



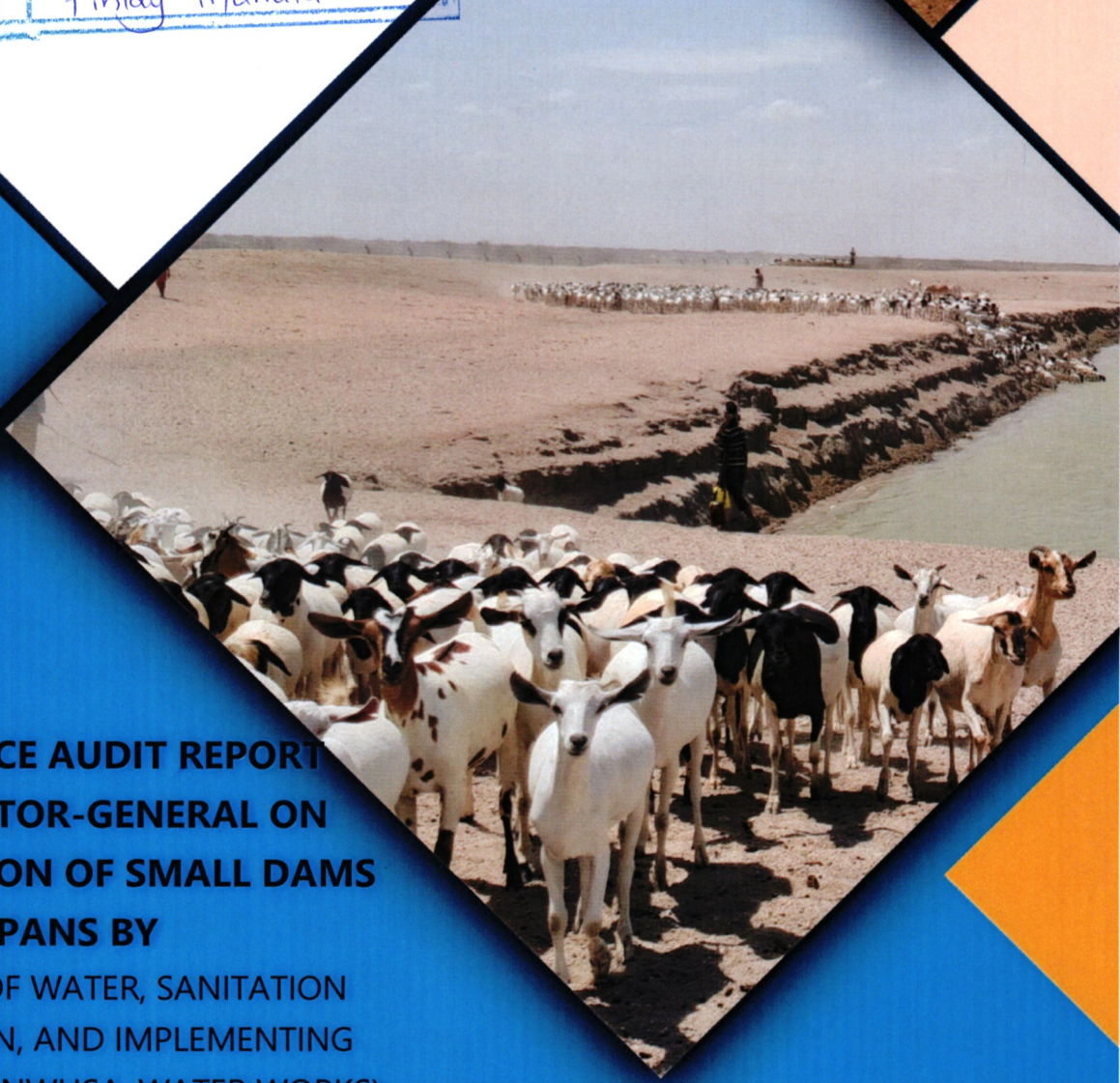
OFFICE OF THE AUDITOR-GENERAL

THE NATIONAL ASSEMBLY

Enhancing Accountability

DATE: 15 JUN 2023 Thur

TABLED BY:	Hon. Kimani Ichungwah, MP Leader of the Majority Party
CLERK-AT-THE-TABLE:	Finlay Munuki



**PERFORMANCE AUDIT REPORT
OF THE AUDITOR-GENERAL ON
CONSTRUCTION OF SMALL DAMS
AND WATER PANS BY
THE MINISTRY OF WATER, SANITATION
AND IRRIGATION, AND IMPLEMENTING
AGENCIES (NIA, NWHSA, WATER WORKS)**

JUNE 2023

VISION

Making a difference in the lives and livelihoods of the Kenyan People

MISSION

Audit services that impact on effective and sustainable service delivery

CORE VALUES

Integrity

Credibility

Relevance

Accountability

Independence

MOTTO

Enhancing Accountability


FOREWORD BY THE AUDITOR-GENERAL

I am pleased to present this performance audit report on Construction of Small Dams and Water Pans by the Ministry of Water, Sanitation and Irrigation, and its implementing Agencies (National Irrigation Authority, National Water Harvesting & Storage Authority and Water Works Development Agencies). My Office carried out the audit under the mandate conferred on me by Section 36 of the Public Audit Act, 2015. The Act mandates the Office of the Auditor General to examine the Economy, Efficiency and Effectiveness with which public money has been expended pursuant to Article 229 of the Constitution.

Performance, financial and compliance audits form the three-pillar audit assurance framework that I have established to give focus to the varied and wide scope of the audit work done by my Office. The framework is intended to provide a high level of assurance to stakeholders that public resources are not only correctly disbursed, recorded and accounted for, but that the use of the resources results in positive impacts on the lives of all Kenyans. The main goal of our performance audits is to ensure effective use of public resources and promote services delivery to Kenyans.

Our performance audits examine compliance with policies, laws, regulations, obligations and standards and whether resources are managed in a sustainable manner. They also examine the economy, efficiency and effectiveness with which public resources have been expended. I am hopeful that corrective action will be taken in line with our recommendations in the report.

The report is submitted to Parliament in accordance with Article 229 (7) of the Constitution of Kenya, 2010 and Section 39 (1) of the Public Audit Act, 2015. In addition, I have remitted copies of the report to the Principal Secretary, State Department of Water and Sanitation, Principal Secretary, State Department for Irrigation, Principal Secretary, The National Treasury and the Chief of Staff and Head of Public Service.


CPA Nancy Gathungu, CBS
AUDITOR – GENERAL
12 June, 2023


 THE NATIONAL ASSEMBLY REPUBLIC OF KENYA	
DATE: 15 JUN 2023	
Thur	
TABLED BY:	Hon. Kimani Ichung'wa, MP Leader of the Majority Party
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LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Definition</u>
ASAL	Arid and Semi-Arid Land
BQ	Bill of Quantity
CRVWWDA	Central Rift Valley Water Works Development Agency
CWWDA	Coast Water Works Development Agency
LVSWWDA	Lake Victoria South Water Works Development Agency
MoWSI	Ministry of Water, Sanitation and Irrigation
MCM	Million Cubic Metres
MTP	Medium Term Plan
NWHSA	National Water Harvesting and Storage Authority
NIA	National Irrigation Authority
NWWDA	North Water Works Development Agency
NWMP	National Water Master Plan
OAG	Office of the Auditor- General
SDG	Sustainable Development Goal
TWWDA	Tana Water Works Development Agency
TANAWWDA	Tanathi Water Works Development Agency
WWDA	Water Works Development Agencies

EXECUTIVE SUMMARY

Introduction

1. Kenya is considered a water-scarce country, regularly experiencing extreme water shortages, especially during periodic dry spells¹. The rapid population growth, urbanization, and inefficient use of water resources has increased the deficit between available water and demand. According to; “The Development of the National Water Master Plan 2030 Report, 2013”² of the Ministry, by 2030, the water deficit to water demand ratio is expected to increase to 70%, specifically 21,468 to 14,969 Million Cubic Metres (MCM) in 2030 compared with 44% at 3,218/1418 Million Cubic Metres (MCM) in 2010. Run-off and poor water harvesting practices during the rainy season have resulted in a high proportion of the rainwater going to waste or even becoming destructive.

2. To address the challenges faced in water resource management, the government developed the National Water Master Plan (NWMP) in 2013. The NWMP anticipates the development of 17,860 small dams and water pans adding 893 million cubic meters of water by 2030. To realize the benefits of this investment, the small dams and water pans must be designed and constructed to the required standards and properly maintained.

Motivation for the Audit

3. The performance audit was motivated by; -
 - i. The National Assembly’s Public Accounts Committee (PAC) requested for a special audit on procurement of construction and civil works on small dams and water pans. This was after the Committee established, during its field visits, that most of the dams and water pans were incomplete, original designs had been altered, while others were dilapidated and not in use. In 2017/2018, the Ministry allocated Kshs. 995 Million to pay outstanding debts for sixty-six (66) water

¹ Practice Manual for Small Dams, Pans and Other Water Conservation Structures in Kenya. 2nd Edition
² JICA Study Team (Ref. Main Report Part A, Section 6.10, Sectoral Report (G), Sections 3.3 and 3.4)

ponds/small dams, three community household projects, and fifty-three (53) boreholes drilled and equipped with 20,000 cubic-meter tanks.

- ii. The Auditor-General's financial audit report for the year 2017/2018 reported that, the State Department for Irrigation had spent Kshs. 865,301,290 on small dams and water pans. However, the Ministry of Water, Sanitation and Irrigation did not provide an inventory indicating the physical location, the contractors, period of construction, and the status of the small dams and water pans as per the National Development Plans.
- iii. Kenya is committed to ensuring improved availability and access to water and sanitation for all. This vision and goal is encapsulated in Kenya Vision 2030 and is also in Sustainable Development Goal (SDG) 6.

Objectives and Scope of the Audit

4. The audit assessed whether measures put in place by the Ministry of Water, Sanitation and Irrigation (MoWSI) and its implementing Agencies had ensured effective construction and maintenance of small dams and water pans, specifically, the audit assessed:
 - i. The planning strategies and monitoring framework put in place by MoWSI and its implementing Agencies to ensure implementation and sustainability of small dams and water pans projects;
 - ii. The status of small dams and water pans; and
 - iii. The extent of the impact of small dams and water pans on the intended beneficiaries/community.
5. Further, the audit examined the operations of MoWSI, and that of the implementing Agencies; the National Irrigation Authority (NIA), the National Water Harvesting and Storage Authority (NWHSA), and four Water Works Development Agencies (WWDAs) in Kenya. The Audit Team conducted physical verification in fifty-two (52) small dams and water pans. The audit covered the following processes: planning, implementation, monitoring, and reporting for a period of five (5) financial years from 2017/2018 to 2021/2022.

Methods Used in Gathering Audit Evidence

6. The audit was conducted in accordance with Performance Auditing Standards (ISSAI 3000) as set by the International Organization of Supreme Audit Institutions (INTOSAI). The audit also used policies and procedures established by the Office of the Auditor-General (OAG). These guidelines and policies fulfil the requirements of the International Standards on Auditing (ISA).

Assessment Criteria

7. The audit assessed the measures put in place by MoWSI and implementing Agencies to ensure effective construction and maintenance of small dams and water pans against criteria drawn from the National Water Master Plan, 2030, the Irrigation Act, 2019, the National Water Harvesting and Storage Regulation, 2019, Water Policy, 2012, the Practice Manual for Small Dams and Water Pans 2nd Edition 2015.

Summary of Findings

8. The Government of Kenya has made efforts to put in place, both legal and institutional measures to address water harvesting and storage challenges through the construction of large, medium, small dams, and water pans. Records from the Ministry indicates that 473 small dams and water pans were constructed by various Agencies between FY 2017/2018 and 2021/2022.
9. The construction of small dams and water pans was expected to substantially reduce water wastage through run offs, and minimise distances covered by people and animals in search of the commodity. The audit established that construction of small dams and water pans has had positive impacts on the population as indicated below.

Increased Irrigation and Livestock Watering Activities

10. The audit noted that projects that held water had positive impact on the beneficiaries. The community utilised the water for daily sustenance such as; irrigation activities, livestock watering, and domestic usage. For instance,

the audit revealed that, Gitange II earth dam in Kirinyaga and Barariru water pan in Laikipia had irrigation activities on going, beneficiaries drawing water and livestock watering. According to interviews with beneficiaries, Har-Handharaka water pan in Isiolo was holding water despite a three year drought in the area. The water pan served the pastoralist communities who brought thousands of livestock in turns everyday.

