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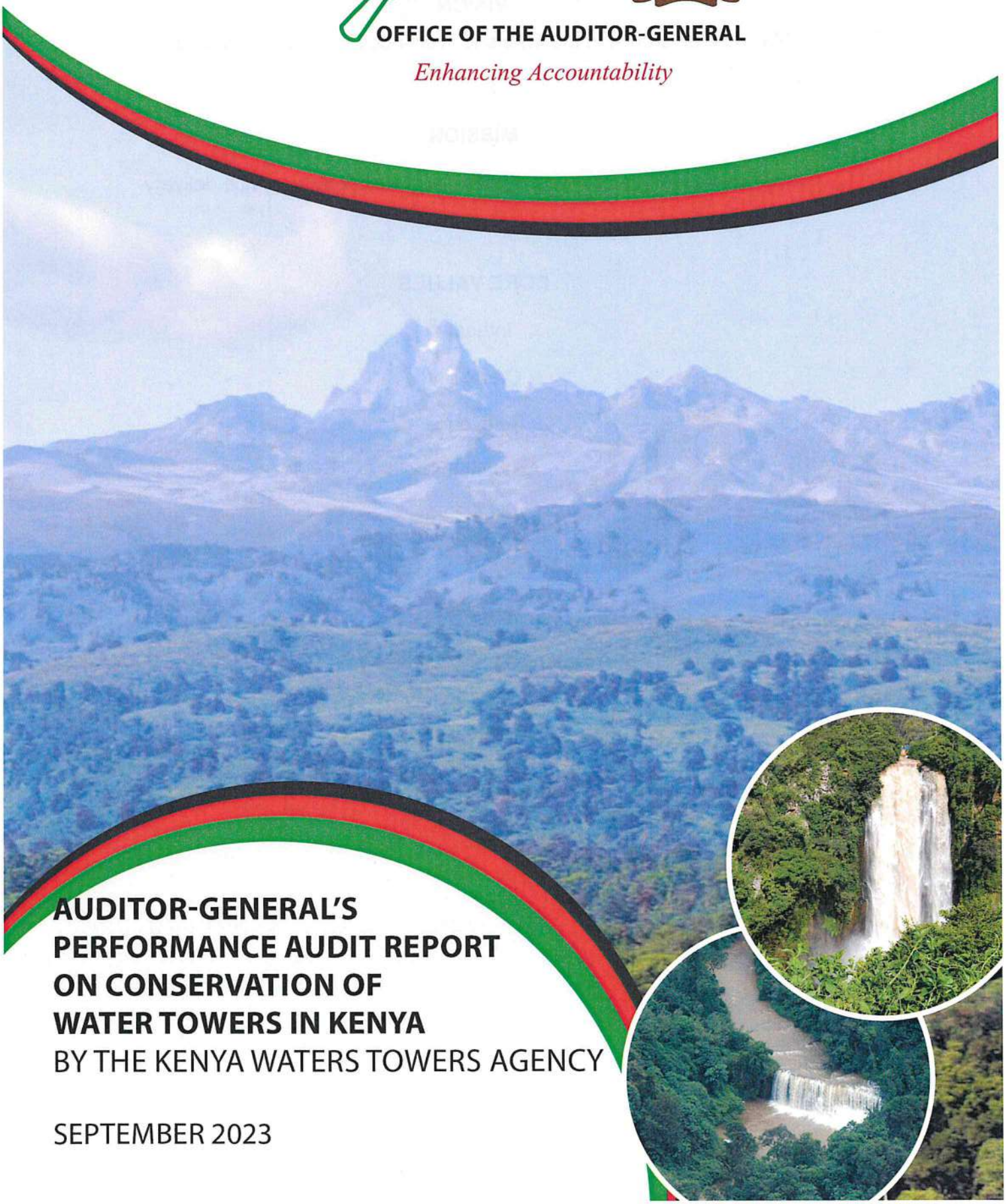

AUDITOR-GENERAL'S PERFORMANCE AUDIT REPORT ON CONSERVATION OF WATER TOWERS IN KENYA

BY THE KENYA WATERS TOWERS AGENCY

SEPTEMBER 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

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Foreword by the Auditor – General

I am pleased to present this performance audit report on: Conservation of Water Towers in Kenya by the Kenya Water Towers Agency. My Office carried out the audit under the mandate conferred to me by Article 229 (6) of the Constitution of Kenya, 2010, to confirm whether or not public money has been applied lawfully and in an effective way. In addition, Section 36 of the Public Audit Act, 2015 requires the Auditor-General to examine the economy, efficiency and effectiveness with which public money has been expended.

Performance, financial and continuous 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.

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 for Environment and Climate Change; the Principal Secretary, The National Treasury; the Director General, Kenya Water Towers Agency; and the Chief of Staff and Head of Public Service.

CPA Nancy Gathungu, CBS
AUDITOR-GENERAL
15 September, 2023

List of Abbreviations

ICS	- Interim Coordinating Secretariat
JEU	- Joint Enforcement Unit
KEFRI	- Kenya Forestry Research Institute
KFS	- Kenya Forest Service
KWS	- Kenya Wildlife Service
KWTA	- Kenya Water Towers Agency
MoEF	- Ministry of Environment and Forestry
MTP	- Medium Term Plan
NEMA	- National Environment Management Authority
NLC	- National Land Commission
OAG	- Office of the Auditor-General
SoK	- Survey of Kenya
SDGs	- Sustainable Development Goals
WASREB	- Water Services Regulatory Authority
WRA	- Water Resources Authority
UN	- United Nations
UNFCCC	- United Nations Convention on Climate Change

Glossary of Terms

The following definitions, adopted from the Kenya Water Towers Agency, apply for purposes of this report:

Biodiversity: The variety of plant and animal life in the world or in a particular habitat, which is usually considered to be important and desirable.

Biodiversity hotspot: An area with a high concentration of species potentially threatened by destruction or extinction.

Carbon sinks: Natural or manmade systems that absorb carbon dioxide from the atmosphere and store it, hence reducing greenhouse gas concentration. For example, water towers act as carbon sinks as they absorb carbon dioxide through its vegetation and soil.

Conservation: Preservation of the water tower ecosystem, including species and the environmental benefits derived from it. It is mainly achieved through protection and rehabilitation or restoration of water towers.

Catchment area: The zone through which rainwater seeps to eventually provide base flow to rivers, lakes, and springs and groundwater recharge. Within the water catchment area are certain sub-catchments critical to maintenance of base flows of the water bodies they recharge, hence known as **critical water catchment areas**.

Degradation: The wearing out of the physical material on the surface of the earth, in this case in water towers. Degradation occurs when water tower ecosystems lose their capacity to provide ecosystem services.

Ecosystem: A community of plants, animals, bacteria, and the physical and chemical environment they live in. The many and varied benefits that humans freely gain from properly functioning ecosystems are called **ecosystem services**.

Forest adjacent community: All people living within 5km radius from the forest boundary, who are likely to be affected directly, either positively or negatively, by any activity taking place within the forest.

Reclamation: The recovery of land within water tower that has been encroached by human activities.

Rehabilitation: The process of attempting to restore an area of land back to its natural state after it has been damaged or degraded, making it safe for wildlife and flora, as well as humans.

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Executive Summary

Background of the Audit

1. The Kenya Water Towers Agency (KWTA) Order, 2012 defines a water tower as an area that acts as a receptacle for rain water, stores water in the aquifers underneath the land surface and gradually releases the water to the rivers and springs. Such areas are forested mountainous regions, highlands and plateaus. There are eighteen (18) gazetted water towers in Kenya. The gazetted water towers comprise of five (5) major water towers, namely; Mt. Kenya, Aberdare Ranges, Mau Forest Complex, Cherangani Hills and Mt. Elgon, and thirteen (13) minor, but critical water towers.

2. Conservation of the water tower ecosystem including species and the environmental benefits deriving from them is mainly achieved through protection and rehabilitation or restoration of the water towers. The Government's commitment to conservation of water towers dates back to 2008 when protection and rehabilitation of water towers was first identified as a Vision 2030 flagship project. This was later followed by the establishment of the Kenya Water Towers Agency (KWTA) in 2012, to coordinate and oversee the conservation and sustainable management of water towers. Despite the Government's conservation efforts, water towers are faced with challenges which limit their capacity to provide critical ecosystem services.

3. The audit was undertaken due to the following key factors: -
   i) There has been increased public concern on destruction of Kenya's main water towers. News headlines on illegal logging and forest encroachment continue to be reported on the Mau Forest Complex and Cherangani Hills while forest fires in the Aberdare Ranges and Mt. Kenya have also made news headlines in the recent past. Further, drying of major rivers such as Mara River, Ewaso Nyiro and River Turkwel has been attributed to climate change and catchment destruction. This is despite Articles 60 (1)(e) and 69 (1)(a) of the Constitution of Kenya, 2010 explicitly providing for sound conservation and protection of ecologically sensitive areas and

sustainable exploitation, utilization, management, and conservation of the environment and natural resources.

ii) There has been deliberate effort by the Government to expand safe water[1] coverage in the Country. Through the implementation of various projects, the Government increased safe water coverage from 49% in 2010/2011 to 60% in 2020/2021. This is in line with the Kenya Water Master Plan 2030, whose goal is to achieve 100% improved water coverage in the country by the year 2030.

iii) The Government's efforts are also aimed at contributing to the achievement of Sustainable Development Goal (SDG) 6 Target 1, which calls on Member States to achieve universal and equitable access to safe and affordable drinking water for all by 2030. Long-term sustainable expanded water coverage depends to a great extent on conservation of water towers.

iv) The audit subject is also related to SDG 6 Target 6 which sought to protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes by 2020. It was therefore necessary to conduct an audit to assess the Government's progress in conservation of water towers.

Objective of the Audit

4. The audit assessed the measures implemented by the government, through the Kenya Water Towers Agency (KWTA), to conserve water towers for sustainable water supply. This was examined through the following audit questions: -
    i) To what extent has the Agency implemented the measures in place to protect water towers?
    ii) To what extent has the Agency implemented interventions to rehabilitate degraded water towers?

[1] Safe water means potable water, free from pollution, harmful organisms, and impurities. The term safe water is often used interchangeably with tapped water.

iii) To what extent has the Agency provided communities living adjacent to forests with alternative livelihoods in order to ease pressure from water towers?

iv) To what extent has the Agency involved stakeholders in conservation activities?

v) To what extent has the Agency monitored and assessed conservation activities in water towers?

Scope of the Audit

5. The audit focused on the Agency's activities geared towards conservation of water towers. The activities examined include; water tower protection, rehabilitation, alternative community livelihoods, stakeholder engagement, and monitoring of conservation activities. The audit covered the period from July 2017 to December 2022 and focused on the eighteen (18) gazetted water towers. However, nine (9) water towers comprising three (3) major towers and six (6) minor towers were sampled for purposes of audit data collection. For the purpose of examining interventions on reclamation of encroached water towers, the Mau Forest Complex was selected as a Case Study.

6. The sampled main water towers were; Aberdare Ranges, Cherangani Hills, and the Mau Forest Complex while the minor towers were; Chyulu Hills, Kirisia Hills, Loita Hills, Nyambene Hills, Mt. Marsabit, and Shimba Hills.

Summary of Major Audit Findings

1. Protection of Water Towers

7. Protection of water towers as carried out by the Agency was mainly done through water towers boundaries mapping and delineation, mapping and securing of critical water catchment areas, and enforcement through the Joint Enforcement Unit (JEU). The audit assessed the Agency's performance in these areas and made the following observations;

8. The Agency was yet to undertake a comprehensive survey and mapping of the eighteen (18) gazetted water towers. This was with the exception of the Maasai Mau Block within the Mau Forest Complex where the Agency oversaw the mapping and realignment of 60 kilometres (km) out of its 119 kilometres boundary. Further, according to the Maasai Mau Phase II Action Plan, the Agency had targeted to construct an electric smart fence along the Maasai Mau Block covering the entire 119km boundary within two (2) years, from August 2019. However, only 30km of the fence had been constructed as at the time of audit in 2022.

9. In the Agency's Strategic Plan (2016-2020), the Agency had planned to identify, map and gazette critical water catchment areas. However, the audit revealed that the Agency had identified critical water catchments in only nine (9) water towers, out of which only three (3) were among the eighteen (18) gazetted. The gazetted water towers were; Loita Hills, Nyambene Hills and Maasai Mau Block in the Mau Forest Complex while the non-gazetted towers were Endau Hills, Elgeyo Hills, Kavonge-Museve, Mbooni Hills, Ngong Hills and Makuli-Nzaui. Good practice requires that the Agency prioritizes gazetted water towers when planning and implementing water tower conservation activities. For instance, except for Maasai Mau Block, critical water catchments were yet to be identified and assessed in major water towers such as the Mt. Kenya, Aberdare Ranges, Cherangani Hills, Mt. Elgon and the entire Mau Forest Complex. In addition, while gazettement is a necessary pre-condition for protection, none of the identified critical catchment land had been surveyed and gazetted as at the time of audit.

10. Further, the Joint Enforcement Unit (JEU),[2] established to provide a multi-agency approach to protection of the Mau Forest Complex, did not seem to be effective in deterring deforestation activities. Review of JEU monthly reports revealed that approximately 69,085 cedar posts and 5,000 bags of charcoal were seized by JEU officers during the period, January 2017 to December 2022. However, no reports were available for a period of nineteen (19) months spread over four (4) out of the six

[2] Joint Enforcement Unit (JEU) is a multi-agency enforcement unit whose membership comprise of officers from Kenya Forest Service (KFS), Kenya Wildlife Service (KWS), County Government of Narok, and National Police Service/Rapid Deployment Unit under the coordination of KWTA.

(6) years under review. The actual destruction may therefore be higher than the figures presented in this report.

11. Due to inadequate implementation of protection measures, water towers were exposed to destructive human activities, leading to degradation. Review of land use and land cover data, since the year 1990, for the sampled nine (9) water towers revealed a declining trend in forest cover in Cherangani, Chyulu, Loita water towers and Maasai Mau, South Mau, and South West Mau Blocks. The Aberdare Ranges, Cherangani, Loita Hills, Mt. Marsabit water towers and South Mau Block had increased trend in crop land, depicting encroachment.

12. The declining forest cover, combined with an increase in crop land has had a negative impact on water availability. This has negatively affected the achievement of SDG 6 Target 1 on universal and equitable access to safe and affordable drinking water for all by 2030. Interviews with staff of the Agency, review of water tower status assessment reports, and analytical review of water quantity data revealed that most of the rivers and springs emanating from the sampled nine (9) water towers have reduced in volumes over the years. This has been attributed to destructive human activities.

