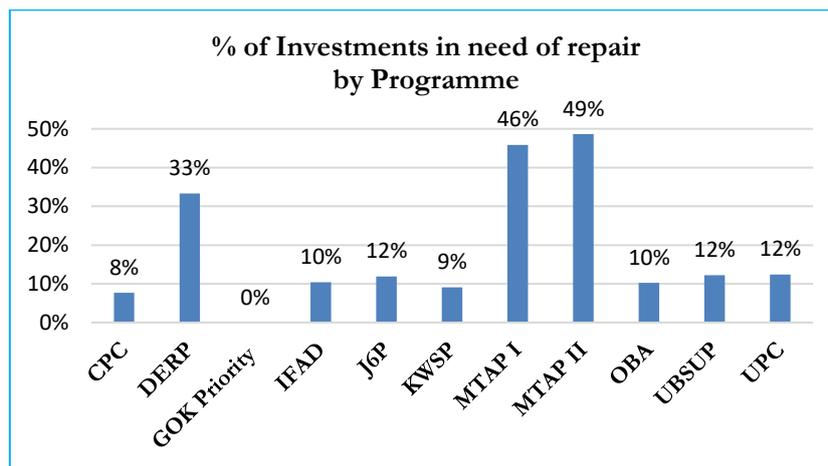


Figure 33. Percentage of investments in need of repair by programme

## Branding

58% of the 2,027 investments monitored were branded with 32% of the investments branding in good condition. The question on branding was targeted to all key investments excluding: connections, meters, riparian pegging, fire-breaks, energy-

saving jikos, and installation of early warning systems, tree pruning and grass strips. More of Rural Investments were branded compared to the other investment windows, however the Water Resources Investments had the highest percentage with branding in good condition (Figure 34).

The RIP and WRI had most of the investments branded compared with other programmes, with the WRI programme having the most projects with branding in good condition when compared to the rest (Figure 34). CPC, KWSP, UPC and MTAPI had the lowest proportion of investments with branding in good condition (8%, 14%, 18% and 23% respectively). Overall, the WaterFund should check that the branding of projects has been done before issuing the project completion certificates.

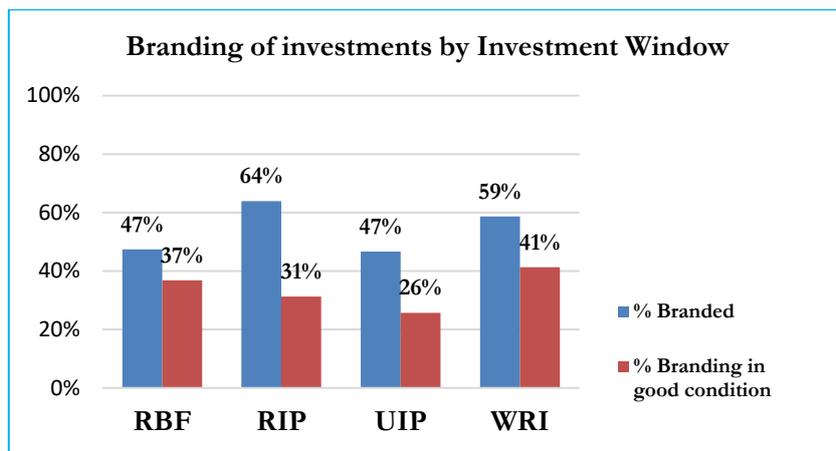


Figure 34. Branding of the Investments by Investments window

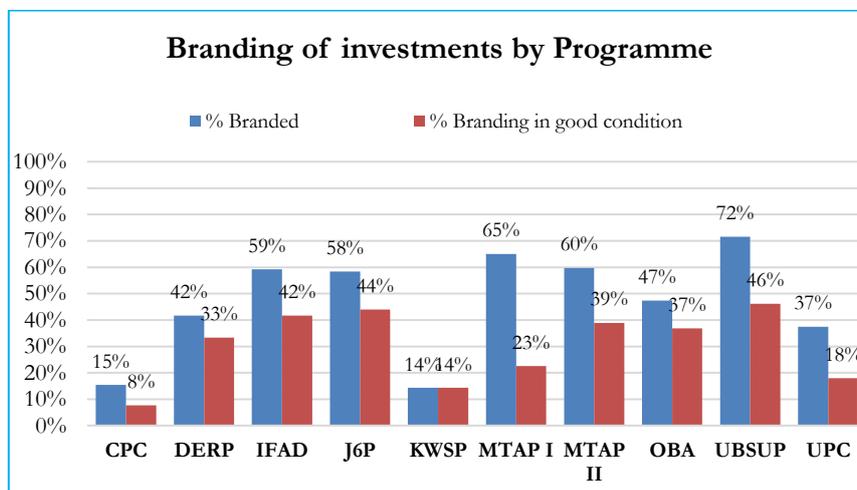


Figure 35. Branding of the investments by Programme.

### Water quality and quantity

The JAOME 2019 exercise assessed the water quantity and quality of the water distribution systems, the water sources/intakes, storage tanks and the water resources management structures. In 68% of the investments the water quantity was found to be either abundant and enough among the cases encountered (Figure 36). In 68% of the investments the water quality was either good or very good, with only 2% having poor quality water.

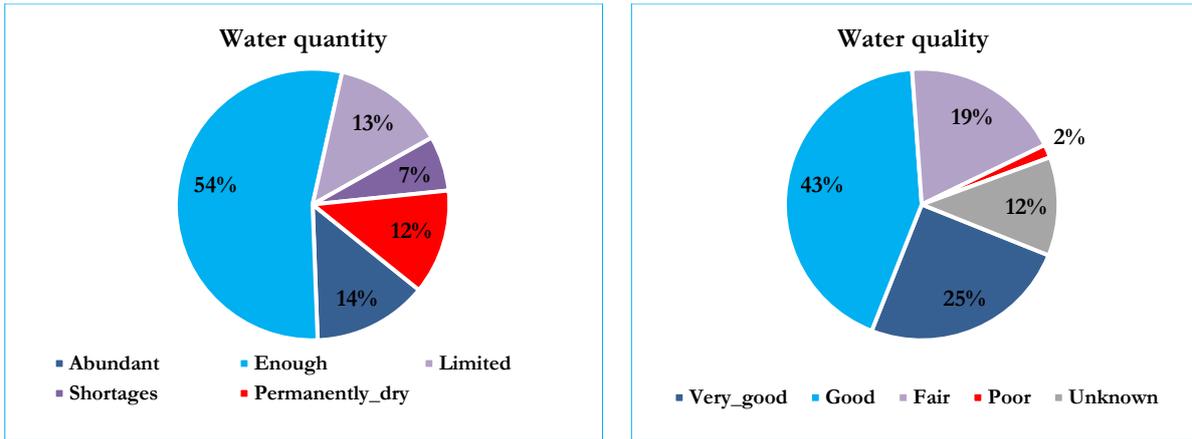


Figure 36. Water quantity and quality as observed at the time of visit

Generally, water quantity appears to be a bigger issue than water quality (Figure 37). There is no clear geographical pattern for water quantity, though generally it was found more commonly abundant or enough in Central and Western Kenya. This is linked to the rainfall patterns, where particularly Northern Kenyan counties record very low measures of annual precipitation. Also quality was generally better in Central, Western and South-Eastern regions, whereas especially in the North-Eastern regions the quality is poorer.

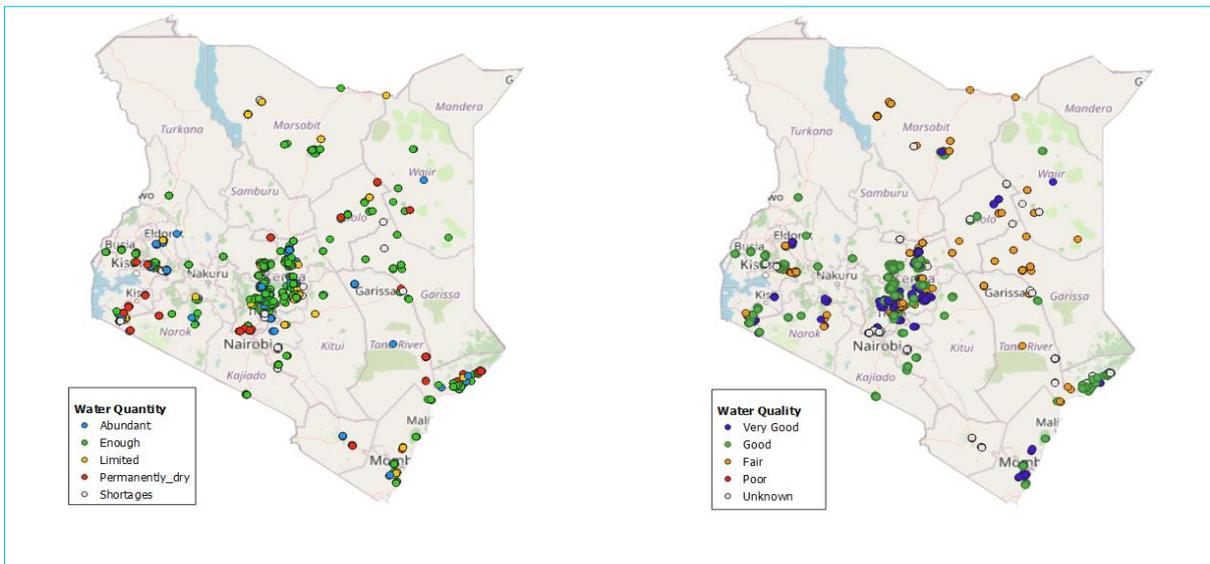


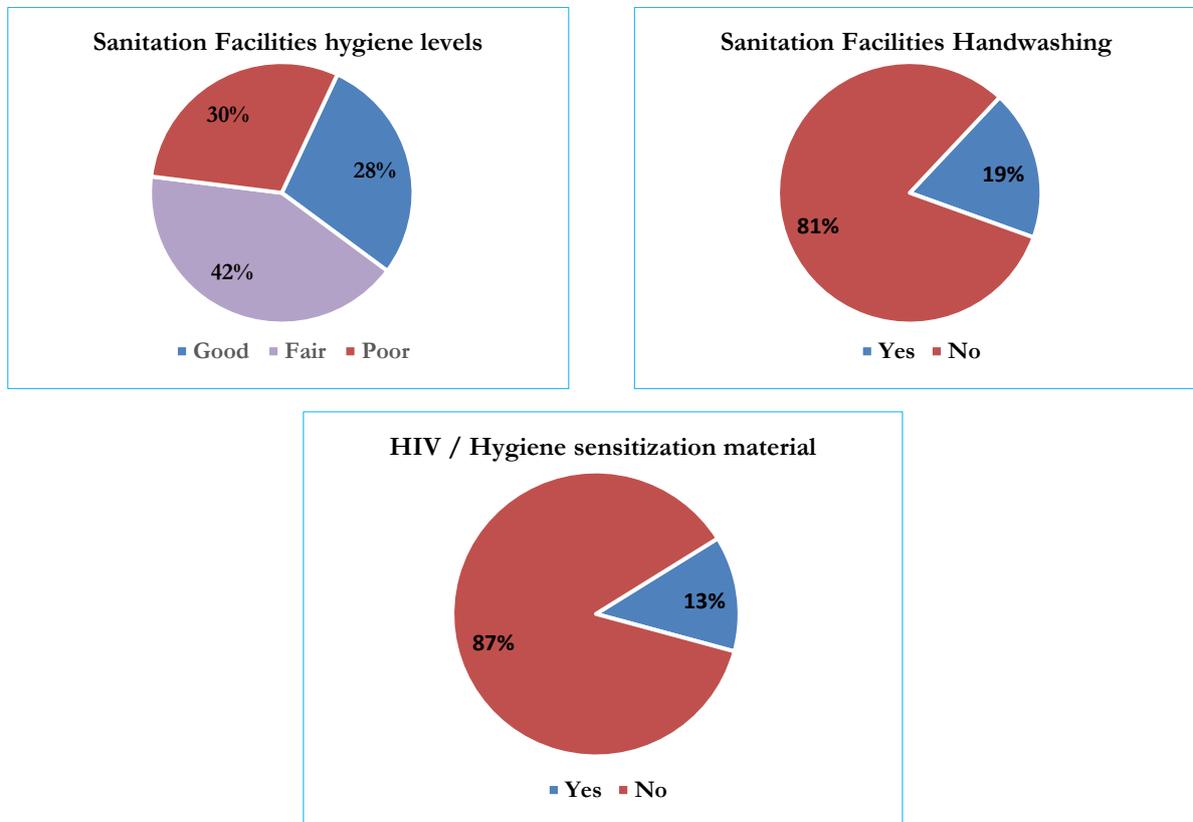
Figure 37. Water Quantity and Quality of the water points

### Sanitation facilities

Three key parameters were observed specifically regarding the quality of the sanitation facilities were: (1) Hygiene levels; (2) Availability of handwashing facilities, and; (3) HIV sensitization posters (Figure 38).

70 % of the sanitation projects (a reduction of 13% compared to the 2018 JAOME results) had good or fair hygiene levels with the urban investments having better hygiene levels than the Rural Investments (Figure 38). The Public Sanitation Facilities (PSF) had the best hygiene levels and handwashing facilities. This may be mostly attributed to the better management of the PSFs because the facilities are for commercial purposes (Figure 40).

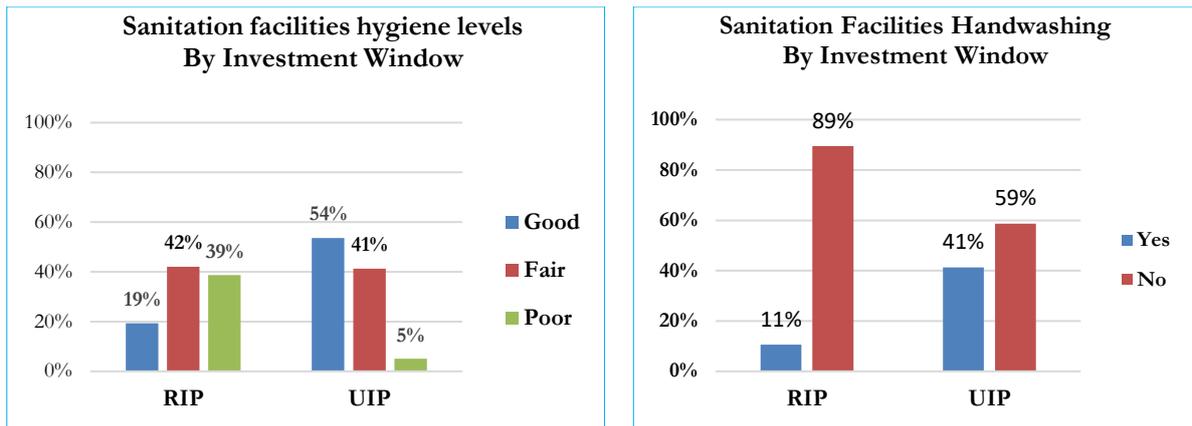
However, of importance to note is that only 13% of the facilities had HIV/Hygiene material distributed and only 19% had handwashing facilities. The lack of handwashing facilities may be due to lack of a reliable source or a water connection in the sanitation facility.



**Figure 38. The three key parameters for the quality of the sanitation facilities<sup>3</sup>**

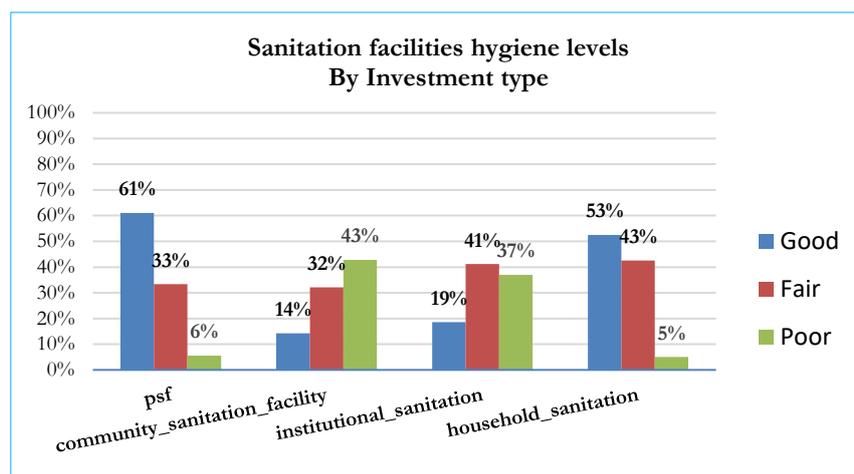
When comparing the rural and urban sanitation investments, it is clear that the urban sanitation facilities had better hygiene levels and in most cases had provision for handwashing facilities (Figure 39). This could be attributed to the fact that the urban sanitation projects are household toilets with owner's responsibility or commercial PSFs, which have a clear operation and maintenance structure, with regular revenue collection. The rural facilities are mostly school or community sanitation facilities, which have challenges of maintenance, leading to lower hygiene levels.

<sup>3</sup> (1) Hygiene levels; (2) Availability of hand-washing facilities, and; (3) Distribution of HIV & Hygiene materials.



**Figure 39. Hygiene levels and handwashing facilities in sanitation facilities**

In general, as per Figures 40 and 41, hygiene levels were found to be better in the PSFs and at the household sanitation facilities, where also the handwashing facilities are commonly provided. The lowest hygiene levels were found at communal and institutional sanitation facilities, which is a great concern as the schools and health facilities are key places for promoting public health and hygiene. Also, the approach of providing hand washing facilities in schools needs to be re-thought as currently the schools are provided with a rainwater harvesting structure with a tap, however these structures were commonly found not operational on the ground due to various reasons, from lack of rain, the tanks missing or the tanks not being connected to the gutters. Providing handwashing facilities in schools should be paid much more attention to, ensuring that the school has a water connection, identifying an appropriate siting for the hand washing unit and ensuring that it is a permanent structure.