Increased Accessibilty to Water Points

11. Interviews with beneficiaries revealed that prior to the construction of small dams and water pans, they walked for between one (1) to twenty (20) Km in order to access water. The presence of small dams and water pans has greatly helped in minimising the distance covered to a water point.
12. Despite the positive impacts realised from construction of small dams and water pans, the audit established that there were challenges in the planning, implementation, and monitoring processes as indicated below:

Lack of Clarity in the Ministry's Planning

13. The Ministry's Strategic Plan, 2018 – 2022 set to increase water storage from 4.5 million cubic meters in 2017 to 14 million cubic metres by 2022. In addition, the National Water Master Plan, 2030 set to achieve irrigation, domestic and industrial water supply for a five (5) and ten (10)-year probable drought period. The Master Plan also set a target of 17,480 small dams and water pans to be constructed by the year 2030, by the Ministry and its' Agencies, to contribute in achieving the goals to increase water capacity.
14. The audit sought to establish whether the Ministry had clear plans and strategies to achieve the set targets, at planning and implementation stage. It was however, not possible to establish clearly identified targets at Agency and regional level. For the Agencies, other than National Irrigation Authority, there was no indication that the target in the annual work plans was tied to their strategic objective as the Agencies received funds for projects already identified by the Ministry. The audit was not able to establish the chain of decision-making of project allocation starting from needs assessment, public

requests, choice of projects at Agency level and decision-making by the Ministry.

Inadequate Collaboration by the Ministry and Agencies

15. The audit observed lack of collaboration among the Agencies throughout the process from planning to reporting. There was no clear unified approach to meeting the NWMP objectives and no evidence of shared data on small dams and water pans. Interviews with the Ministry officials indicated that there had been a collaborative committee with a representative from each Agency but the Committee was not active and no documentation on their meetings or decision-making was provided. Interviews with the Agencies revealed they were unaware of what the other Agencies were undertaking and generally worked in silos as they used the project list provided by the Ministry. In addition, the audit revealed that the Ministry had not mapped out the current projects and their status, thereby increasing the risk of overlap and gaps in implementation.

16. For instance, in Nakuru County, it was observed that the County Government of Nakuru had drilled a borehole right next to the Ndimu Water Pan constructed by National Irrigation Authority. While in Kwale County, National Irrigation Authority (NIA) and National Water Harvesting and Storage Authority (NWHSA) had constructed water pans adjacent to one another. It was not clear whether needs assessment had been done by either Agency or the rationale of the Agencies undertaking adjacent projects, when there were other parts of the county in need of similar facilities.

Delay in Implementation of the Projects

17. Review of contract documents from all the Agencies revealed that construction of small dams and water pans usually took between six (6) to nine (9) months to complete. The audit revealed instances where the projects took longer than nine months. For instance, Makororo water pan in Taita Taveta County which is under Coastal Water Works Development Agencies (CWWDA), started in 2018/2019 financial year was incomplete at the time of the audit. The project was abandoned by the contractor due to non-payment.

In Nakuru, Barina water pan under Central Rift Valley Water Works Development Agency (CRVWWDA), started in 2018/2019 financial year was still under construction three (3) years after the contract was awarded.

18. The audit further revealed that apart from National Water Harvesting and Storage Authority whose projects were handed over to the county government or the community for operation and maintenance, the other Agencies had not handed over their projects and where they had, it was not adequately done. Tanathi, Tana, Coast, and Central Rift Water works had not officially handed over the projects to the beneficiaries. In addition, Keringet dam under Central Rift Valley Water Works Development Agency (CRVWWDA), Kianyange and Thimangiri earth dams under Tana Water Works Development Agency (TWWDA), Syomithumo water pan for Tanathi Water Works Development Agency (TANAWWDA) and Warero pan for National Irrigation Authority(NIA) had been completed but not yet handed over to the community. The audit could not establish the reasons behind the delay in handing over of the projects as they still lacked custodianship.

Inadequacies in the Implementation of the Projects

A. Deviation from Standards Outlined in the Practice Manual

19. Interviews with Project engineers from the Ministry, NIA, NWWSA, and Water Works Development Agencies revealed that spillway, silt trap, fencing, and draw-off systems are some of the components prioritized during planning for construction of small dams and water pans. However, field verifications and documents review of forty-nine (49)³ projects by the Audit Team revealed that components such as fencing and gates, spillways, draw off systems, communal water points and silt traps were not incorporated in some of the projects as per design recommended by the Practice Manual for small dams and water pans.

20. Where drawing designs were provided, they did not include all the components as required by the Practice Manual for Small Dams and Water

³ Project files for two(2) projects were not provided and one(1) was abandoned

Pans. This has resulted in the construction of small dams and water pans that do not meet the recommended standards as per the manual.

B. Deviations from Initial Designs / Approved Bill of Quantities

21. The audit noted that in the thirty-three (33) small dams and water pans whose design documents and Bill of Quantities (BQs) were provided, nine (9) small dams and water pans namely, Masongaleni, Warero, Keringet, Gwakagiri, Ilmotiok, Kawala, Gwaseni, Mbilini, and Kwa Abdallah had their BQs partially implemented.
22. Observations made by the team revealed that deviations from approved BQs was a common occurrence despite project engineers from the Ministry and Agencies confirming during interviews that the designs and BQs are usually implemented as planned, except where the topography of the area did not allow. The audit further noted that in the forty-seven⁴ (47) small dams and water pans used by livestock, twenty (20) small dams and water pans did not have livestock support features such as cattle troughs and fencing despite being used by the community to water their livestock.
23. Further, the audit noted that out of the remaining twenty-seven (27) small dams and water pans with cattle troughs, some were not being utilised because water was not channelled directly into the troughs, channels were blocked, the troughs were inaccessible, and gate valves vandalised.

Inadequate Public Participation and Sensitization

24. Public participation helps to ensure that the community owns the project and is aware of the project objectives. When this is done they can also offer useful advice on how best to implement and sustain the project.
25. Responses from beneficiaries in forty-five⁵ (45) projects visited revealed that some of the ways in which the communities were involved included providing

⁴ 47 is number of small dams and water pans used by the communities to water their livestock. 4 are purely for irrigation and 1 abandoned.

⁵ In 3 projects, beneficiaries stated that there was no involvement. 1 project abandoned and in 3 projects, no beneficiaries were present to fill the questionnaires.

casual labour to the project during site clearance and in some areas, they were consulted on the availability or preparation of land. In addition, the community indicated that there was no proper sensitization and prior information about the projects before implementation.

26. National Irrigation Authority had identified this gap and started carrying out post implementation capacity building programs for beneficiaries in November 2021 to enhance their knowledge on irrigated agricultural crop production and project operations and sustainability.

Inactive Water Committees

27. The audit noted that out of forty-eight⁶ (48) small dams and water pans, thirty-four (34) had committees in place. Further, out of thirty-four (34) water committees, only twenty-three (23) were active at the time of the audit while eleven were inactive. The Audit Team observed that projects that did not have active water committees to manage them, faced challenges of vandalism on the components such as fences, gates, gate valves and poor maintenance of the structure and its environs. The absence of active water committees resulted in the following inefficiencies.

A. Inadequate Maintenance

28. Analysis of community responses revealed that in forty-one (41) out of forty-five (45) projects, no maintenance activities were being carried out by the communities.
29. Interviews with community members revealed that the absence of committees resulted in lack of leadership, security, organization, and cooperation in maintenance of the small dams and water pans, leading to the dilapidated state of the projects. In contrast, small dams and water pans that had active management such as Kwa Matu in Machakos, Matuu Community Projects, Gitiburi in Embu, Sosurwo and Ndimu in Nakuru held water for longer periods and users were able to carry out more activities with

⁶ 3 projects lacked beneficiaries to fill the questionnaires and one (1) project was abandoned.

the water, such as irrigating of crops. The pans were well protected from interference from animals and their environs had vegetation cover, which reduced erosion and siltation.

B. Siltation of Small Dams and Water Pans

30. The Practice Manual for small dams and water pans states that the ability of sedimentation to seriously reduce the useful lifetime of the reservoir means that erosion control should be included, designed, costed, and implemented as an integral part of the project. Excessive sedimentation can be addressed through improvements of silt traps, improved control of inflows, or catchment improvement campaigns. Out of fifty-one (51)⁷ small dams and water pans sampled by the audit team, twenty-six (26) had silt traps constructed but lacked maintenance and hence had accumulated silt and were non-functional. Siltation of the small dams and water pans may reduce the lifespan and volume of water harvested.

Inadequate Monitoring

31. The audit noted that monitoring was not being undertaken after the project completion. The entities attributed this to the fact that their contracts end on the handing-over date since there is no budget provision for post-implementation activities.
32. Due to lack of monitoring, the authorities are not able to ascertain the status of the small dams and water pans. The authorities also lack timely detection of defects on the existing projects, such as vandalised fences and gates, blocked piping, broken taps and isolated cattle troughs.

Conclusion

33. We commend the government, through the Ministry and the implementing Agencies for undertaking the construction of small dams and water pans to alleviate water scarcity. Water storage for use during the dry seasons especially in marginalised areas has improved where there are well executed projects. However, the construction faced challenges as enumerated below.

⁷ One project was abandoned

34. The implementing Agencies were expected to use guidelines contained in the Practice Manual for construction of Small Dams and Water Pans. However, the guidelines were not being fully observed by the Agencies while carrying out the projects. This is partly because of laxity by the Agencies or inadequate funding from the Ministry, forcing the Agencies to eliminate some components during implementation.
35. Inadequate collaboration between the Ministry and implementing Agencies poses an imbalance and obscurity in the implementation of the projects. It is also a clear missed opportunity to have better coordinated implementation as well as shared data that maps out Kenya's progress in achieving the National Water Master Plan, 2030.
36. The Agencies lack a structured system for monitoring and reporting of project implementation and proper sensitization of the community on the importance of protecting and maintaining the projects. The Agencies have not taken it upon themselves to ensure that an active water committee is formed before handing over the projects. The water committees play a vital role in ensuring that the projects are managed well after handing over, to ensure sustainability. This in turn contributed to lack of care by the community, resulting in common cases of vandalism and deterioration of the facilities and projects.
37. The Agencies involved the beneficiaries of the proposed projects through a site meeting before their commencement. However, the Agencies did not adequately involve them during and after the project implementations. Community engagements during the project implementations ensures project ownership (custodianship) by the beneficiaries thus proper use and maintenance by the beneficiaries.
38. Construction of small dams and water pans was expected to reduce physical distance to water sources and solve water scarcity problems. However, in some areas, beneficiaries continued to walk long distances in search of water for domestic use and for livestock due to delays in completion of the projects. The delays were mainly attributed to the delays or failure by the

Ministry and the National Treasury to disburse funds for construction of small dams and water pans.

Recommendations

39. In view of the findings and conclusions of the audit, the Auditor-General proposes the following recommendation for implementation by the Ministry of Water, Sanitation and Irrigation: -
40. The Ministry should put in place measures to ensure implementing Agencies harmonize their list of projects and locations to better coordinate the distribution and implementation of the projects. A central inventory for all relevant Agencies and Institutions would provide not only the number of projects implemented, but indicate the location and status, thereby providing a real time information to MoWSI on the actual need on the ground.
41. The Ministry should provide the funding for ongoing projects with approved budgetary allocation for completion to avoid cases of stalled and abandoned projects or deviation from specifications by contractors.
42. The Ministry should ensure that the set standards in the Practice Manual for the Construction of Small Dams and Pans is adhered to. The Practice Manual should be utilized as the guiding tool in construction of small dams and water pans. The Ministry should also ensure measures for non-compliant Agencies who disregard it in the implementation. Where deviations are made, a report of the exceptions should be completed.
43. The Ministry should develop a framework for post-implementation programs. This will ensure that enough resources are allocated for monitoring and reporting to facilitate maintenance of the facilities in order to serve beneficiaries for a longer period and ensure sustainability.
44. The Ministry should enhance the roles of water committee and have proper sensitization done before the commencement of projects, since they play a critical role in the planning, implementation, and maintenance of the facilities.