13. The inadequacies in the implementation of water towers protection measures were attributed to delays in the enactment of the legal framework for water towers, among other factors. The Agency had drafted the Water Towers Conservation and Coordination Policy, 2019 and Kenya Water Towers Bill, 2019 with provisions on stakeholder engagement and coordination. The Policy and Bill were however still in draft form as at the time of audit. The audit established that the Agency operated under a legal notice which did not expressly state overseeing of water tower boundary mapping and gazettement of critical catchment areas as one of the key functions.

2. Rehabilitation of Degraded Sites Within Water Towers

14. The Agency's performance in rehabilitation of degraded water towers was assessed through activities geared towards reclamation of encroached water tower land and reforestation of degraded sites. The audit observations were as follows;

15. Using a multi-agency approach, the Government undertook reclamation interventions in the Mau Forest Complex from 2008, under the coordination of the Agency. However, the Agency did not provide information on the total area reclaimed, as well as the targeted locations. This was with the exception of the 4,500 hectares (Ha) in Nkoben area and 8,869Ha in "Status Quo"[3] area of the Maasai Mau Block recovered in 2018 and 2019, respectively. While some of the encroachers had land ownership documents, the Agency did not provide evidence to confirm revocation of such documents. The audit therefore could not ascertain whether the reclamation process was completed and encroached land reverted back to forest reserves.

16. Several challenges affected reclamation efforts, namely; lack of comprehensive information on the extent of encroachment, unclear water tower boundaries, and conflicting boundaries. Due to insufficient reclamation, the Mau Forest Complex and other water towers continue to experience encroachment challenges, leading to their degradation.

17. The Agency rehabilitated eleven (11) water towers through tree planting during the period 2017/2018 to 2021/2022. However, while good practice would have required prioritization of gazetted water towers, seven (7) out of the eleven (11) water towers rehabilitated were non-gazetted. Besides, the Agency's reforestation activities were limited in scale and reported low survival rates of the planted tree seedlings.

18. A total of 189,028Ha was under high level of degradation in the nine (9) sampled water towers. However, the Agency reforested 7,372.5Ha, representing 3.9% of the total area that required reforestation, either directly or through other actors. In addition, while the Agency's recommended seedling survival rate was 80% for a reforestation intervention to be considered successful, only two (2) out of the seven (7) sites whose seedling audit reports were availed for audit had a survival rate of 80% and above. The low survival

[3] "Status Quo" covered Kamwengoi, Sierra Leone and Kipchoge areas bordering Ol Pusimoru forest in Maasai Mau Block.

rate was also observed during audit inspections in Nyambene Hills, Shimba Hills and the Maasai Mau Block, where patches of bare land were observed in reforested areas.

19. The audit attributed the inadequate reforestation of degraded sites to lack of documented guidelines on tree planting in water towers in general. This in turn negatively affected reforestation activities, through: low seedling production; challenges with procurement of seedlings; lack of securing of rehabilitated sites; and failure to weed reforested sites.

20. Due to limited coverage of areas that required reforestation and low seedling survival rates, water towers were still under high levels of degradation, despite the Agency's rehabilitation efforts.

3. Alternative Community Livelihood Interventions

21. The Agency undertook to establish a National Bamboo Growing Demonstration Centre at Kaptagat Forest in Elgeyo Hills, in the year 2018/2019 to promote bamboo commercialization among communities living adjacent to forests. The site was to be used for production of bamboo seedlings and to also serve as a community learning centre. However, the audit revealed that the site was neglected and had minimal activity towards establishing a bamboo demonstration centre. This is despite the Agency having utilised approximately Ksh.147.7million between 2017/2018 to 2021/2022 towards establishment of the bamboo enterprise.

22. Further, the Agency's efforts to promote honey production as an alternative livelihood among the communities living adjacent to forests recorded poor results. Out of the 1,135 beehives distributed by the Agency to eight (8) groups spread across five (5) water towers in the audit sample, 665 were inspected and revealed colonisation in only 93 hives, representing 14% colonisation rate. The beneficiary groups were issued with both beehives and honey processing tools and equipment. However, only one (1) out of the eight (8) groups had established a honey processing factory. Some of the

challenges experienced by beneficiary groups included; pest infestation, lack of skills on apiary management, and poor location of the apiaries[4].

23. Similar observations of low success rates were made in the charcoal briquette enterprise intervention in the Maasai Mau Block. Physical inspection revealed that the briquette enterprise was small in scale and would not have economic impact on the beneficiaries. Further, interactions with group members revealed that the Agency did not provide them with mechanical crusher, despite this being critical for large scale production. In addition, the group members were not trained on charcoal briquette making, which led to production of poor-quality briquettes. As at the time of audit, production of charcoal briquettes was limited to members own household consumption.

24. The audit attributed the inadequacies in alternative community livelihood interventions to; inadequate capacity building of beneficiary groups, failure to provide beneficiaries with technical assistance, and lack of monitoring by the Agency.

4. Stakeholder Engagement and Coordination

25. The audit revealed that there were no structures in place for coordination of actors involved in the conservation of water towers. As a result, actors involved in conservation of water towers could not share information among themselves. Interviews with staff of the Agency revealed that as part of the development of the Integrated Monitoring System, the Agency was working with stakeholders to develop information sharing protocols. The protocols are expected to provide a platform for information sharing among stakeholders.

26. In addition, the Agency did not provide evidence of strategic partnership arrangements, except for the Maasai Mau Block, where adopt-a-block strategy was used. Adopt-a-block is a strategy used by the Agency to rehabilitate the parcels of

[4] An apiary refers to a collection of beehives, located in one place, where bees are kept to provide honey.

land reclaimed in the Maasai Mau Block in 2019. The reclaimed land was divided into small blocks measuring 100Ha each, which interested actors were to adopt and rehabilitate under the coordination of the Agency. However, due to unclear implementation structures, adoptees did not reforest the total pledged area and failed to maintain the reforested areas, leading to low success rates of the strategy.

27. The audit attributed the inadequate coordination and stakeholder involvement to lack of a stakeholder engagement framework and guiding legal framework. It was noted that the Agency had drafted the Water Towers Conservation and Coordination Policy, 2019 and Kenya Water Towers Bill, 2019 with provisions on stakeholder engagement and coordination.

5. Water Towers Assessment and Monitoring of Conservation Activities

28. The audit established that while the Agency had the mandate to monitor water tower conservation activities implemented by all actors, its monitoring was restricted to the Agency's own activities. Besides, the Agency's monitoring activities were only limited to seedling survival rate inspections, meant to monitor performance of sites reforested by the Agency. Further, the audit noted that while the seedling survival rate inspections were done at the Headquarters level, the Regional offices did not receive feedback on the sites assessed.

29. The audit revealed that the Agency conducted twenty-eight (28) water tower status assessments, out of which fifteen (15) had been published as at the time of audit. While good practice requires the Agency to prioritize gazetted water towers, seven (7) out of the fifteen (15) published assessment reports were for non-gazetted water towers. Critical water towers such as the Aberdare Ranges and Mt. Kenya had not been assessed. Besides, only five (5) out of the twenty-two (22) Blocks in the Mau Forest Complex had been assessed. The audit also observed that the Agency took between two (2) to three (3) years to finalise and publish the assessment reports. Therefore, the published reports may lack current information on the status of the assessed water towers.

30. As a result of inadequate water tower assessments and limited monitoring, the Agency not only lacked up to date information on the status of its activities, but also those implemented by other actors. The audit attributed the inadequate monitoring of activities to a number of factors, namely: lack of implementation of the Water Towers Ecosystem Monitoring Framework; lack of activity level indicators, and limited number of monitoring and evaluation staff, as well as lack of representation of key technical departments at the Agency's regional offices.

Conclusion

31. From the findings of the audit, it is evident that the Agency has implemented various interventions in a bid to conserve water towers. However, the implementation has faced various challenges, limiting the success of the interventions. There is inadequate implementation of protection and rehabilitation interventions. In addition, implementation of conservation activities is concentrated in the non-gazetted water towers. Despite conservation of water towers being multi-sectoral, stakeholder engagement and coordination is still a challenge, mainly due to the lack of legal framework. Besides, the Agency has not put much emphasis on monitoring of conservation activities, despite it being key to successful implementation of water towers conservation interventions. The findings of this audit show minimal progress in achievement of SDG 6 Target 6, which requires Member States to protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes by the year 2020. The Government's efforts to expand safe water coverage in the country may be an exercise in futility if interventions put in place for conserving water towers are not implemented.

32. Failure to enact an enabling legal framework has hindered the Agency's efforts to implement water tower conservation interventions. This has resulted in the water tower boundaries not being surveyed and demarcated, making them susceptible to encroachment. In addition, critical water catchment areas within water towers have not been gazetted. Further, although the Agency was established as a lead coordinator and expected to coordinate conservation activities of various actors, including the Kenya Wildlife Services and the Kenya Forest Service, it operates under

a Legal Notice which is subordinate to the Acts of Parliament that established the actors it is supposed to coordinate.

33. Reforestation is a necessary step towards rehabilitation of degraded water towers. However, the success of any reforestation exercise is dependent on several factors, including; maturity stage of the seedlings, timing of planting, travel distance during transportation of seedlings, security of the planted areas, and maintenance of the planted seedlings. Despite the investments in tree planting activities, the Agency did not pay close attention to the success factors, hence most planted sites recorded low seedling survival rates.

34. The objective of easing pressure from forest resources remains elusive despite the Agency's investments in several nature-based projects meant to provide alternative livelihoods to communities living adjacent to forests. The Agency has failed to address the sustainability component of alternative livelihood interventions, leading to low success rates.

Recommendations

35. In view of the findings and conclusions of the audit, the following is recommended for consideration by the Agency to improve on the conservation of water towers: -

    I) To ensure adequate protection of water towers, the Agency should:
        i) Work closely with the State Department for Environment and Climate Change to fast-track the finalization and enactment of the Water Towers Conservation and Coordination Policy, 2019 and Kenya Water Towers Bill, 2019. This will strengthen the Agency's mandate as a lead coordinator and overseer in water tower conservation;
        ii) Implement the Framework for Resource Mobilization and Engagement of Development Partners, giving priority to operationalization of the Water Tower Conservation Fund and Adopt-a-Water Tower Programme; and

iii) Fast track the development and implementation of the Guidelines for Engagement with the Joint Enforcement Unit (JEU). The Guidelines should outline clear roles and responsibilities for each party, with a focus on sustainable operations of the Unit.

II) To ensure adequate rehabilitation of water towers, the Agency should:

i) Survey and map the gazetted water towers and undertake comprehensive assessment of the extent of encroachment;

ii) Develop and implement guidelines on tree planting in water towers. The guidelines should emphasise on shift of focus from not just planting of trees but to growing trees for sustainability. The guidelines should also address critical issues such as quality of seedlings to be planted, sourcing of seedlings, security of planted sites, maintenance of the planted sites, and seedling survival rate requirements; and

iii) Develop tree planting targets, with clear and measurable deliverables. This will ensure tracking of progress in reforestation interventions.

III) To ensure sustainability of community alternative livelihoods, the Agency should:

i) Coordinate with the relevant stakeholders to ensure that beneficiary groups are adequately trained before engaging them on nature-based enterprises, including seedling production; and

ii) Coordinate with relevant stakeholders to ensure that they provide technical assistance to beneficiary groups throughout the timeline are of nature-based projects.

IV) To ensure active involvement of stakeholders in conservation of water towers, the Agency should develop and implement a comprehensive stakeholder engagement framework. The framework should provide guidance on strategic partnerships, information sharing, and coordination.

V) To facilitate monitoring of water tower conservation activities, the Agency should:

i) Implement the Water Towers Ecosystem Monitoring Framework, including operationalization of the Integrated Water Tower Monitoring System;

ii) Streamline the human resource functions to ensure all key departments are represented in the Agency's regional offices, with adequate and skilled staff; and

iii) Develop intervention specific activity-level indicators. This will ensure that monitoring of the conservation interventions is carried out at the activity level.

Chapter 1: Background of the Audit

Introduction

1.1 The Kenya Water Towers Agency (KWTA) Order, 2012 defines a water tower as an area that acts as a receptacle for rain water, stores water in the aquifers underneath the land surface and gradually releases the water to the rivers and springs emanating from it. Such areas are forested mountainous regions, highlands and plateaus. There are eighteen (18) gazetted water towers[5] in Kenya, as shown in **Appendix 1**. The gazetted water towers comprise of five (5) major water towers, namely: Mt. Kenya, Aberdare Ranges, the Mau Forest Complex, Cherangani Hills and Mt. Elgon, and thirteen (13) minor, but critical water towers. These water towers form the upper catchment of most of the main rivers in the Country.

1.2 Conservation of the water tower ecosystem including species and the environmental benefits deriving from them is mainly achieved through protection and rehabilitation or restoration of the water towers. The Government's commitment to conservation of water towers is captured in its Vision 2030 development plan. Rehabilitation and protection of water towers was a flagship project during the Vision 2030 First Medium Term Plan (MTP I) covering the period 2008-2012 and has remained the same for the Vision 2030 planning period of 2018-2022. The Government's commitment is in line with Sustainable Development Goal (SDG) 6 Target 6 which calls on Member States to protect and restore water related ecosystems including mountains, forests, wetlands, rivers, aquifers and lakes by 2020.

1.3 To institutionalise conservation of water towers, the Government established the Kenya Water Towers Agency (hereafter also referred to as the Agency) through KWTA Order, 2012. The Agency's mandate is to coordinate and oversee the conservation and sustainable management of water towers.

[5] The water towers listed in the Water Towers Agency Order, 2012.

1.4 Despite the Government's conservation efforts, water towers are faced with challenges which limit their capacity to provide critical ecosystem services. These challenges include; encroachment for settlement and farming, illegal logging, forest fires, overgrazing, pollution from factories, and charcoal production, among others.