**Figure 40. Sanitation facilities' hygiene levels by Investment Types**

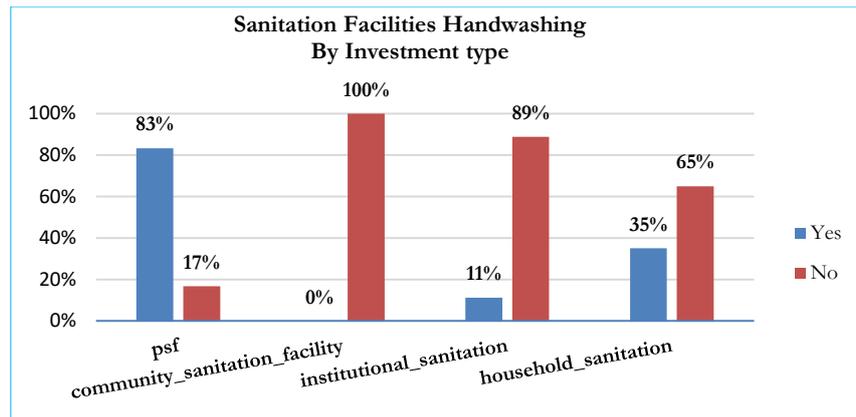


Figure 41. Handwashing availability at the sanitation facilities by Investment Types.

### 3.5 Revenue collection

Revenue collection is a key aspect for enhancing the sustainability of investments and it was therefore selected as the main indicator for the Sustainability Index. The question on revenue collection was asked both for the entire projects as well as for separate investments where revenue was expected to be collected.

The question applied to all projects irrespective of their type, whereas the question was asked only on the types of the investments which were specifically expected to collect revenue. The question was asked for animal troughs, stand pipes, water kiosks and other communal water points for water supply category; for DTFs and PSFs under sanitation category; and for energy saving jikos, bee hives, fish ponds, animal troughs, djabias, rainwater harvesting pans, sand and sub surface dams, rainwater harvesting tanks, spring protection and tree nurseries under the water resources.

Overall, only 25% of projects where revenue collection was expected were actually collecting revenue (Figure 42). The low percentage is due to Rural and Water Resource Investments where revenue is expected to be collected but is not collected. However, the sustainability index has 2 out of 4 scenarios that include 50% weighted percentage for revenue collection. The more active revenue collection occurred in the RBF and urban investment windows, while the lowest was found in Rural and water resources investments. The low revenue collection efficiency (9%) for projects under the rural investments is of concern considering the fact the window had the highest number of investments sampled. However, most of these investments are toilets which do not collect revenue.

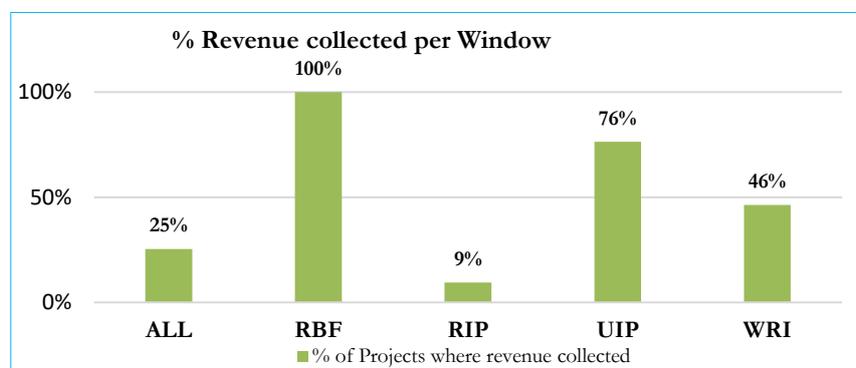
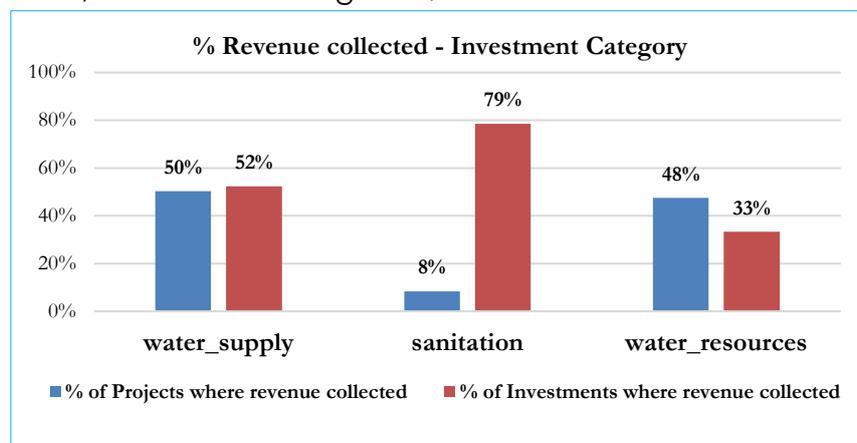


Figure 42. Revenue collection per investment window.

The higher revenue collection percentage for RBF and urban investments windows is closely linked with their being operated and managed by established WSPs, while

water resources investment are run by WRUAs, which are community initiatives in most cases lacking the culture of income generation. A key objective for the sustainability of WRUAs would be to ensure that if livelihood activities are supported, they are accompanied with a sound business plan that ensures income generation for the association. Only 7% of the WRI investments were asked if they collect revenue, out of which 46% answered “Yes”.

A comparison between investment categories (Figure 43), reveals the highest percentage of projects collecting revenue to be under water supply, and the lowest to be under sanitation. The low percentage of sanitation projects collecting revenue results from a large percentage of school sanitation projects which generally do not collect revenue. The sanitation investments that are expected collect revenue are public sanitation facilities and decentralized treatment facilities which generally generate income, therefore resulting in 79% revenue collection rate for sanitation.



**Figure 43. Revenue collection by investment category for projects and investments**

Figure 44 presents the percentage of investments and projects collecting revenue for the programmes. The highest percentages for revenue collection are for the urban and RBF programmes (OBA, UBSUP and UPC). For most of the programmes the percentage of revenue collection was higher for the projects than the individual investments, the only exception with MTAP I and UBSUP. For MTAP I, 73% of the projects are sanitation projects for institutional or communal sanitation facilities, which are not expected to collect revenue. Out of the 558 investments monitored under MTAP I, only 37 investments were expected to collect revenue.

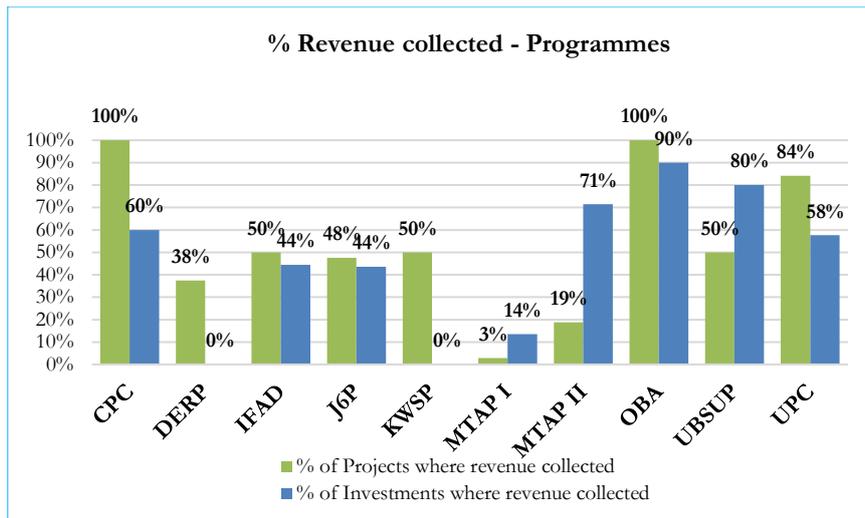


Figure 44. Revenue collection by programme for projects and investments separately.

Revenue was collected in 50% of water supply investments, with 50% of animal troughs (2 investments), 50% of stand pipes (9 investments) and 57% of water kiosks (150 investments) (Figure 45).

It was found that 8% of the 527 sanitation investments were collecting revenue, this includes 80% of Decentralised Treatments Facilities (DTFs) (10 investments) and 78% of PSFs (18 investments) (Figure 46). The DTFs are expected to collect revenue on the discharge from the exhausters as they bring the sludge to be treated. Another potential revenue stream for the DTFs would be the by-products for the use of farming, but this has not yet been realized in the 10 DTFs monitored.

For water resources investments, the revenue question was asked for tree planting, energy saving jikos, water resources management structures (RWH pans, dams, djabias, tanks, spring protection and livestock troughs) and livelihood activities (Figure 47). From the livelihood activities, 40% of bee hives (5 investments) and 33% tree – planting nurseries (18 investments) collect revenue. Meanwhile, none of the rainwater harvesting structures were found to be collecting revenue. A lot of more capacity building support is required to have the WRUAs to start generating income with the activities listed in Figure 47.

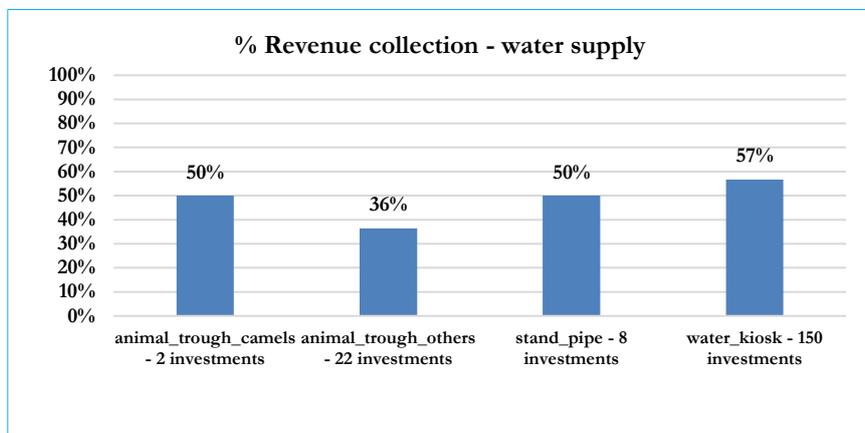
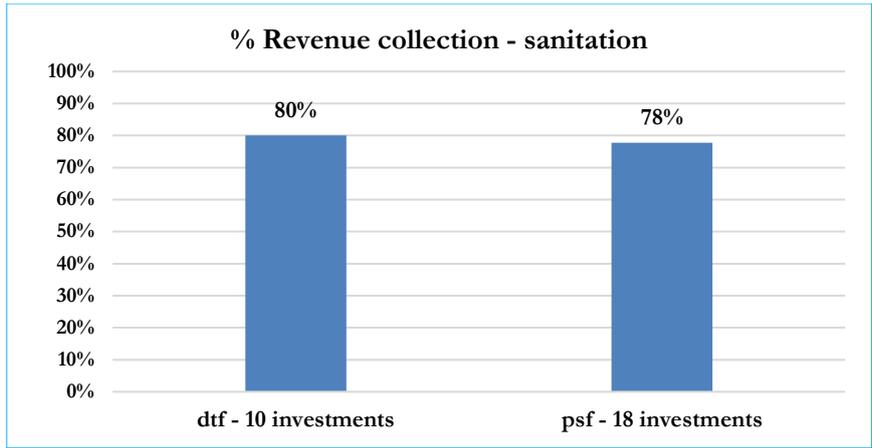
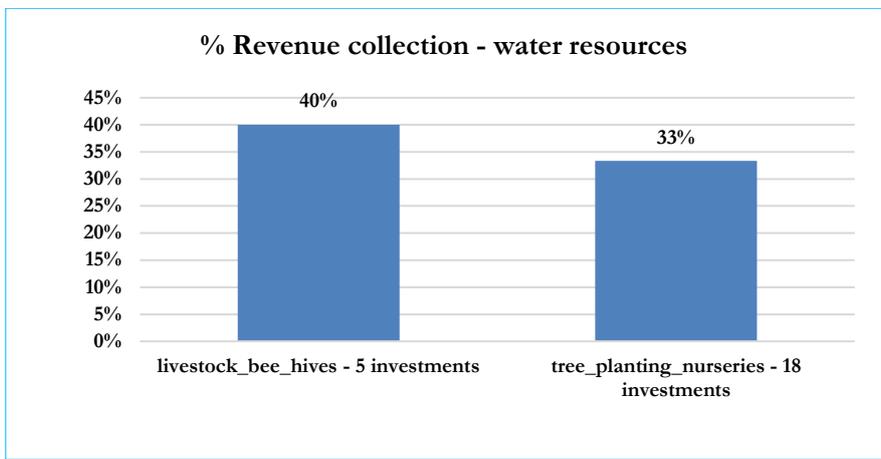


Figure 45. Revenue collection by water supply investment types



**Figure 46. Revenue collection by sanitation investment types**



**Figure 47. Revenue collection by water resources investment types.**

The Fund could consider investment decisions on whether to concentrate on income generating activities to sustain a WRUA or catchment management issues. There can also be a cross cutting decision to achieve both.

## Beneficiaries

The data for beneficiaries was collected on specific investments including distribution systems (water kiosks, stand pipes, yard taps, other communal water points, individual connections, industrial connections and institutional connections) and sanitation (institutional sanitation, community sanitation, household sanitation and PSFs). The beneficiary data was also collected for the overall projects. It should be noted that the beneficiaries are estimated by the enumerators on the ground, and the integrity of the data depends on the ability of the enumerator to interrogate the information on each project/investment accurately.

When looking at access points and household sanitation facilities, according to the data collected, the proportion of female beneficiaries are approximately 50% across all investments (Table 5). The generally higher percentage of female beneficiaries for water kiosks can be attributed to the fact that women are commonly tasked with the role of fetching and management of water supply in most households, and are thus the ones to collect water from the access points. At household level (individual connections and household sanitation), the whole household is seen as a beneficiary. The percentage of minors as beneficiaries generally ranges between 3% (household sanitation) and 40% (individual connections) of total number of beneficiaries. The exception is the institutional sanitation, which includes mostly schools, where the percentage of minors is as high as 84% of the total number of beneficiaries.

The average beneficiaries per investment are also presented in Table 5. Generally it was found that the kiosks and yard taps serve approximately 43-717 beneficiaries per investment, though it should be noted that this may vary largely between the rural and the urban contexts. On average, there were 6 beneficiaries for individual connections and 18 per household sanitation door. The 6 beneficiaries per connection seems fairly adequate. Based on the estimates from the ground, each institutional sanitation door had 73 beneficiaries on average, though the recommended number should be 25-30 pupils per door. The PSFs had an average of approximately 751 beneficiaries, which is a slightly higher figure as the PSFs are designed to serve approximately 450-600 beneficiaries per day.

**Table 5. Number of beneficiaries per investment type**

Investment type:	No of investments	Beneficiaries per investment	Total number of beneficiaries	Female beneficiaries	Minors below Age 18
Water kiosk	154	717	107,620	60,452	27,560
Yard tap	75	43	2,999	1,499	860
Individual connection	18	6	103	55	41
Household sanitation	474	18	26,117	1,460	881
Institutional sanitation	1,164	230	83,922	42,530	70,244
Community sanitation facility	58	358	9,317	4,921	2,811
PSF	18	751	13,510	6,412	1,462

NB:

- 1) Each door has been counted under sanitation investment types except for PSF
- 2) The beneficiaries for PSF are the average daily users

### 3.6 Cross-cutting issues

#### Gender Equality and Social Inclusion

The Gender Equality and Social Inclusion (GESI) aspects for the investments are captured by three main parameters, namely;

- i) Dis-aggregated data for number of beneficiaries (specific to access points and household sanitation);
- ii) Whether or not the design of the facility is provisional to people with disability / gender / age (specific to water kiosks, yard taps and sanitation facilities), and;
- iii) Whether or not the operations responsibility of an investment is also allocated for Youth, Men, Women or the Disabled.

The dis-aggregated data for number of beneficiaries was presented in the previous chapter. The design of facilities should facilitate equitable access and use for women, men, minors and those with disabilities. The technical designs for sanitation facilities should reflect the needs of women and men and should address their specific needs and concerns. These concerns include siting of facilities, safety, security, health, hygiene, privacy and convenience. The sanitation facility should also respond to female biological needs such as menstrual hygiene management (MHM) that impact the health and mobility of women. While poor design can affect everyone, they are groups of people who are more vulnerable than others and they include persons with physical challenges, pregnant women, children, the elderly and the sick.

Also water collection falls directly on women and children and therefore the technical designs for water kiosks should meet their needs. Any water supply intervention must respond to the need to free up time that could be used by those who collect water to engage in other productive tasks as well as guarantee security of the women and children. Any sanitation technology or water collection point thus must be assessed from the perspectives of gender equality and inclusivity. These aspects were covered during the training of the enumerators to ensure the collection of accurate data, so that the enumerators are aware of the aspects that they need to look out for to evaluate whether or not a facility is provisional to disability/gender/age.

For JAOME 2019, 10% of the 10 RBF investments, 82% of the 464 rural investments and 69% of the 286 urban investments had considered gender in their designs. (Figure 48). Considering the needs of children and elderly, the respective figures were 0%, 58% and 65%. What is notable though is that majority of the technical designs do not take into consideration the needs of the people with disabilities. When comparing different investment types, the PSFs seemed to be designed especially well in terms of the needs of people of different ages, of gender, and of disabilities.

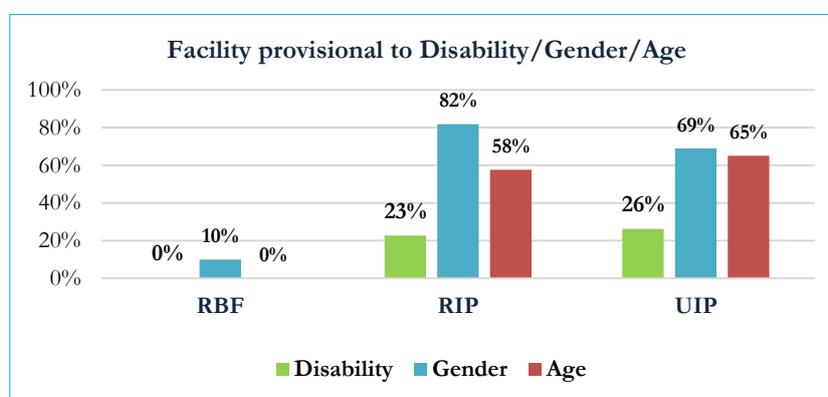


Figure 48. Percentage of investment facilities with provision for disability/gender/age

Figures 49 and 50 present the same data for distribution systems and sanitation facilities respectively. The monitored distribution systems were: 8 No. stand pipes, 151 No. water kiosks, 69 No. yard taps and 1 No. communal water point. The data shows that stand pipes, water kiosks and yard taps are more commonly provisional to gender and age than to people with disabilities. However, communal water points are equally provisional to gender, age and disability.