1.0. BACKGROUND OF THE AUDIT

Introduction

- 1.1. Kenya is considered a water-scarce country, regularly experiencing extreme water shortages, especially during periodic dry spells⁸. The rapid population growth, urbanization, and inefficient use of water resources has increased the deficit between available water and demand. According to The Development of the National Water Master Plan 2030 Report, 2013⁹, in 2030, the water deficit to water demand ratio is expected to increase to 70% specifically 21,468 to 14,969 Million Cubic Metres(MCM) per year in 2030 compared with 44% at 3,218/1418 Million Cubic Metres (MCM) per year in 2010. Kenya is now facing a future where availability of water will be a major challenge, with the scarcity being a major constraint to sustainable livelihoods.
- 1.2. Run-off and poor water harvesting practices during the rainy season have resulted in a high proportion of the rainwater going to waste or even becoming destructive. Harvesting rainwater presents opportunities to address water scarcity through collection of water in; small dams, water pans, and other water conservation structures.
- 1.3. To address the challenges faced in water resource management, the government developed the National Water Master Plan (NWMP) in 2013. The plan seeks to address water challenges in Kenya and sets out plans to support the realization of the Vision 2030 goals. The NWMP anticipates the development of 17,860 small dams and water pans which is expected to increase the water volume in the Country by 893 million cubic meters by 2030. This represents a significant investment by the government to address water storage. To realize the benefits of this investment, the small dams and water pans must be designed and constructed to the required standards and properly maintained.

⁸ Practice Manual for Small Dams, Pans and Other Water Conservation Structures in Kenya. 2nd Edition
⁹ JICA Study Team (Ref. Main Report Part A, Section 6.10, Sectoral Report (G), Sections 3.3 and 3.4)

- 1.4. Small dams, water pans, and other water storage structures provide a critical source of water for many Kenyans for domestic, livestock, irrigation, and other commercial usage. The increasing population places a higher demand for water provision. Further, climate-induced hydrological extremes make the availability of the resource more uncertain. These two factors mean that improved water storage has a fundamental role to play in building a more water-secure future for Kenya.

Motivation for the Audit

- 1.5. The performance audit was motivated by; -
 - i. The National Assembly's Public Accounts Committee (PAC) requested for an audit on procurement of construction and civil works on small dams and water pans. This was after the Committee during its field visits established that most of the dams and water pans were incomplete, original designs had been altered while others were dilapidated and not in use. In 2017/18, the Ministry allocated Kshs. 995 million to pay outstanding debts for sixty-six (66) water pans and small dams, three community household projects, and fifty-three (53) boreholes drilled, equipped with 20,000 cubic-meter tanks.
 - ii. The Auditor-General's financial audit report for the year 2017/2018 reported that, the State Department for Irrigation had spent Kshs. 865,301,290 on small dams and water pans. However, the Ministry of Water, Sanitation and Irrigation did not provide an inventory indicating the physical location, the contractors, period of construction and the status of the small dams and water pans as per the National Development Plans. There were also no technical reports like feasibility, hydrological, and environmental impact assessment carried out before the commencement of the works.
 - iii. Kenya Vision 2030 aims at ensuring improved water and sanitation availability and access to all. The goal for 2012 was to increase both access to safe water and sanitation in both rural and urban areas beyond present levels. It further aims at promoting agricultural productivity with increased area under irrigation and drainage from 140,000 to 300,000 hectares.

- iv. Sustainable Development Goal (SDG) 6 advocates for access to clean water and sanitation for all. Water shortages negatively influence food security and incomes of rural farmers while improving water management improves the national economies, the agriculture, and food sectors more resilient to rainfall availability and able to fulfill the needs of a growing population. Target 6.4 aims to ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity by 2030.

The above reasons made it necessary for the Auditor- General to conduct a performance audit in order to assess whether small dams and water pans are initiated, implemented and monitored in line with the principles of economy, efficiency and effectiveness.

2.0. DESIGN OF THE AUDIT

Audit Objective

- 2.1. The main objective was **“To assess whether measures put in place by the Ministry of Water, Sanitation and Irrigation (MoWSI) and its implementing Agencies had ensured effective construction and maintenance of small dams and water pans”**.
- 2.2. Specifically, the audit sought to;
 - i. Assess the planning strategies and monitoring framework put in place by the Ministry of water, Sanitation and Irrigation and its implementing Agencies had ensured effective construction and maintenance of small dams and water pans, specifically, the audit assessed:
 - ii. The planning strategies and monitoring framework put in place by MoWSI and its implementing Agencies to ensure implementation and sustainability of small dams and water pans projects;
 - iii. The status of small dams and water pans; and
 - iv. The extent of the impact of small dams and water pans on the intended beneficiaries/community.
- 2.3. To address the above audit objectives, the team formulated the following audit questions;
 - i. What planning strategies and monitoring framework had the Ministry and its implementing Agencies put in place to ensure adequate implementation of small dams and water pans?
 - ii. Were the approved standards for constructing small dams and water pans followed by the implementing Agencies?
 - iii. To what extent have the small dams and water pans constructed by the Agencies impacted the beneficiaries/community?
- 2.4. Detailed audit questions and sub-questions are outlined in **Annexure 1**.

Audit Scope

- 2.5. The audit team examined the operations of the Ministry of Water, Sanitation, and Irrigation (MoWSI), The implementing Agencies; National Irrigation Authority (NIA), National Water Harvesting and Storage Authority (NWHSA), and four Water Works Development Agencies in Kenya. The audit covered the following processes; planning, implementation, monitoring, and reporting for a period of five (5) financial years from 2017/2018 to 2021/2022.
- 2.6. Sixteen (16) counties namely: Kitui, Kajiado, Machakos, Kwale, Kilifi, Isiolo, Muranga, Embu, Meru, Nyeri, Laikipia, Nyandarua, Elgeyo Marakwet, Baringo, Nakuru and Taita Taveta were selected for the audit. The selection was based on Arid and Semi-Arid Land (ASAL) coverage regions believed to experience acute water shortages.

Methods Used in Gathering Audit Evidence

- 2.7. The team conducted the audit in accordance with performance auditing standards issued by International Organization of Supreme Audit Institutions (INTOSAI) which states that; In conducting a performance audit the auditors should follow the INTOSAI Code of Ethics and Auditing Standards as well as relevant office standards and guidelines applicable to performance auditing. The INTOSAI general auditing standards states that the audit and the office must be independent, possess required competence, and exercise due care to provide a guide on the execution and reporting of audit findings.
- 2.8. The audit evidence was gathered through document review, interviews and physical verification. The team conducted physical verification in fifty-two (52) small dams and water pans as shown in **Table 1** to assess their status. A detailed list of sampled projects is in **Annexure 2**.

Table 1: Distribution of small dams and water pans per Agency

No.	Agency	Water Pan	Small Dams
1.	National Irrigation Authority	15	6
2.	National Water Harvesting and Storage Authority	3	3
3.	Coast Water Works Development Agency	5	2
4.	Tana Water Works Development Agency	-	6
5.	Central Rift Valley Water Works Development Agency	5	2
6.	Tanathi Water Works Development Agency	5	-
	TOTAL	33	19

- 2.9. The audit team reviewed documents from the Ministry and implementing Agencies concerning the construction and maintenance of small dams and water pans. The team also conducted interviews with various technical staff from the implementing Agencies to understand how small dams and water pans were planned, constructed, and maintained as well as measures put in place to ensure sustainability.
- 2.10. Further, community representatives in the sampled projects were interviewed to assess the impact of the projects on the beneficiaries. A detailed list of interviewees and documents reviewed is in **Annexure 3** and **Annexure 4** respectively.
- 2.11. These various methods enabled the audit team to collect, collate and analyse data to achieve the audit objectives. The evidence collected was analysed and presented using tables and graphs as appropriate.

Assessment Criteria

- 2.12. The Audit Team assessed measures put in place by MoWSI and implementing Agencies to ensure effective construction and maintenance of small dams and water pans against criteria drawn from The National Water Master Plan 2030, the Irrigation Act, 2019, the National Water Harvesting

and Storage Regulation, 2019, Water Policy, 2012, the Practice Manual for Small Dams and Water Pans 2nd Edition 2015.

2.13. Details of the audit criteria and the source are provided in the findings chapter and **Annexure 5**.

3.0. DESCRIPTION OF THE AUDIT AREA

- 3.1. This chapter outlines the roles and responsibilities of the Ministry of Water, Sanitation and Irrigation (MoWSI) and other key actors, policies and legal framework within which the Ministry operates, systems and processes in place for construction of small dams and water pans, operations as well as the funding structure.

The Ministry of Water, Sanitation and Irrigation

- 3.2. The Ministry of Water, Sanitation and Irrigation (MoWSI) was created following the merger of the former Ministry of Water and Sanitation and State Department for Irrigation through Executive Order No. 6 of 2019. The mandate of the Ministry was revised through Executive Order No. 1 of 2020. The Executive Order also placed seventeen Water Sector Institutions under the Ministry.
- 3.3. The Ministry's mandate is guided by policies and legal framework as provided by the Constitution of Kenya 2010, Water Act 2016, Irrigation Act 2019, Kenya Water Institute (KEWI) Act 2001, Legal Notice Number 252 of 2015, Agenda 2063, SDGs No. 6, The Kenya Vision 2030, Medium Term Plan III (2018-2022), National Water Master Plan, 2030 and the 'Big four' agenda. These policies and legal framework emphasize the need for efficiency and better management in the utilization of natural resources to enable the government achieve its strategic goals of economic growth, poverty reduction, and social stability.
- 3.4. The Ministry is mandated with: formulation and implementation of policies, legal and regulatory frameworks for promoting sustainability in water resources and transboundary waters management, improvement of water and sanitation services, irrigation, and land reclamation while at the same time mitigating and adapting to the effects of land use and climate change.

Statutory Mandate of the Ministry of Water, Sanitation and Irrigation

- 3.5. The mandate and functions of the MoWSI related to the construction of small dams and water pans as outlined in the Executive Order No. 1 of 2020 (Revised) include:
- i. Management of public water schemes and community water projects;
 - ii. Domestic water storage and development;
 - iii. Development of dams for domestic and industrial water uses;
 - iv. Water storage, flood control and dykes, and
 - v. Irrigation, water harvesting and storage.

Strategic Objectives of the Ministry of Water, Sanitation and Irrigation

- 3.6. The strategic objectives of the MoWSI related to the construction of small dams and water pans as outlined in the strategic plan 2018-2022 are as follows:
- i. To enhance sector governance and leadership through formulation and implementation of policies, bills, and strategies in full compliance with the Water Act of 2016 and Irrigation Act of 2019.
 - ii. To increase water storage per capita from 4.5 million cubic meters to 14 million cubic meters by 2022.
 - iii. To increase the volume of water available for irrigation through design and construction of water harvesting and storage structures.
 - iv. To increase the area of land under irrigation from 484,000 acres in 2018 to 1,200,000 acres by 2022.

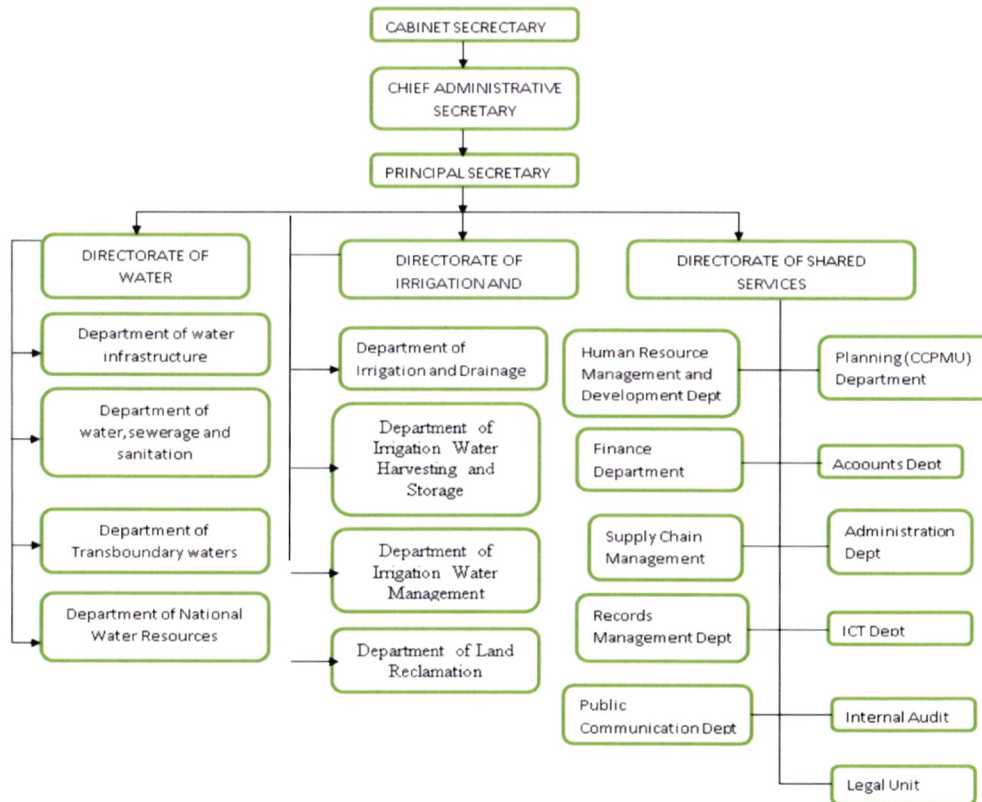
Organizational Structure of the Ministry of Water, Sanitation and Irrigation

- 3.7. The MoWSI is headed by a Cabinet Secretary assisted by the Principal Secretary, who is the accounting officer. The Ministry has three main directorates, namely; Shared Services, Water, and Irrigation and drainage. Construction of small dams and water pans cuts across two directorates namely; Directorate of water where Water Works Development Agencies and

National Water Harvesting and Storage authority fall and Directorate of irrigation and drainage where National Irrigation Authority fall.