Motivation for the Audit

1.5 The audit was performed due to the following factors:

i) There has been increased public concern on destruction of Kenya's main water towers. News headlines on illegal logging and forest encroachment continue to be reported on the Mau Forest Complex and Cherangani Hills while forest fires in the Aberdare Ranges and Mt. Kenya have also made news headlines in the recent past. Further, drying of major rivers such as Mara River, Ewaso Nyiro and River Turkwel has been attributed to climate change and catchment destruction. This is despite Articles 60 (1)(e) and 69 (1)(a) of the Constitution of Kenya, 2010 explicitly providing for sound conservation and protection of ecologically sensitive areas and sustainable exploitation, utilization, management, and conservation of the environment and natural resources.

ii) There has been deliberate effort by the Government to expand safe water coverage in the Country. Through the implementation of various projects, the Government increased safe water[6] coverage from 49% in 2010/2011 to 60% in 2020/2021. This is in line with the Kenya Water Master Plan 2030, whose goal is to achieve 100% improved water coverage in the country by the year 2030.

iii) The Government's efforts are also aimed at contributing to the achievement of Sustainable Development Goal (SDG) 6 Target 1, which calls on Member States to achieve universal and equitable access to

[6] Safe water means potable water, free from pollution, harmful organisms, and impurities. The term safe water is often used interchangeably with tapped water.

safe and affordable drinking water for all by 2030. Long-term sustainable expanded water coverage depends to a greater extent on conservation of water towers.

iv) Water towers play a critical role in water purification and storage for recharge of springs and rivers, while also acting as reservoirs of biodiversity. In this regard, conservation of water towers contributes to the achievement of SDGs, specifically Target 1 of Goal 6 and Target 1 and Target 4 of Goal 15[7]. Besides, conservation of water towers presents an opportunity for community empowerment through sustainable livelihoods. Hence, conservation of water towers is an enabler in the achievement of SDG 1 Target 1 and Target 2. Further, water towers do not only act as carbon sinks[8] but also hold excess rain water, thereby minimising the intensity of flood occurrence. Conservation of water towers is therefore necessary for climate change action.

1.6 The audit subject is related to SDG 6 Target 6, which sought to protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers, and lakes by the year 2020. Given the important role water towers play, both in achievement of Kenya's development agenda and the Sustainable Development Agenda, the audit was conducted to assess the Government's progress in conservation of water towers.

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[7]**SDG 1.1:** By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $ 1.25 a day.
SDG 1.2: By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
SDG 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all
SDG 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
SDG 15.4: By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.

[8] Carbon sinks refers to natural or manmade systems that absorb carbon dioxide from the atmosphere and store them hence reducing greenhouse gas concentration.

Chapter 2: Design of the Audit

Objective of the Audit

2.1 The audit assessed the measures implemented by the government, through the Kenya Water Towers Agency (KWTA), to conserve water towers for sustainable water supply.

2.2 The assessment of this objective was guided by the following main audit questions:

i) To what extent has the Agency implemented the measures in place to protect water towers?

ii) To what extent has the Agency implemented interventions to rehabilitate degraded water towers?

iii) To what extent has the Agency provided communities living adjacent to forests with alternative livelihoods in order to ease pressure from water towers?

iv) To what extent has the Agency involved stakeholders in conservation activities?

v) To what extent has the Agency monitored and assessed conservation activities in water towers?

Scope of the Audit

2.3 The audit focused the Agency's activities geared towards conservation of water towers. The activities examined include; water tower protection, rehabilitation, alternative community livelihoods, stakeholder engagement, and monitoring of conservation activities. The audit covered the period from July 2017 to December 2022 and focused on the eighteen (18) gazetted water towers. However, nine (9) water towers comprising of three (3) major towers and six (6) minor towers, were sampled for purposes of audit data collection. For purpose of examining interventions on reclamation of encroached water towers, the Mau Forest Complex was selected as a Case Study.

Assessment Criteria

2.4 The Criteria used to assess the performance of the Agency in conservation of water towers was mainly drawn from the Kenya Water Towers Agency Order, 2012. Additional criteria were drawn from the Agency's Strategic Plan (2016-2020), since it was within the scope of the audit. The Agency's Strategic Plan (2021-2026) was still in draft form as at the time of audit, hence could not be used as a source of criteria. Details of the criteria are discussed in Chapter 4.

Methodology of the Audit

2.5 The audit was conducted in accordance with Performance Auditing Guidelines (ISSAI 3000) 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).

2.6 To assess the performance of KWTA in conservation of water towers, the audit used the following methods.

Interviews

2.7 The audit team interviewed staff the Agency in the headquarters and in regional offices as outlined in **Appendix 2(a).** The audit team also interviewed other relevant actors, including officers in the Joint Enforcement Unit (JEU).

Document Review

2.8 To gain an understanding of the audit area, the audit team reviewed various documents as outlined in **Appendix 2(b).**

Physical Verification

2.9 To confirm the current status of the sampled water towers, as well as the status of the implemented interventions, the audit team carried out physical verifications as outlined in **Appendix 2(c).**

Sampling and Sample Size

2.10 The audit used both stratified and purposive sampling to select water towers to be assessed. A two-stage stratified sampling was used to ensure that the sample included are representation of the Agency's regional offices and also major and minor water towers. The Agency has eight (8) regional offices, which formed the broad strata. Within the regions are ecosystems classified either as major or minor water towers, which formed the sub-strata.

2.11 Given that the Agency had implemented conservation activities, there was need to use purposive sampling to ensure that the sampled water towers were those that had at least benefitted from such activities. As such, six (6) regional offices were sampled, consisting of three (3) major and six (6) minor water towers. The sampled water towers were: the Aberdare Ranges and Nyambene Hills in Mt Kenya Region; Cherangani Hills in North Rift Region; the Mau Forest Complex and Loita Hills in South Rift Region; Chyulu Hills in Eastern Region; Kirisia Hills and Mt. Marsabit in Northern Region; and Shimba Hills in Coast Region. At the water tower level, random sampling was used to select the activities to be verified.

Chapter 3: Description of the Audit Area

Background to Conservation of Water Towers in Kenya

3.1 Water towers in Kenya consist of five major ecosystems that serve most of the country's drainage systems. These drainage systems are vital for provision of water to many parts of the country. These major water towers include; the Mt. Kenya, Aberdare Ranges, the Mau Forest Complex, Cherangani Hills and Mt. Elgon. In addition, other 13 minor, but critical, water towers have been gazetted and many more ecosystems proposed for gazettement as shown in **Appendix 1**.

3.2 Water towers and their associated ecosystems represent critical livelihood opportunities for many rural and urban populations providing cash income, fuelwood, timber, valuable medicines, pasture for livestock, and an improved water supply. In addition, the forests act as carbon sinks for climate change mitigation and reservoirs of biodiversity. However, these ecosystems are faced with widespread challenges that threaten their functioning hence the need for conservation.

3.3 The Government, through the relevant actors, have designed and implemented various strategies in a bid to conserve these important ecosystems since 2008 as outlined below. Having recognized the threat facing Mau and other water towers in the country, the Government formed a Task Force on Conservation of the Mau Forests Complex in 2008. The Task Force's responsibility was to study and make recommendations to the Government on the immediate, short and long-term options for restoring the entire Mau Forest Complex and other water towers.

3.4 The adoption of the Mau Task Force report led to the establishment of an Interim Coordinating Secretariat (ICS) to coordinate the implementation of the recommendations of the Task Force. In addition, ICS was to develop a framework for long-term measures to restore and sustainably manage the Mau Forest Complex and other water towers. One of the achievements of ICS was institutionalisation of conservation of water towers through establishment of a coordinating agency vide the Kenya Water Towers Agency Order, 2012. The

Agency's mandate is on the gazetted water towers. The Agency exists to not only coordinate but also to oversee the conservation of water towers. While the Agency's mandate is on the 18 gazetted water towers, its operations have over the years extended to the other critical ecosystems not listed in the Kenya Water Towers Agency Order, 2012.

Government Objectives, Strategies and Undertakings in Conservation of Water Towers

3.5 According to the National Water Policy, 2021, the Government has committed to promote an inclusive and integrated approach to the management of water resources by ensuring measures are put in place for catchment protection and conservation, water resources management planning, and water quality management[9]. This is to be achieved, among others, through ensuring that water resources, wetlands, riparian and catchment areas are well mapped, managed, protected and conserved, by all levels of government.

3.6 There have been a number of interventions by the Government, through KWTA and other key actors, aimed at conserving water towers during the period under review as follows:

i) Maasai Mau Restoration Programme which involved reclamation of land, boundary fencing, and reforestation;
ii) Protection of the Mau Forest Complex through the Joint Enforcement Unit (JEU)[10]. JEU is a multi-agency enforcement unit comprising of officers from KFS, KWS, Narok County Government and National Police Service;
iii) Survey and mapping of boundaries of 10 water towers;
iv) National campaign towards 10% tree cover implemented as from 2018;
v) Establishment of the National Bamboo Demonstration Centre at Kaptagat forest, Elgeyo Hills; and
vi) Community alternative livelihood projects through which communities living adjacent to forests were supported with nature-based livelihood initiatives.

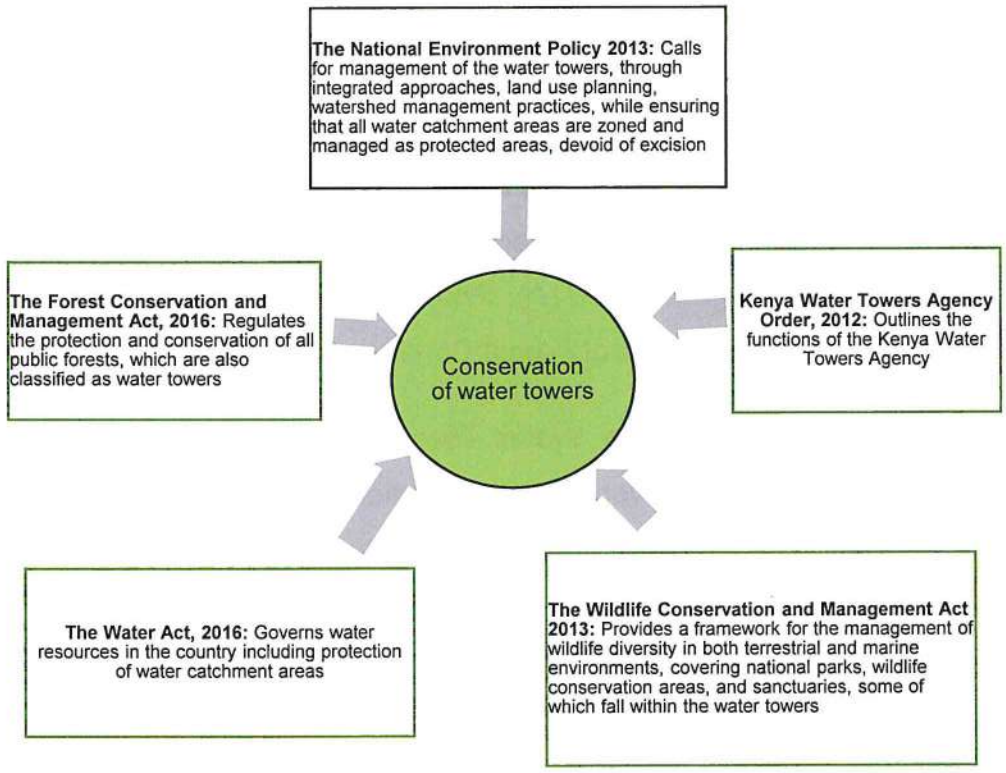
[9] Sessional Paper No. 1 of 2021 on National Water Policy.

Legal and Administrative Framework for Conservation of Water Towers in Kenya

a) Legal Framework

3.7 There is no specific policy or Act of Parliament on conservation of water towers in Kenya. Having realised this gap, the Agency drafted the Water Towers Conservation and Coordination Policy, 2019 and the Kenya Water Towers bill, 2019. However, these two legal documents are yet to be finalised. The operations of the Agency are currently guided by the Kenya Water Towers Agency Order, 2012, which outlines its functions. In addition to this, several sectoral laws and policies exist to provide guidance as shown in **Figure 1**.

Figure 1: Legal Framework for Conservation of Water Towers



Source: OAG's conceptualisation based on review of documents

3.8 At the global level, there are three (3) important multilateral agreements related to conservation of water towers, namely; the UN Framework Convention on Climate

Change (UNFCCC), UN Convention on Biological Diversity, and the Ramsar Convention on Wetlands. The objective of the UNFCCC is to stabilize greenhouse gases in the atmosphere through mitigation and adaptation actions, which calls for conservation of water towers as carbon sinks. The UN Convention on Biological Diversity require Member States to implement strategies to support sustainable use of biological diversity, including protection of natural habitats, and rehabilitate and restore degraded species. The Ramsar Convention, on the other hand, calls on Member States to designate, conserve and sustainably manage wetlands of international importance. The Tana Delta and five (5) lakes along the Rift Valley, namely; Lakes Baringo, Bogoria, Elementaita, Nakuru, and Naivasha, have been gazetted as Ramsar sites in Kenya.

b) Administrative Framework

3.9 The State Department for Environment and Climate Change, within the Ministry of Environment, Climate Change and Forestry, is the main institution charged with the responsibility for conservation of water towers. According to the Executive Order No. 1 of 2023, the State Department is responsible for restoration and protection of strategic water towers. The State Department discharges this mandate through the Kenya Water Towers Agency (KWTA). Prior to this Executive Order, the Agency used to report to the Directorate of Forest Conservation in the same Ministry.

3.10 Established through the Kenya Water Towers Agency Order, 2012, KWTA is mandated to coordinate and oversee the protection, rehabilitation, conservation and sustainable management of water towers in Kenya. Other functions of the Agency outlined in Section 5(1) of the Kenya Water Towers Agency Order, 2012 include to:

i) Co-ordinate and oversee the recovery and rehabilitation of forest lands, wetlands and biodiversity hot spots;

ii) Promote the implementation of sustainable livelihood programmes in water towers in accordance with natural resource conservation; and

iii) Assess and monitor rehabilitation, conservation and management activities in water towers.

Other Key Actors in Conservation of Water Towers

a) Kenya Forest Service

3.11 The Kenya Forest Service (KFS) is a state corporation created through the Forest Act, 2005 (now repealed). Section 8 of the Forest Conservation and Management Act, 2016 mandates KFS to:

i) Conserve, protect and manage all public forests; and

ii) Manage water catchment areas in relation to soil and water conservation, carbon sequestration and other environmental services in collaboration with relevant stakeholders.

b) Kenya Wildlife Service

3.12 The Kenya Wildlife Service (KWS) is responsible for the conservation and management of water towers that fall under national parks and reserves.

c) Kenya Forestry Research Institute

3.13 Kenya Forestry Research Institute (KEFRI) is an agency responsible for forestry research and development. The Kenya Forestry Research Institute's main role in water tower conservation is to offer expert advice on appropriate tree species for each water tower.

d) Water Resources Authority

3.14 The Water Resources Authority (WRA) is a state corporation established under Section 11 of the Water Act, 2016. It is mandated to, on behalf of the National Government, safeguard the right to clean water by ensuring that there is proper regulation of the management and use of water resources to ensure sufficient water for everyone now and in the future.

e) County Governments

3.15 According to the Fourth Schedule of the Constitution of Kenya, 2010, county governments are responsible for implementation of specific national government policies on natural resources and environmental conservation, including forestry.