For sanitation facilities the monitored investments included 18 PSFs, 25 No. community sanitation facilities, 120 No. household sanitation and 364 No. institutional sanitation. The facilities were more commonly provisional to disability/age/gender in cases of PSFs, which have been carefully designed to take the accessibility and usability into consideration. This is not the case often for households and institutions. In particular, the institutional sanitation should not be considered for funding without a design that ensures that the facilities are appropriate to use for all patients, in case of health centers, or all pupils, in case of schools.

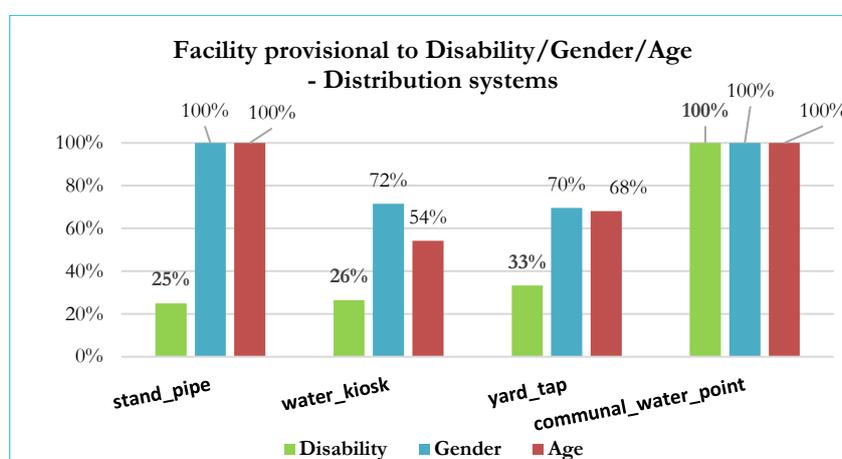


Figure 49. Percentage of Distribution systems facilities with provision for disability/gender/age

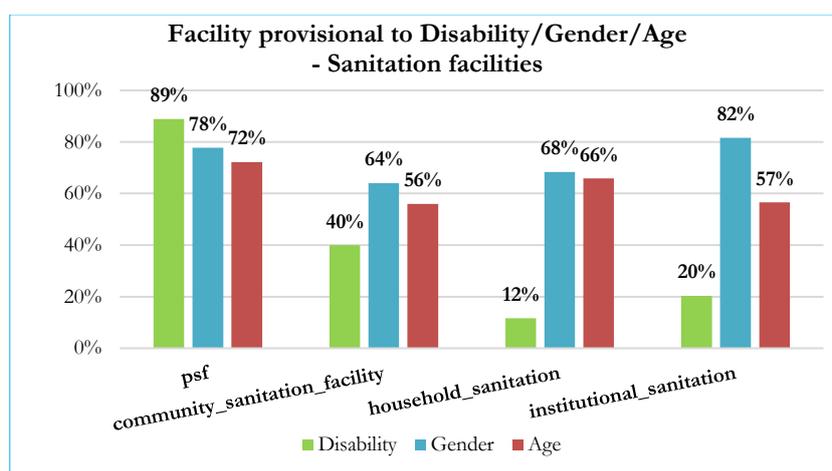


Figure 50: Percentage of Sanitation facilities with provision for disability/gender/age

The third parameter for assessing the aspects of GESI was the question of primary operations responsibility. Figure 51 shows that generally it is more common for women to have the operations responsibility for RBF and rural investments and for men in rural and urban investments. It is very rare to have youth or disabled included in the running of water supply or sanitation investments.

When looking at key investment types, women are more often primarily responsible for the running of water kiosks (53%) than men (Figure 52). PSFs are mainly run by men (44%) as compared to women (33%) while DTFs are primarily run by men (60%).

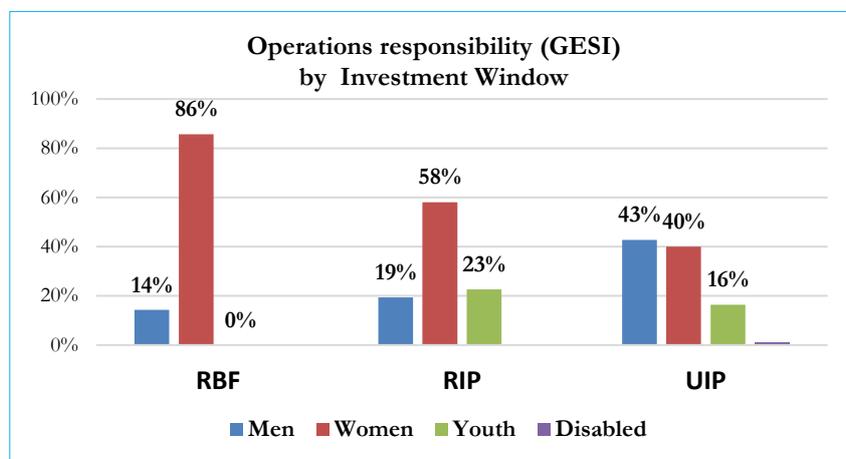


Figure 51. Primary operations responsibility (GESI) by investment window

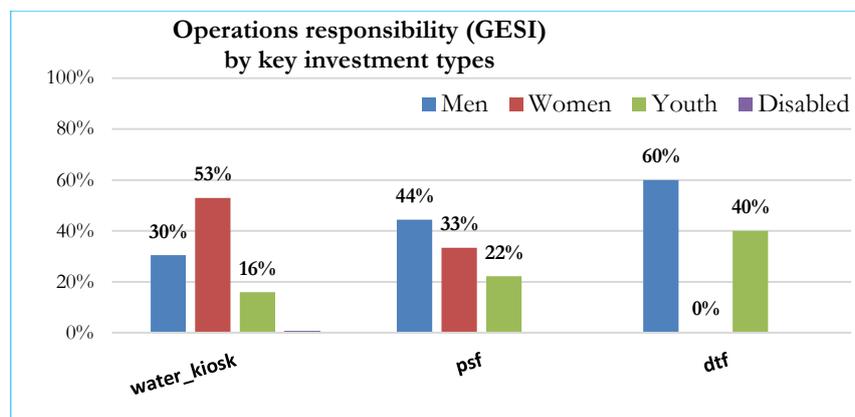


Figure 52. Primary operations responsibility (GESI) by key investment types.

Figure 53 shows that the facilities are more commonly operational if primarily run by women, followed by youth and then men. Only one investment was primarily run by people with disabilities. An investment being primarily run by the Disabled or women improved the rate by revenue collection (Figure 54). These two parameters are key for the calculation of the SI.

The positive impact on the sustainability score from involvement of women in operational tasks goes hand in hand with a common perception that involving women in water and sanitation projects increases their sustainability as the knowledge base increases. As the Fund strives to provide an increased focus on enhancing gender and social equity and human rights based approaches in the overall programme design, there should also be a target to enhance the involvement and capacity of women, members of youth and people with disabilities in the running and management of the schemes.

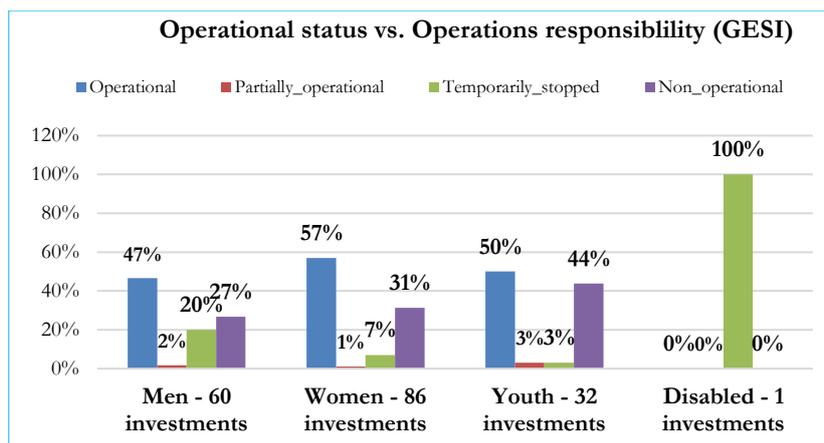


Figure 53. Operational status vs. Primary operations responsibility (GESI)

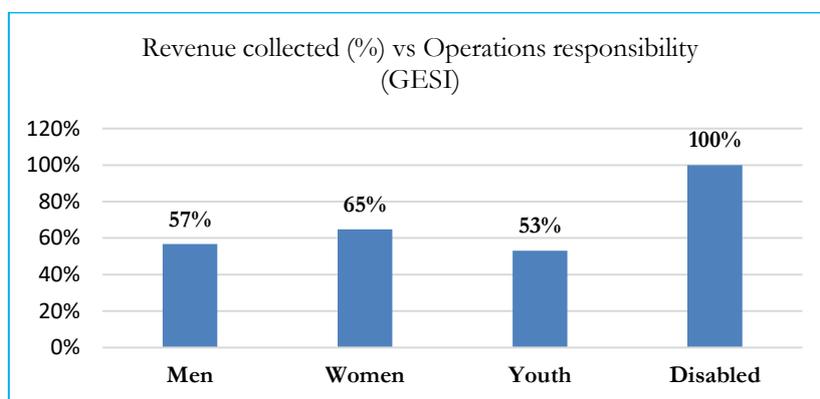
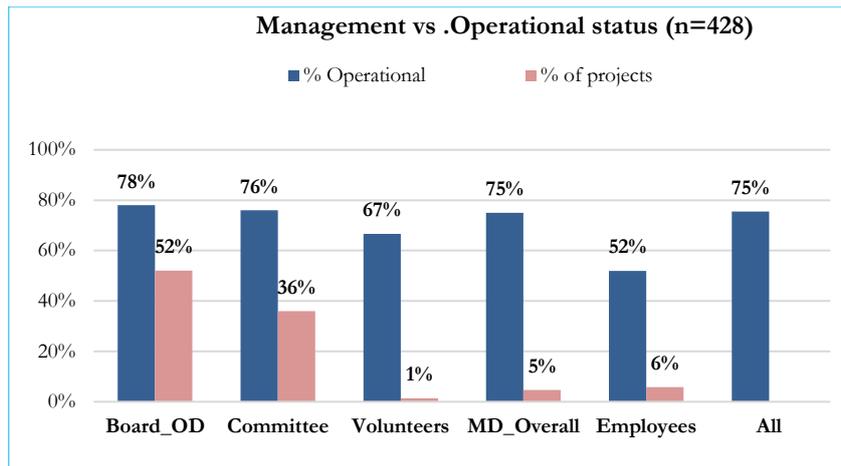


Figure 54. Revenue collection (%) vs. Primary operations responsibility (GESI).

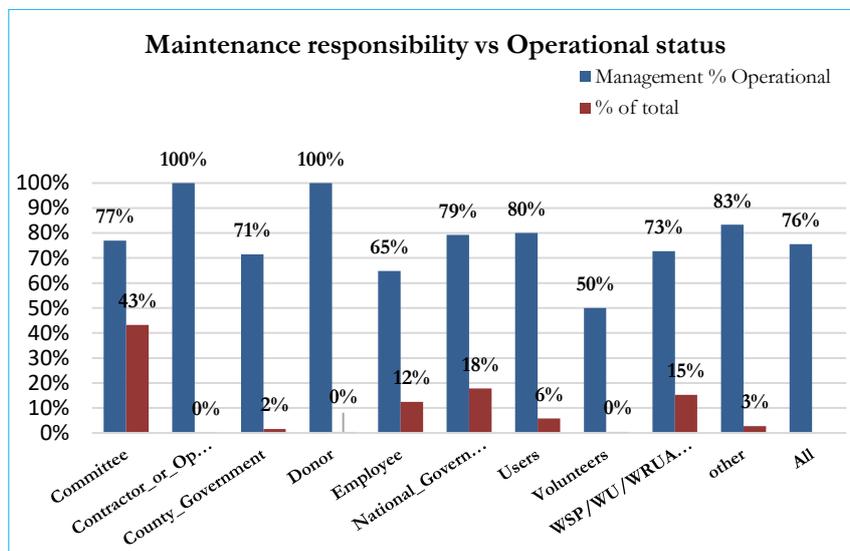
Of the investments that require operators, there were 60 investments run by Men and 86 investments run by Women. Out of all, 32 investments are run by Youth and 1 investments by Persons with Disability.

### Governance and management of projects

Out of the 428 projects with general project forms, it was observed that 52% were in schools run by a Board of Directors, 36% were CBOs or WRUAs run by a committee, and 5% were implemented through WSPs run by a managing director (MD), followed by employees (6%) and volunteers (1%) (Figure 55). Management by Board of Directors seems to improve the operational status, in comparison to a committee and an MD. Surprisingly, the rate of revenue collection seems to follow an opposite pattern (Figure 55).



**Figure 55. Management of projects vs. operational status**



**Figure 56. Maintenance responsibility vs operational status**



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4

SUSTAINABILITY  
OF THE PROJECTS

The sustainability index (SI) was developed as a key performance metric to facilitate assessment and monitoring of sustainability of investments. This index was established already for the JAOME 2016, and has been calculated each year as a key quantitative performance measure to facilitate the assessment and monitoring of sustainability of investments to support progress evaluation over time and the development of appropriate response measures. For the purposes of the assessment, sustainability was defined as the ability of an investment to realize the objectives within 5 years of operation.

The Sustainability Index score is between 0 - 100%, with 100% depicting a high sustainability rate of the investments. The highest weight (50%) was allocated to revenue collection based on the fact that without revenue collection, the investment does not have long term sustainability. Functionality, i.e. the operational status, is a key attribute to describe the status of the services and was allocated the weight of 25%. The age and survival rate of the investment was allocated a weight of 15%. The condition of an investment was allocated a smaller weight (10%) since the condition is, while important, less essential for the usability and sustainability of the facility. The four indicators that contribute to the sustainability index are:

- i) **Revenue Collection:** % of investments collecting revenue (weight 50%);
- ii) **Operational Status:** % of investments operational (weight 25%);
- iii) **Age-Survival:** % of over two-year old investments still fully operational (weight 15%), and;
- iv) **Good Condition:** % of investments in good condition (weight 10%).

**On the basis of the above criteria, revenue collection scored 27%, Operational status 18%, Age survival 10% and functionality 5% resulting in an overall SI score of 60%.**

There are 4 scenarios with different weightage for each. Where no revenue is expected, the weight of revenue collection is zero.

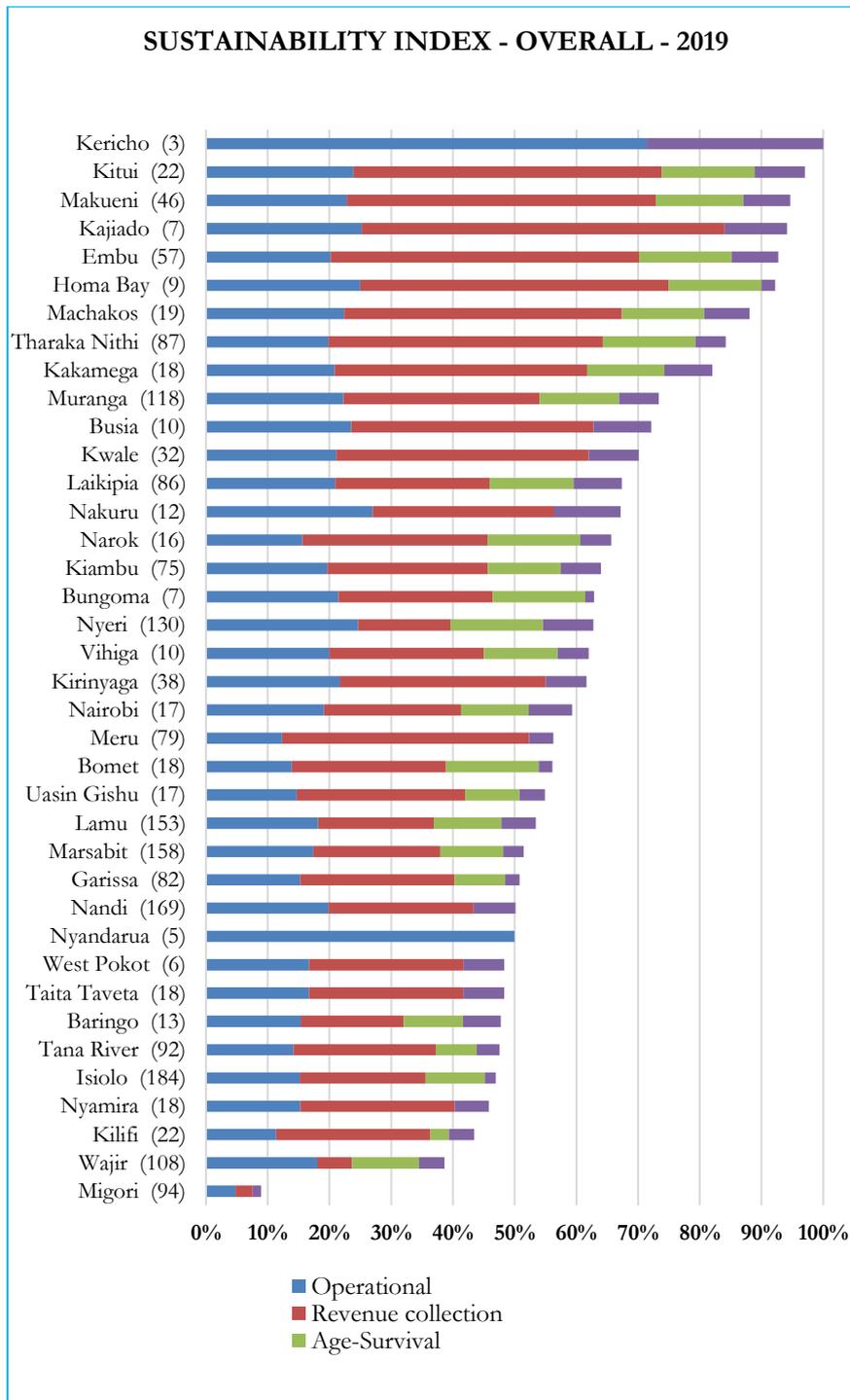
In this section the sustainability index is presented for the counties, by programme and by key investment types. In addition, a comparison is made to the 2018 and 2017 JAOME findings.