3.8. The departments as contained within the directorates are illustrated in **Figure 1.**

Figure 1: Organization Structure of the Ministry



Statutory Institutions under the Ministry of Water, Sanitation and Irrigation

3.9. The role of the Ministry is to provide policy guidance, capacity building, resource mobilization, coordination and oversight for the following statutory institutions as defined in “Organization of the Government, Executive Order No. 1 of 2018. The mandate of the Ministry was later revised through Executive Order No. 1 of 2020. The nine Water Works Development Agencies (WWDAs) and National Water Harvesting and Storage Authority (NWHSA) fall under the directorate of water whereas National Irrigation Authority (NIA) falls under the irrigation and drainage directorate.

National Water Harvesting and Storage Authority

- 3.10. The Authority is the successor of National Water Conservation and Pipeline Corporation Under section 30 of the Water Act, 2016, the Authority is mandated to undertake on behalf of the national government: the development of national public water works for water resources storage and flood control and maintain and manage national public water works infrastructure for water resources storage.

Water Works Development Agencies

- 3.11. The Water Works Development Agencies (WWDAs) are the successors of Water Service Boards. Section 65 of the Water Act, 2016, mandates the WWDAs to undertake development, maintenance and management of national public water works within their area of jurisdiction. There are nine (9) WWDAs namely; Tana, Athi, Tanathi, Lake Victoria South, Lake Victoria North, North Rift, Central Rift, Coast, and Northern Water Works Development Agency.

National Irrigation Authority

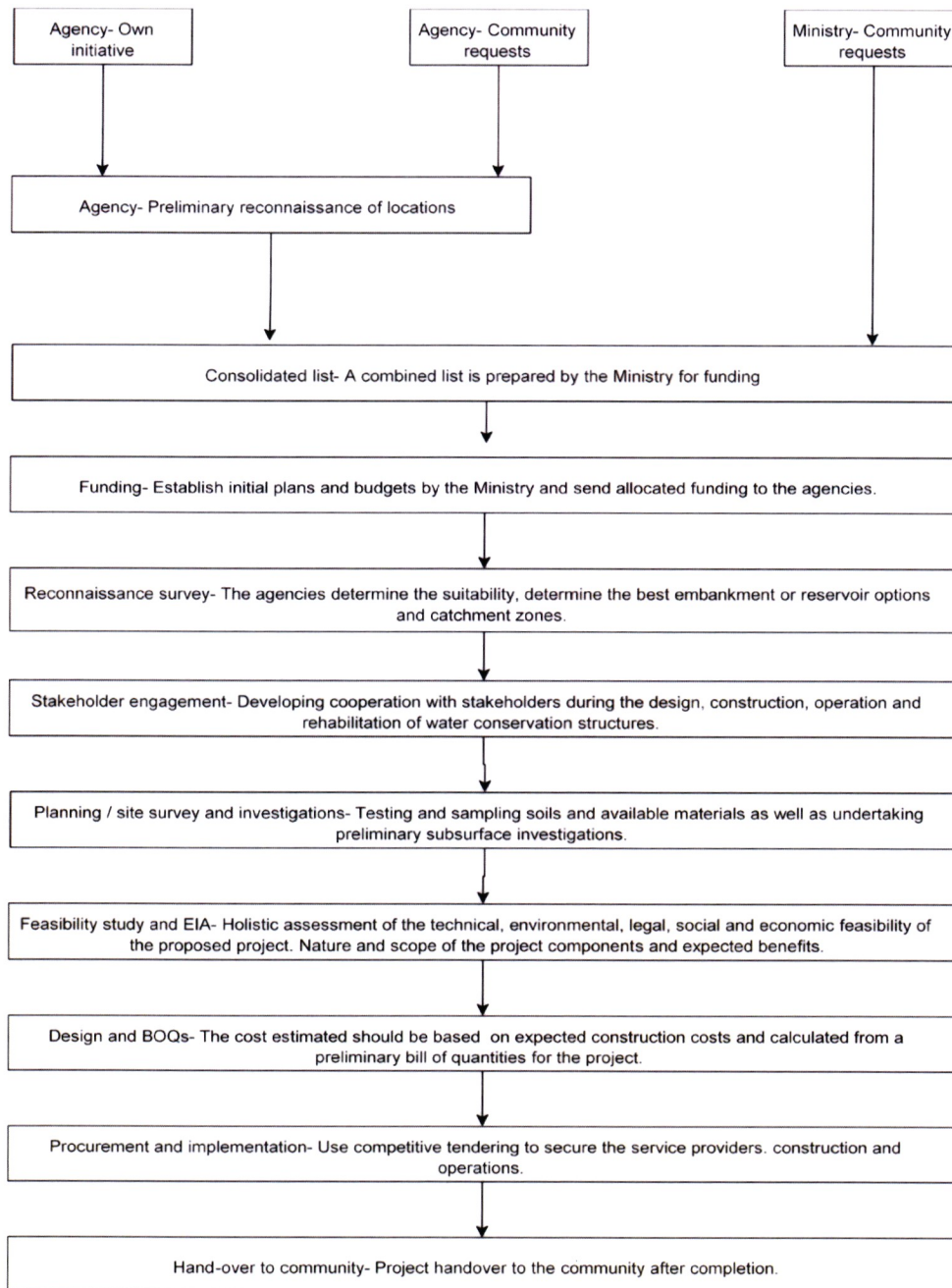
- 3.12. The National Irrigation Authority (NIA) is a successor of National Irrigation Board established under Irrigation Act, 2019. Section 8 of the Act mandates the Authority to develop and improve irrigation infrastructure for national or public schemes.

Process Description

- 3.13. The Ministry and its Agencies receive direct requests for water projects; small dams and water pans from political leaders, local area leaders, and communities. The Agencies prepare an inventory of all the project requests, send a team to the suggested sites and then come up with a budget which is submitted to the Ministry for funding. The Ministry combines the inventory of projects including its own and select the ones to be prioritised.
- 3.14. Subsequently, the Ministry establishes the funding needed, and disburses the funds accordingly. The funds are disbursed with or without a list of sites or location.

- 3.15. In cases where the funds have been disbursed to the Agencies without a list of project locations, or where a new project has been identified, the Agencies identify the locations or sites and carry out a reconnaissance survey to determine suitability.
- 3.16. After approval of a project, a stakeholder engagement, mostly with the community is made during the design, construction, and custodianship of the water facilities. The Agencies then carry out site surveys, feasibility studies, and Environmental Impact Assessments for the agreed small dams and water pans. This is done with a view to better understand the geology and impacts of the construction.
- 3.17. The Agencies subsequently develop designs and bill of quantities detailing the expected costs of the project after which the procurement process is initiated. Once the tender has been awarded, the Agency then hands over the site to the contractor to undertake the construction works. After completion and defects liability period lapses, the Agency hands over the facility to the beneficiary community. The process description is further illustrated in **Figure 2**.

Figure 2: The Process of Constructing Small Dams And Water Pans



Sources of Funding for Construction of Small Dams and Water Pans

3.18. The National Irrigation Authority, National Water Harvesting and Storage Authority and Water Works Development Agencies receive funds for construction of small dams and water pans from the parent Ministry. In FY 2018/2019, the Ministry disbursed funds under equalization program. From FY 2019/2020 to date, disbursement for construction of small dams and water pans is done under National Water Harvesting and Ground Water Exploitation Program.

3.19. A total of Kshs. 6,212.6 Billion was spent in construction of small dams and water pans by the implementing Agencies between FY 2017/2018 and 2021/2022 as indicated in **Table 2**.

Table 2: Financial Allocation for Small Dams and Water Pans

Financial Year	2017/18 (Kshs. Millions)	2018/19 (Kshs. Millions)	2019/20 (Kshs. Millions)	2020/21 (Kshs. Millions)	2021/22 (Kshs. Millions)	Total (Kshs. Millions)
National Irrigation Authority	500	1,450	1,325	1,678	105	5,058
National Water Harvesting and Storage Authority	NIL	133.4	69.6	90.1	50.5	343.6
Central Rift Water Works Development Agency	NIL	61	225	111	30.5	427.5
Tana Water Works Development Agency	NIL	26	140	NIL	6.5	172.5
Coast Water Works Development Agency	NIL	44	30	NIL	NIL	74
Tanathi Water Works Development Agency	NIL	50	80	NIL	7	137
Total	500	1,764.4	1,869.6	1,879.1	199.5	6,212.6

4.0. AUDIT FINDINGS

- 4.1. The Government of Kenya has made efforts to put in place, both legal and institutional measures to address water harvesting and storage challenges through the construction of large, medium, small dams, and water pans. Records from the Ministry indicates that Four Hundred Seventy Three (473) small dams and water pans were constructed by various Agencies between FY 2017/2018 and 2021/2022. To enhance synergy within the water sector, the Government merged the State Department for Irrigation with State Department for Water and Sanitation through Executive Order No. 6 of 2019 to form the Ministry of Water, Sanitation and Irrigation.
- 4.2. The water sector has developed the National Water Master Plan through which it has mapped it's strategy in line with the Kenya Vision 2030. The interventions are expected to address water resource management challenges. Construction of small dams and water pans is amongst the measures and strategies identified to achieve this. Records from the Ministry indicates that the various Agencies constructed Four Hundred Seventy Three (473) small dams and water pans between FY 2017/2018 and 2021/2022 as shown in **Table 3**.

Table 3: Number of Small Dams and Water Pans Constructed by Agencies.

FY	NIA	NWHS	LVS WWDA	CRV WWDA	Northern WWDA	CWWDA	Tana WWDA	Tanathi WWDA	Total
2017/18	23	-	2	-	14	-	-	-	39
2018/19	46	24	7	20	18	14	-	3	132
2019/20	24	7	7	-	7	1	12	2	60
2020/21	144	12	4	-	18	1	4	-	183
2021/22	55	-	1	-	3	-	-	-	59
Total	292	43	21	20	60	16	16	5	473

- 4.3. The construction of the small dams and water pans was expected to substantially reduce wastage through run offs and minimise distances covered by people and animals in search of water. The audit established that construction of small dams and water pans has had successes as indicated below.

Increased Irrigation and Livestock Watering Activities.

- 4.4. During physical verification, it was noted that projects that held water had positive impact on the beneficiaries. The community utilised the water for; irrigation activities, livestock watering, and domestic usage. For instance, Gitange II earth dam in Kirinyaga and Barariru water pan in Laikipia had irrigation activities ongoing, livestock watering and beneficiaries drawing water. According to interviews with beneficiaries, Har-Handharaka water pan in Isiolo was holding water despite a three year drought in the area. The water pan served the pastoralist communities who brought thousands of livestock in turns everyday.
- 4.5. Further, the audit noted impact beyond intended beneficiaries for example: Ndimu earth dam was a habitat for several types of birds, animals and fish, Sosurwo water pan and haba haba small dam had fish, Lenguruman, Ilmotiok and Kijabe II water pans were also used by wild animals including elephants. **Figure 3** illustrates some of the positive impacts from sampled projects visited.

Figure 3: Photos showing the community benefiting from the pan



Top row; A gentleman drawing water for use from Kwa Kamelo water pan and herds drinking water at Harr Handharaka water pan.

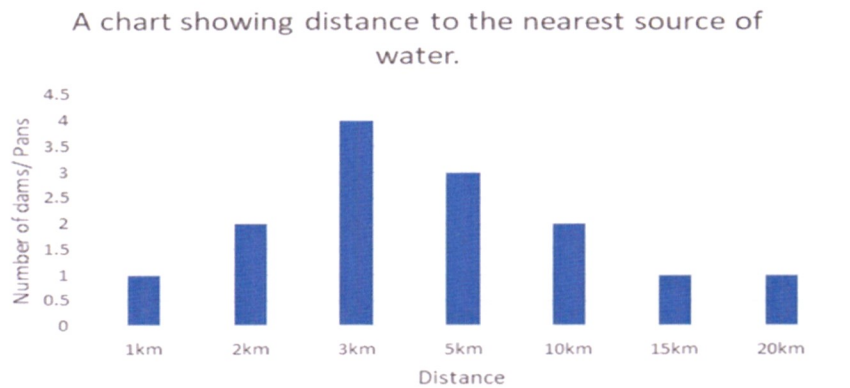
Bottom row; well irrigated crops at Kanjeria water pan and livestock drinking water from a cattle trough at Sosurwo water pan.