County governments are therefore responsible for conservation of water towers that fall in the category of community forests, such as Maasai Mau and Loita Hills.

Organizational Structure for the Kenya Water Towers Agency

3.16 The Agency is headed by a Director General who reports to the Board. Below the Director General are five directorates each headed by a director as illustrated in **Figure 2.** The activities involved in conservation of water towers fall within the mandate of three technical directorates namely: Ecosystem Protection Rehabilitation and Conservation; Ecological, Research, Planning, and Audit; and Community Partnerships and Sustainable Livelihoods. The functions of each of the three technical directorates is as outlined below.

a) Ecosystem Protection, Rehabilitation, and Conservation Directorate

3.17 This directorate is responsible for the functions in Section 5 (a) and (b) of KWTA Order, 2012, which focuses on conservation and protection of water towers and critical biological hot spots. Specifically, the functions of the Directorate include:

i) Coordinate and oversee gazettement of water towers;
ii) Coordinate and oversee securing of catchment lands, wetlands and critical biodiversity hotspots within water towers ecosystems; and
iii) Coordinate and oversee the recovery and rehabilitation of forest lands, wetlands, and biodiversity hot spots.

b) The Ecological Research, Planning and Audit Directorate

3.18 This directorate is responsible for implementation of functions in Sections 5(e) and (f) of KWTA Order, 2012, which requires the Agency to carry out water towers research, planning, monitoring and audit. Specifically, the Directorate functions include:

i) Coordinate and oversee the identification of water towers, critical catchment, wetlands, and biodiversity hotspot in consultation with relevant stakeholders;
ii) Coordinate and oversee water towers status and resource assessments as well as economic valuation of water towers;

iii) Coordinate and oversee the development of water towers ecosystem strategic management plans; and

iv) Coordinate and oversee development and implementation of a joint monitoring system for water towers.

c) Community Partnerships and Sustainable Livelihoods Directorate

3.19 This department is responsible for implementation of functions in Sections 5(c) and (d) of KWTA Order, 2012, which requires the Agency to promote sustainable livelihood programs and nature-based business enterprises in water towers. Specifically, the Directorate's functions include:

i) Develop framework for community engagement;

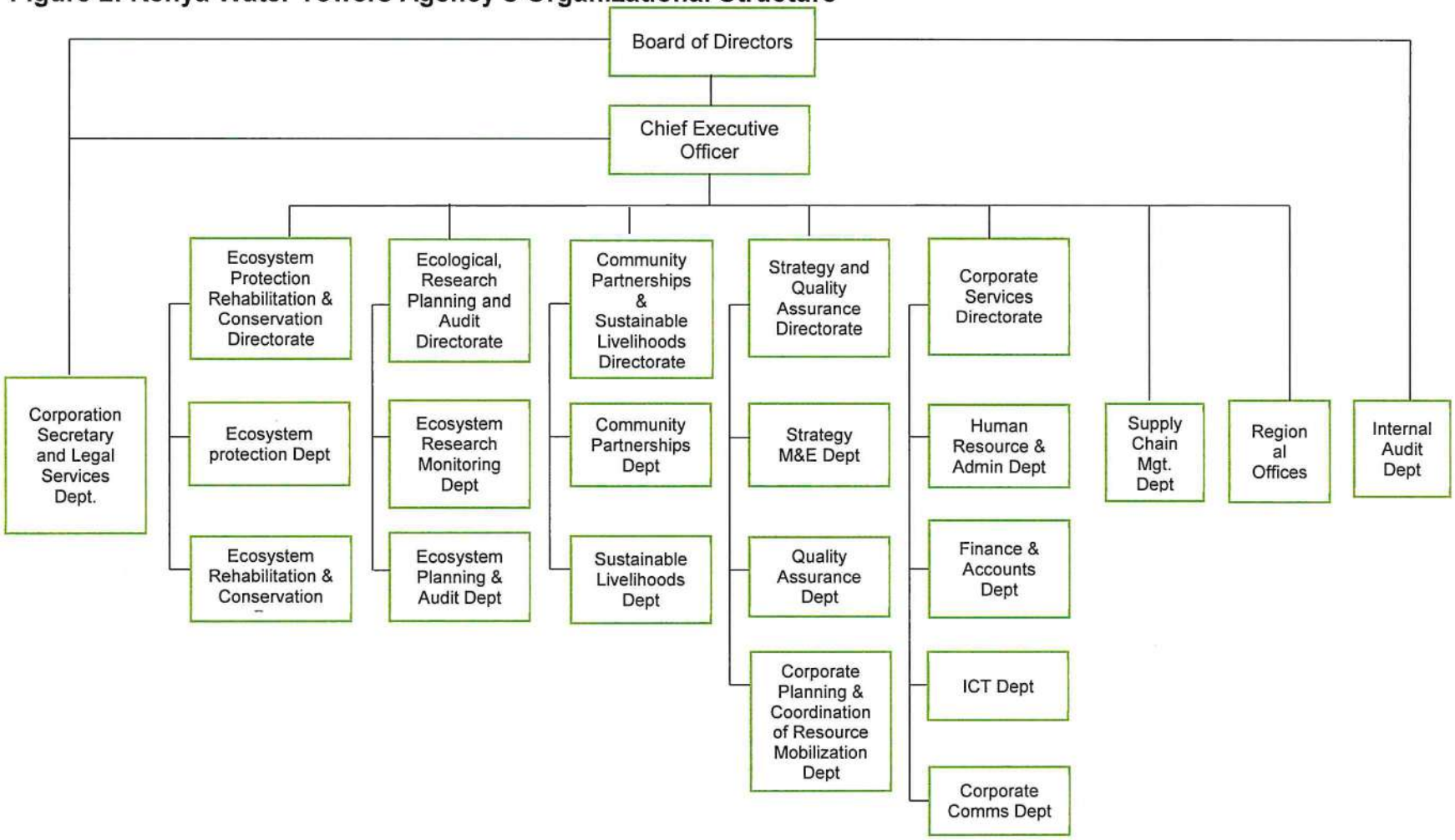
ii) Promote and support viable innovative nature-based business enterprises, value additions, and markets at farm level for communities around water towers;

iii) Capacity development of communities and stakeholders on nature-based business enterprises; and

iv) Mobilize partners and resources to support community investments through innovative strategies like Payment for Ecosystem Services.

3.20 In addition to the three technical directorates, the Agency has 8 regional offices which report directly to the Director General. Broadly, the regional offices assist the Director General in coordinating and overseeing the conservation and sustainable management of all the critical water towers within the respective regions. Further, the Agency has the Department of Strategy and Monitoring and Evaluation, in the Directorate Strategy and Quality Assurance, which is responsible for overseeing monitoring and evaluation of the Agency's programmes and projects.

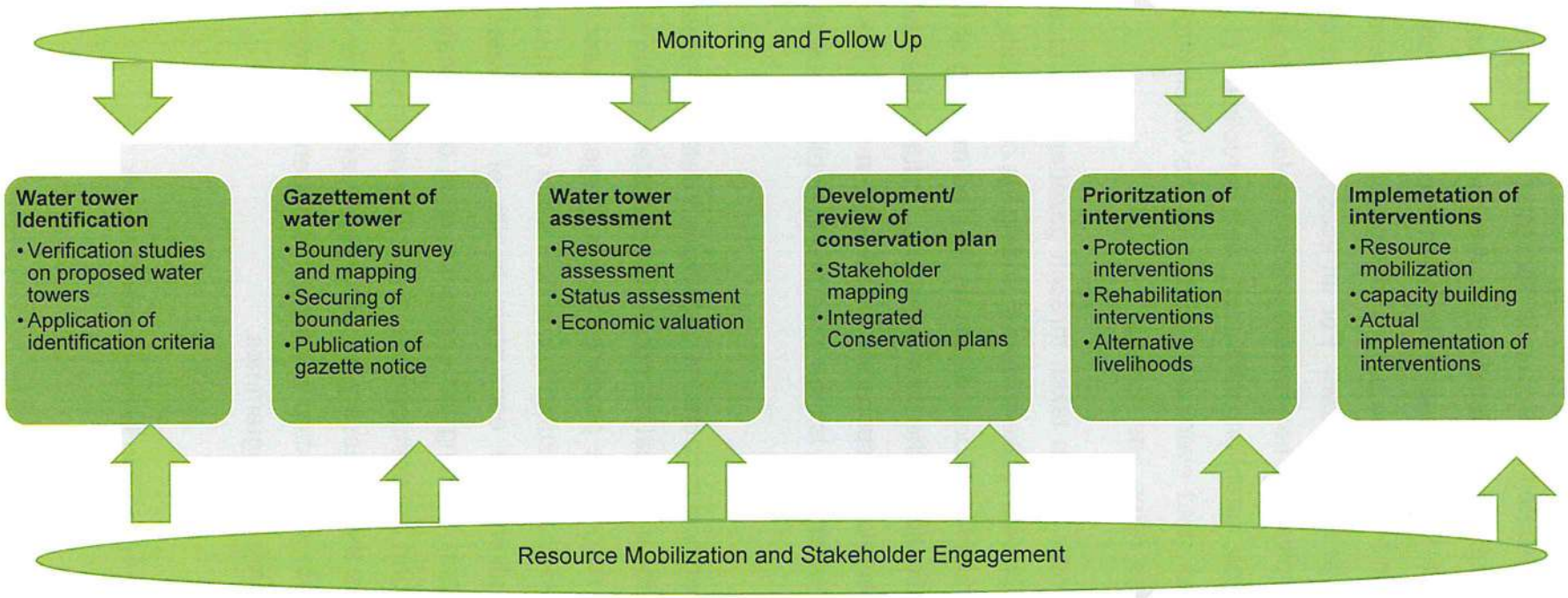
Figure 2: Kenya Water Towers Agency's Organizational Structure



Source: Kenya Water Towers Strategic Plan (2021-2026)

Process Description

Figure 3: Water Tower Conservation Process



Source: *OAG conceptualization based on audit interview minutes*

3.21 The activities geared towards conservation of water towers go through six (6) main stages as shown in **Figure 3.** The process begins with identification of water towers. Identification is initiated by proposals from the community or stakeholders to the Agency, requesting for classification of an ecosystem as a water tower. The Agency is then expected to conduct verification studies in consultation with relevant stakeholders and subject the proposed ecosystem to criteria that outlines the key characteristics of a water tower. For an ecosystem to be classified as a water tower, its topography must be elevated and its geology, soils and vegetation should support reception, retention, infiltration, and percolation of precipitation, storage as groundwater, and eventually release of the water through springs, streams, rivers, swamps, lakes, and oceans[11].

3.22 The identified water tower is then taken through gazettement process, which is again done in consultation with stakeholders including the community. The process involves survey and mapping of boundaries as well as marking of the identified boundaries, and identification of the land ownership status of the identified water tower. The Cabinet Secretary responsible for ministry in which the mandate for conservation of water towers falls is then expected to publish the water tower in a gazette notice.

3.23 Once gazetted, the Agency is expected to undertake a detailed assessment of the water tower to identify the biological hot spots, its ecosystem health and economic value. Three different reports are produced at this stage: resource assessment report outlining the biological hot spots and critical water catchment areas; status assessment report outlining the ecosystem health of the water tower; and economic valuation report outlining the economic value of the water tower. The assessment results inform the development of a conservation plan identifying the stakeholders as well as the necessary conservation interventions. Working with stakeholders, the Agency is expected to prioritize the identified interventions and design the necessary projects/programmes.

[11] Definition of water tower as presented in the Agency's water tower status assessment reports.

3.24 Once the interventions are implemented, the Agency is expected to carry out a status assessment to examine the ecosystem health of the water tower and hence evaluate the effectiveness of the intervention. The results of the assessment can then inform a review of the conservation plan and the activities thereafter.

3.25 During implementation of the activities in the above listed six (6) stages, the Agency is expected to carry out continuous monitoring and engagement with stakeholders. The Agency is also expected to mobilize the needed resources both from the Government as well as non-state actors. The Agency is also expected to generate reports while implementing the activities.

Funding for Conservation of Water Towers

3.26 Water tower conservation activities are mainly funded by the Government through the exchequer. The Agency is also funded by international and local donors, through strategic partnerships. In addition, a Water Tower Conservation Fund, though dormant, was established in 2010 to facilitate funding for conservation activities. The Agency also explores strategic partnership options in the form of adopt-a-water tower strategy where interested partners adopt sections of water towers and rehabilitate as the need dictate. To facilitate it's resource mobilisation, the Agency has developed the Framework for Resource Mobilisation and Engagement of Development Partners, 2019. Other approaches to resource mobilisation proposed in the Framework include:

i) Payment for ecosystem services;
ii) Carbon credits; and
iii) Green bonds

3.27 Conservation of water towers, as funded by the exchequer, is classified under development expenditure. A review of the financial statements indicates that the Agency's development and reccurrent expenditures during the period under review was approximately Ksh. 1.38 billion and Ksh. 2.5 billion, respectively, as shown in **Table 1 and Table 2**. The exchequer

budgetory allocation on development vote for conservation activities has been declining while the budgetory allocation on recurrent vote has marginally increased since the year 2017/18. A breakdown of development expenditure on conservation activities is shown in **Appendix 3.**

Table 1: Development Budget and Expenditure on Conservation of Water Towers

Year	Approved Budget	Actual Disbursement	Expenditure
2017/18	548,994,000	390,243,998	226,326,916
2018/19	459,000,000	387,000,000	504,672,489
2019/20	439,000,000	244,500,000	300,586,104
2020/21	175,500,000	175,500,000	169,314,046
2021/22	180,000,000	180,000,000	180,277,572
Total	**1,802,494,000**	**1,377,243,998**	**1,381,177,127**

Source: Audit team analysis of KWTA financial documents

Table 2: Recurrent Budget and Expenditure on Conservation of Water Towers

Year	Approved Budget	Actual Disbursement	Expenditure
2017/18	434,222,737	434,222,736	350,723,737
2018/19	469,000,000	458,640,000	544,824,802
2019/20	457,700,000	457,700,001	535,071,013
2020/21	497,700,000	497,700,000	517,577,530
2021/22	494,000,000	494,000,000	554,060,623
Total	**2,352,622,737**	**2,342,262,737**	**2,502,257,705**

Source: Audit team analysis of KWTA financial documents

Chapter 4: Audit Findings

4.1 The audit observed that, through the Kenya Water Tower Agency (KWTA) intervention, there was significant positive achievements and impacts in the conservation of water towers, as summarized below: -

i) Using a multi-agency approach, the Agency oversaw the reclamation of some parcels of encroached land in the Mau Forest Complex. However, information on total reclaimed land was not available, except the 4,500 hectares (ha) and 8,869hHa recovered in 2018 and 2019, respectively in Maasai Mau. Natural ecosystem regeneration was observed in the reclaimed areas.

ii) The Agency had undertaken water tower status assessments and published reports of seven (7) out of the eighteen (18) gazetted water towers. The assessed water towers were Cherangani Hills, Kirisia Hills, Mau Forest Complex (East and South West blocks), Mt. Elgon, Nyambene Hills and Shimba Hills. The assessment reports had information on the economic value, degradation status, as well as recommendations for conservation, which could be used by stakeholders to aid their conservation activities.

iii) The Agency had made efforts to rehabilitate degraded sites within water towers through planting indigenous trees. Approximately 7, 374 Ha within the sampled nine (9) water towers was rehabilitated during the period July 2017 to December 2022. However, the planted sites recorded low seedling survival rates, as will be discussed later in this Chapter.