#### **4.1 County Sustainability Index**

The County Sustainability Index (CSI) is calculated using the four indicators described above and in Section 2.6.1. The CSI ranks all the counties based on the composite index calculated for all the monitored investments (Rural, Urban, Water Resources and RBF) in each county (Figure 57). The **Overall SI score for JAOME 2019 was 60**. Revenue collection scored 27% Figures 58-60 present the CSI for the Urban and RBF, Rural and Water Resources separately.

The results for the CSI show that there is a large variance in terms of the sustainability of investments across the Counties. Figure 57 below shows the ranking for all the Counties with more than 10 monitored investments, giving the highest score for Kericho (100%), Kitui (97%), Makueni (95%), Kajiado (94%), Embu (93%) Homabay (92%) and Machakos (88%). Counties were expected to have at least 10 monitored investments for purpose of representation and comparison.

The five lowest ranking counties were Migori (9% CSI with 94 monitored investments), Wajir (38% CSI with 108 investments), Kilifi (44% CSI with 22 investments), Nyamira (46% CSI with 18 investments) and Isiolo (47% CSI with 184 investments).



**Figure 57: County sustainability index (CSI) 2019<sup>4</sup>**

Figures 58 - 60 present the results for the CSI separately for each investment window, for the UIP and RBF, the RIP, and the WRI, respectively. The top five performers based on the sustainability criteria for urban investments were Kericho (100%), Embu (100%), Kitui (97%), Laikipia (96%), Tharaka Nithi (95%) and Makueni (94%). All of these Counties

<sup>4</sup> Counties with a sample size of above 10 investments (number in brackets indicates the number of sampled investments in each county).

reached a score of 50% or above with revenue collection rate. Counties with less than 10 monitored investments were excluded from the analysis.

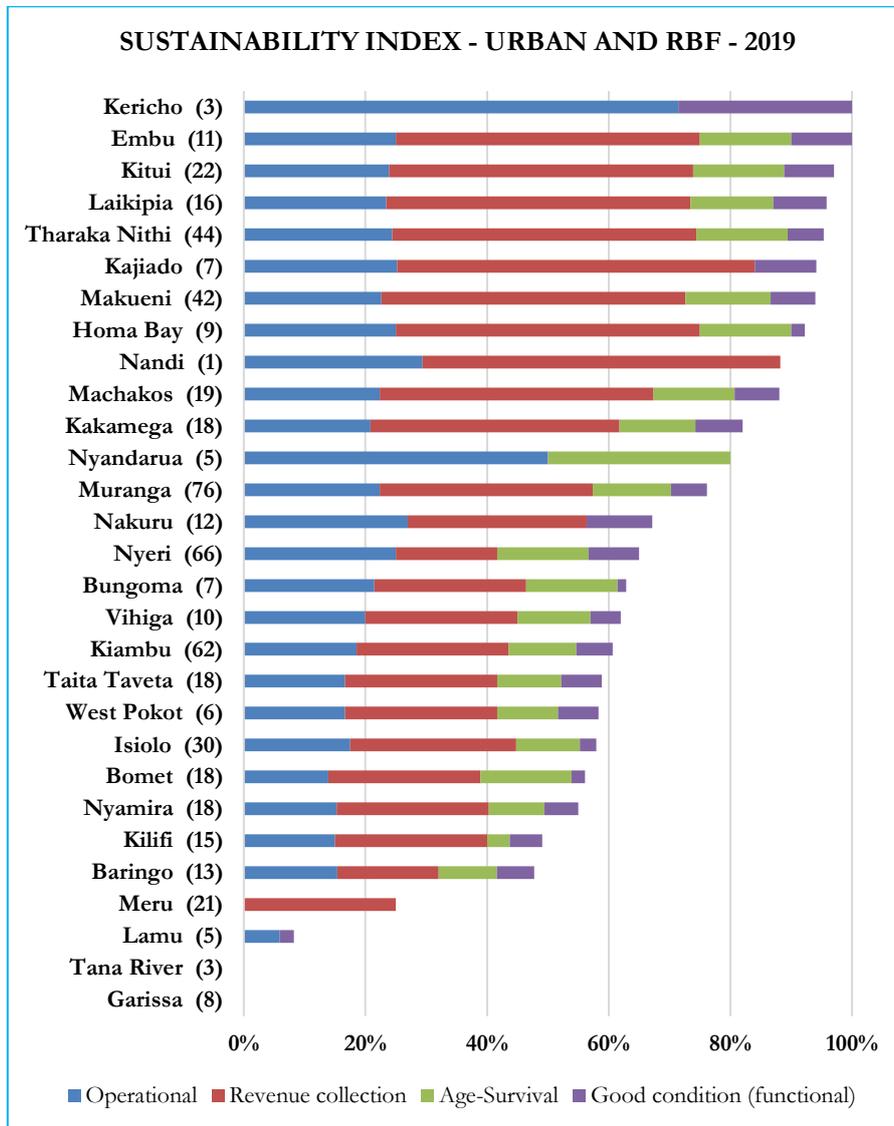


Figure 58: County sustainability index (CSI) 2019 for UIP and the RBF <sup>5</sup>

The best performers for rural projects were Laikipia (98%), Kwale (98%), Kiambu (79%) and Lamu (65%). Tharaka Nithi had less than 10 investments observed and hence was excluded from the rating. Counties with less than 10 monitored investments were excluded from the analysis.

<sup>5</sup> Counties with a sample size of above 10 investments (number in brackets indicates the number of sampled investments in each county).

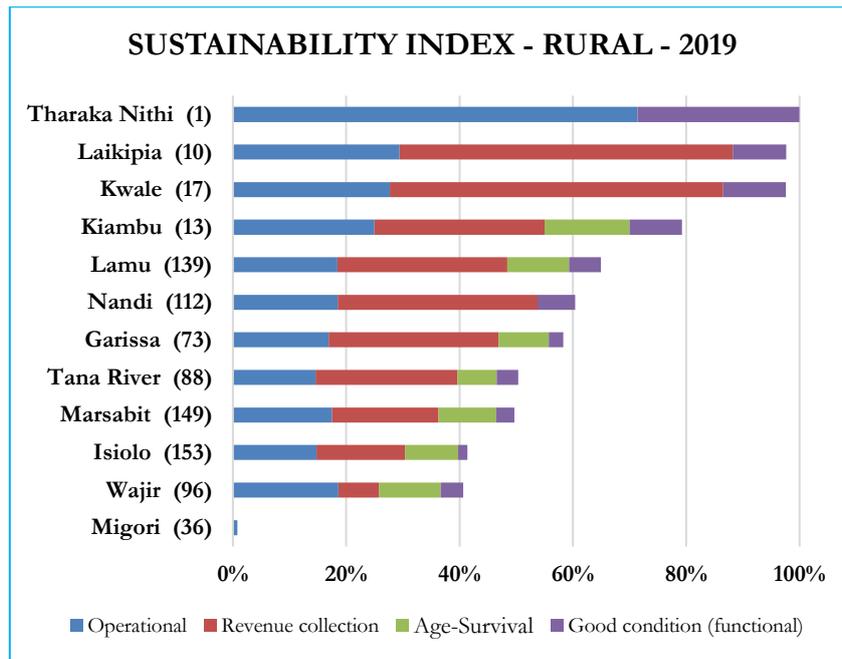


Figure 59: County sustainability index (CSI) 2019 for RIP <sup>6</sup>

Finally, for Water Resources Investments the best performing counties were Makueni (100%), Kwale (87%), Kirinyaga (86%), Meru (85%), Lamu (83%) and Embu (74%). However, counties with less than 10 monitored investments were excluded from further analysis including Lamu and Makueni Counties (Figure 63)

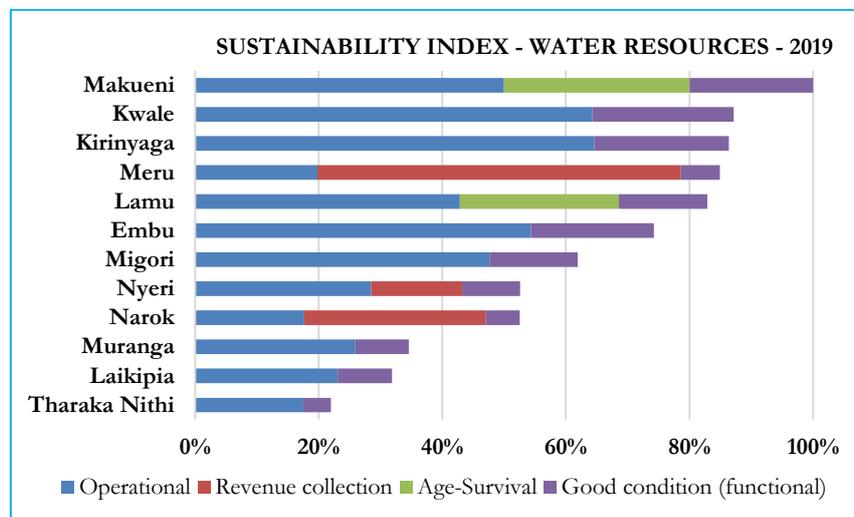


Figure 60. County sustainability index (CSI) 2019 for WRI <sup>7</sup>

It should be noted that while the SI can be used as indicative of the sustainability of investments in counties, it cannot be used as the sole indicator to determine future

<sup>6</sup> Counties with a sample size of above 10 investments (number in brackets indicates the number of sampled investments in each county).

<sup>7</sup> Counties with a sample size of above 10 investments (number in brackets indicates the number of sampled investments in each county).

investments, as the nature of the projects determine performance of the county, together with other factors such as the governance of the county and the capacity of the implementing partner, whether it's a CBO, WU, WSP, WRUA or CFA. These others factors were not part of the JAOME 2019 evaluation.

## 4.2 Sustainability Index by Investment Window

The SI for the visited 695 urban and RBF investments in JAOME 2019 was found to be 65%, with a reduction of 6% from year 2018, when the SI was 71% (Figure 61). While the age survival remained the same, revenue collection rate, operational status and functionality reduced by 7%, 1% and 12% respectively.

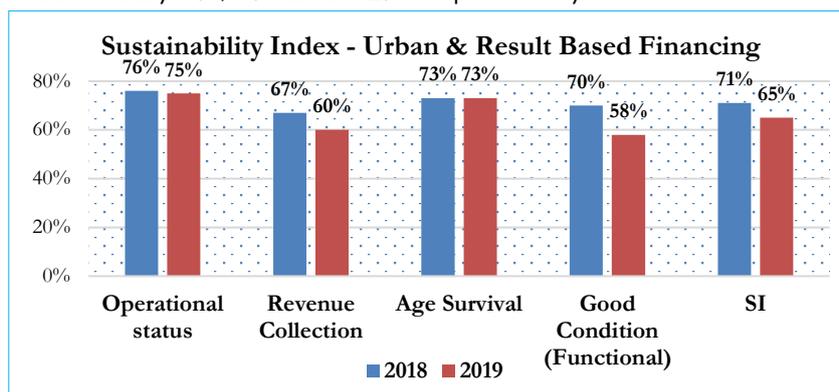


Figure 61. Sustainability Index for urban investments and Results Based Financing.

The SI for the visited 894 rural investments in JAOME 2019 was found to be 53%, with an improvement of 8% from year 2018, when the SI for rural investments was 45% (Figure 62). The improvement is largely attributable to the improvement in revenue collection, operational status and age survival. Functionality recorded almost same value as that of 2018. The overall SI indicators for rural investments saw an increase since 2017.

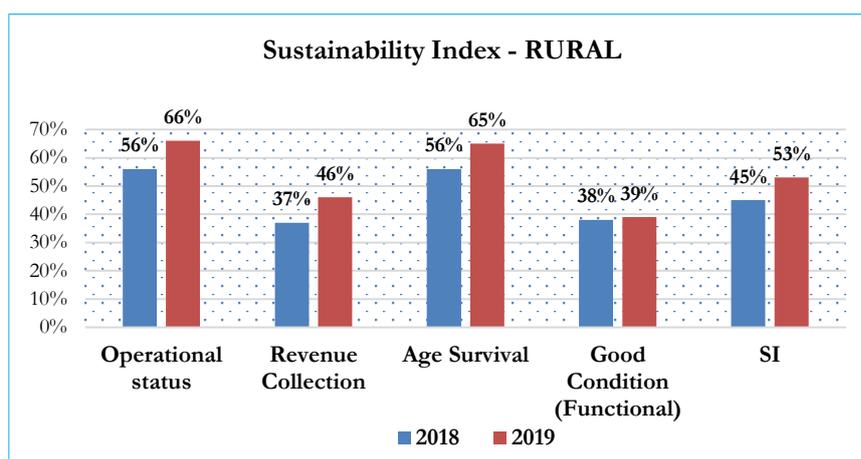


Figure 62. Sustainability Index for rural investments.

The SI for water resources investments in JAOME 2019 was found to be 53%, a remarkable improvement from year 2018, when the SI for water resources investments was 31% (Figure 63). All the four indicators recorded significant improvement from the 2018 JAOME results; operational status improved by 17%, revenue collection by 27%, age survival by 20% and functionality by 5%.

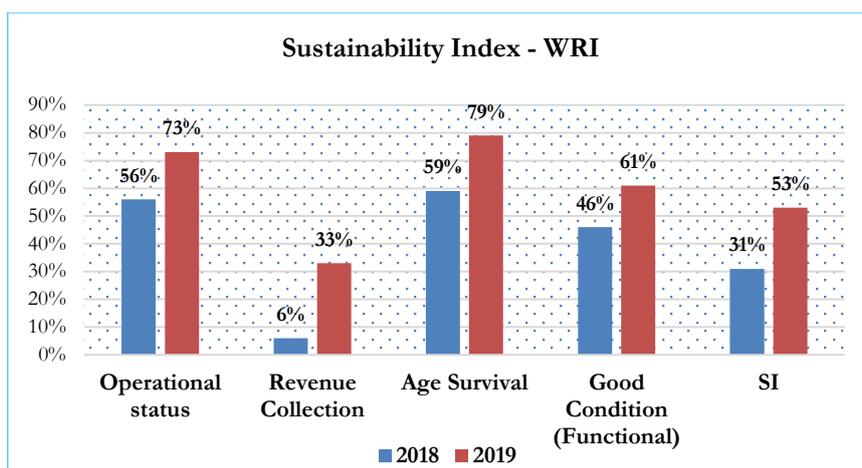


Figure 63. Sustainability Index for Water Resources Investments.

The results show (Figure 64) that the rural investments scored 51% for water supply and 64% for sanitation. Water resources scored 54%. Urban investments reached a higher success rate of SI with 62% for water supply and 82% for sanitation. The performance difference between urban and rural projects is largely related to revenue collection, the primary indicator selected for sustainability, which is higher for urban investments. Similar to the findings in JAOME 2018 & 2017, the urban investments, due to their connection to the established WSPs, collect revenue leading to a consistently higher SI. This points to the need to build a strong culture of revenue collection for the upcoming rural Water Utilities (WUs).

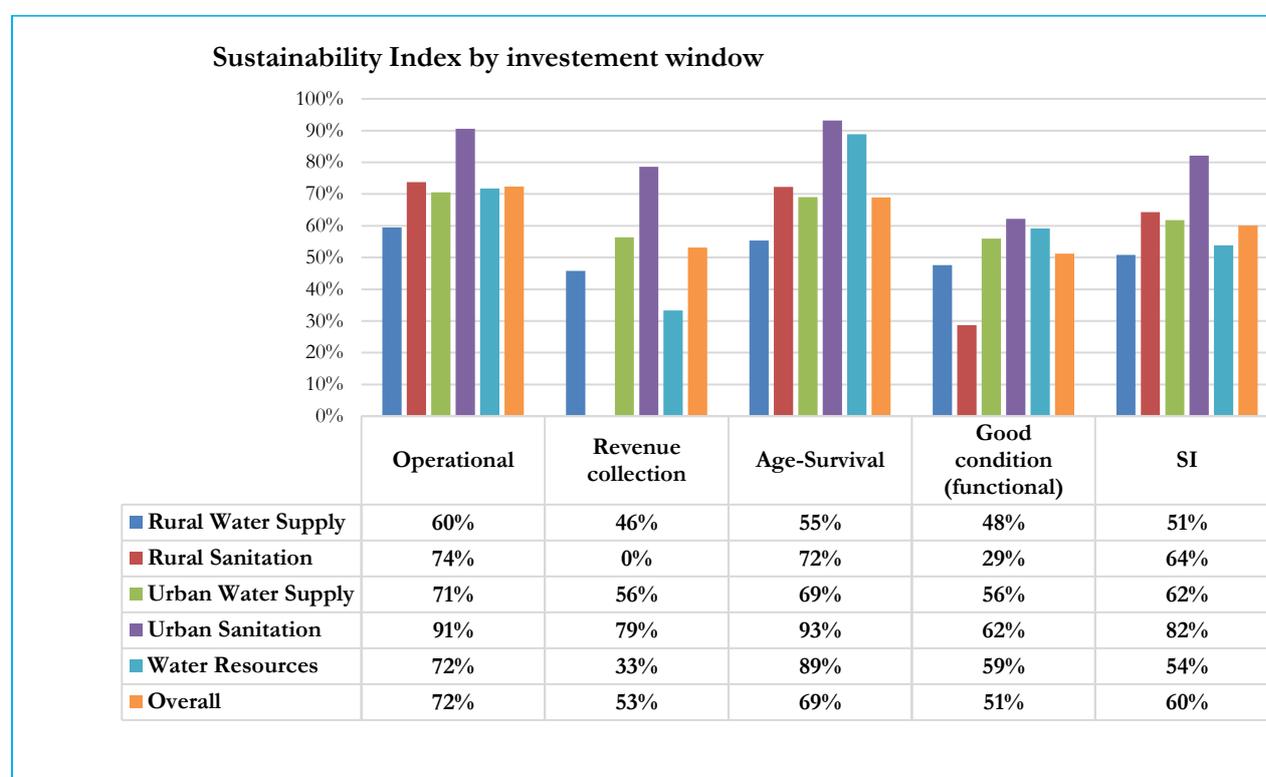


Figure 64. Sustainability Index (SI) and its four indicators for all Investment Windows<sup>8</sup>

### 4.3 Sustainability Index by Programme

The Sustainability Index was calculated for each programme separately, presented in Figure 65. The results show that the overall Sustainability Index calculated for all the programmes together was 60%. This was higher by 10% compared to the 2018 results with UPC (Urban Project Concept), DERP (Drought Emergency Response Programme), MTAP II, CPC (Community Project Cycle) OBA (Output Based Aid) and UBSUP (Upscaling Basic Sanitation for the Urban Poor) scoring higher than the average. IFAD (International Fund for Agricultural Development), J6P (Joint Six Programme), KWSP (Kenya Water and Sanitation Programme) and MTAP I (Medium-Term Arid and Semi-Arid (ASAL) Programme) had scores below average. Results for each programme are analysed are in more detail;

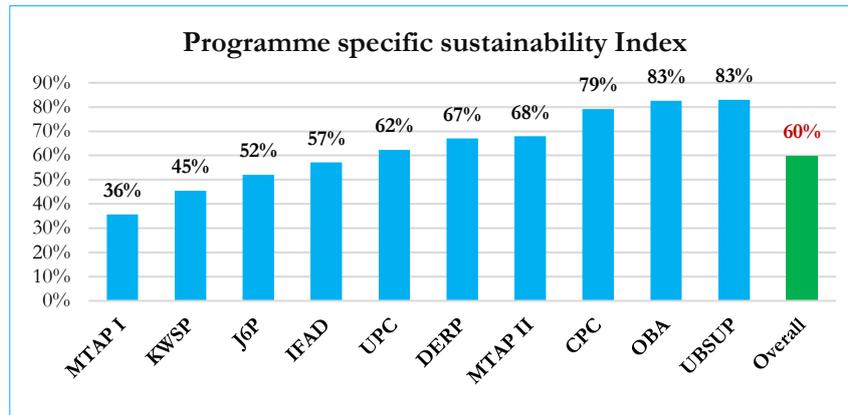


Figure 65. Programme specific Sustainability Index scoring.