Source; photos taken by auditors on- clockwise 3rd February, 2022, 31st January, 2022, 6th July, 2022 and 29th June, 2022.

Increased Accessibility to Water Points

- 4.6. Interviews with beneficiaries revealed that prior to construction of small dams and water pans, they used to walk between one (1) to twenty (20) km in order to access water. The presence of small dams and water pans has greatly helped in reducing the distance travelled as illustrated in **Figure 4**.

Figure 4: Distance to the nearest water source



- 4.7. Despite construction of small dams and water pans achieving positive impacts on the environment and the community, the audit established that there were challenges in the planning, implementation, and monitoring processes as discussed below:

I. Lack of Clarity in the Ministry's Planning

- 4.8. The Ministry's Strategic Plan, 2018 – 2022 set to increase water storage from 4.5 million cubic meters in 2017 to 14 million cubic metres by 2022. In addition, the National Water Master Plan, 2030 set to achieve irrigation, domestic and industrial water supply for a five (5) and ten (10)-year probable drought period. The Master Plan also set a target of 17,480 small dams and water pans to be constructed by the year 2030 by the Ministry and its' Agencies, to contribute in achieving the goals to increase water capacity.
- 4.9. The audit sought to establish whether the Ministry had clear plans and strategies to achieve the goals at planning and implementation stage. It was

however, not possible to establish clearly identified targets at Agency and regional level as the MoWSI did not avail annual work plans for the period under review. For the Agencies, other than National Irrigation Authority, there was no indication that the target in the annual work plans was tied to their strategic objective as the Agencies received funds for projects already identified by the Ministry. The audit was not able to establish the chain of decision making of project allocation starting from needs assessment, public requests, choice of projects at Agency level and decision making by the Ministry.

- 4.10. Further, interviews with Ministry officials indicated that they were not tracking the implementation of the projects. In addition, there was no clear and comprehensive inventory on all the projects that had been implemented in the duration between 2017/2018 and 2021/2022 FY. Therefore, the audit could not establish the total number of projects undertaken during this period or how far or close the Ministry was in achieving the 17,480 dams, or the 14 million cubic meters of water storage by 2022.
- 4.11. Interviews with the Agencies revealed that in many cases, the projects were requested through or by political and area leaders and allocation of funds to projects was based on need. However, the Ministry had no documentation such as initial site reports to show how this need was determined and how they arrived at a particular project from the list of projects. It was also not clear the criteria the Ministry used to allocate the funds to the various Agencies. Further the audit could not establish a linkage between the allocation of funds against previously established national, regional and local priorities.

II. Inadequate Collaboration by the Ministry and Agencies

- 4.12. The National Water Master Plan (NWMP), 2030, states that the establishment of an efficient and effective institutional framework is essential to achieve systematic development and management of the water sector.

- 4.13. The audit observed lack of collaboration among the Agencies throughout the process from planning to reporting. There was no clear combined approach to meeting the NWMP objectives and no evidence of shared data on small dams and water pans. Interviews with the Ministry indicated that there had been a collaborative committee with representatives from each Agency but it was not active and no documentation on their meetings or decision-making was provided. Interviews with the Agencies revealed they were not aware of the programs of other Agencies and generally worked in silos as they used the project list provided by the Ministry.
- 4.14. The audit also noted that the Ministry and Agencies did not have a common reporting procedure on the implementation of the small dams and water pans projects. Apart from NIA, the other Agencies did not provide sustainability reports on the projects they had undertaken. The Ministry did not provide any comprehensive, consolidated periodic reports from all the Agencies to show the status and impact of the implementation of small dams and water pans. In addition, the audit revealed that the Ministry had not mapped out the current projects and their status, thereby increasing the risk of overlap and gaps in implementation.
- 4.15. For instance, in Nakuru, it was observed that the County Government of Nakuru had drilled a borehole right next to the Ndimu Water Pan by National Irrigation Authority. While in Kwale County, NIA and NWWSA had constructed water pans adjacent to one another. It was not clear whether needs assessment had been done by either Agency or what informed the need to have adjacent projects when there were other parts of the county that also needed the facilities.

III. Delay in Implementation of the Projects.

- 4.16. Review of contract documents from all the Agencies revealed that construction of small dams and water pans usually took between six (6) to nine (9) months to complete. The audit revealed instances where the projects took longer than 9 months. For instance, Makororo water pan in Taita Taveta County which is under Coastal Water Works Development Agencies

(CWWDA), started in 2018/2019 financial year was incomplete at the time of the audit. The project was abandoned by the contractor due to non-payment. In Nakuru, Barina water pan under Central Rift Valley Water Works Development Agency (CRVWWDA), started in 2018/2019 financial year was still under construction three (3) years after the contract was awarded.

4.17. The Agencies attributed the delay in completion of the projects to failure by the MoWSI to disburse money in time due to what they said was budgetary constraints. For example, in all the fourteen (14) projects undertaken by CWWDA in the financial year 2018/2019 amounting to Kshs.76,500,342.50, only Kshs. 15,125,440.70 representing 19.77% had been paid as at the time of the audit. This delay would mean that the intended beneficiaries will have to wait longer and continue to walk long distances in order to water their livestock and satisfy domestic needs.

4.18. The audit further revealed that apart from NWHSA whose projects were handed over to the county government for operation and maintenance, the other Agencies had not handed over their projects and where they had, it was not adequately done. Tanathi, Tana, Coast, and Central Rift Water works had not officially handed over the projects to the beneficiaries. In addition, Keringet dam under Central Rift Valley Water Works Development Agency, Kianyange and Thimangiri earth dams for Tana Water Works Development Authority, Syomithumo water pan under TANAWWDA and Warero pan under National Irrigation Authority had been completed but not yet handed over to the community. The audit could not establish the reasons behind the delay in handing over of the projects as they still lacked custodianship.

IV. Inadequacies in Implementation of the Projects

A. Deviation from Standards Outlined in the Practice Manual

4.19. To ensure development of water conservation structures that are safe, robust, economic, environmentally, and legally compliant. The MoWSI

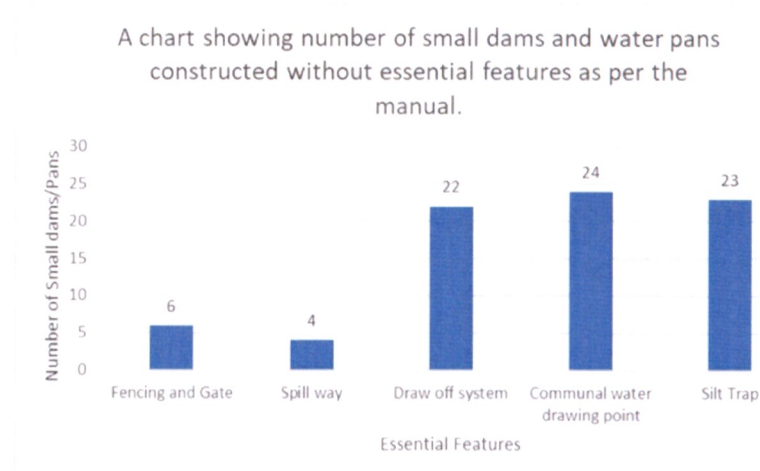
developed the Practice Manual¹⁰, 2015, 2nd Edition. The Manual provides standards to ensure that water conservation structures are designed and built to acceptable standards.

- 4.20. The Manual further states that a typical pan design should have the following components; reservoir, inlet, outlet, and silt trap. Due to their shallow depths, water storage pans are usually not suitable as permanent water sources for high evaporation areas, while for catchment areas subject to erosion, silt traps have to be included in the design.
- 4.21. Interviews with project engineers from the Ministry, NIA, NWHSA, and Water Works Development Agencies revealed that spillways, silt traps, fencing, and draw-off systems are some of the components prioritized during planning for construction of small dams and water pans. A visual look of the critical components in a dam or water pan, their description and functions are shown in **Annexure 6**.
- 4.22. However, field verifications and documents review of forty-nine¹¹ projects revealed that components such as fencing and gates, spillways, draw off system, communal water points and silt traps were not incorporated in some of the projects as per the Practice Manual for small dams and water pans. For instance, twenty-four out of the forty-nine dams and water pans did not have communal water drawing points. **Figure 5** shows the number of small dams or water pans that lacked essential features.

¹⁰ Practice Manual for Small Dams, Pans and other Water Conservation Structures in Kenya, 2015. 2nd Edition

¹¹ Project files for two (2) projects were not provided and one (1) project abandoned

Figure 5: Dams and Water Pans without essential structures



- 4.23. Failure to incorporate essential components in the projects could be attributed to non-adherence to the guidelines and standards in the Practice Manual by the implementing Agencies or site-specific ad hoc changes made by engineers. For instance, the four water works audited did not provide any drawing design document for the inspected small dams and water pans which indicated that projects are being constructed without drawing designs.
- 4.24. Where drawing designs were provided they did not include all the components as required by the Practice Manual for small dams and water pans. This has resulted in the construction of small dams and water pans that do not meet the recommended standards as per the manual. **Figure 6** shows photos of how beneficiaries are using the facilities without some of the essential structures as illustrated in **Annexure 6**.

Figure 6: Photos showing pans without essential structures



Top row; A lady drawing water directly from Kwa Kamelo water pan due to lack of communal water drawing point and water being extracted directly from Olokiil pan using a pump due to lack of draw off points.

Bottom row; Cattle accessing water directly from Mukengesya pan due to lack of cattle trough and a lady drawing water from Syomithumo pan due to lack of communal water drawing point.

Source; photos taken by auditors on- clockwise 3rd February, 2022, 31st January, 2022, 25th January, 2022 and 2nd February, 2022.

B. Deviation from Initial Designs or Approved Bill of Quantities

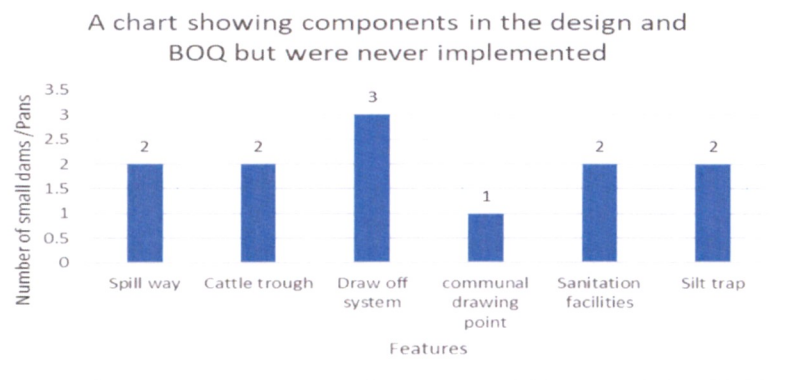
- 4.25. Project designs and Bill of Quantities are tools designed to guide the components that should be included in the project and process. They are outlined in the Practice Manual¹² as vital planning and quality control tools in the construction of small dams and water pans.
- 4.26. During physical verifications conducted by the audit team, it was noted that in the thirty-three (33) small dams and water pans whose design documents and BQs were provided, nine (9) small dams and water pans namely; Masongaleni, Warero, Keringet, Gwakagiri, Ilmotiok¹³, Kawala, Gwaseni, Mbilini, and Kwa Abdallah had their BQs partially implemented.

¹² Practice manual for small dams and water pans Chapter 11.

¹³ Changes made during implementation was approved by NWHSA and a copy provided.

4.27. Physical verification by the audit team revealed that deviation from approved BQs was a common occurrence despite project engineers from the Ministry and Agencies confirming during interviews that the designs and BQs are usually implemented as planned. **Figure 7** shows number of small dams and water pans with missing structures despite having been provided in the BQs.

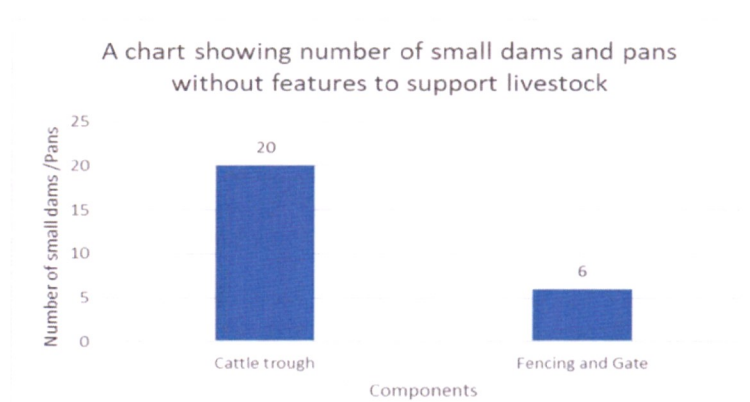
Figure 7: Small Dams and Water Pans whose designs were altered during implementation



4.28. The audit further noted that in the forty-seven (47¹⁴) small dams and water pans, twenty small dams and water pans did not have livestock support features such as cattle troughs and fencing as they had been omitted, despite the need and demand by the community to water their livestock as shown in **Figure 8**.