4.2 These positive observations notwithstanding, the audit observed that conservation of water towers as carried out by the Agency was faced with several shortcomings as discussed below: -

1) Protection of Water Towers

4.3 Section 5(1)(a) of KWTA Order, 2012 mandates the Agency to co-ordinate and oversee the protection, rehabilitation, conservation, and sustainable management of water towers. Protection of water towers, as carried out by the Agency, was mainly done through water towers boundaries mapping and delineation, mapping and securing of critical water catchment areas, and enforcement through the Joint Enforcement Unit (JEU). The audit assessed the Agency's performance in these areas and made the following observations: -

a) Inadequate Survey and Demarcation of Water Tower Boundaries

4.4 The Agency was yet to undertake a comprehensive survey and mapping of the eighteen (18) gazetted water towers. This was with the exception of the Maasai Mau Block within the Mau Forest Complex where the Agency oversaw the mapping and realignment of 60 kilometres (km) out of its 119 kilometres boundary. The information on the total area of a water tower as maintained by the Agency was based on assumption of the requirement for a 5km buffer from the protected forest area.

4.5 The audit also revealed that out of the nine (9) sampled water towers, only three (3) that host national parks had fenced boundaries. The three water towers were the Aberdare Ranges, Chyulu Hills, and Shimba Hills. Interviews with staff of the Agency the revealed that fencing was done by the Kenya Wildlife Service (KWS), in collaboration with the David Sheldrick Wildlife Trust.

4.6 According to the Maasai Mau Phase II Action Plan, the Agency had targeted to construct an electric smart fence along the Maasai Mau Block covering the entire 119km boundary within two (2) years, starting from August 2019. However, only 30km of the fence had been constructed as at the time of audit in 2022. The fence was to provide a barrier for uncontrolled human access and real time monitoring of activities along the fence. The constructed fence observed during the audit inspection was as shown in **Picture 1**.

Picture 1: Erected Boundary Fence Along Maasai Mau

Source: Photo taken by the audit team in November, 2022

4.7 The lack of mapping and demarcation of boundaries exposed water towers to destructive human activities, especially encroachment. Interviews and document reviews revealed that all the sampled nine (9) water towers had land outside the protected forest area ranging from 47% to 100% as shown in **Table 3**.

Table 3: Area of Water Towers Outside Protected Forest

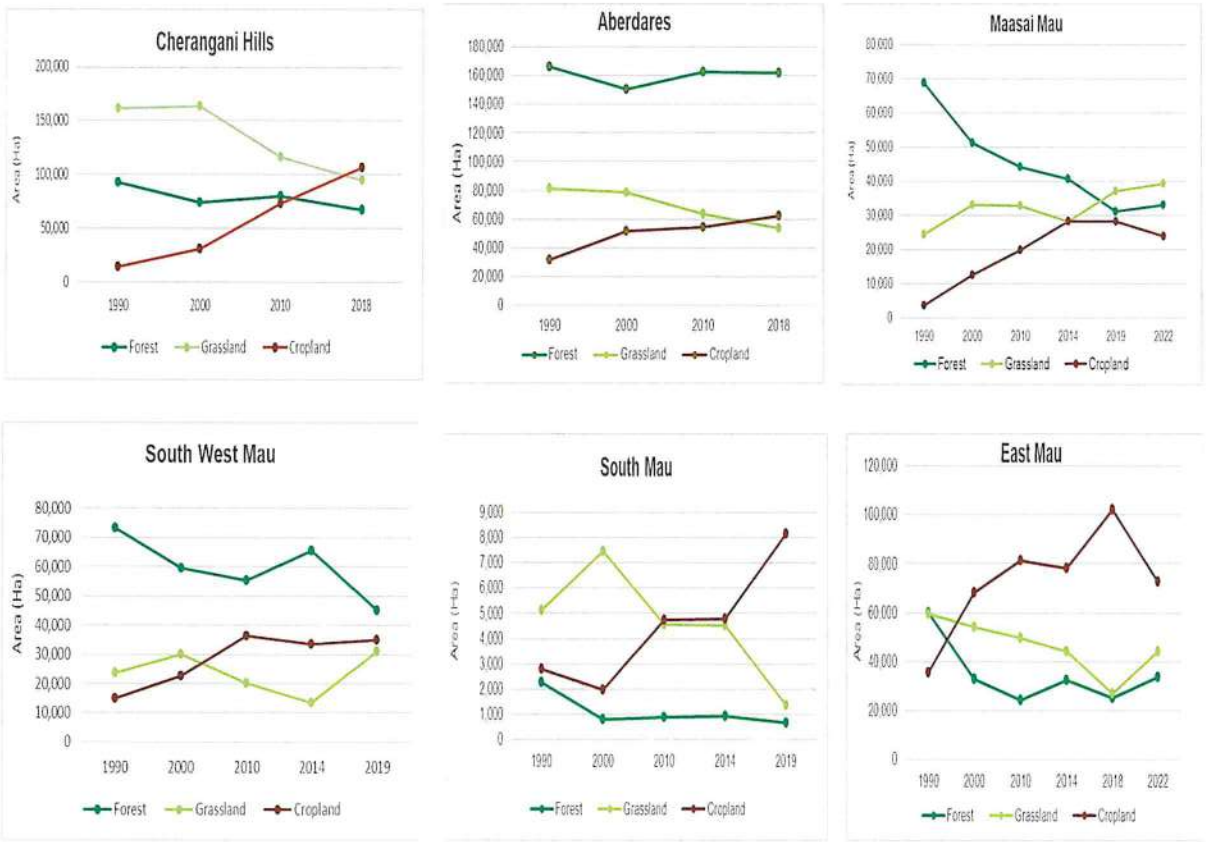
Serial No.	Water Tower		Total Water Tower Area (ha)	Protected Forest Area (ha)	Area Outside Protected Forest (ha)	Percentage of Area Outside the Protected Forest
1.	Aberdare Ranges		313,823	104,078	209,745	67%
2.	Cherangani Hills		270,276	97,397	172,879	64%
3.	Chyulu Hills		110,945	7,895	103,050	93%
4.	Kirisia Hills		171,581	91,613	79,968	47%
5.	Loita Hills		144,863	0	144,863	100%
6.	Mau Forest Complex	South Mau	10,069	128	9,941	99%
		East Mau	155,087	66,729	88,358	57%
		Maasai Mau	96,998	46,223	50,775	52%
7.	Mt. Marsabit		48,348	15,701	32,647	68%
8.	Nyambene Hills		30,313	5,427	24,886	82%
9.	Shimba Hills		91,078	23,236	67,842	74%

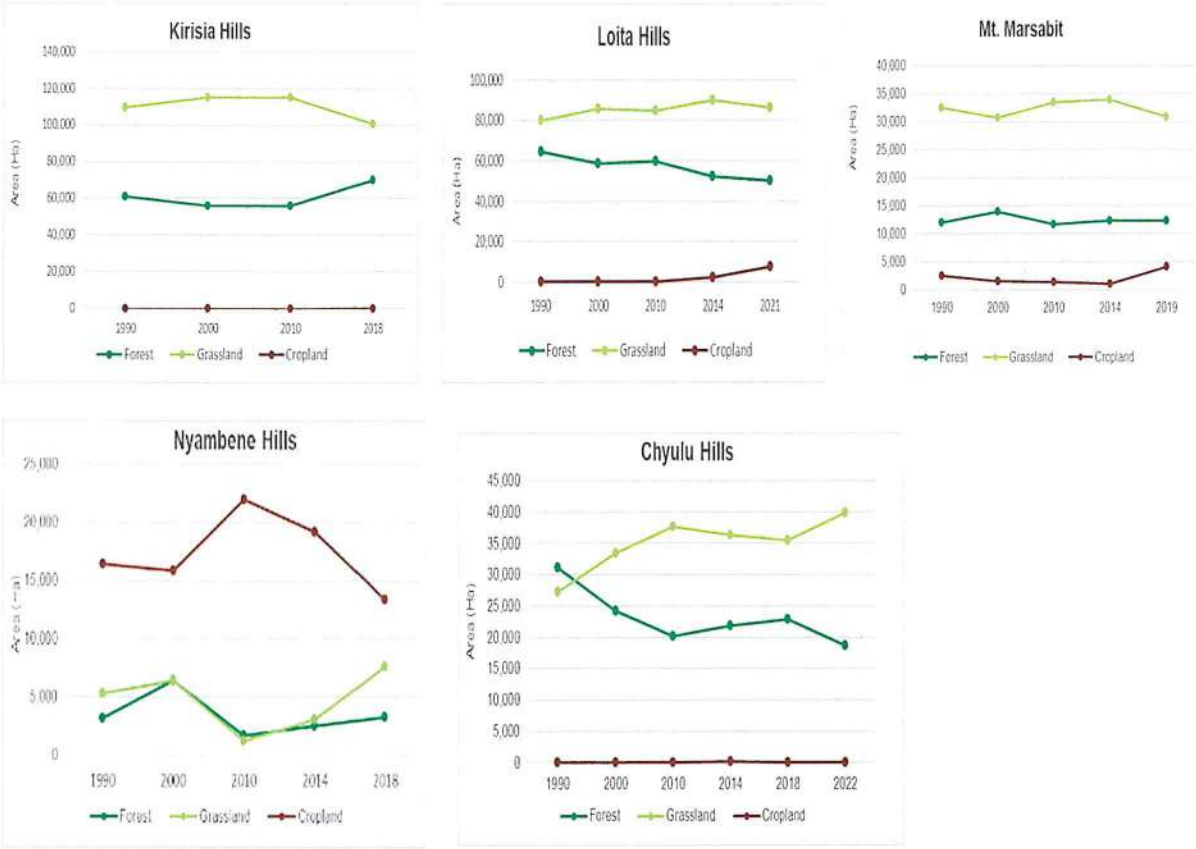
Source: Water tower status assessment reports and audit minutes

4.8 The unprotected water tower areas were mostly either in private lands or unprotected community forests and provided an avenue for encroachment into

protected forest areas, for settlement and agricultural purposes. For example, review of land use and land cover data, since the year 1990, revealed a declining trend in forest cover in Cherangani, Chyulu, Loita water towers and Maasai Mau, South Mau, and South West Mau blocks as shown in **Figure 4**. The Aberdare Ranges, Cherangani, Loita Hills, Mt. Marsabit water towers and South Mau Block had increased trend in crop land, depicting encroachment. Maasai Mau and East Mau blacks recorded a sharp decline in forest cover with marginal increase since 2019, attributable to rehabilitation activities implemented. Human encroachment into water towers was also observed during physical verifications. For instance, the Embobut Forest Block in Cherangani Hills and Nkareta area in Maasai Mau Block had both human settlement and farming activities. This was observed even on steep slopes thereby increasing the risks of flooding, landslides and siltation of rivers.

Figure 4: Land Use and Land Cover Changes in the Sampled Water Towers Since 1990

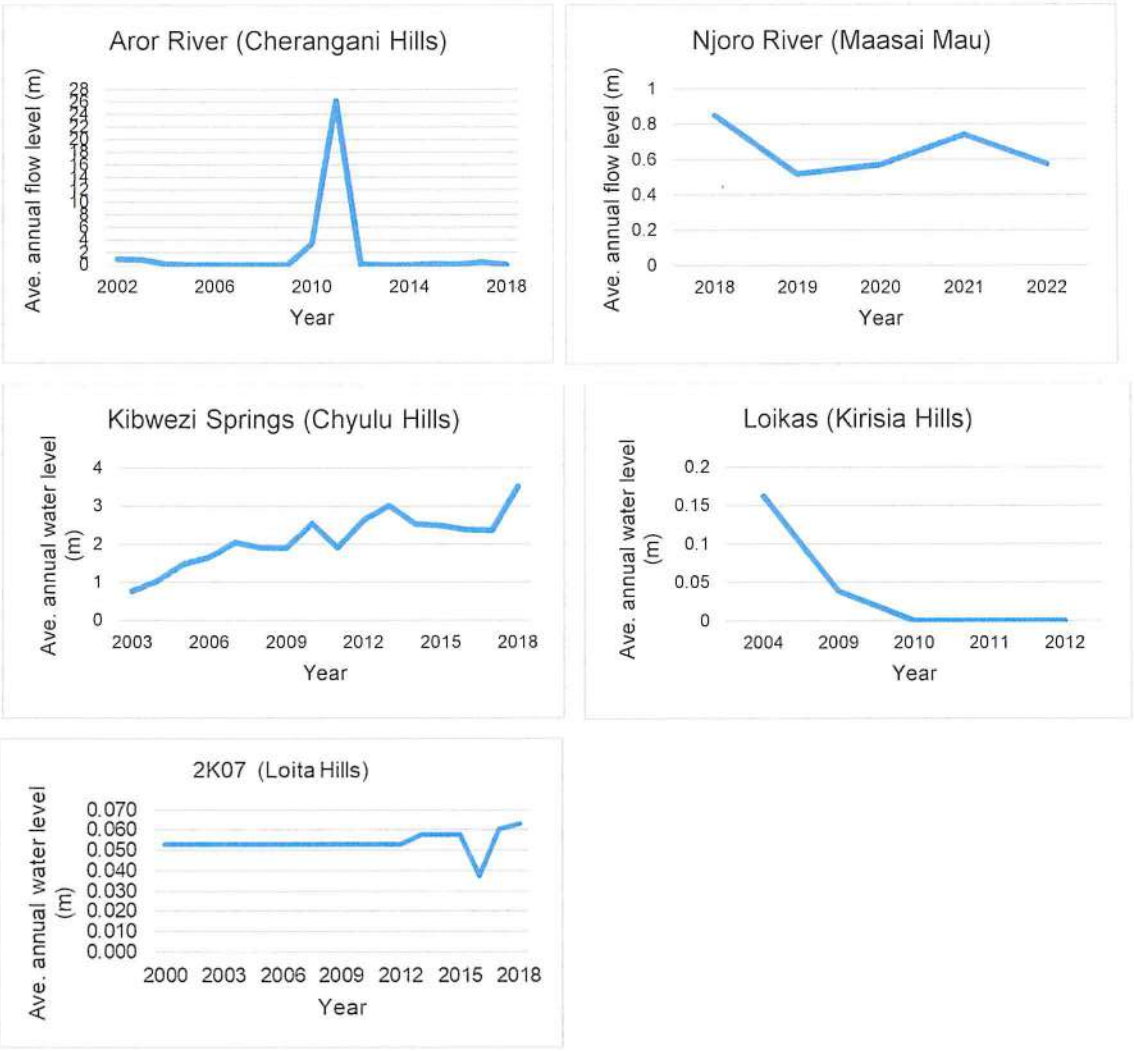




Source: Audit team analysis of the Agency's data on land use land cover changes

4.9 The declining forest cover combined with an increase in crop land has had a negative impact on water availability, which contributes to the achievement of SDG 6 Target 1 on universal and equitable access to safe and affordable drinking water for all by 2030. Interviews with staff of the Agency and review of water tower status assessment reports revealed that most of the rivers and springs emanating from these water towers had recorded reduced volumes over the years due to destructive human activities in water towers. This was also confirmed through analysis of water quantity data maintained by the Water Resources Authority (WRA). However, due to limitations in the data, the audit could only confirm the trend in flow levels for water sources in five (5) out of the nine (9) sampled water towers. The data showed a declining trend in three (3) out of the five (5) water sources as shown in **Figure 5**.