#### Community Project Cycle

With only 1 project (comprising of 13 investments) observed, the CPC programme scored 79% for the weighted SI, and above average on the Sustainability Index across all the indicators (Figure 66). All the investments visited were implemented under Ndula water supply and sanitation project in Thika, were more than 4 years old (funded in 2014 of 2015). Most of the investments were under water supply category (11), with only 2 under sanitation category. All investments were found operational at the time of visit, with 12 in both good condition as well as having good quality of works. One investment (water intake) was found to be in both fair condition and fair quality of works. All communal water points were collecting revenue to the project.

<sup>8</sup> The indicators contributing to the SI are the following: Functionality (=facility is operational at the time of visit) of the investment (25%), Revenue Collection (Weight 50%), Age and Survival (operational) rate of an investment (Weight 15%), Condition of an Investment (that is also operational) (10%).

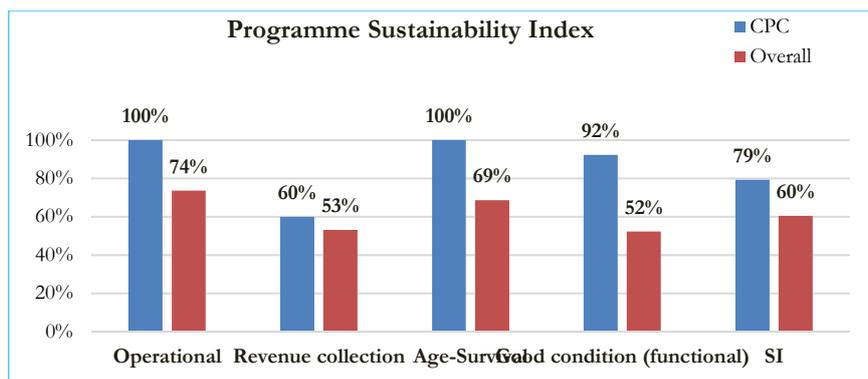


Figure 66. Sustainability Index for the CPC vs. overall results.

### Drought Emergency Response Programme

The DERP programme scored 67% for the SI, with above average on condition of investments only. (Figure 67). As all the investments monitored were less than 2 years old since the program was funded in 2017/18, and with no investments expected to collect revenue, the calculation of the SI followed adjusted weighting (Operational - 69% and Good condition - 62%). The sample included 8 projects in total with altogether 13 investments. All the investments were under water supply and include 5 boreholes, 4 water pans, 3 djabias and 1 diesel pump. Out of the 13 investments, 9 were found operational at the time of visit, with reasons such as siltation or broken pumps causing the investments not to be fully operational. Considering the fact that most DERP activities are rehabilitations aimed at improving existing investments and given the higher rate of success, WaterFund perhaps need to undertake further studies into the advantages of investing in rehabilitations in other programmes rather than investing in new investments

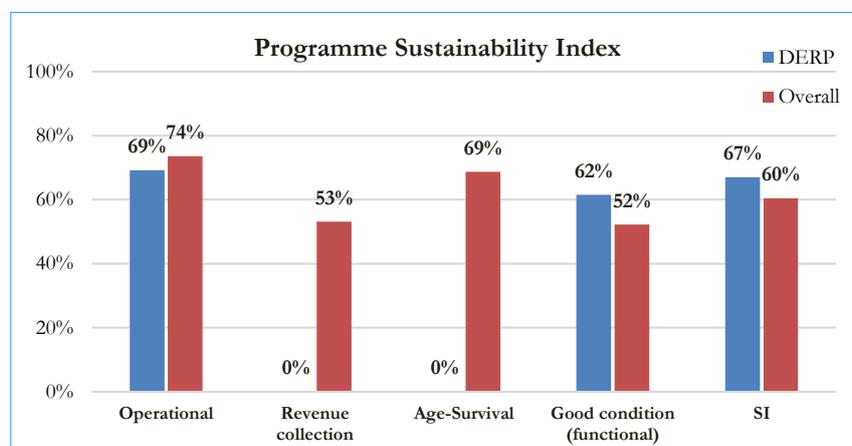


Figure 67. Sustainability Index for the DERP vs. overall results.

### International Fund for Agricultural Development

The IFAD programme scored 57% for the SI, with below average on operational status (73%), revenue collection (44%), and age survival with a score of 0%. Condition of investments (60%) performed better than overall. The sample included 30 projects with a total of 270 investments. All the investments monitored were under water resources category. 79% of the investments were found operational at the time of visit with Table 8 giving the details of the operational status for each investment type monitored and the number of investments in the observation. What lowers the SI scoring for IFAD is the age survival and revenue collection indicator, which scored 0% and 44% respectively.

This is common for water resources investments, as WRUAs and CFAs do not commonly collect revenue for their investments. The revenue collection question was asked for all livelihoods, tree nurseries, energy saving jikos and all water resources management structures (RWH pans, RWH dams, RWH djabias, RWH sand/sub-surface dams, RWH tanks, springs, livestock troughs, water pans). As especially the water resources management structures do not generally collect revenue (e.g. RWH tanks at schools), the indicator score is significantly lowered for water resources projects. The investments found collecting revenue were the tree nurseries in 8 out of the 10 CFAs visited as compared to 8 WRUAs out of the 20 visited.

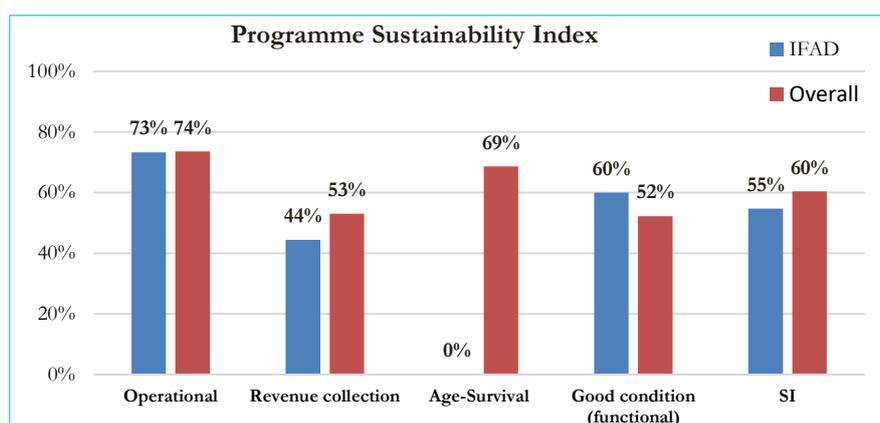


Figure 68: Sustainability Index for the IFAD vs. overall results.

Table 6. Break-down of monitored investments for IFAD and their operational status

Investment type	No.	%
RWH tanks	202	77%
Tree plantina transplanted	29	83%
Sprina protection	33	94%
Tree plantina nurseries	21	62%
Gabions	18	94%
Enerav savina iikos	18	100%
Bulk meter	7	43%
RWH sand sub sur face dams	3	100%
Water pan rehabilitation	1	100%
Livestock troughs	2	50%
Fencing catchment	1	100%
Livestock bee hives	5	80%
Installation of early warning systems	7	86%
Pruning	3	100%
Wetland rehabilitation	2	100%
Fire breaks	1	100%
Weir self-regulating	2	100%
Livestock fish ponds unlined	2	100%
RWH pans	16	63%
Common intake	2	50%

### Joint Six Programme

The J6P programme scored 52 % in 2019 compared to a score of 47% in the 2018 JAOME for the SI, with above average score for condition of investments or functionality and close to average scoring for operational status of investments. Revenue collection scored 44% while age survival had 0%. (Figure 69), as all the investments monitored were less than 2 years old since the first projects were completed in 2017/18. The sample included 21 projects in total with altogether 320 investments. 169 investment were under water supply, 20 under sanitation and 131 under water resources category.

Overall, 67% of the investments were found operational at the time of visit with 58% of water supply, 95% of sanitation and 70% of water resources. With an exception of the water supply investments, sanitation and water resources investments recorded improvement when compared with the 2018 JAOME. The revenue collection was found to be 44%, lowering the SI score, as this is an important indicator for describing the sustainability of a project. What lowers the score the most is the lack of revenue collection in the water resources investments (RWH tanks, sand and sub-service tanks, djabias and springs).

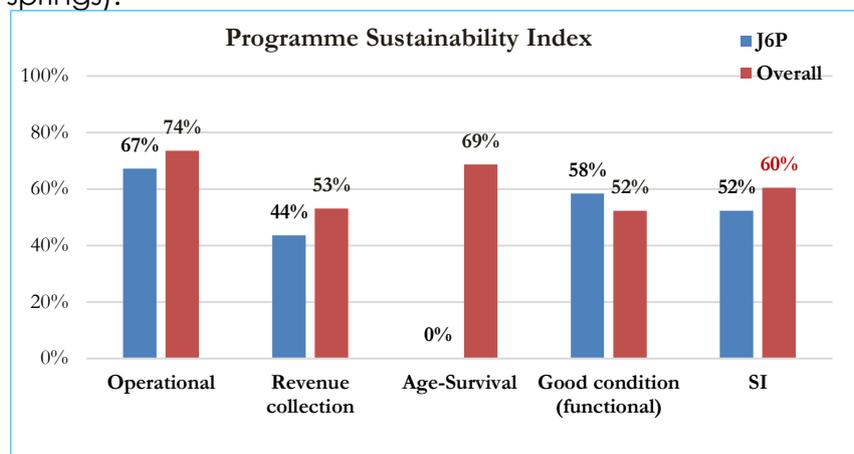


Figure 69. Sustainability Index for the J6P vs. overall results.

### Kenya Water and Sanitation Programme

The KWSP programme scored 45% for the SI (Figure 70) with scores below the overall values across all indicators. All the investments were more than 2 years old (funded in 2013/14 or 2014/15). The sample included 2 projects in total with altogether 11 investments, one project under water resources (Iterani) and one under water supply and sanitation (Friends of Hope in Kilifi County). Five (5) of the 11 investments (45%) were found operational at the time of visit, while none were collecting revenue.

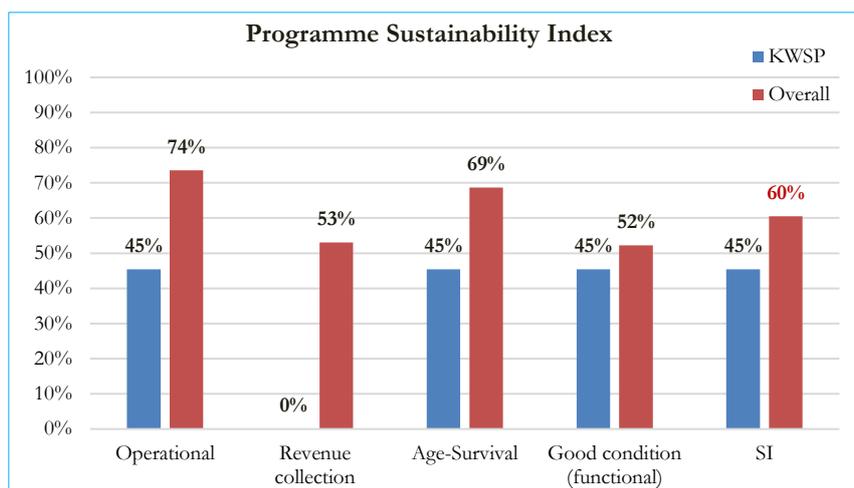


Figure 70. Sustainability Index for the KWSP vs. overall results.

### Medium-Term Arid and Semi-Arid (ASAL) Programme (MTAP I)

The MTAP I programme scored 35% for the SI, with below average scoring for all indicators as per figure 71. Operational status and revenue collection scored 65% and 14% respectively hence lowering the SI score as these are an important indicator for SI

determination due to the relatively high weights. The sample included 251 projects with a total of 558 investments. 216 investment were under water supply while 342 under sanitation category. 53% of water supply investments, 72% of sanitation were operational. Revenue collection across projects was only 3%. There was no revenue collection in the water resources investments (RWH tanks, water pan and livestock troughs).

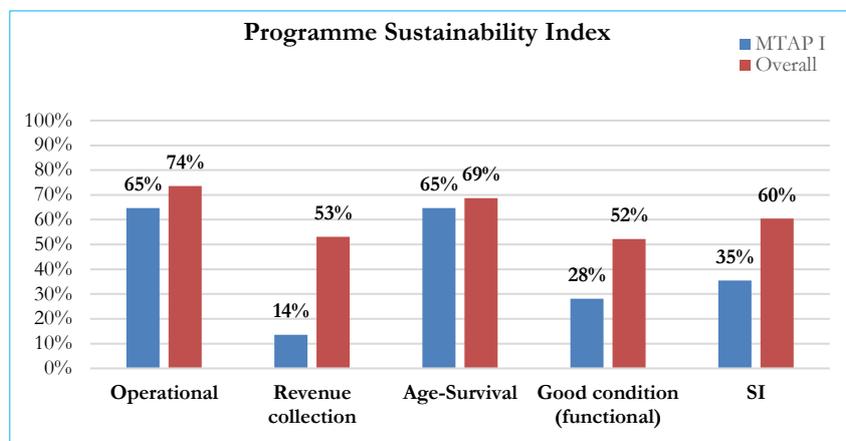


Figure 71. Sustainability Index for the MTAP I vs. overall results.

### Medium-Term Arid and Semi-Arid (ASAL) Programme (MTAP II)

The MTAP II programme scored 67% for the SI and scores above average for all indicators with an exception of Functionality which scored 47%. (Figure 72). The sample included 16 projects in total of 74 investments. 45 investment were under water supply, 21 under sanitation category while 8 were under water resources.

The monitoring recorded 64% of the water investments and 67 % of the sanitation investments were operational at the time of visit. The revenue collection was found to be 71%, for the investments of the 14 investments where it was asked whether revenue collected.

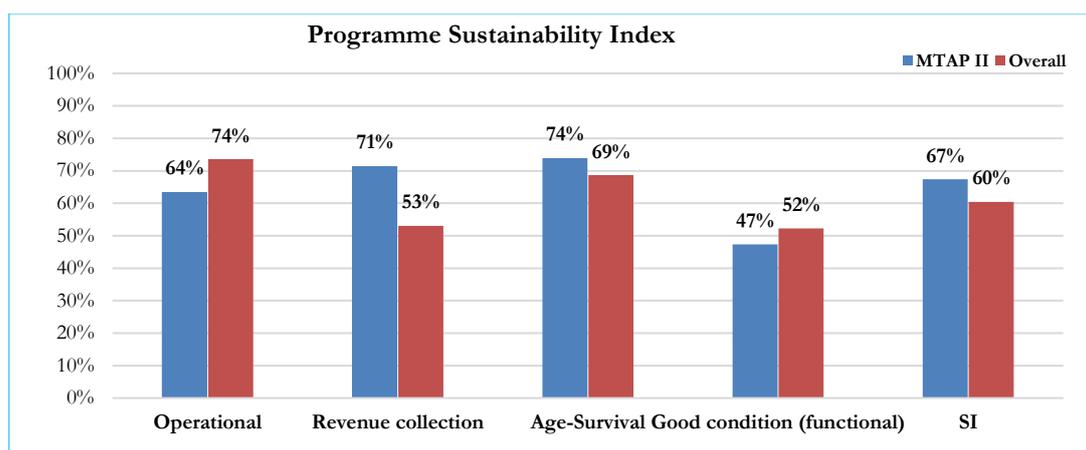


Figure 72. Sustainability Index for the MTAP II vs. overall results.

### Output Based Aid

The OBA programme scored 83% for the SI, with higher than average scoring across three of the indicators (operational status, revenue collection and age survival). Both OBA and UBSUP had the highest score. (Figure 73). The sample included 3 projects in total with altogether 49 investments, all of which under the water supply category.

86% of the investments (42 out of 49) were found operational at the time of visit. The investments that were temporarily stopped or non-operational were all under the Nol Turesh project in Makueni County and Murang'a South. The revenue collection was found to be impressive at 93% level. Only 51% of the investments were found to be in good condition.