¹⁴47 is the number of small dams and water pans used by the communities to water their livestock, 4 were purely for irrigation and one was abandoned.

Figure 8: Small Dams and Water Pans constructed without features to support livestock



4.29. Consequently, in the remaining twenty-seven (27) small dams and water pans with cattle troughs, some were not being utilised because water was not channelled directly into the troughs, channels were blocked, the troughs were inaccessible, and gate valves vandalised as shown in **Figure 9**.

Figure 9: Non-functional component.



Top row; Mukengesya and Hababa cattle troughs without water channelled directly into them.

Bottom row; Vandalised gate valve at Thimangiri water pan and blocked channel at Kipchepchep water pan.

Source: photos taken by auditors on Clockwise 25th January, 2022, 19th July, 2022, 28th June, 2022 and 12th July, 2022 respectively.

4.30. The Agencies attributed these alterations and deviations from intended designs and BQs to unforeseen challenges majorly delayed funds and unpredictable disbursements from the Ministry.

4.31. These omissions and deviations have resulted in faster deterioration of the structures as water users collect water directly from the reservoir, silt gets its way into the reservoir, and cattle are left to wander up the embankment and into the reservoir thus wearing out the embankment and accelerating siltation.

V. Inadequate Public Participation and Sensitization

4.32. The Practice Manual for small dams and water pans states that successful development of safe, economically and environmentally appropriate small dams, pans, and other water conservation structures, like any other development project, demands the active participation of stakeholders to ensure proper coordination, planning, smooth implementation, and sustainable benefits. The importance of actively developing and sustaining relationships with affected communities and other stakeholders throughout the life of such projects has proved beneficial in risk management and has delivered better project outcomes¹⁵.

4.33. Further, the manual states that, one of the principal objectives of stakeholder engagement is to build consensus between the projects and community members to mitigate potential risk of conflicts which can be detrimental to the success of the water conservation project.

4.34. Public participation helps to ensure that the community owns the project and is made aware of the project objectives. When this is done they can also offer useful advice on how best to implement and sustain the project.

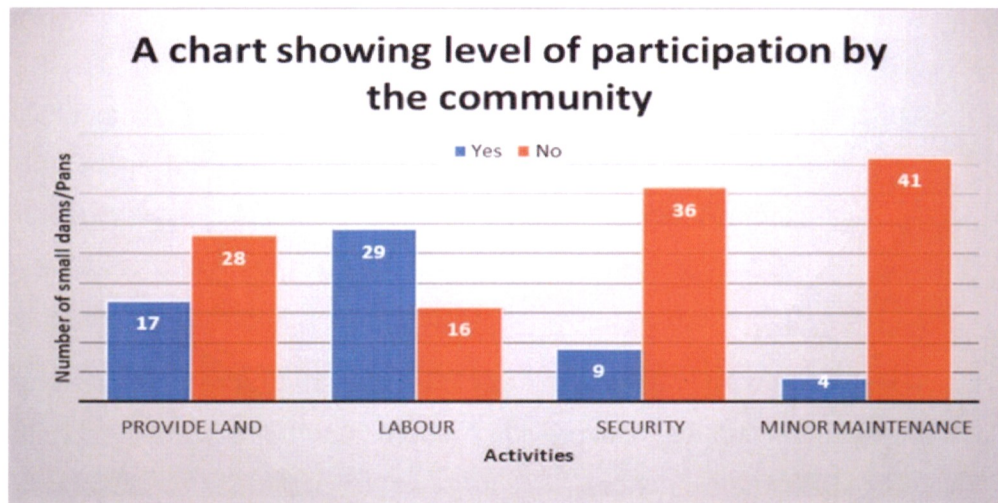
4.35. Analysis of responses from beneficiaries in forty-five¹⁶ (45) projects visited revealed that some of the ways in which the communities were involved

¹⁵ Practice manual for small dams and water pans (pg. 78, 5.1)

¹⁶ 3 projects lacked beneficiaries to fill the questionnaire. Beneficiaries in 3 projects stated that they were never involved while one (1) project was abandoned.

included; providing casual labour to the project during site clearance and in some areas, they were consulted on the availability or preparation of land. **Figure 10** shows the level of community engagement.

Figure 10: Level of participation by the community



- 4.36. Further, responses from interviews with members of the community indicated that there was no proper sensitization. Most community members expressed concerns that they had no prior information about the projects before implementation.
- 4.37. National Irrigation Authority had identified this gap and started carrying out post implementation capacity building programs for beneficiaries in November 2021 to enhance their knowledge on irrigated agricultural crop production and project operations and sustainability.
- 4.38. The absence of proper public participation and sensitization could be as a result of failure by the implementing Agencies to prioritize community involvement during and after project implementation. The audit observed several indications of poor public participation such as; lack of dedicated departments that could have liaised with the community post project implementation and loss of project ownership to individuals as was the case in Kilifi, Kawala water pan.

- 4.39. Inadequate sensitization has resulted in lack of awareness by the beneficiaries on how to maintain the small dams and water pans to ensure their longevity, for example, desilting of silt traps to minimize sedimentation of the small dams and water pans that could be undertaken by the beneficiaries is not being done.
- 4.40. On the other hand, inadequate participation of the community has led to lack of project ownership by the beneficiaries and increased risk to the sustainability of the projects.

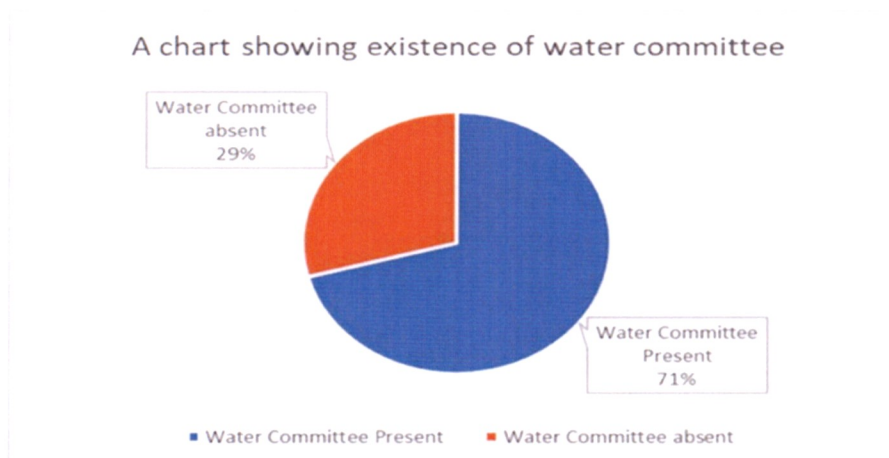
VI. Inactive Water Committees

- 4.41. According to the Irrigation Act, Section 19 (2) the Cabinet Secretary, through the Authority, shall provide resources and direction for capacity building and technical services to irrigation water users associations, scheme management committees, dispute resolution committees, and other farmer associations to enable them to progressively accept and assume full responsibility for management of national or public schemes under appropriate Agency contracts with the National Government or county governments, as the case may be.
- 4.42. Further, the Practice Manual, states that participation of the community in the processes of planning and design will then be ensured through the legal and social framework overseen by implementing Agencies. The rights and responsibilities of the community must be discussed and agreed in a structured way and formal registration of a community-based organisation (or dam management committee) ensured within the prevailing legal framework¹⁷.

¹⁷ Practice manual for small dams and water pans (pg. 79, 5.2)

4.43. Interviews conducted in the forty-eight¹⁸(48) small dams and water pans revealed that thirty-four (34) had committees in place as presented in **Figure 11**.

Figure 11: Existence of water committee



4.44. Further, out of thirty-four (34) water committees, only twenty-three (23) were active at the time of the audit while eleven (11) were inactive. The Audit Team observed that projects that did not have active water committees to manage them, faced challenges of vandalism on the components such as fences, gates, gate valves, and poor maintenance of the structure and its environs. The absence of active water committees resulted in the following inefficiencies.

A. Inadequate Maintenance

4.45. Section 21(1) of the National Water Harvesting and Storage Regulations states that an owner or operator of water works shall be responsible for the safety of the storage dam and shall directly or through an agent undertake the maintenance and management of the waterworks.

4.46. According to the Practice Manual for small dams and water pans, in order to achieve sustainable projects (in the case of small earth dams, pans, and other water conservation structures, the structure should have a useful

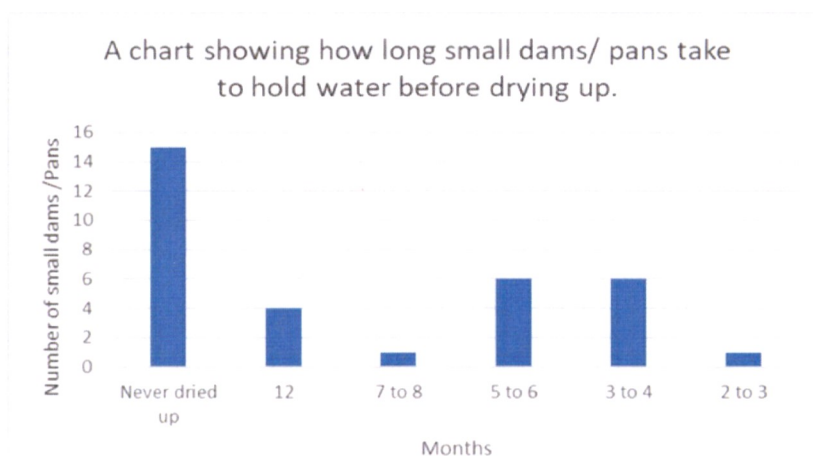
¹⁸ 3 projects lacked beneficiaries to fill the questionnaire. 1 project abandoned.

lifetime of twenty (20) to twenty-five (25) years) the beneficiaries should be actively involved in the planning, construction and particularly operation and Maintenance of the facility¹⁹.

4.47. Analysis of community responses revealed that in forty-one (41) out of forty-five (45) projects, no maintenance activities were being carried out by the communities as shown in **Figure 10**.

4.48. From observations and discussions with the users, the small dams and water pans with proper management such as Kwa Matu in Machakos, Matuu Community Projects, Gitiburi in Embu, Sosurwo and Ndimu in Nakuru held more water for longer periods as shown in **Figure 12**. The water users in the respective small dams and water pans were able to carry out more activities such as irrigating variety of crops. The pans were well protected from interference from animals and their environs had vegetation cover, which reduced erosion and siltation.

Figure 12: Duration of before drying up



4.49. In contrast, observation shows the structures that lacked custodianship were dilapidated and in bad shape. Interviews²⁰ with community members

¹⁹ Practice manual for small dams and water pans (Section 5.3.1)

²⁰ Community Questionnaires

revealed that the absence of committees resulted in lack of leadership, security, organization, and cooperation in maintenance of the small dams and water pans leading to dilapidated state of the projects as shown in **Figure 13**.

Figure 13: Photos showing lack of maintenance in dams and pans without custodianship



Top row; Masongaleni water pan silting at the inlet, with damaged and displaced gabion; cattle trough abandoned with overgrown reeds at Iriatune water pan.

Bottom row; A damaged fence at Mukengesya water pan and overgrown plants in a communal water point at Thimangiri water pan.

Source: photos taken by auditors on Clockwise 27th January, 2022, 12th July, 2022, 14th July, 2022 and 2nd February, 2022 respectively.

B. Siltation of small dams and water pans

4.50. The Practice Manual for small dams and water pans states that; the ability of sedimentation to seriously reduce the useful lifetime of the reservoir means that erosion control should be included, designed, costed, and implemented as an integral part of the project.

- 4.51. Excessive sedimentation can be addressed through improvements of silt traps, improved control of inflows, or catchment improvement campaigns. Twenty-six (26) out of fifty-one (51)²¹ small dams and water pans, had silt traps constructed but lacked maintenance and hence had accumulated silt and were non-functional. **Figure 14** shows silt traps filled with silt as a result of lack of maintenance. Siltation of the small dams and water pans may reduce the lifespan and volume of water harvested.