Figure 5: Trend in Water Flow Levels



Source: Analysis of WRA's water quantity data

4.10 The audit attributed the inadequate survey and demarcation of water tower boundaries to a number of factors, namely; the delay in enactment of the legal framework for water tower conservation, coordination challenges, and budgetary constraints, as discussed below: -

i) Delay in the Enactment of the Legal Framework for Water Tower Conservation

4.11 The audit revealed that the Agency had drafted the Water Towers Conservation and Coordination Policy, 2019 and Kenya Water Towers Bill, 2019, which once enacted would provide the required legal guidance. The Policy and Bill were yet to

be presented to Parliament for enactment as at the time of audit. The Agency's operations were guided by KWTA Order, 2012 which did not expressly state the mapping and demarcation of water towers boundaries as one of the Agency's key functions. The Bill has addressed this shortcoming by listing delineation of water tower boundaries as one of the functions of the Agency.

ii) Challenges in Coordination of Actors

4.12 Mapping and demarcation of physical boundaries would require the participation of various actors, especially the Kenya Forest Service (KFS), Kenya Wildlife Service (KWS), National Lands Commission (NLC), and Survey of Kenya (SoK). The Agency was expected to coordinate these actors, yet it lacked a strong legal mandate, given that all these actors were established under Acts of Parliament, which is superior to a legal notice.

iii) Budgetary Constraints

4.13 The audit noted that survey and mapping of all the gazetted water towers boundaries would be a resource intensive exercise. However, a review of the financial documents revealed that the Agency's development expenditure budgetary allocation declined by 67% from Ksh. 549million in 2017/18 to Ksh. 180million in 2021/22 as shown in **Table 1**. The Agency's scope of mandate remained the same, despite the significant reduction in budget.

4.14 Despite the limited budget, the audit observed that the Agency spent approximately Ksh.14million in the year 2019/2020 to survey and map 10 water towers, all of which were non-gazetted. Interviews with staff of the Agency and document reviews revealed that the mapping exercise was part of the gazettement process. However, it was not clear the basis on which the Agency identified the 10 water towers since the Agency was yet to finalize the development of water tower identification criteria. The mapped 10 water towers were yet to be gazetted as at the time of finalising this report.

4.15 Further, the audit revealed that the Agency had a Water Tower Conservation Fund established in 2010. However, the Fund became inactive in 2014, with

approximately Ksh. 30million in the account, following the expiry of the term of its management committee. No reason was provided for failure to appoint a management committee. If operationalized, the Fund would provide the Agency with a platform for resource mobilisation, from the government and donors. Operationalization of the Fund had been identified as one of the items that required immediate action in the Agency's Framework for Resource Mobilization and Engagement of Development Partners, 2019.

b) Limited Mapping and Securing of Critical Water Catchment Areas

4.16 A water catchment area is the zone through which rainwater seeps to eventually provide base flow to rivers, lakes, and springs and also provides for groundwater recharge. Within the water catchment area are certain sub-catchments which are critical to maintenance of the base flows of the water bodies they recharge. Therefore, a catchment area is considered critical if it has any of the following characteristics[12]:

i) Source of water for critical wetlands, such as lakes and swamps that are Ramsar[13] or world heritage sites;
ii) Source of rivers that are the major contributors of the perennial rivers, lakes or critical wetlands;
iii) Springs sources that are key to sustainability of base flows;
iv) The riparian land along which the main rivers and tributaries flow; and
v) Source of rivers that provide key ecosystem services.

4.17 The Agency's Strategic Objective No. 2 of its Strategic Plan (2016-2020) sought "to coordinate and oversee securing of catchment lands, wetlands, and critical biodiversity hotspots within the water towers ecosystem". This was to be done through:

i) Establishing the location, status and ownership of catchment lands, critical biodiversity hotspots, and wetlands within water towers;
ii) Undertaking survey of catchment lands; and

[12] The Agency's definition of a critical water catchment area as presented in the critical water catchment area mapping reports.
[13] Ramsar site is a wetland site designated to be of international importance under the Ramsar Convention.

iii) Undertaking measures to secure and register catchment lands.

4.18 A review of the Agency's financial documents revealed that the Agency spent approximately Ksh. 77.4million during the period 2017/2018 to 2021/2022 towards identification and assessment of critical water catchments, wetlands and biodiversity hotspots. The activity was implemented in only nine (9) water towers, out of which only three (3) were among the gazetted ones, namely; Loita Hills, Maasai Mau Block, and Nyambene Hills. The non-gazetted water towers were Endau Hills, Elgeyo Hills, Mbooni Hills, Makuli-Nzaui, Ngong Hills and Kavonge-Museve. Good practice requires that the Agency prioritizes gazetted water towers when planning and implementing water tower conservation activities. For instance, except for Masaai Mau Block, critical water catchment areas in major water towers such as the Mt. Kenya, the Aberdare Ranges, Cherangani Hills, Mt. Elgon and the entire Mau Forest Complex were yet to be identified and assessed.

4.19 Apart from identifying the critical catchment areas in the nine (9) water towers, the Agency had not taken the required measures to secure the critical catchment areas. This should have been done through survey and gazettement of catchment lands as critical water catchment areas. Some of the critical water catchment areas lie on private land within the buffer areas, therefore; gazettement would aid in regulating land use.

4.20 Securing of critical water catchment lands is a necessary pre-requisite for conservation of such areas. The limited mapping and securing of such areas denied stakeholders the information needed to prioritize conservation activities and left such lands exposed to destructive human activities. From interviews and document reviews, the audit revealed that critical water catchment areas such as Lake Olbolosat in the Aberdare Ranges, as well as Ol Pusimoru Forest and Enapuipui Swamp in Maasai Mau had experienced some levels of degradation, thereby negatively affecting water availability. For example, analysis of water quantity data revealed a declining trend in Njoro River, whose source is Enapuipui Swamp, as earlier shown in **Figure 5**. Njoro River drains into L.

Nakuru, which is a Ramsar site, hence its declining trend in flow level not only negatively affects the achievement of SDG 6 Target 1 but also the Country's implementation of the Ramsar Convention on Wetlands.

4.21 The audit attributed the limited mapping and securing of critical water catchment areas to inadequate legal framework, planning, resources. While the Agency sought to map, survey and register critical catchment areas, it lacked the legal mandate on which it could survey and gazette the identified land. Therefore, the Agency's work was limited to identification of critical water catchment areas.

4.22 In addition, planning is a necessary pre-requisite for resource mobilization. The Agency is expected to plan for mapping and assessment of the critical water catchment areas in all the eighteen (18) gazetted water towers. However, a review of the Agency's annual work plans revealed that it planned to undertake mapping of critical water catchment areas in only nine (9) water towers during the period 2017/18-2022/2023. Interviews with staff of the Agency revealed that planning was often based on the available resources.

c) Inadequacies in the Operations of the Joint Enforcement Unit

4.23 The audit revealed that protection of water towers through enforcement is done by county governments, KFS and KWS in water towers within their respective jurisdiction. The Joint Enforcement Unit (JEU) existed It was only in the Mau Forest Complex. JEU operated under the Agency's coordination to provide for a multi-agency approach to enforcement. The Unit's membership comprised of officers from KFS, the County Government of Narok, KWS, and National Police Service. The Unit, which was largely financed by the Agency, existed mainly to protect the Mau Forest Complex from illegal human activities.

4.24 However, the audit revealed that logging, especially for red cedar, was widespread in the Mau Forest Complex, even with the existence of JEU. Review of JEU monthly reports revealed that approximately 69,085 cedar posts and 5,000 bags of charcoal were seized by JEU officers during the period January 2017 to December 2022, as shown in **Table 4**. However, no reports were provided for a

period of nineteen (19) months spread over four (4) out of the six (6) years under review. The actual destruction may be higher than the figures presented in this report. Good practice requires that JEU officers deter loggers before they fell trees.

Table 4: Logging Activities in Mau Forest Complex

Year	No. of Months With Submitted JEU Reports	Bags of Charcoal Seized	No. of Cedar Posts Seized
2017	11	1,355	5,750
2018	6	779	10,151
2019	5	246	11,581
2020	7	796	15,217
2021	12	1,371	14,698
2022	12	460	11,688
Total		**5,007**	**69,085**

Source: Audit team review of JEU correspondence file maintained at the Agency

4.25 Further, monthly reporting provides a mechanism for the Agency to supervise JEU operations. However, JEU's correspondence file reviewed did not have evidence of the Agency giving feedback on JEU reports. The Agency's management explained that feedback was given during physical meetings. However, the evidence provided showed that only two (2) meetings were held during the period under audit, in 2019 and 2021. Review of the minutes of the two (2) meetings indicated that JEU monthly reporting was not an agenda item in the meetings.

4.26 The audit observed that while the Agency was expected to coordinate the operations of JEU, it lacked the legal mandate. Besides, all the actors in JEU were uniformed forces, hence could not take orders from the Agency's officers, who were not uniformed. In addition, JEU did not have any documented guidelines or regulations to govern its operations. The audit noted that the Agency had draft Guidelines of Engagement Between KWTA and the Joint Enforcement Units.

2) Rehabilitation of Degraded Sites Within Water Towers

4.27 Rehabilitation of degraded water towers involved activities geared towards reclamation of encroached water tower land and reforestation of degraded sites. Section 5(1) (b) of KWTA Order, 2012, mandates the Agency to coordinate and

oversee the recovery and restoration of forest lands, wetlands and biodiversity hot spots. However, the audit observed several inadequacies in implementation of rehabilitation interventions as discussed below: -

a) Insufficient Reclamation of Encroached Water Tower Land

4.28 Reclamation of water towers involves three key activities, namely; eviction of encroachers, revocation of irregularly acquired ownership documents and transfer of land back to protected forest land. The audit selected the Mau Forest Complex as a case study to assess the Agency's efforts in reclamation.

Case Study: The Mau Forest Complex Reclamation

4.29 According to the 2009 Prime Minister's Task Force Report, the Mau Forest Complex had two categories of encroachment. The Taskforce Report recommended eviction of all these encroachers. The two categories of encroachers were:

i) Encroachments that resulted from government intentions such as: adjudication of Maasai Mau trust land into group ranches; 2001 excision of forest land in East and South West Mau; Maasai Mau boundary re-declaration to conform with the recommendations of the 1986 Presidential Ole Ntutu Commission, and; adjudication of community land in Ol Pusimoru area, East Mau. This category of encroachers had land ownership documents, though considered irregular as per the Task Force Report; and

ii) Encroachment that did not result from government intentions and were widespread.

4.30 The audit revealed that the Agency did not have comprehensive and up to date information on the extent of encroachment in the Mau Forest Complex. It therefore lacked sufficient information to guide reclamation activities. Interviews and document review revealed that using a multi-agency approach, the

Government had undertaken reclamation interventions in the Mau Forest Complex, under the coordination of the Agency. However, the Agency did not provide information on the total area reclaimed, as well as the targeted locations. This is with the exception of the 4,500ha in Nkoben and 8, 869ha in "Status Quo" areas of Maasai Mau recovered in 2018 and 2019, respectively[14].

4.31 While some of the encroachers had land ownership documents, the Agency did not provide information on the number of illegally acquired titles, neither did it provide evidence to confirm revocation of titles. The audit therefore could not ascertain whether the reclamation process was completed and land reverted back to forest reserve.

4.32 As a result of insufficient reclamation, the Mau Forest Complex is still threatened by encroachers who often clear forest area to make room for settlement and crop production. For instance, analysis of land use land cover data for four (4) blocks in the Mau Forest Complex, that is Maasai Mau, East Mau, South Mau and South West Mau, revealed a general declining trend in forest cover while cropland increases as earlier shown in **Figure 4.** However, the Maasai Mau Block revealed slight improvement in forest cover attributable to reclamations done in 2018 and 2019.

4.33 The reduction in forest cover negatively affected biodiversity and water availability the Mau Forest Complex. For example, a review of the Agency's status assessment reports revealed that Maasai Mau, South Mau, and South West Mau blocks recorded a decline in wildlife population due to habitat destruction, pouching, and overgrazing. In addition, Maasai Mau, South Mau, East Mau and South West Mau recorded a decline in water flow levels.

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[14] Information obtained from the 2021 Progress Report on Restoration of Maasai Mau prepared by the Agency. **"Status Quo"** covered Kamwengoi, Siera Leone and Kipchoge areas bordering Ol Pusimoru forest in Maasai Mau.