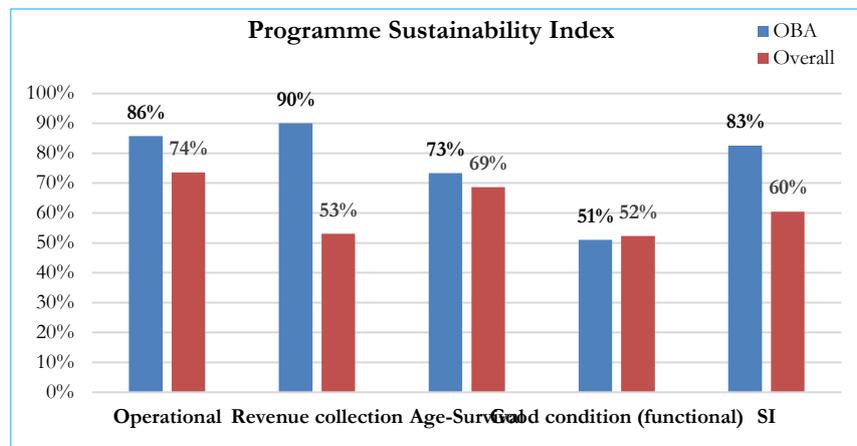


Figure 73. Sustainability Index for the OBA vs. overall results.

### Upscaling Basic Sanitation for the Urban Poor

The UBSUP programme scored 84% for the SI, which was the highest of all the programmes, with higher than average scoring across all the indicators in comparison to the average of all the other programmes (Figure 74). The sample included 18 projects in total with altogether 131 investments, all of which under the sanitation category.

92% of the investments were found operational at the time of visit. The revenue collection was found to be 80%, though this only included the 10 DTFs as the household sanitation is not expected to collect revenue. 63% of the investments were found to be in good condition.

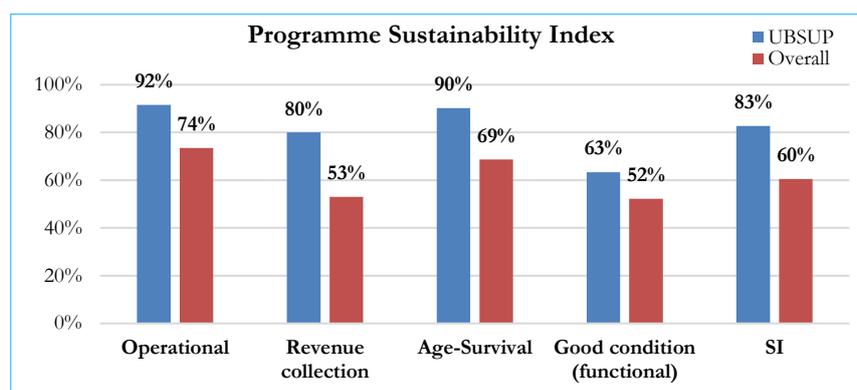


Figure 74. Sustainability Index for the UBSUP vs. overall results.

### Urban Projects Concept

The UPC programme scored 62% for the SI with higher than average scoring across three indicators (revenue collection, age survival and functionality) in comparison to the average of all the other programmes (Figure 75). The sample included 57 projects in total with altogether 509 investments. Of the 509 investments, 491 were under water supply and the other 18 were PSFs. Table 10 shows the breakdown of the monitored investments with their operational status. The lowest operational status was with water kiosks (48%), whereas individual connections seemed to have a higher success rate.

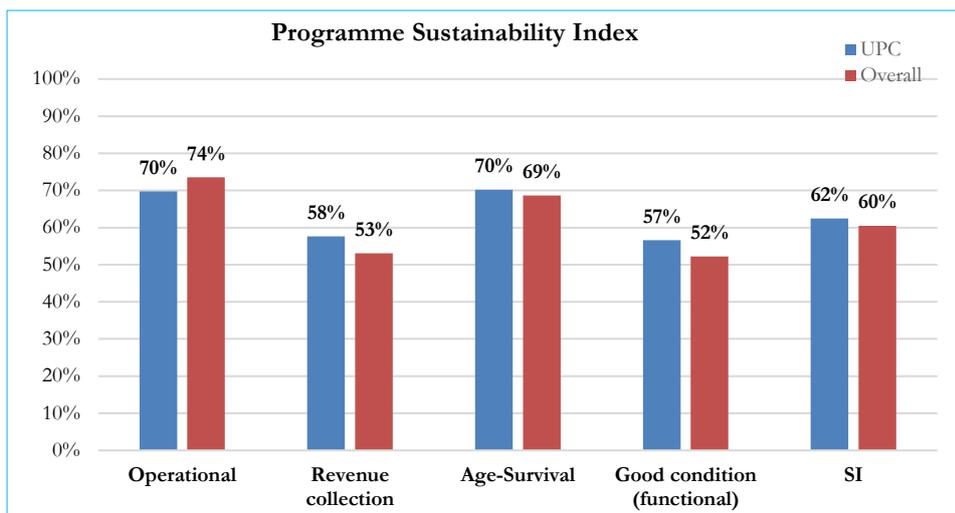


Figure 75. Sustainability Index for the UPC vs. overall results.

Table 7. Breakdown of monitored investments for UPC and their operational status

Investment type	No monitored	% Operational
Pipeline	98	80%
PSF	18	78%
Pump / energy source	2	50%
Storage tank	51	63%
Pipeline appurtenances	20	95%
Intake / water source	0	-
<b>Distribution systems:</b>	<b>331</b>	
Water kiosk	82	48%
Consumer meter	171	80%
Individual connection	4	100%
Yard tap	70	57%
Bulk meter	4	75%

#### 4.4 Sustainability Index by Investment class

##### Sustainability Index for rural investments

The SI for rural water supply investments is 51% and sanitation investments 64% (Tables 8-9). For rural investments the revenue collection question was asked only for distribution systems (water kiosks, yard taps and stand pipes), and was found to be only 46%. Pipelines and buildings appurtenances showed the highest operational status (73%), while the pump/energy source (46%) and storage tanks (54%) had the lowest operational status. Pipelines appurtenances and treatment works were found to be most commonly in good condition.

**Table 8. Sustainability Index of water supply by rural investment classes.**

Investment TYPE	No of investments	Functionality	Revenue collection	Age-survival (operational after 2 years)	Good Condition	SI
Building	11	73%		0	55%	47
Distribution system	163	51%	46%	29%	42%	44%
Intake water sources	43	70%		67	53%	66%
Pipeline	52	73%		64%	63%	69%
Pipeline appurtenances	22	68%		100%	50%	74%
Pump / Energy source	24	46%		36%	38%	41%
Rain water harvesting	122	65				
Storage tank	48	54%		37%	44%	47%
Treatment works	5	0%				
<b>Water supply ALL</b>	<b>490</b>	<b>59%</b>	<b>46%</b>	<b>55%</b>	<b>47%</b>	<b>51%</b>

The rural sanitation schemes have mostly focused on both school and household sanitation, where there is no expected revenue collection and therefore the indicator does not exist for rural sanitation. The overall functionality for the rural investments was 64% with no revenue collection.

**Table 9. Sustainability Index of sanitation by rural investment classes**

Investment TYPE	Tot No of investments	Functional	Revenue collection	Age-survival (operational after 2 years)	Good Condition	SI
Community sanitation	28	57%		33%	21%	43%
Institutional sanitation	376	75%		73%	29%	65%
<b>Sanitation - Overall</b>	<b>404</b>	<b>74%</b>		<b>72%</b>	<b>29%</b>	<b>64%</b>

### Sustainability Index for urban investments

The sustainability index for the urban investment types was generally higher than for the rural investments with average score of 62% for water supply and 82% for sanitation investments (Tables 13-14). The more successful investment types were pipelines, pipeline appurtenances, DTFs, household sanitation and PSFs.

**Table 10. Sustainability Index of water supply by urban investment classes.**

Investment TYPE	Tot No of investments	Functional	Revenue collection	Age-survival (operational after 2 years)	Good Condition	SI
Distribution system	375	69%	56%	34%	53%	56%
Pipeline	98	80%		38%	68%	65%
Pipeline appurtenances	20	95%		52%	55%	74%
Pump/ energy source	2	50%		0%	50%	35%
Storage tank	51	63%		31%	57%	52%
<b>Water supply ALL</b>	<b>548</b>	<b>71%</b>	<b>56%</b>	<b>69%</b>	<b>56%</b>	<b>62%</b>

**Table 11. Sustainability Index of sanitation by urban investment classes.**

Investment TYPE	Tot No of investments	Functional	Revenue collection	Age-survival (operational after 2 years)	Good Condition	SI
DTF	10	70%	80%	60%	60%	73%
Household sanitation	120	93%		93%	63%	87%
PSF	18	78%	78%	50%	56%	71%
<b>Sanitation ALL</b>	<b>148</b>	<b>90%</b>	<b>79%</b>	<b>92%</b>	<b>62%</b>	<b>82%</b>

### Sustainability Index for water resources investments

The water resources investments performed slightly lower than the urban water supply with a 54% sustainability score (Table 15). The water resources schemes are commonly related to catchment conservation which do not necessarily collect revenue thus impacting on sustainability score of water resources projects and investments. Some investments, which currently do not collect any revenue, would have a potential to do so, such as water pans and djabias, livelihood activities and tree nurseries.

**Table 12. Sustainability Index of water resources investment classes.**

Investment TYPE	Tot No of investments	Functional	Revenue collection	Age-survival (operational after 2 years)	Good Condition	SI
Water resources management structures	254	70%		83%	60%	72%
Catchment management	115	76%	33%	100%	57%	56%
Regulation	11	55%			55%	55%
Livelihood	9	89%	33%	100%	89%	63%
<b>Water resources ALL</b>	<b>389</b>	<b>72%</b>	<b>33%</b>	<b>89%</b>	<b>59%</b>	<b>54%</b>

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CHALLENGES  
EXPERIENCED  
DURING THE STUDY

## **5.1 Time constraints**

The time provided for some clusters and projects was not adequate thus some clusters had to devise ways to capture all the projects as stipulated in the schedule. The teams had to stretch to extra hours and to split into sub teams to meet the target due to vast nature of some counties and spread of investments across the project area.

The Water Resources projects in some instances had quite a number of investments ranging from wetland rehabilitation, riparian pegging to spring protection, these ideally covered the upper, middle and lower WRUA coverage as provided for in the WDC. However, capturing these investments posed a challenges in terms of time allocation.

The wrong clustering of some projects especially in adjacent counties and constituencies affected the field teams as more time was lost in locating the projects. In addition, it caused confusion among clusters as to which cluster should take responsibility for the monitoring of the project which intern affected the itinerary of the field teams.

The entry meetings with the Counties/WSPs responsible for the water and sanitation provision saved time in terms of location of projects/investments. However, most of these meetings caused delays to the actual field exercise as the same monitoring teams had to await for the WSP guides to get the necessary authorization to accompany the team. In addition, these entry meetings with county water executives lasted for more hours which had not been initially provided for in the field plans.

## **5.2 Data collection and submission**

The process preparation experienced challenges especially with training and logistics for data collection. The training for data collection was conducted to a third of the field teams and this meant that team leaders had to dedicate more time in refreshing the team on data collection and submission. The training was limited in terms of explanation of technical aspects of the projects/investments due to timing of the training as the facilitators were not readily available to undertake the same.

Logistical facilitation for the cluster teams was limited in terms of availability of vehicles, this was further affected by other field activities that were prioritized. Some cluster teams had to reschedule their deployment to the field as the vehicles allocated had to undergo servicing which took longer than was anticipated. Further, use of vehicles borrowed from county offices proved unreliable since their drivers could be allocated other duties leading to alteration of field plans.

The availability of knowledgeable projects/investment guides/informants affected the data collection process whereby in some investments, the informants were unavailable especially for schools which were on midterm holiday. Therefore the information gathered from such projects/investments was not adequate in terms of breadth and depth. In some instances whereby the informants were households, the data collection team experienced challenges as some of the project beneficiaries were reluctant to give information. This challenge was widespread among Safisan toilet beneficiaries who were largely tenants.

Some of the information sought on some projects/investments as per the data collection application could not be ascertained especially on the exact cost of Operation and Maintenance of certain projects/investments and the aggregated data on total number of beneficiaries for women, youth and children. The other challenge was obtaining the right information on pipelines, particularly the length and diameter as well as pipeline route as nearly all are unmarked.

There were challenges experienced with regards to data submission, the application experienced some delays in certain instances could not allow for submission of the forms hence delayed the submissions. However, this caused anxiety among field teams especially those who had limited storage in their gadgets with the potential of data loss as much as the issue was later addressed and all the forms were submitted.

### **5.3 Condition of roads and weather**

The timing of the exercise was good as the weather conditions were largely conducive except for a few instances where the teams experienced harsh conditions as a result of either heavy down pours or high temperatures. Some roads to the project investments were impassable due to the prolonged short rainy season that caused floods therefore affecting access to project/investment sites.

### **5.4 Insecurity**

Due to the persistent threat of insecurity by the Al- Shaba in the north eastern parts of the country, some sampled projects in these counties were not visited. In Lamu County for example, security agents mounted several road blocks leading delays in terms of time and access to the projects by team as much as all the sampled projects were visited. In the counties of Wajir, Garissa and Tana River, some areas where sampled projects were had been declared as no go zones and even security personnel could not be attached to the teams.

### **5.5 Support on ground**

Some teams experienced challenges in mobilising project stakeholders and logistics due to lack of a CRM and project guides during the exercise. Due to changes in staffing by some of the implementing partners, some WSTF supported projects implemented managed by specific staff had challenges in tracing documentation as well as some investments. This led to confusion as some investments not branded could be attributed to any supporting partner to the IP. Language barrier was a challenge but to a limited extent especially in projects implemented by communities and WRUAs. Though this was partly addressed by team formation, however some dialects differ therefore the need to involve a translator.

### **5.6 Hardware issues**

There were isolated cases of some of the gadgets being used by the field teams especially mobile phones not attaining the recommended six meter (6m) accuracy as required when obtaining the geo-reference points for the various investments. A few cases were also recorded whereby the gadgets were out of power during the field work. In addition, the new tablets took long, at times over 5 minutes to capture the geo-reference coordinates.

## **5.7 Data cleaning**

Due to the magnitude of the data collected, the data cleaning took more time than had been anticipated as some of the data submitted had queries especially on operationality. This was further aggravated by the COVID-19 pandemic that forced teams to work from isolated locations leading to delay in response to data queries.

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6

LESSONS LEARNED

## **6.1 Process preparation**

The Planning, Research, Monitoring and Evaluation department should continue with the coordination role. The JAOME roadmap and workplan should be prepared at least 3 months in advance. The budget for the exercise should be provided for in all the ongoing programmes' budgets and be part and parcel of every programme's activities as this will ensure sustainability of the exercise with adequate budgeting. The approval for the field activity should be granted in advance of 1 month as this will not only address the logistical challenge but also offer an opportunity for adequate training and pretesting of the survey tools and inclusion of any adjustment that may be required.

The process of preparation should involve all the CRMS and relevant program officers so that the projects information are captured in the WaSHMIS database. This information should then be verified by both CRM and programme officers to ensure that changes to project scope if any are captured.

## **6.2 Sampling of projects**

The sampling of projects for JAOME in as much as is based on the sampling criteria, there should be a reference to the previous JAOME data and reports especially on operational status and recommendations and/or comments. This will make it possible for the inactive projects data to be retrieved for purposes of analysis thus saving the field teams both financial and time resources and focusing on the other sampled projects.

## **6.3 Survey Tools and Training of Enumerators**

Training of the enumerators for the exercise should be conducted early enough preferably on the week preceding the actual field work. The training plan and topics should be comprehensive and should capture the recommendation of the field reports as well as the JAOME report. The flow of survey instruments plays a major role on quality of data and validity of results, therefore the tools should be pretested during training to ensure smooth flow of questions. This would provide for continual improvement of the process and enable the enumerators internalize the WASHMIS translated questionnaire and practice before moving to the field. Further, it would help in addressing challenges of irrelevant/non valid data.

## **6.4 Field Teams**

The field team composition should be matched such that it involves the CRM and key programme staff (technical person) and support staff, further they should be based on individual strengths and the project areas. The entire JAOME team should be able to make judgement on each of the investments and give recommendations that when implemented would improve the functionality of the projects/investments.

## **6.5 Field plan**

Field plans are critical components of field work and should be prepared prior to proceeding to the field, the cluster teams are expected to share their revised field plans based on the approved general field plan for quality assurance by the PRM&E department. This would ensure that the plans are practical and realistically implementable. The revision should be done in liaison with the respective CRMs and to an extent the IPs. These plans would be key in tracking the progress during field work as well as inform in reallocation of resources should such a need arise.

## **6.6 Data collection and submission**

During data collection and submission, the processes should be seamless to ensure smooth transmission, storage and retrieval of data as this assures the integrity of the data. Prior to JAOME exercise, all interrelated systems should be test run to ensure that all hitches are addressed including renewal of contracts with service providers.

Overtime, it has been observed that there exists high staff turnover, frequent changes of management staff as well as transfers to other areas among implementing partners especially in WSPs. These changes sometimes involve key staff responsible for implemented WSTF-funded projects leading to unavailability of the IPs employees with adequate background of funded projects. This challenge could be overcome by having duplicate copies of project documents scanned and stored by the WaterFund as they are critical in addressing audit issues/queries. The process of daily screening and verification of all the data collected during the day before actual submission should be emphasized as it not only addresses the risk of data loss but also gives near real-time progress being by the various cluster teams.

## **6.7 Timing of the Study**

The negative impacts of climate change are increasing making the weather patterns more unpredictable. Therefore for maximum output to be realized from both enumerators and guides, the exercise should be done when weather conditions are conducive i.e. after the short rainy season. Since institutional sanitation projects are largely implemented in schools, the timing of the exercise should be in tandem with the schooling calendar. This will address the challenge of unavailability of key informants and smoothen the process of data verification as well as gathering information on beneficiaries.

## **6.8 Data Screening and Verification**

Data quality and integrity makes information generated from analysis reliable and verifiable. However, given the amount of data each enumerator is expected to collect, the errors cannot be eliminated completely. In as much as the team leaders do verify the collected data before submission, the questionnaire should be designed such that it is self-checking. Further, during data cleaning the enumerators should individually take responsibility in addressing comments raised as reliance on team leaders has proved to not only slow down the process but also ineffective as they would still refer the comments to the individual enumerators.