Figure 14: Photos of silted silt traps



Left to right; Syomithumo and Nkoroshon water pans showing silted silt traps respectively.
Source: Photos taken by auditors on 25 January, 2022 and 31 January, 2022 respectively.

VII. Inadequate Monitoring

- 4.52. Section 21(4) b of The National Water Harvesting and Storage Regulations states that for purposes of management and maintenance of the waterworks, the owner or operator of the waterworks shall create a monitoring and evaluation system for optimal use of the works.
- 4.53. Section 27 (1) (a) of the Irrigation Act highlights that the, Cabinet Secretary shall, in consultation with the county governments; develop and implement a monitoring and evaluation system for the development, governance,

²¹ One (1) project abandoned

management, and financing of irrigation at all levels, and this may include assessment of inputs, immediate outcomes and ultimate impacts based on the results.

- 4.54. According to the National Irrigation Authority guide on Monitoring, Evaluation and Learning Guide Framework, a Monitoring and Evaluation document shall help to track and assess the results of the intervention throughout the life of a program/project.
- 4.55. **Water Harvesting in Practice: “Towards Building Resilient Livelihoods in Semi-Arid Zones”** also states that the authority involved in construction of water pans should Prepare a Monitoring and evaluation system to track the condition of the pan and also leave in place a system for equitable sharing of water, gender mainstreaming, conflict management and environmental management as well as operation and maintenance of pumps and other accessories to enhance sustainability.
- 4.56. During field visits to assess the status of the small dams and water pans, it was noted that monitoring was not being undertaken after the project completion. The entities attributed this to the fact that their contracts end on the handing-over date since there is no budget provision for post-implementation activities.
- 4.57. Due to lack of monitoring, the Ministry and authorities are not able to ascertain the status of the small dams and water pans. The authorities also lack timely detection of defects on the existing projects such as vandalised fences and gates, blocked piping, broken taps, isolated cattle troughs, and siltation as shown in **Figure 15**. Interviews²² with NIA officials revealed that it is far cheaper to continually monitor and desilt silt traps for small dams and water pans than to construct new ones or do major rehabilitation.

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Figure 15: Photos showing vandalized components



Top row: Vandalized gates at Nkoroshon and Kijabe II water pans respectively.

Bottom Row: A vandalized fence at Barariru earth dam and vandalized tap for communal water at Gitange II water pan respectively.

Source: photos taken by auditors on 31st January, 2022, 19th July, 2022, 20th July, 2022 and 14th July, 2022 respectively.

5.0. CONCLUSION

- 5.1. The government has achieved a significant milestone on harvesting water through developing National Water Master Plan, 2030 which seeks to construct 17,860 small dams and water pans. The projects have alleviated water scarcity, especially during the dry spells by increasing accessibility to water for domestic, livestock and irrigation. In addition, the Ministry developed policies and guidelines to assist in the construction of small dams and water pans. However, the implementing Agencies have not been able to effectively implement guidelines put in place by the Ministry in constructing small dams and water pans. In addition, there are gaps that have hindered effective construction of small dams and water pans as detailed below.
- 5.2 The implementing Agencies were expected to use guidelines in the Practice Manual to construct small dams and water pans. However, the guidelines are not fully observed by the Agencies while carrying out the projects. This can be partly attributed to laxity by the Agencies and inadequate funding from the Ministry. This constrained the implementation and monitoring of projects, forcing the Agencies to eliminate some components during implementation.
- 5.3 Inadequate collaboration between the Ministry and implementing Agencies poses an imbalance and lack of obscurity in the implementation of the projects. It is also a clear missed opportunity to have better coordinated implementation as well as shared data that maps out Kenya's progress in achieving the National Water Master Plan, 2030.
- 5.4 The Agencies lack a structured system for monitoring and reporting of projects and proper sensitization of the communities on the importance of protecting the projects. The Agencies have not taken it upon themselves to ensure that an active water committee are formed before handing over the projects. The water committees play a vital role in ensuring that the projects are managed well after handing over to ensure sustainability. This in turn

contributed to lack of care by the community, resulting in common cases of vandalism and deterioration of the facilities and projects.

5.5 The Agencies involve the communities through a site meeting during the at the start of the projects. However, the Agencies have not adequately involved the beneficiaries during and after the project implementations. Community engagements during the project implementations ensures project ownership (custodianship) by the beneficiaries thus proper use and maintenance by the beneficiaries.

5.6 Construction of small dams and water pans was expected to reduce physical distance to water sources and solve water scarcity problems. However, in some areas, beneficiaries still have to walk long distances in search of water for domestic use and for livestock due to delays in completion of the projects mainly occasioned by the failure of the Ministry to disburse funds for construction of small dams and water pans.

6.0. RECOMMENDATIONS

- 6.1. From the findings and conclusions of the audit, the Auditor-General makes the following recommendations for consideration by the Ministry of Water, Sanitation and Irrigation (MoWSI) to facilitate effective construction of small dams and water pans.
- 6.2. The Ministry should put in place measures to ensure implementing Agencies harmonize their list of projects and locations to better coordinate the distribution and implementation of the projects. A central inventory for all relevant Agencies and Institutions would provide not only the number of projects implemented, but indicate the location and status, thereby providing a real time information to the Ministry on the actual need on the ground.
- 6.3. The Ministry through the National Treasury should provide the funding for ongoing projects with approved budgetary allocation for completion to avoid cases of stalled and abandoned projects or deviation from specifications by contractors.
- 6.4. The Ministry should ensure that the set standards in the Practice Manual for the Construction of Small Dams and Pans is adhered to. The Practice Manual should be utilized as the guiding tool in construction of small dams and water pans. The Ministry should also ensure measures for non-compliant Agencies who disregard it in the implementation. Where deviations are made, a report of the exceptions should be completed.
- 6.5. The Ministry should develop a framework for post-implementation programs. This will ensure that enough resources are allocated for monitoring and reporting to facilitate maintenance of the facilities in order to serve beneficiaries for a longer period and ensure sustainability.
- 6.6. The Ministry should enhance the roles of water committee and conduct sensitization before the commencement of projects, since they play a critical role in the planning, implementation, and maintenance of the facilities.

7.0. Annexures

Annexure 1: Audit Questions

No	Main Audit Question	Audit Sub-Questions
1.	What planning strategies and monitoring framework have the Ministry and Implementing Agencies put in place to ensure adequate implementation of small dams and water pans?	1. How does the Ministry allocate funds to the implementing Agencies for the construction of small dams and water pans?
		2. What Monitoring and Evaluation framework has the Authority put in place to track the progress and status of small dams and water pans?
3.	Are there standards for constructing small dams and water pans?	1. Do the Agencies adhere to standards provided by the Ministry in planning the construction of small dams and water pans?
		2. Do the Agencies construct small dams and pans as planned?
3.	To what extent has the small dams and water pans constructed by the Agencies impacted the beneficiaries/community?	1. Do the implementing Agencies engage the community in extension services, public awareness, and participation?
		2. What has been the impact of small dams and water pans on the community?

Annexure 2: List of Small Dams and Water Pans Sampled

No	Name of Dam/Pan	County	Entity
1.	Muambani Earth Pan	Kitui	Tanathi Water Works
2.	Masongaleni Water Pan	Kitui	Tanathi Water Works
3.	Ndovoini Water Pan	Machakos	Tanathi Water Works
4.	Kitambasya Water Pan	Kitui	Tanathi Water Works
5.	Syomuithumo Water Pan	Kitui	Tanathi Water Works
6.	Oloika Water Pan	Kajiado	National Irrigation Authority
7.	Nkoroshoni Water Pan	Kajiado	National Irrigation Authority
8.	Kwa Kamelo Water Pan	Machakos	National Irrigation Authority
9.	Kwa Matu Water Pan	Machakos	National Irrigation Authority
10.	Itinga Water Pan	Machakos	National Irrigation Authority
11.	Mukengesia Water Pan	Machakos	National Irrigation Authority
12.	Kwa Mania Water Pan	Machakos	National Irrigation Authority
13.	Olookil Water Pan	Kajiado	National Irrigation Authority
14.	Kwa Joseph Water Pan	Kajiado	National Irrigation Authority
15.	Nkirasha Water Pan	Kajiado	National Irrigation Authority
16.	Lenguruman Water Pan	Isiolo	National Irrigation Authority
17.	Ndimu Earth Dam	Nakuru	National Irrigation Authority
18.	Sosurwo Water Pan	Nakuru	National Irrigation Authority
19.	Kanjeria Earth Dam	Laikipia	National Irrigation Authority
20.	Harr Hand haraka Water Pan	Isiolo	National Irrigation Authority
21.	Kaplelach Earth Dam	Nakuru	National Irrigation Authority
22.	Museveni Earth Dam	Nyahururu	National Irrigation Authority
23.	Kanguongo Small Dam	Nyandarua	National Irrigation Authority
24.	Warero Water Pan	Laikipia	National Irrigation Authority
25.	Barariru Water Pan	Laikipia	National Irrigation Authority
26.	Gwa-Kung'u Small Dam	Nakuru	National Irrigation Authority
27.	Kimotony water pan	Baringo	Central Rift Water Works
28.	Miiriini Small Dam	Nyandarua	Central Rift Water Works
29.	Barina Water Pan	Nakuru	Central Rift Water Works

No	Name of Dam/Pan	County	Entity
30.	Gathara Water Pan	Nyandarua	Central Rift Water Works
31.	Kipchepchep Water pan	Elgeyo Marakwet	Central Rift Water Works
32.	Gichaka Dam	Nyandarua	Central Rift Water Works
33.	Keringet water pan	Nakuru	Central Rift Water Works
34.	Kianyange Earth dam	Nyeri	Tana Water Works
35.	Thimangiri Earth dam	Meru	Tana Water Works
36.	Makuyu Small Dam	Muranga	Tana Water Works
37.	Itangi 2 Earth dam	Kirinyaga	Tana Water Works
38.	Mariara Kirigara Earth dam	Embu	Tana Water Works
39.	Gwakagiri Earth dam	Nyeri	Tana Water Works
40.	Iriaitune Small Dam	Embu	NWHS
41.	Gitiburi Water Pan	Embu	NWHS
42.	Ilmotiok Water Pan	Laikipia	NWHS
43.	Haba Haba Dam	Laikipia	NWHS
44.	Kijabe II Water Pan	Laikipia	NWHS
45.	Muhaka Dam	Kwale	NWHS
46.	Makororo Water Pan	Taita Taveta	Coast Water Works
47.	Kawala Pan	Kilifi	Coast Water Works
48.	Mwatate Water Pan	Taita Taveta	Coast Water Works
49.	Migodomwani (Karimboni) Water Pan	Kilifi	Coast Water Works
50.	Gwaseni Water Pan	Kilifi	Coast Water Works
51.	Mbilini/Nyango Dam	Kwale	Coast Water Works
52.	Kwa Abdallah Earth Dam	Kilifi	Coast Water Works

Annexure 3: List of Officer Interviewed.

Position of interviewee	Purpose of the interview
Director of Irrigation department from Ministry of Water Sanitation and Irrigation	To understand the roles and responsibilities of the department within the Ministry in construction of small dams and water pans.
Director of Water department from Ministry of Water Sanitation and Irrigation	To understand the roles and responsibilities of the department within the Ministry in construction of small dams and water pans.
Engineer In charge of small dams and pans construction -National Water Harvesting and Storage Authority.	To understand and gather information on the construction of small dams and water pans by the Authority.
Head, Engineering and Head Planning department from National Irrigations Authority.	To understand and gather information on the construction of small dams and water pans by the Authority.
Chief Manager infrastructure-Tanathi Water Works Development Agency	To understand and gather information on the construction of small dams and water pans by the Authority.
Technical Department officers from Coast Water Works Development Agency	To understand and gather information on the construction of small dams and water pans by the Agency.
Engineers from Central Rift Water Works Development Agency	To understand and gather information on the construction of small dams and water pans by the Agency.
Technical Department Officers from Tana Water Works Development Agency	To understand and gather information on the construction of small dams and water pans by the Agency.

Annexure 4: List of Documents Reviewed

Document	Information needed from the document.
The Water Act, 2016	To understand the legal mandate of the Ministry, National Water Harvesting and Storage Authority, and the water works development Agencies.
The Irrigation Act, 2019	To understand the legal mandate of NIA
Approved Strategic Plan for (2013-2017) and (2018-2022) Tanathi Strategic Plan 2018/19 to 2022/23	To obtain information on operations of the Ministry and Tanathi, strategic objectives, organizational structure, goals, and functions.
Procurement documents	To understand the procurement process undertaken by the implementing Agencies.
Work plans for the implementing Agencies	To obtain information on the construction and maintenance of the dams.
Practice manual for small dams and water pans	To obtain information on components of small dams and pans, provide a framework for the construction of small dams and pans.
Annual Budgets FY 2016/17-2020/21	To obtain information on the sources and level of funding.
Constitution of Kenya, 2010	To assess whether the Ministry and the Agencies are delivering services as required by the constitution.
Kenya Vision 2030	To assess whether the Ministry is working towards achieving vision 2030-social pillar.