4.34 The audit attributed inadequate reclamation of encroached land to a number of factors, namely; lack of comprehensive information on the extent of encroachment, unclear water tower boundaries, and conflicting boundaries.

i) Lack of Comprehensive Information on the Extent of Encroachment

4.35 The audit revealed that the Agency had not undertaken a comprehensive assessment to establish the extent of encroachment in the Mau Forest Complex. The Agency therefore lacked up to date information to guide planning for reclamation activities. Besides, due to lack of information, it was not possible to measure progress on recovery of encroached water tower land. The information currently in use is outdate as it is based on the 2009 Report of the Prime Minister's Task Force on the Conservation of the Mau Forest Complex.

ii) Unclear Water Tower Boundaries

4.36 The audit revealed that the Mau Forest Complex consist of twenty-two (22) forest blocks. However, boundary mapping had only been done in one (1) block, Maasai Mau, where 60km of its 119km boundary was mapped and realigned. The remaining boundaries in the entire Mau Forest Complex were unclear and hence posed a challenge to reclamation efforts.

iii)Conflicting Boundary Challenges

4.37 The audit noted that some of the realigned boundary sections within the Maasai Mau had conflicting boundary challenges. For instance, the audit observed that Nkareta area had two boundaries: Ole Ntutu and the Water Towers Interim Coordinating Secretariat (ICS). ICS boundary represents part of the 60km realignment which indicated that the area was encroached for a distance of approximately 2km inside the protected forest land. However, the Narok County Government considers Ole Ntutu boundary as the correct boundary rendering the area not encroached.

b) Inadequate Reforestation of Degraded Sites

4.38 Reforestation is a necessary intervention towards restoration of degraded water towers. The audit however observed that reforestation, as carried out by the Agency, was inadequate as reflected in; over prioritization of non-gazetted water towers, limited area planted compared to total degraded area, and the low seedling survival rate in the planted areas. The audit observations were as discussed below.

4.39 Review of documents revealed that the Agency rehabilitated eleven (11) water towers through tree planting during the period 2017/2018 to 2021/2022. However, seven (7) out of the eleven (11) water towers rehabilitated were non-gazetted. Good practice requires that the Agency prioritises the gazetted water towers. Critical water towers such as Cherangani Hills and Mt. Elgon were not considered for reforestation, despite them having faced degradation. The gazetted water towers that were reforested were Aberdare Ranges, the Mau Forest Complex, Mt. Marsabit, Nyambene Hills and Shimba Hills.

4.40 Interviews and review of water tower status assessment reports revealed that cumulatively, 189,028ha was under high level of degradation in the nine (9) sampled water towers as shown in **Table 5.** However, the Agency reforested 7,372.5Ha, representing 3.9% of the total area that required reforestation, either directly or through other actors.

Table 5: Performance on Reforestation of Degraded Sites as at April, 2023

Serial No.	Water Tower		Area Under High Level of Degradation (ha)	Actual Area Rehabilitated Area (ha)		Total Rehabilitated Area (ha)	Percentage Rehabilitated Area (ha)
				By the Agency	By Other Actors		
1.	Aberdare Ranges		16, 000	50	300	350	2.19%
2.	Cherangani Hills		71,991	0	0	0	0.00%
3.	Chyulu Hills		-	0	3	3	-
4.	Kirisia Hills		300	0	0	0	0.00%
5.	Loita Hills		42,742	0	0	0	0.00%
6.	Mau Forest Complex	East Mau Block	-	35	0	35	-
		Maasai Mau Block	11,391	744	6,144.5	6,888.5	60.47%
7.	Mt. Marsabit		4,499	7	0	7	0.16%
8.	Nyambene Hills		7,858	50	0	50	0.64%
9.	Shimba Hills		34,247	13	26	39	0.11%
	Total		**189,028**	**899**	**6,473.5**	**7,372.5**	**3.90%**

Source: KWTA documents and audit minutes

4.41 The audit established that the Agency used a strategic partnership approach in reforestation of the Maasai Mau Block, hence the significant area reforested compared to other water towers. Out of the 6,888.5Ha rehabilitated in the Maasai Mau, Ewaso Nyiro South Development Authority (ENSDA) rehabilitated 694.5ha while the remaining 6,194Ha was rehabilitated by the Agency and other actors through adopt-a-block strategy as shown in **Table 6**.

4.42 The adopt-a-block strategy, which was launched in 2019, involved actors adopting and rehabilitating a block measuring approximately 100Ha. As at the time of the audit only 6,194Ha out of the targeted 13,400ha, representing 46.2% had been reforested as shown in **Table 6**. The adopt-a-block strategy was therefore not successful. For instance, Eden Restoration adopted 57 Blocks (5,700Ha) to reforest over a period of three (3) years beginning January 2021. However, it had reforested 594.7Ha out of the targeted 5,700Ha, representing 10.4%, as at the time of audit inspection in November 2022. Interviews with KWTA staff and review of documents also revealed that 3, 600Ha out of the 3, 620 Ha rehabilitated by KEFRI through aerial seeding recorded low seed germination.

Table 6: Status of Implementation of Adopt-a-Block Strategy

Adoptee	No. of Blocks Adopted	Appr. Target Area (ha)	Appr. Planted Area (ha)	Percentage Area Rehabilitated
MoEF	3	300	260	86.67%
KFS	10	1, 700	925	54.41%
KWTA	8	1, 700	744	43.53%
KEFRI	36	3, 700	3, 610	97.57%
NEMA	1	100	2.7	2.70%
Total-Kenya/KENGEN/Base Titanium	1	100	56.6	56.60%
Eden Restoration Projects	57	5, 700	594.7	10.43%
The Green Story Organisation	1	100	1.2	1.20%
Total		**13,400**	**6,194**	**46.20%**

Source: Kenya Water Towers Agency documents on progress of adopt-a-block strategy as at December, 2022

4.43 The audit noted that while the Agency had Memorandum of Understandings (MoUs) with the private actors, the MoUs did not have set targets to aid in monitoring the performance of adoptees. Besides, government entities that adopted blocks did not formally adopt the blocks but rather planted trees as a one-off exercise during the launch of Maasai Mau restoration exercise.

4.44 Further, document review revealed that the Agency's recommended seedling survival rate was 80% for a reforestation intervention to be considered successful. However, review of seedling audit reports availed for audit revealed that five (5) out of the seven (7) planted sites recorded survival rates lower than 80% as shown in **Table 7.** This is despite the Agency spending approximately Ksh.174million on tree planting activities towards the 10% National Tree Cover Campaign during the period 2019/2020 to 2021/2022. For instance, out of the seven (7) sites whose seedling audit reports were availed for audit, only two (2) had a survival rate of 80% and above. Block 67 in Maasai Mau recorded a very low survival rate of 39.4%.

Table 7: Reported Seedling Survival Rate for Rehabilitated Sites

Water Tower	Rehabilitated Site	No. Of Seedlings Planted	Reported Survival Rate
Mau Forest Complex	Maasai Mau- Block 67	100,000	39.40%
Mau Forest Complex	Maasai Mau- Block 58	100, 000	53.80%
Mau Forest Complex	Maasai Mau- Block 66	100, 000	65.30%
Mau Forest Complex	Maasai Mau- Block 99 and 100	200,000	80.70%
Aberdare Ranges	Ndarugo	10, 000	90%
Nyambene	Athi beat	50, 000	57%
Mt. Kenya	Muthira River	10, 000	65.80%

Source: Kenya Water Towers Agency documents

4.45 The low seedling survival rates in reforested areas were also observed during audit inspection. For example, patches of bare land were observed in sites that the Agency claimed to have reforested in Nyambene Hills, Shimba Hills and Maasai Mau forest as shown in **Picture 2**.

Picture 2: Status of Reforested Sites in Nyambene, Shimba Hills and Maasai Mau

Source: Photo taken by the audit team in the months of November and December, 2022

4.46 The Due to limited coverage of areas that required reforestation and low seedling survival rates, water towers were still under high levels of degradation, despite the Agency's rehabilitation efforts. Interviews and review of documents revealed a decline in water flow volumes attributed to the high degradation status in water towers.

4.47 The audit attributed the inadequate reforestation of degraded sites to lack of documented guidelines on tree planting in water towers in general. This resulted to a number of factors which affected reforestation activities, namely:

i) Low seedling production;
ii) Challenges with procurement of seedlings;
iii) Lack of securing of rehabilitated sites; and
iv) Failure to weed reforested sites.

i) Low Seedling Production

4.48 The audit revealed that as part of its efforts on the campaign towards achieving 10% national tree cover by 2022, the Agency targeted to produce 1,200,000 seedlings, enough to rehabilitate 1,200Ha[15], during the period 2019/2020 and 2020/2021. The target was to be achieved through partnership with the Kenya Prison Services (KPS) and public schools. However, document review revealed that only a total of 153,536 seedlings were produced, hence could only rehabilitate 153.54Ha. Consequently, the Agency had to procure seedlings at a higher cost, hence reducing the size of the area to be planted.

4.49 In the seedlings production partnership, the Agency provided partners with seeds and nursery implements while partners were to establish nurseries and produce seedlings. Interviews and document reviews revealed that the partnership was mainly affected by low seed germination rate. This was attributed to the lack of guidance on seedling production. The audit revealed

[15] According to interviews with KWTA staff, rehabilitating 1 Ha of degraded area requires approximately 1000 seedlings.

that while the Agency expected the partners to establish and maintain tree nurseries, it did not provide them with training on tree nursery management.

ii) Challenges with Procurement of Seedlings

4.50 Interviews and document review revealed that the suppliers engaged by the Agency sourced seedlings far from the sites being rehabilitated. The seedlings were not given time to acclimatize with the area before planting, hence leading to low survival rate of the planted seedlings. Interviews and document review also revealed that the recommended height of a seedling should be between 1ft and 1.5ft. However, interviews with staff of the Agency and review of documents revealed that the seedlings delivered were often below the recommended height. In addition, review of documents revealed that seedlings were sometimes delivered either when the rains were about to subside or after the rainy season, hence could not survive without watering.

4.51 The audit noted that the Agency had started promoting local level seedling production by supporting selected community groups with tree nursery implements, including seeds. The arrangement was that the groups should produce seedlings and sell them to the Agency at a subsidised price. The seedlings were to be used for rehabilitation in the neighbouring water towers. However, physical verifications of such nurseries revealed low production capacity and poor nursery management. Besides, the seedlings looked overgrown as shown in **Picture 3** yet the Agency was supposed to procure from the community once the seedlings are mature. The groups reported that other than nursery implements, the Agency did not provide them with training on tree nursery management.

Picture 3: Status of Community Owned Nurseries

Source: Photo taken by the audit team in Shimba Hills and Maasai Mau in November, 2022

iii) Lack of Securing of Reforested Sites

4.52 The audit revealed that most rehabilitated sites were not secured. Therefore, the planted seedlings could not survive since livestock freely grazed on the rehabilitated sites. Interviews with staff of the Agency revealed that even when fenced, roaming livestock often vandalized the fence. The officers interviewed suggested that engaging community scouts would provide a sustainable security in reforested areas until the planted seedlings are established as opposed to fencing.

iv) Failure to Weed Reforested Sites

4.53 In order to increase the survival rate of the planted seedlings, the Agency was expected to weed reforested areas. However, a review of documents, as well as physical verifications, revealed that reforested sites had overgrown grass and bushes, hence chocking the planted seedlings.

3) Alternative Community Livelihood Interventions

4.54 Section 5(1)(c) of the Kenya Water Towers Agency Order, 2012 mandates the Agency to promote the implementation of sustainable livelihood programmes in water towers, in accordance with natural resource conservation. In this regard, Strategic Objective 4 of KWTA's Strategic Plan (2016-2020) was to promote sustainable livelihood support programmes within water towers.

4.55 The audit revealed that the Agency implemented various alternative livelihoods during the period under audit. Such interventions were in the areas of nature-based enterprises, namely; bamboo commercialization, briquette making, honey production, and baobab value addition. However, the audit observed inadequacies in the implemented interventions as outlined below.

a) Inadequacies in Bamboo Commercialisation Enterprises

4.56 The audit revealed that the Agency spent approximately Ksh.147.7million during the period 2017/2018 to 2021/2022 towards establishment of bamboo enterprise. This involved establishment of a National Bamboo Growing Demonstration Centre at Kaptagat Forest, Elgeyo Hills, among other activities. The site was to act as a bamboo demonstration centre where interested individuals would learn about the commercial value of bamboo and also procure bamboo seedlings. However, physical verification revealed that the site had been neglected as shown in **Picture 4.** Therefore, the intended objective of providing an alternative livelihood through bamboo commercialization was not achieved.

Picture 4: The Status of the National Bamboo Demonstration Centre

Source: Photos taken by the audit team in November, 2022

b) Inadequacies in Honey Production Enterprises

4.57 Interviews and review of documents revealed that the Agency utilised approximately Ksh. 20.75million during the period 2018/2019 to 2020/2021, towards implementation of honey production interventions in six (6) water towers. The audit assessed the intervention in five (5) out of the six (6) beneficiary water towers and made the following observations.

4.58 Interviews and review of documents revealed that a total of 1,135 beehives were issued to eight (8) groups spread across five (5) water towers in the audit sample. However, physical verifications of 665 beehives revealed colonisation in only 93 hives, representing 14% colonisation as shown in **Table 8**. While Samburu Bee Keepers, in Kirisia Hills, indicated general success in the implementation of the intervention, the audit could only verify 10 out of the 430 beehives issued, due to terrain and security challenges. The success of Samburu Bee Beepers honey production intervention was attributed to working in smaller groups; Samburu Bee Beepers had divided themselves into forty-eight (48) smaller groups each managing five (5) beehives located far apart inside Kirisia Hills.

Table 8: Status of Colonisation of Beehives Issued to Community Groups

Water Tower	Total No. of Beehives Issued	Year of Issue	No. of Beehives Inspected During Audit	No. of Beehives Colonised	Percentage Of Inspected Beehives Colonised
Cherangani Hills	120	2019	70	20	29%
Chyulu Hills	225	2019	225	9	4%
Kirisia Hills	430	2019	10	10	100%
Mau Forest Complex	210	2020	210	12	5.7%
Nyambene Hills	150	2019	150	42	28%
Total	**1, 135**		**665**	**93**	**14%**

Source: Audit team analysis of audit minutes and activity inspection sheets

4.59 The honey production intervention involved setting up of an apiary[16] and establishing a small-scale honey processing factory. The beneficiary

[16] An apiary refers to a collection of beehives, located in one place, where bees are kept to provide honey

groups were issued with beehives, honey harvesting and processing tools and equipment, and branded honey packaging materials.

4.60 The audit revealed that out of the eight (8) groups verified, only Samburu Bee Keepers had set up a honey processing factory as shown in **Picture 5**. However, interactions with group officials revealed the Agency provided a manual centrifuge, yet the honey produced in the region was highly viscous, requiring heating during processing. Consequently, the group did not use the equipment and resorted to use the equipment supplied to them later by the World Vision.