## **6.9 Analysis and reporting**

The adoption of automated JAOME data analysis platform that generates charts and graphs that can readily be integrated into the narrative reports has proven to be time saving in report writing. As a result, the dashboard should continually be improved to ensure timely reporting with public access as well as restricted access wherein users will be required to log into the dashboard to download data for updating or manipulation being enabled after running the analysis.

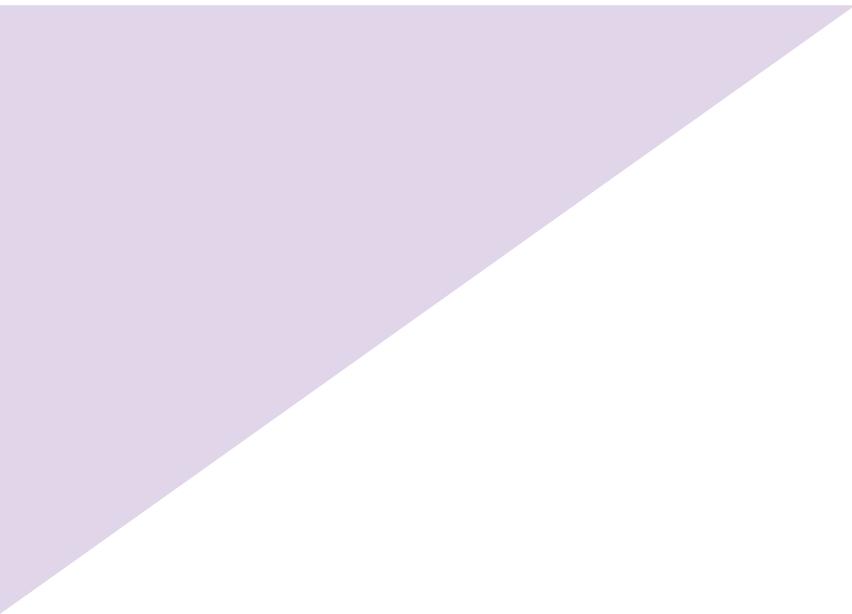
## **6.10 Dissemination of results**

The utilization of JAMOER reports was observed to be limited among partners since the reports were only available in shared drive. However, the publication of the reports in various WaterFund platforms in shareable formats has greatly improved the audience of the reports. The Planning, Research, Monitoring and Evaluation through the support

of publication consultant should continually ensure that draft reports are reviewed to improve quality, readability and presentation of the reports.



# CONCLUSIONS & RECOMMENDATIONS



This section makes recommendations based on the lessons learned on the JAOME 2019, specifically on the approach and what kind of updates the technical components require. Furthermore, it makes recommendations on the investments based on the collected data in order to inform future investment planning and priorities.

## **7.1 Design of the operational monitoring exercise**

### **JAOME approach**

A critical review of the JAOME approach should be conducted given that the exercise has been conducted for four consecutive years. The first and the original approach of conducting the exercise, which has now been deployed four times (JAOME 2016-2019), and has involved larger proportion of the WaterFund staff in an intensive two- to three-week exercise. In this approach the majority of the Fund's staff were divided into seven or eight clusters with senior staff as team leaders. The junior staff have been divided into two teams in each cluster, with the first team on the first week and the second team on the second week, with seven or eight teams in the field simultaneously, as described in Section 2.4. However, this has led to high costs, a lot of detailed field planning and also involving non-technical staff members in the exercise, despite its technical nature, compromising the quality of the data.

An optional (and recommended) approach of conducting the exercise is that the data collection period will be continuous and the projects will be visited throughout the year or a period of some months. This would be done following a data collection timeline clearly indicated in a workplan prepared by the M&E department based on the completion anniversaries of the sampled projects. The data would be collected by the CRMs in addition to their other tasks in their workplans. Also the field interns in six J6P counties could be mobilised alongside the CRMs. If the WaterFund staff are also to support the data collection, only technical staff should be part of the exercise.

The workplan should allow some flexibility so the data collection can be conducted on the side of other tasks. This approach will reduce the time pressure of the exercise and optimize the limited resources of the institution. Once the data collection has been completed, as usual, the data will be analysed in the annual operations report, which will show trends and give indicators on the general operational status of the projects.

This alternative approach requires some early planning as ideally the data collection should start instantly after the final completion year, i.e. the completion year of the youngest projects, has ended. This would mean that the JAOME 2020 data collection for projects completed during financial years 2015/16 – 2019/20 should have ideally been promptly planned in July 2020, and carried out up to December by the CRMs. Executing this second approach would also require someone from the Fund to closely follow the implementation of the workplans and checking the progress of the data collection against the agreed timelines.

### **Budgeting for JAOME**

In order to ensure the sustainability of the JAOME, the budget should be institutionalized as part of the annual institutional activities, thus reducing the dependency on the donor funds for carrying out the exercise. This would require entrenching a clear budget line to finance the JAOME on an annual basis. This would increase the institutional ownership of the exercise, and make it part of the annual activities, independent of the donor funding.

## **Sampling**

For two years in a row, the M&E department has drawn samples from all completed projects to be monitored during JAOME, instead of visiting all the projects every year. This approach ensures that the Fund is able to conduct the operations monitoring exercise annually with its existing resources and without major additional costs. The sampling is drawn so that each project is visited three (3) times in a period of five (5) years after completion. This approach has yielded positive results, since it has made the task more manageable while giving a good representation of counties, programmes and types of investments.

In addition to the sampling approach, it is recommended that the previous years' data is carefully reviewed by the team when planning the next JAOME exercise. Especially the already collapsed investments that are permanently non-operational should not be visited repeatedly.

## **Planning and quality control**

The operational planning of the monitoring is the basis for the general success and quality of JAOME. Therefore, the data collection, analysis and reporting should be planned thoroughly and a timeline should be put in place annually. The workplan consists of several activities, defined by output and linked to a person responsible. To assure smooth implementation of the data collection exercise, the communication between the WaterFund and the CRMs (primary data collectors) is of utmost importance. The following activities should be seamlessly incorporated to the preparation and planning of the next exercise:

- i) The sampled projects within a county should be shared with the CRMs well in advance for actual detailed planning and communication to relevant stakeholders.
- ii) The security intelligence information should be obtained well in advance from all relevant departments.
- iii) The budget allocation for each county should reflect the distances, logistical conditions and security factors, allowing realistic timelines for data collection.
- iv) All projects changes of scope of works should be updated in the App.
- v) Data and feedback from previous JAOME should be shared with the data collection teams to prepare for feedback on the ground.
- vi) Proper guidelines, standards and criteria should be developed for observation in order to reduce inter personal errors and subjective biases. An example is in the assessment of hygiene levels of sanitation facilities.

For quality control, a team should be assigned to be in charge of checking the quality of the incoming data. The quality checked data can then be submitted to the online platform in a timely manner by the M&E department, on a weekly or monthly basis in case of continuous data collection. A predefined analysis template will ensure that the data is being processed in an efficient and safe manner.

## **Timeliness of reporting**

A task team should be formed to report on the JAOME results in a timely manner. Once the submitted data has been cleaned, and the data has been analyzed using the analysis template, the team should be given a period of 1-2 weeks to fully concentrate to produce the report. The WaterFund should have a specific month of the year when the annual report is to be published, so that the other sector partners know when to expect the WaterFund annual JAOME report, similar to the WASREB impact report. This would also create internal pressure and priority to report on the JAOME on a timely manner, which has been a challenge previously.

## Follow-up of projects

The follow-up on issues should happen at two levels:

- i) While the data will be used for the JAOME report at the end of a financial year, any acute technical, financial, operational or social issues that require intervention, should be addressed immediately. This requires clear internal procedures and responsibilities in order to ensure immediate action and follow-up from the head office. A robust system should be developed where the monitoring data systems and the quality assurance system QPulse are integrated to allow a person appointed to enter an issue to QPulse raised in JAOME and assign a person to take action on that issue.
- ii) Longer-term action based on decisions on the managerial level. Here the outcomes and impacts of investments are evaluated over time to allow lessons to be learned on what has worked and been successful and what not, and thereby informing future investment planning. This also ensures better controls on future funding, for example by determining the better and poorer performing utilities or counties. To facilitate such decisions, the WaterFund should organise a management level meeting on an annual basis so the findings from the operations monitoring can be discussed and possible adjustments to the investment policy can be made.

In addition, if remedial actions have been suggested in the JAOME 2018 and 2019 for projects that were monitored and found to be non-operational, they should be given priority in JAOME 2020 to find out if they have been taken into consideration to make them operational.

## 7.2 Sustainability of the Investments

Based on the collected data it was possible to establish the operational/functional status of the funded investments. Against the Fund's target of 95% of investments being operational after five years of commissioning, 66% of rural investments, 73% of water resources investments, 74% of urban investments and 86% of RBF investments were found to be fully operational for the period under review. This corresponds to as many as 597 out of the total of 2,027 monitored investments being non-operational, temporarily stopped or only partially functioning. However, there has been improvement since the previous years, as the overall operational status was 76% for JAOME 2018, from the 73% in JAOME 2016 and 69% in JAOME 2017.

The three most common and easily identifiable reasons for non-operational status for investments were found to be Issues related to operational responsibility (29% of cases); Water source/connection being unreliable or lacking (19% of cases), vandalism (15% of cases) and natural/climatic causes (10% of cases). To address these issues, a more vigorous appraisal process is recommended for all projects, both at the desk and the field level. The appraisal process should scrutinize the technical designs as well as the feasibility and relevance of the proposed activities in addressing the water demand (in case of water supply), the status of the catchment (in case of water resources projects) or the need or suitable technology for sanitation services in the project area.

The WaterFund has already taken the necessary steps in strengthening the implementation process and ensuring improved quality of works and timely technical support by hiring resident engineers in all active project counties. This is expected to improve the sustainability of the projects as there is more quality control of materials and workmanship throughout the project implementation phase.

In addition to proper planning and implementation of projects, the sustainability of projects is affected by the way they are managed and operated after completion. Though the JAOME does not look into the factors in-depth, such as project governance and management, it is common that poor or non-existence of proper management and governance systems, especially in the case of unregulated rural utilities, is a significant contributor to low performance and low sustainability of the projects. Revenue collection was found to be only 33% for RBF investments, 38% for rural investments, 69% for urban investments and 5% for water resources investments. Revenue collection is the basis for ensuring that the utilities and other implementation partners have sufficient funds for maintaining the funded infrastructure.

In general, more attention needs to be paid to revenue collection efficiency and reduction of Non-Revenue Water (NRW). It is thus recommended that in the implementation of the new programmes, institutionalization of revenue collection as a sustainability measure will be required as part of the overall project design. In case of water supply projects, the utilities should have a proven record of billing and collecting revenue prior to funding. If the utility requires support in billing systems or keeping financial records, such measures should be incorporated into the project design. For water resources, if there are livelihood activities funded, they should have a clear plan on how to collect revenue from the activity and what proportion of this will be brought back to the WRUA/CFA to sustain or further fund its activities. As stated by the findings from previous JAOMEs, for water resources investments the inability to generate revenue streams even through the livelihood components continues to be a factor hindering the sustainability of the WRI funding, an issue which needs to be revisited in the programme design.

For water supply, the least sustainable investment types were water kiosks (53% fully operational), plastic moulded tanks (53% fully operational), water pans (61% fully operational) and animal troughs (12% fully operational). The general challenge with water kiosks is that they are seen as a temporary solution prior to each plot getting an individual connection, making them redundant after a certain period of time. The plastic tanks generally had issues of being vulnerable to vandalism or climatic factors, such as strong winds, if not installed properly, or lacking connections to gutters, inlet pipes or taps. The water pans had commonly an issue of being heavily silted. Finally, the animal troughs were most commonly non-operational as they were missing a water connection either as the design was inadequate or was not followed during implementation.

The sanitation investments were again found to be more successful than other investment categories in terms of sustainability, both in rural and in urban contexts. 96% of the household sanitation facilities funded through the UBSUP concept were found to be operational, which is showing significant impact on the improvement of the sanitation levels of the urban poor. 84% of PSFs were operational with high level of demand and active revenue collection, in line with previous year's findings. A persistent issue (also identified in the JAOME 2016 and 2017) with sanitation facilities remains to be the lack of handwashing facilities, especially in schools. In order to ensure the provision of hand washing facilities for institutional sanitation, the budgets and contracts should ensure that these designs are incorporated as part of the sanitation projects, along with a reliable source of water, as a minimum standard.

The operational status of rain water harvesting tanks was again identified as a key implementation challenge, especially in ASAL counties. The overall operational status

of the rainwater harvesting tanks was 75%, but when only the MTAP I and II were assessed, excluding tanks under the J6P and IFAD programmes, the operational status dropped to 36%. The JAOME 2016, 2017 and 2018 all thus recommend that appropriate technologies and investments should be made for each region.

A key indicator for JAOME is the County Sustainability Index (CSI). This has been designed to measure the sustainability of projects with four (4) indicators, including operational status, revenue collection, and condition and age-survival rate. The index is also used to rank the counties to give an indication of the best and worst performing ones. It is meant to motivate the counties to take charge in fulfilling their mandate of providing sustainable and reliable water and sanitation services as set out in the Water Act 2016.

In JAOME 2018, the three (3) best performing counties for urban projects were Nyeri, Isiolo and Tharaka Nithi, all with a score of almost 100%. The worst three performing counties for urban projects were Samburu, Nyamira and Kajiado (below 30% sustainability score). Looking at rural projects, the counties succeeding with above 90% were Tharaka Nithi and Laikipia, and the lowest were Tana River, Vihiga, Wajir and Garissa, all below 30% score. For water resources, the highest sustainability score was achieved by Nyeri, Kirinyaga and Muranga counties (all above 40%), and the lowest by Garissa, Kwale and Laikipia (all below 15% score).

If the counties repeatedly perform poorly in the sustainability ranking, the types of projects and investments that are funded in those counties should be carefully evaluated for their feasibility and relevance. Also, in line with JAOME findings from previous years, improving the sustainability of investments especially in the counties with low SI score requires customized service delivery, operations and maintenance models which should be identified and promoted through the capacity building component.

In this year's JAOME report, a new approach has been adopted in evaluation and discussion on the findings compared to previous year's JAOME reports. This is based on the fact that several new projects in different ecological and geographic zones do not lend themselves to direct year to year comparison. For example, in JAOME 2019 the vast majority of water harvesting tanks were contracted around Mt Kenya under the IFAD programme, and to compare these with the ASAL water harvesting tanks is not useful, as most water tanks in the wetter Mt Kenya region were fully operational, while the 2018 drought resulted in nearly all the ASAL water harvesting tanks (the majority sampled during that year) were empty.

Similarly, the difference in time of JAOME sampling in February/March compared to September/ October as previous JAOME together with an exceptionally wet year means the results are differently interpreted; for example, nearly all springs that were renovated were operational, compared with only 30% when sampled in previous years and during the dry season, also water pans this nearly all contained some water and were therefore described as 'operational'. However, it is still possible to draw some generic conclusions based on the experience of the last 4 years and provide some recommendations of how WSTF performance can be improved further.

For overall JAOME 2019 sampling, a number of projects that were recorded as completed were selected, but were found not to have been fully commissioned. For example one PSF was completed and handed over but the committee managing the

facility had not yet agreed on a tariff for use so at the time of JAOME the completed and good condition facility was classed as non-operational. Also a number of project briefs were inaccurate for the purposes of JAOME for example the Skanska DERP project was described as 'rehabilitation of a borehole' when the only activity carried out was to service the generator. This has led to a complete misrepresentation of the project being described as a borehole investment. There is little point in sampling a three year old activity which consisted of solely servicing a generator (which incidentally was replaced by a solar system at Skanska through a different funder).

This clearly points to the urgent need to have a comprehensive management information system covering all projects with details of scopes implemented, correct timelines etc. This has been recognised as an important, essential, recording and management system. Such a system would preclude projects that have not yet been commissioned from the JAOME sample, or enumerators recording the wrong or missing infrastructure.

Over the course of the 4 years of JAOME data collection Kenya has experienced severe droughts and in 2019 a particularly wet long rains. These extremes have strongly influenced the perceived operational status of many projects – especially for water harvesting and surface water resources management. For example many water pans visited in 2017 and found to be non-operational were described as operational in 2019 as a result of recent heavy rain. As a result it is important that levels of sedimentation, condition of spillway and intake are assessed and not just the presence or absence of water.

In addition differing inherent climate conditions strongly impact on year to year comparisons. For example Water Resources Management interventions and activities in and around Mt Kenya under the IFAD funded UTaNRMP have proved very effective in part due to the inherent higher rainfall regime making tree planting survival good, as well as showing good potential for rainwater harvesting when compared with the MTAP funded water harvesting in ASAL areas. Similarly a wider range of livelihood options have been fruitful, especially establishment of tree nurseries for plant sale, fish ponds and bee hives.

JAOME results point to the need for further data collection and analytical work. Currently the good impact from livelihood programmes is mainly anecdotal, with newly established livelihood enterprises showing good promise but in 2021 the WSTF M&E department should carry out or commission more in depth studies to quantify benefits that community groups and individuals can get from these perceived 'successful enterprises'. Currently communities are provided free support to develop these new livelihoods but can they be scaled up by developing similar enterprises through commercial loans? Or do these new livelihood activities require donor funds for scaling up and even for maintenance after 3-5 years (for pond liners and greenhouse coverings). However it is difficult to see any sustainable solutions in ASAL areas. Beekeeping, one of the most commonly promoted livelihood options for the ASALs, does not appear to a worthwhile investment from the JAOME data with investment costs running into 100s of thousands of shillings while returns are seen to be a maximum of Ksh 10,000. Such poor returns do not warrant investments, but M&E should also review in more detail the costs and benefits from such activities (for example bee keeping) amongst the WRUAs and CFAs funded in both ASALs and around Mt Kenya. It is important that the questions raised by JAOME are investigated further to refine WSTF

support with the aim of improving sustainability of investments. These feedback mechanisms are very important to inform the appraisal, selection and implementation processes for investments.

The data collected on water kiosks, yard taps and consumer meters is confusing and needs further investigation. There has been a lot of discussion about service delivery with an envisaged steady progression from water kiosk to yard tap and then individual connection as water utility service delivery improves. However the data collected does not support this argument with the condition and operational status of all three delivery mechanisms declining. This is puzzling and needs further detailed assessment and feedback to understand and improve both project implementation and long term sustainability.