Annexure 5: Sources of assessment criteria

No	Criteria	Source
1.	The establishment of an efficient and effective institutional framework is essential to achieve a systematic development and management of the water sector.	The National Water Master Plan, 2030
2.	A typical pan design should have the following components; reservoir, inlet, outlet, and silt trap.	Practice Manual for Small Dams and Water Pans 2 nd Edition, 2015
3.	Project designs and bill of quantities are vital planning and quality control tools designed to provide guidance on the components that should be included in the project and process.	Practice Manual for Small Dams and Water Pans 2 nd Edition, 2015
4.	Successful development of safe, economically, and environmentally appropriate small dams, pans, and other water conservation structures, like any other development project, demands the active participation of stakeholders to ensure proper coordination, planning, smooth implementation, and sustainable benefits. The importance of actively developing and sustaining relationships with affected communities and other stakeholders throughout the life of such projects has proved beneficial in risk management and has delivered better project outcomes.	Practice Manual for small Dams and Water Pans 2 nd Edition, 2015
5.	The Cabinet Secretary, through the Authority, shall provide resources and direction for capacity building and technical services to irrigation water users associations, scheme management committees, dispute resolution committees, and other farmer associations to enable them to	Irrigation Act, 2019 Section 19 (2)

No	Criteria	Source
	<p>progressively accept and assume full responsibility for management of national or public schemes under appropriate Agency contracts with the National Government or county governments, as the case may be.</p>	
6.	<p>One of the principle objectives of stakeholder engagement is to build consensus between the projects and community members to mitigate potential risk of conflicts that can be detrimental to the success of the water conservation project.</p>	<p>Practice Manual for Small Dams and Water Pans 2nd Edition, 2015</p>
7.	<p>Participation of the community in the processes of planning and design will then be ensured through the legal and social framework overseen by implementing Agencies. The rights and responsibilities of the community must be discussed and agreed in a structured way and formal registration of a community-based organisation (or dam management committee) ensured within the prevailing legal framework</p>	<p>Practice Manual for Small Dams and Water Pans 2nd Edition, 2015</p>
8.	<p>The Cabinet Secretary shall, in consultation with the county governments; develop and implement a monitoring and evaluation system for the development, governance, management, and financing of irrigation at all levels, and this may include assessment of inputs, immediate outcomes, and ultimate impacts based on the results.</p>	<p>Irrigation Act, 2019 Section 27 (1) (a)</p>

No	Criteria	Source
9.	In order to achieve sustainable projects (in the case of small earth dams, pans, and other water conservation structures, the structure should have a useful lifetime of 20 to 25 years) the beneficiaries should be actively involved in the planning, construction, and particularly operation and maintenance of the facility.	Practice Manual for Small Dams and Water Pans 2 nd Edition, 2015
10.	The ability of sedimentation to seriously reduce the useful lifetime of the reservoir means that erosion control should be included, designed, costed, and implemented as an integral part of the project.	Practice Manual for Small Dams and Water Pans 2 nd Edition, 2015
11.	The Monitoring and Evaluation document shall help to track and assess the results of the intervention throughout the life of a program/project.	National Irrigation Authority guide on Monitoring, Evaluation, and Learning Guide Framework

Annexure 6: Components of Small Dams and Water Pans

COMPONENT	EXAMPLE
<p>Reservoir-the storage area for dam/pan water</p> <p>Spill way -A channel to safely discharge excess water to water course or away from the dam/pan</p>	 
<p>Embankment- A layer of pan/dam material compacted to form a wall to held in holding water and preventing seepage</p>	 <p style="text-align: right; font-size: small;">Photo by: A. Breitenbach Georg Ineer Website http://www.georgineer.org</p>
<p>Silt trap- A method of preventing silt from entering dam/pan. It can be place at any convenient point along the inlet channel to reduce excessive sedimentation.</p>	

Cattle trough; a structure of the pan /dam intended to provide drinking water to animals, livestock on farms or ranches or wild animals.



Communal water point; points where community members collect water and carry it home.



Fencing with gate;



Annexure 7: Ministry of Water, Sanitation and Irrigation Response to the Audit Findings.

Audit Finding	Management Response	Auditor's Comments
<p>1. Lack of Clarity on The Ministry's Planning</p> <p>Paragraph 4.8</p> <p>The audit sought to establish whether the Ministry had clear plans and strategies to achieve the goals at planning and implementation stage. However, the audit could not establish clearly identified targets at Agency and regional level as MoWSI did not avail annual work plans for the period under review. For the Agencies, other than National Irrigation Authority, there was no indication that the target in the annual work plans was tied to their strategic objective as the</p>	<p>While the National Water Master Plan had projected construction of 17,480 small dams and pans to increase water storage by 893Mm³ by 2030, the Ministry has continued to plan and review plans annually for the construction of small dams and pans depending on the available resources. Delivery of annual planned activities have often been interrupted by budget cuts and inadequate finances over the years out resulting in delayed completion of projects and even non-implementation of planned works e.g. in the year 2017/18 budget was Kshs. 2.0 billion but reduced to only Kshs. 991million in the revised budget. The Ministry plans on the construction of small dams and pans is informed by the needs of the beneficiaries where leaders identify sites and areas for the construction of water pans based on population, available sources of water and community needs. The Ministry keeps on reviewing such plans in consideration of the developments being undertaken by Agencies that influences the prioritization of projects, noting</p>	<p>The information is noted. However, no data or information was provided to show targets at the agency and regional level for construction of small dams and water pans. The information if available can be verified during a follow up audit. Our findings therefore remain as captured in the report.</p>

Audit Finding	Management Response	Auditor's Comments
<p>Agencies received funds for projects already identified by the Ministry. The audit was not able to establish the chain decision making of project allocation starting from needs assessment, public requests, choice making at Agency level and decision making by the Ministry.</p>	<p>that the needs surpass the available resources. The Constitution of Kenya 2010 vested the provision of water services in the County Government while development of national public water and sewerage works remains under the National Government. The Water Act 2016 provides guidelines on development of a plan for the transfer of assets to the users. This is being done through the Asset Transfer Plan which is being completed. Once completed, it is anticipated that the operation and maintenance of water pans and dams shall improve following guidelines proposed under transfer/handling over of assets/projects.</p>	
<p>2. Inadequate Collaboration by The Ministry and Agencies.</p> <p>Paragraph 4.12</p> <p>The audit observed lack of collaboration among the Agencies throughout the process from planning to reporting. There was no clear unified approach to meeting the NWMP objectives and no</p>	<p>The Ministry and Agencies have been carrying out projects in close collaboration in line with the Ministerial mandate and objectives as guided by the policy like the national water master plan, the National Water Policy, Water harvesting and Storage strategy 2018/2019, 2019/20 and 2021/21/22, The Big four Agenda and other related Government policies. The Ministry holds quarterly meetings with the Agencies to review progress of works and plans implementation. The Ministry and Agencies have records of such collaborative meetings and</p>	<p>No information/ Minutes were provided to verify the mentioned quarterly meetings with the implementing Agencies. The audit team had requested for the meeting Minutes with the Agencies, which have not been provided up to date.</p>

Audit Finding	Management Response	Auditor's Comments
<p>evidence of shared data on small dams and water pans. Interviews with the Ministry indicate that there had been a collaborative committee with a representative from each Agency but was not active and no documentation on their meetings or decision-making was availed. Interviews with the Agencies revealed they were unaware of what the other Agencies were doing and generally worked in silos as they work with the project list provided by the Ministry.</p>	<p>progress reports which the Audit team should have obtained. However, the Ministry endeavours to increase collaboration with the county Government to increase efficiency in funds utilization on construction of small dams and pans.</p>	<p>The information if available can be verified at future follow up audit, Our finding therefore remains as reported unless contrary evidence is provided.</p>
<p>3. Delay in Implementation of Projects. Paragraph 4.15 A review of contract documents from all the Agencies revealed that construction of small dams and</p>	<p>Annual work plans are based on the resources appropriated in budget and plans tied on the available resources. This however has been a challenge where budgets are reviewed and reduced in the middle of the planned year e.g 2017/18 the budgeted item was Kshs. 2.0 billion but later reduced to Kshs. 991 million. This has always led to delayed</p>	<p>The team appreciates this information. However, although the information was to be provided, as at the time of finalisation, the Ministry did not provide data to</p>

Audit Finding	Management Response	Auditor's Comments
<p>water pans usually takes between six (6) to nine (9) months to complete. It was noted during field visits that project timelines for Central Rift Valley and Coastal Water Works Development Agencies that were funded through equalization fund program were seriously affected. For instance, Makororo water pan- a 2018/2019 financial year project for CWWDA in Taita Taveta was found abandoned by the contractor due to non-payment. In Nakuru, Barina water pan- a 2018/2019 financial year project for CRVWDA was still under construction three (3) years after the contract was awarded.</p>	<p>implementation of planned works. The delay is further compounded by delayed release of exchequer from the National Treasury.</p>	<p>substantiate the reduced budget from Kshs. 2 billion to Kshs. 991 Million. The regions mentioned were severely affected as indicated in the report therefore the finding remains as was.</p>

Audit Finding	Management Response	Auditor's Comments
<p>4. Inadequacies in Implementation of</p> <p>i) Deviation from Standards Outlined in the Practice Manual</p> <p>Paragraph 4.20 Interviews with Project engineers from the Ministry, NIA, NWHSA, and Water Works Development Agencies revealed that spillway, silt trap, fencing, and draw-off system are some of the components they prioritize during planning for construction of small dams and water pans.</p> <p>Paragraph 4.21 However, field verifications and documents review of 49 projects by the audit team revealed that the components of the pans/ small</p>	<p>To provide standards for adequacy and safety of small dams and pans the Ministry developed the practice manual for the construction, operation and maintenance of dams in Kenya 2015. The manual is meant to provide guidelines for planning, implementation and operation of dams in Kenya. However, implementation of specific dams and pans will be guided by its specific design as conditions shall vary from site to site e.g site slopes will influence the installation of draw off systems which are mainly gravity.</p> <p>The facilities included in the water pan or/dam design are mainly dictated by the site conditions and captured in design and available resources in consideration of beneficiary priorities.</p> <p>The Ministry has set standards for the construction of dams /pans and no works can be implemented without proper design and drawings. However, some design review may be done during construction depending on emerging site conditions.</p>	<p>We appreciate this clarification. However, we expected the engineers to provide variation notes where the terrain dictated. In the absence of any clarification, the finding remain as was reported.</p>

Audit Finding	Management Response	Auditor's Comments
<p>dams such as fencing and gate, spillway, draw off system, communal water point and silt traps were not all incorporated as per the Practice Manual for small dams and water pans.</p> <p>ii) Deviation from Initial Designs/ Approved Bill of Quantities.</p> <p>Paragraph 4.25</p> <p>During physical verifications conducted by the audit team, it was noted that in the thirty-three (33) small dams and water pans whose design documents and BQs were provided, nine (9) small dams and water pans namely; Masongaleni (Tanathi WWDA), Warero (NIA), Keringet (CRVWWDA), Gwakagiri (TWWDA), Ilmotiok (NWHSA),</p>		

Audit Finding	Management Response	Auditor's Comments
<p>Kawala, Gwaseni, Mbilini, and Kwa Abdallah (CWWDA) had their BQs partially implemented.</p>		
<p>5. Inadequate Public Participation and Sensitization of Committees.</p> <p>Paragraph 4.34</p> <p>Analysis of responses from beneficiaries in forty-five (45) projects visited revealed that some of the ways in which the communities were involved included; providing casual labour to the project during site clearance and in some areas, they were consulted on the availability or preparation of land.</p>	<p>It is expected that consultation with beneficiaries is done during site selection and the implementing Agencies always engage the beneficiaries during implementation. However, most sites are located in pastoralist land where nomad movement are recorded depending on the water and pasture availability. The project committees therefore keep on changing and hence need to capacity build users. This is provided in the transfer of assets plan and shall be implemented during handing over of assets/projects.</p>	<p>We concur that some of the pans are in pastoral areas. Sensitisation and securing the dams is critical to minimise instances of vandalism. This and other benefits will accrue with cordial relationships with affected communities and other stakeholders throughout the life of the project. The team however did not find evidence of this engagement. Therefore, the finding remains the same.</p>

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