More metrics and Key Performance indicators need to be identified to enable comparison of Counties. It is currently a challenge to rank Counties based on the sustainability index of investments given that not all County have an equal number of projects or investments. Furthermore, Counties have unique climatic zones and the interventions implemented vary to a large extent. Also, a County by County comparison is limited because it is not the Counties that directly implement these projects.

From 2017 WF has moved away from many small projects with associated high transaction costs (for example 360 schools receiving support to improve sanitation through 360 separate contracts) to fewer, bigger projects where there is greater impact – the Ksh 140 million Solio water project in Laikipia County under J6P being a good example. This shift designed to support infrastructure systems at a project level that are more sustainable through generating sufficient funds that allow for repairs and maintenance. This shift to fewer bigger projects is clearly seen in Table 1 where the 100% sample of projects completed in 2019 was 64 compared with 352 in 2016. As a result the data for sanitation has a large number of VIP latrines constructed 5 years ago in ASAL areas. This cohort of old toilets in often remote ASAL areas is bringing down the overall performance of sanitation significantly. While the fewer bigger projects approach has the potential to lead to improved sustainability of investments, there is also a danger that failed projects come at a greater cost. As a result it is recommended that a more rigorous project appraisal process is followed that should include a costed business model before implementation starts – it was noted that several projects visited under JAOME 2019 were non-operational because tariffs had not been set and there was disagreement about the service – should it be free, at cost or with a profit? These decisions need to be discussed and agreed before investing.

In addition there have been a number of instances where County Water Companies have been funded to implement a project. On completion the county want the money remitted to its water company whereas the community want to manage the installation and require funds raised from the sale of water in order to do this. This again is an issue that needs clarity and transparency at appraisal - ahead of any investment.

### **7.3 Way Forward**

The following points are recommended as the way forward in view of preparing for the JAOME 2019, and to take full advantage of the data and lesson learned from the previous exercises:

**Planning:** More support should be sourced from the CRMs in the planning phase. Once the project sample has been drawn, it should be sent to the CRMs well in advance for their input and advice. The detailed field plan should be drawn up fully informed by the logistical and security conditions of each county so that the plan is accurate and realistic. JAOME Calendar should be integrated within the WSTF annual programming.

**Budgeting:** Dependency on donor funds for carrying out the exercise should be reduced by entrenching a Treasury budget line for financing the exercise on an annual basis.

**Data collection:** The JAOME data collection process needs to be streamlined to ensure that the team sizes and compositions are optimized for cost-effectiveness together with sufficient technical expertise in each team. The roles of CRMs and field interns should be increased so that, where possible, some of the counties could be fully monitored by the field staff in the interest of reducing the budget of the exercise. The exercise needs to be accommodated with sufficient logistical support so that the data collection can be done effectively and without unnecessary delays. The enumerators should have familiarised with the previous years' data on the projects they are to visit for full preparedness of feedback and issues to be addressed. If the data shows that a particular investment is permanently collapsed, there is no need to have further visits to the same investment. Finally, a clear selection criteria should be documented for the enumerators.

**Data analysis and reporting:** A task force for data cleaning, analysis and reporting should be set-up so that the reporting and follow-up can be done on a timely manner. To improve the visibility of the important exercise, an annual release month of the *WaterFund Sustainability Report* should be set. This would create the expectation of the report to the sector partners and DPs, and ensure the much-deserved attention to the report as one of the annual key sector publications.

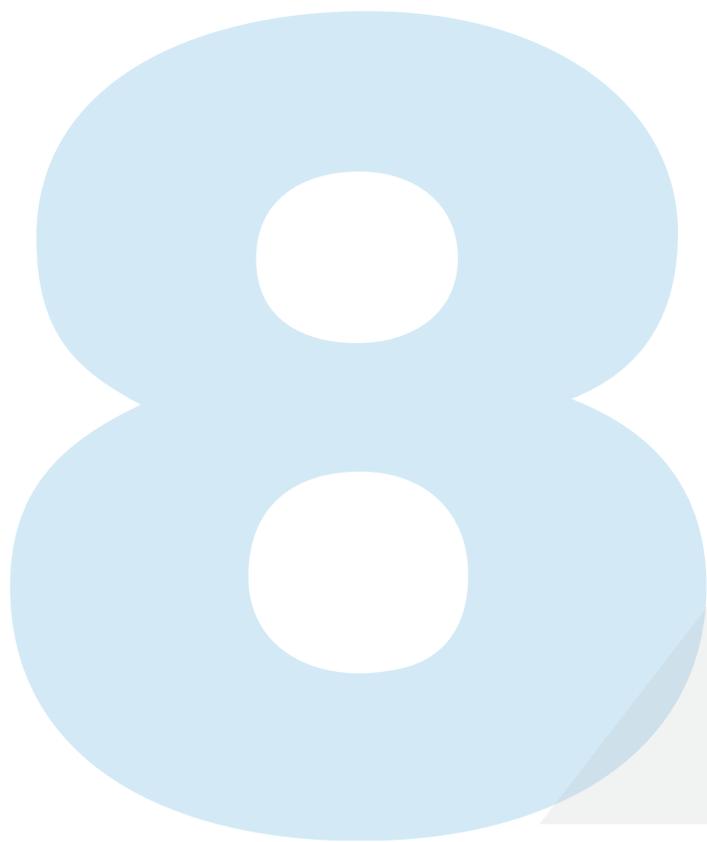
**Follow-up** on acute technical, financial, operational or social issues raised during JAOME should be addressed by the Fund and CRMs on a timely manner, where possible and to the extent of their capacity. Where needed, the implementing partner or the county should be alerted to possible issues found on the ground.

**Lessons learned:** Consistent failures in terms of design flaws, inadequacies and errors should be addressed on the management level in order to inform future programme designs and investment decisions. The same applies to highlighting the successes experienced in programmes.

**Use of JAOME data:** The WaterFund, the DPs and the implementing partners should aim to fully take advantage of the extensive data and information that has been collected through three consecutive JAOME years. The data can be used to check on the operational status of specific projects after completion, or more broadly, it can be used to document best practices regarding the successful investment types and programmes for the benefit of future project and programme design.

**Data access:** Currently the data is analysed by the WaterFund using a set Excel template. This limits the access to the data to only those that have the specific interest to the data, but does not make it attractive and easy to view for the general public. WSTF has engaged a consultant to create a public dashboard embedded in the institutional website for all the previous and future JAOME data. This is a key step in increasing transparency, accountability and encourage sustainability.



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ANNEXES

## Annex 1: General Form Data Structure

Page	Comments
<b>Filtering Details</b>	<b>Swipe left for more questions</b>
<ol style="list-style-type: none"> <li>1. Name of enumerator (1)</li> <li>2. Select a County (1)</li> <li>3. Select Name of Constituency (<i>in the background</i>)</li> <li>4. Select Name of Investment window (RIP, UIP, WRI, RBF) (1)</li> <li>5. Project name (1)</li> <li>6. Project Brief</li> <li>7. Year of completion (<i>in the background</i>)</li> <li>8. Programme (<i>in the background</i>) if RIP = (MTAP I, MTAP II, KWSP, J6P) if UIP = (UPC,UBSUP) if WRI = (IFAD, J6P, MTAP) if RBF = (AOD, OBA)</li> <li>9. Funding source (<i>in the background</i>)</li> <li>10. Category (Water supply, Sanitation, Water resources) (1)</li> </ol>	<p>Questions in this section are Mandatory.</p> <p>These are preloaded data.</p> <p>Select one option (1)</p> <p>Select more than one option (M)</p> <p>Text field (T)</p> <p>Numeric field (N)</p> <p>Radio button (R)</p>
<b>General Information</b>	<b>Swipe</b>
<ol style="list-style-type: none"> <li>1. Name of Informant (T)</li> <li>2. Position of Informant (Official, Committee, User, Caretaker) (1)</li> <li>3. Phone number of informant (N)</li> <li>4. Is the overall project operational at the time of visit? (Operational, Partially operational, Temporarily stopped, Non-operational) (1) <ol style="list-style-type: none"> <li>1. If Non-operational, how long has project been non-operational (months) (N)</li> </ol> </li> <li>5. Does the project serve the intended target group? (Yes/No) (1)</li> <li>6. Target Beneficiaries (of Project) <ol style="list-style-type: none"> <li>1. Total no. of people incl. children (N)</li> <li>2. No. of livestock (N)</li> </ol> </li> <li>7. In case of Water resources: Catchment area (km2) (N)</li> <li>8. In case of Water resources: Does the WRUA/CFA have a copy of the SCAMP/PFMP? (1)</li> </ol>	<p>Questions in this section are Mandatory.</p> <p>Select one option (1)</p> <p>Select more than one option (M)</p> <p>Text field (T)</p> <p>Numeric field (N)</p> <p>Radio button (R)</p>
<b>Financial and Management Information</b>	<b>Swipe</b>

<ol style="list-style-type: none"> <li>1. Total cost (Ksh) of project as per contract (incl. community contribution) (N)</li> <li>2. Local Contribution (Labor, Cash, Materials, Land, None) (M)</li> <li>3. Value of local contribution (Ksh) (N)</li> <li>4. Governance/Management (Board OD, Board of Management, Committee, MD-Overall, Employees, Volunteers, Contractor) (1)</li> <li>5. Registration Status (Self Help Group, CBO, Society, Company, Institutional, Other) (1)</li> <li>6. Records are kept: (Regularly, Irregularly, Not kept) (1)</li> <li>7. Strategic Plan: (Yes/No) (1)</li> <li>8. Operations and maintenance (O&amp;M) responsibility (Employee, Committee, Volunteers, Users, Contractor / Operator, Individual, Group, WSP/WU/WRUA/CFA, County Government, National Government, Donor, Other, specify) (1) <ul style="list-style-type: none"> <li>• Total number of people responsible for O&amp;M (N)</li> <li>• Number of women responsible for O&amp;M (N)</li> </ul> </li> <li>9. O&amp;M cost, approx. annual (Ksh) (N)</li> <li>10. Does the project collect revenue? (Yes/No)</li> <li>11. In case of Water supply: Average water tariff (ksh/m<sup>3</sup>) (N)</li> <li>12. In case of Sanitation: Sanitation charges? (yes/no)</li> <li>13. In case of Sanitation: Average sanitation tariff (ksh/use) (N)</li> <li>14. Project income, ave. annual (Ksh) (N)</li> <li>15. Operation cost coverage =income/ cost*100 (0.00%)</li> </ol>	<p>Questions in this section are Mandatory.</p> <p>Select one option (1)</p> <p>Select more than one option (M)</p> <p>Text field (T)</p> <p>Numeric field (N)</p> <p>Radio button (R)</p>
<p><b>Photo</b></p>	<p><b>Swipe</b></p>
<p>Take a Photo of project office</p>	<p>Section is mandatory. Please Take a good picture</p>
<p><b>GPS Location</b></p>	
<p>Take GPS location of project office</p> <p>NB: Wait till it indicates the accuracy is at least 5m, then click on 'Record Location'</p>	<p>Click on 'Record Location' button</p> <p>You can Replace location if it is not accurate by clicking Replace location tab</p>
<p><b>Finalize Form</b></p>	
<p>Give the particular form entry a name:  <b>Reason:</b> You will visit several project offices and later on you may need to make some edits on a particular entry. It is easier to get it if you had unique name for the entries.</p> <p>If sure of answers (No edits and ready for online submission), Please check the 'Mark form as finalized' button.</p> <p><b>Mark form as finalized button:</b> Comes in when you want to 'send' the forms to the server, unless a form is marked as 'finalized' it will not appear in the 'Send Finalized Form' list when you need to submit your collected data.</p>	<p>By default if gives the particular entry, the name of the data collection form i.e "WaterFund General Project"</p> <p>Please change that to the name of the project you have been collecting data on.</p> <p>Click 'Save Form and exit'</p>

## Annex 2: JAOME Infrastructure Data Structure – Investment Types

Category	Investment class	Type	
A. WATER SUPPLY	Intakes/ Water sources	Weir - River Intake	
		Lake intake	
		Water pan	
		Dam	
		Borehole	
		Hand dug well	
		Sand dam	
		Sub-surface dam	
	Pumps/ energy sources	Spring Protection	
		Hand pump	
		Solar pumping system	
		Hydram	
		Wind mill	
		Electricity mains	
		Generating set	
	Treatment works	Diesel pump	
		Chlorination unit	
		Chemical dosing unit	
		Composite filtration unit	
		Conventional treatment works	
		Slow sand filtration	
	Pipelines	Waste water recycling	
		Desalination of salty water	
		UPVC-Unplasticised polyvinyl chloride	
		HDPE-High density polyethelene	
		PPR-polypropylene random-copolymer	
		GI-Galvanised iron	
Pipeline appurtenances	DI-Ductile iron		
	Unknown		
Storage tanks	Valve chambers		
	Masonry tank		
	Elevated concrete tank		
	Reinforced concrete tank		
	Sectional steel tank		
	Plastic molded tank		
	Ferro cement tank		
Distribution system	Djabia		
	Berkad		
	Water kiosk		
	Communal Water Point (open)		
	Stand pipes		
	Yard taps		
	Individual connections		
	Institutional connections		
	Industrial connections		
	Animal Trough (cattle, donkeys, sheep, goats)		
	Animal Trough (camels)		
	Consumer meters		
	Bulk meters		
Rainwater Harvesting (from Roofs)	Roof catchment		
	Gutters		
Building	Storage tank		
	Office		
	Laboratory		
	Pump house		
B. SANITATION	Public sanitation	Regular	Fencing
			Pit latrine
			VIP latrine
			Pour flush
			Cistern flush (squatting)
		Mini	Cistern flush (seat)
			UDDT (dry toilets)
			Pit latrine
			VIP latrine
			Pour flush
Cistern flush (squatting)			
Cistern flush (seat)			
UDDT (dry toilets)			

Category	Investment class	Type
	<b>Institutional Sanitation</b>	Pit latrine
		VIP latrine
		Pour flush
		Cistern flush (squatting)
		Cistern flush (seat)
		UDDT (dry toilets)
	<b>Community sanitation facility</b>	Pit latrine
		VIP latrine
		Pour flush
		Cistern flush (squatting)
		Cistern flush (seat)
UDDT (dry toilets)		
<b>Household sanitation</b>	Pit latrine	
	VIP latrine	
	Pour flush	
	Cistern flush (squatting)	
	Cistern flush (seat)	
	UDDT (dry toilets)	
<b>DTFs</b>	DTF	
	DTF Enpure Hybrid	
<b>Sewers</b>	Municipal sewer	
<b>C. WATER RESOURCES</b>	<b>Regulation</b>	Common intake
		Weir self-regulating
		Bulk Meter
	<b>Catchment Management</b>	Check dams
		Tree planting - Nurseries
		Tree planting - Transplanted
		Gabions
		Fencing of a pan
		Opening of Malkas
		Waste disposal pits
		Riparian pegging
		Energy saving jikos
		Fire breaks
		Installation of early warning systems
		Pruning
		Grass strips
	<b>Water Resources Management Structures</b>	RWH Pans
		RWH Dams
		RWH Djabias
		RWH Sand/sub-surface dams
		Spring protection
RWH Tanks		
Livestock troughs		
Water pan rehabilitation		
<b>Livelihood</b>	Livestock (Bee hives)	
	Livestock (Fish ponds-lined)	
	Livestock (Fish ponds-unlined)	
	Livestock (Dairy goats)	
	Livestock (Poultry)	
	Horticulture (Drip kit)	
	Horticulture (Greenhouse)	
Horticulture (Greenhouse drip kit)		

### Annex 3: Division of Teams for the Operations Monitoring Exercise

JAOME 2019 FIELD PLAN															
CLUSTERS	CLUSTER 1		CLUSTER 2		CLUSTER 3		CLUSTER 4		CLUSTER 5		CLUSTER 6		CLUSTER 7		TOTAL
	County	Projects	County	Projects	County	Projects	County	Projects	County	Projects	County	Projects	County	Projects	
COUNTRIES IN CLUSTER	Lamu	68	Wajir	74	a) Isiolo	64	Nairobi	3	Meru	8	Kericho	1	West Pokot	1	
							Kiambu	5	Tharaka Nithi	7	Bomet	3	Transnzoia	2	
			Garissa	76	b) Marsabit	71	Kajiado	2	Embu	5	Kisii	1	Elgeyo Marakwet	1	
							Machakos	7	Kirinyaga	4	Uasin Gishu	1	Baringo	2	
			Tana river	43			Makueni	7	Nyeri	13	Homabay	2	Nakuru	2	
							Kitui	2	Murang'a	12	Migori	6	Nyandarua	1	
			Mandera	1	c) Laikipia	6	Taita Taveta	1			Bungoma	3	Nandi	10	
					d) Samburu	1	Kwale	6			Kakamega	2	Narok	2	
							Kilifi	4			Vihiga	2			
										Busia	1				
TOTAL PROJECTS		<i>Total</i>	<i>68</i>		<i>194</i>		<i>142</i>		<i>37</i>		<i>49</i>		<i>22</i>		<i>533</i>
PROJECTS	URBAN	1	8	5	28	15	18	12	87						
	RBF	0	0	0	1	2	0	0	3						
	WATER RESOURCES	1	3	3	2	31	1	3	44						
	RURAL	66	183	134	6	1	3	6	399						
	TOTAL	<i>68</i>	<i>194</i>	<i>142</i>	<i>37</i>	<i>49</i>	<i>22</i>	<i>21</i>	<i>533</i>						

NB: Table based on sampled projects



*Figure 76: Elevated steel tanks.*



Figure 77: Masonry tanks; various locations



Figure 78: Water Kiosks; various locations



Figure 79: Yard Taps; various locations





Figure 81: Consumer Meters; Various locations



Figure 82: Institutional sanitation; various locations



Figure 83: UBSUP Household sanitation.



Figure 84: Public Sanitation Facilities (PSFs).



Figure 85: De-centralized Treatment Facilities



Figure 86: Riparian land conservation and protection



Figure 87: Catchment regulation



Figure 88: Livelihood Activities



# WaterFund

Financing the Water Sector

**WATER SECTOR TRUST FUND**

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