Picture 5: Samburu Bee Keepers Honey Processing Factory

Left photo- Honey processing factory setup; Right photo- manual centrifuges

Source: Photos taken by the audit team in November, 2022

4.61 Some of the challenges affecting colonisation included pest infestation. In addition, physical verifications revealed that beneficiary groups lacked skills on apiary management and location of the apiaries. For example, physical verifications revealed that the beehives issued to a community group in Kiptunga Forest were initially colonised but got infested by insects. It was observed that although the beehive stands had provision for putting oil to deter insects, the group had not placed oil on the stands. The group had also located its apiary in an open area. Besides, the apiary had overgrown grass through which insects could easily access the beehives. Status of beehives in Kiptunga Forest were as shown in **Picture 6**

Picture 6: Status of Beehives in Kiptunga Forest Apiary

Source: Photos taken by the audit team in November, 2022

c) Inadequacies in Charcoal Briquette Making Enterprises

4.62 The Agency supported community groups towards establishment of charcoal briquette making enterprises. Beneficiary groups were provided with charcoal briquette making machines to help them start an alternative nature-based enterprise.

4.63 However, audit inspection at a beneficiary group in the Maasai Mau Block revealed that the enterprise was small in scale and would not have economic impact on the beneficiaries. Further, interactions with group members revealed that the Agency did not provide them with mechanical crusher, despite this being critical for large scale production. Crushing of raw materials was therefore done manually, limiting the quantity that could be produced. In addition, the group members were not trained on charcoal

briquette making, which led to production of poor-quality briquettes. As at the time of audit, production of charcoal briquettes was limited to members own household consumption.

4.64 Due to inadequacies in the alternative livelihood interventions, communities living adjacent to forests continued with destructive livelihoods which degrade water towers. This negatively affects water flow volumes from these water towers, thereby slowing down the achievement of affecting the achievement of SDG 6 Target 1 which seeks to by 2030 achieve universal and equitable access to safe and affordable drinking water for all. Besides, the alternative livelihood interventions were income generating and therefore would have provided an opportunity for community empowerment which is necessary for the achievement of SDG 1 on end poverty in all its forms everywhere.

4.65 The audit attributed the challenges in community alternative livelihood interventions to three (3) sustainability factors, namely; inadequate capacity building of beneficiary groups, failure to provide beneficiaries with technical assistance, and lack of monitoring by the Agency.

i) Inadequate Capacity Building of Beneficiary Groups

4.66 The audit revealed that most beneficiary groups lacked the requisite skills to manage nature-based projects. Review of documents revealed that training was conducted in five (5) out of ten (10) sampled groups, as shown in **Appendix 4**. Besides, a review of training reports revealed that the trainings did not address critical success factors. For example, except for Nkaroni Tirap Beekeeping Self Help Group, the training offered to other beekeeping beneficiary groups did not cover critical issues such as apiary siting, bee colonisation, and apiary management.

ii) Lack of Provision of Technical Assistance to Beneficiary Groups

4.67 For successful implementation of any community-based intervention, it is expected that the Agency collaborate with relevant stakeholders to offer technical assistance to the beneficiary groups, especially at the onset of interventions. However, there

was no evidence of technical assistance to beneficiary groups during implementation of community alternative livelihood projects. This was with the exception of Samburu Beekeepers who had benefitted from the Samburu County Government and Non-Governmental Organisations operating in the area. For instance, interactions with sampled beneficiary groups revealed that they identified the apiary sites without any technical assistance from the Agency or any other actor. While water is critical in an apiary, the audit did not observe any source of water near the apiaries verified. The beneficiary groups reported intentions of moving the apiaries to other locations citing challenges such as lack of flowering plants nearby and exposure to wind.

iii) Lack of Monitoring the Implantation of the Alternative Livelihood Interventions

4.68 The audit revealed that the Agency did not monitor the implementation of alternative livelihood interventions. Staff of the Agency, both at the headquarter and in the regional offices, did not have information on the current status of the interventions.

4.69 The audit attributed lack of monitoring to the Agency's staffing challenges. Community livelihood interventions were implemented through the Agency's Directorate of Community Partnerships and Sustainable Livelihoods. However, the Directorate did not have staff in the sampled regional offices, except for South Rift and Coast regions. Further, a review of the Agency's staff establishment which revealed that the Directorate had eleven (11) staff responsible for community livelihoods and empowerment. However, eight (8) out of the eleven (11) staff were based at the headquarters. As such, the Agency could not undertake real time monitoring of the interventions.

4) Stakeholder Engagement and Coordination

4.70 Sections 5(1)(a) and (b) of the Kenya Water Towers Agency Order, 2012 mandates the Agency to co-ordinate and oversee the protection, rehabilitation, conservation, and sustainable management of water towers, including the

recovery of forest lands, wetlands, and biodiversity hot spots. In addition, Strategic Objective No. 5 of the Agency's Strategic Plan (2016-2020) sought to establish strategic partnerships and linkages for sustainable management of water towers.

4.71 The audit revealed that there were no structures in place for coordination of actors involved in the conservation of water towers. Interviews with staff of the Agency revealed that ad hoc committees existed, but only during national functions such as launch of national tree planting campaigns and reclamation activities.

4.72 In addition, the Agency did not provide evidence of strategic partnership arrangements, except for the Maasai Mau Block where adopt-a-block strategy was used. However, as discussed earlier, the Agency did not have structures in place for implementation of the strategy. Due to unclear implementation structures, adoptees did not reforest the total pledged area and failed to maintain the reforested areas, leading to low success rates of the strategy.

4.73 The audit also revealed lack of information sharing among actors involved in conservation of water towers. Interviews with staff of the Agency revealed that as part of the development of the Integrated Monitoring System, the Agency was working with stakeholders to develop information sharing protocols which are expected to provide a platform for information sharing among stakeholders.

4.74 Inadequate stakeholder engagement and coordination of actors did not only give room for duplication of efforts but also resulted to inadequate information on what each actor was doing. The audit observed overlaps in mandate among the various players as shown in **Table 9.** A coordinated action would have provided for synergy in activities among the actors.

Table 9: Summary Mandates for Water Tower Conservation

Entity	Mandate	Source of Mandate
Kenya Water Towers Agency (KWTA)	- Coordinate and oversee the protection, rehabilitation, conservation and sustainable management of water towers.	Section 5(1) of KWTA Order, 2012
Kenya Forest Services (KFS)	- Conserve, protect and manage all public forests. - Some of the public forests are gazetted water towers.	Section (8)(a) of the Forest Conservation and Management Act, 2016
Kenya Wildlife Service (KWS)	- Conserve and manage national parks, wildlife conservation areas, and sanctuaries under its jurisdiction. - Some of the national parks and reserves are gazetted water towers.	Section 7(a) of the Wildlife Conservation and Management Act, 2013
Water Resources Authority (WRA)	- Catchment area protection through gazettement and regulation of activities - The catchment areas fall within water towers	Section 22 of the Water Act, 2016

Source: Review of various legal documents

4.75 The audit attributed the inadequate stakeholder involvement to lack of a stakeholder engagement framework. Besides, the Agency had no guidelines in place for coordination of conservation activities. It was noted that the Agency had drafted the Water Towers Conservation and Coordination Policy, 2019 and Kenya Water Towers Bill, 2019 with provisions on stakeholder engagement and coordination with provisions on stakeholder engagement and coordination.

5) Water Towers Assessment and Monitoring of Conservation Activities

4.76 Sections 5(1)(a) and (b) of the Kenya Water Towers Agency Order, 2012 mandates the Agency to assess and monitor the rehabilitation, conservation, and management activities in water towers.

4.77 The audit revealed that monitoring as carried out by the Agency was limited and restricted to its own activities. Focus was on seedling survival rate audits to monitor performance of sites reforested by the Agency. However, the audit noted that while monitoring of the Agency's activities was done at the Headquarters level, the Regional offices did not receive feedback on the activities monitored.

4.78 Further, the audit revealed that the Agency conducted twenty-eight (28) water tower status assessments out of which fifteen (15) had been published as at the time of audit. Water towers whose assessments were finalised are as outlined in **Table 10**. The thirteen (13) assessments that were yet to be finalised were for Maasai Mau Block, South Mau Block, Western Mau Block, Mt. Marsabit, Kipipiri, Mt. Kulal, Mbooni, Loita Hills, Mathews range, Huri Hills, Kasigau Hills, Nandi Hills, and Kavonge-Museve. Status assessment entailed evaluation of the economic value of a water tower and level of degradation. It also provided information on the required conservation interventions.

4.79 While good practice requires the Agency to prioritize gazetted water towers, seven (7) out of the fifteen (15) published assessments reports were for the non-gazetted water towers while the remaining eight (8) were conducted in seven (7) gazetted water towers. Critical water towers such as the Aberdare Ranges and Mt. Kenya had not been assessed. Besides only five (5) out of the twenty-two (22) Blocks in the Mau Forest Complex had been assessed.

Table 10: List of Published Water Tower Status Assessment Reports

No.		Water Tower		Year Assessed	Publication Date	Approx. Duration of Delay From Assessment Date (Years)
1.	Gazetted	Chyulu Hills		2016/2017	2020	3
2.		Cherangani Hills		2017/2018	2020	2
3.		Kirisia Hills		2017/2018	2020	2
4.		Mt. Elgon		2017/2018	2020	2
5.		Nyambene Hills		2019/2020	2020	0
6.		Shimba Hills		2018/2019	2020	1
7.		Mau Forest Complex	East Mau	2016/2017	2020	3
			South West Mau	2018/2019	2020	2
8.	None Gazetted	Elgeyo Hills		2019/2020	2020	0
9.		Endau Hills		2017/2018	2020	2
10.		Gwassi Hills		2018/2019	2020	1
11.		Namanga Hills		2018/2019	2020	2
12.		Nthangu-Kitondo		2019/2020	2020	0
13.		Makuli-Nzaui Hills		2018/2019	2020	1
14.		Mwangea Hills		2019/2020	2020	0

Source: Audit team review of water tower status reports

4.80 Further, the audit observed that the Agency did not finalise and publish the water tower assessment reports in a timely manner. It took the Agency between two (2) and three (3) years in most of the times to finalise and publish the reports as shown in **Table 10**. Therefore, the published assessment reports may lack current information on the status of the assessed water towers. Moreover, while the water towers status assessment reports had a section on recommendations for improvements, the audit did not find evidence of action on such recommendations.

4.81 As a result of inadequate water tower assessments and limited monitoring, the Agency, not only lacked up to date information on the status of its activities but also those implemented by other actors. The audit attributed the inadequate monitoring of activities to a number of factors, namely: lack of a monitoring framework; staffing challenges; lack of activity level indicators, and lack of representation of key technical departments at the regional offices, as discussed below.

i) Lack of Implementation of Water Towers Ecosystem Monitoring Framework

4.82 The audit revealed that while the Agency had developed a Water Towers Ecosystem Monitoring Framework, it had not been put into use to aid in monitoring of actors' activities. However, it was noted that a web-based Integrated Monitoring System was under development. Once finalised, the system would provide the Agency with a platform for monitoring the actors' activities.

ii) Staffing Challenges

4.83 Internal monitoring of the Agency's activities was also affected by staffing challenges. The Agency had set up eight (8) regional offices in an effort to establish its presence closer to the water towers. The regional offices were supposed to not only aid in implementation of the Agency's conservation activities but also monitor the implemented activities by the Agency and other actors. However, the audit revealed that the Agency's staff establishment in the regional offices generally

lacked the representation of key technical departments which would aid in monitoring as shown in **Table 11.**

Table 11: Representation of Key Departments in the Regional Offices

Regional Office	Total No. of Technical Staff	Ecosystem Protection Rehabilitation and Conservation Directorate	Ecological, Research Planning And Audit Directorate	Community Partnerships and Sustainable Livelihoods Directorate
North Rift	3	✓	x	✓
Central Rift	3	✓	x	X
Coast	5	✓	✓	✓
Eastern	3	✓	x	X
Mt. Kenya	3	✓	✓	X
Northern	3	✓	x	X
South Rift	4	✓	✓	✓

Source: Audit Minutes

4.84 In addition, internal monitoring was supposed to be carried out by the Agency's Department of Strategy and M&E in the Directorates of Planning, Strategy and Quality Assurance. However, review of the Agency's staff establishment revealed that the Department's approved staff establishment was five (5) out of which only one (1) was in post.

4.85 Further, according to the Agency's organizational structure, monitoring of the activities of actors is supposed to be carried out by the Directorate of Ecosystem Research, Planning and Audit. However, the audit revealed that the Directorate had sixteen (16) out of the twenty-seven (27) approved staff. While continuous monitoring would require that these staff be posted in the regional offices, 13 out of the 16 were at the headquarters.

iii) Lack of Activity Level Indicators

4.86 The audit revealed that the Agency had a Project Monitoring and Evaluation Framework for internal monitoring of its activities. A review of the Agency's Framework and annual work plans revealed that planned activities had performance indicators and output targets. However, the audit did not find activity-level indicators which would then aid in monitoring of progress at the activity level.

Auditee's Response to Audit Findings

4.87 At the conclusion of the audit, an exit meeting was held and subsequently a management letter was sent to the management of the Agency, requesting for their comments on the audit findings. The Agency agreed with the findings and recommendations of the audit except for some audit observations as presented in **Appendix 5**.

Chapter 5: Conclusion

5.1 From the findings of the audit, it is evident that the Agency has implemented various interventions in a bid to conserve water towers. However, the implementation has faced various challenges, limiting the success of the interventions. There is inadequate implementation of protection and rehabilitation interventions. In addition, implementation of conservation activities is concentrated in the non-gazetted water towers. Despite conservation of water towers being multi-sectoral, stakeholder engagement and coordination is still a challenge, mainly due to the lack of legal framework. Besides, the Agency has not put much emphasis on monitoring of conservation activities, despite it being key to successful implementation of water towers conservation interventions. The findings of this audit show minimal progress in achievement of SDG 6 Target 6, which required Member States to protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes by the year 2020. The Government's efforts to expand safe water coverage in the country may be an exercise in futility if interventions put in place for conserving water towers are not implemented.

5.2 Failure to enact an enabling legal framework has hindered the Agency's efforts to implement water tower conservation interventions. This has resulted in the water tower boundaries not being surveyed and demarcated, making them susceptible to encroachment. In addition, critical water catchment areas within water towers have not been gazetted. Besides, the Agency is established as a lead coordinator, expected to coordinate conservation activities of various actors, including the Kenya Wildlife Services and the Kenya Forest Service. However, it operates under a legal notice which is inferior to the Acts of Parliament that established the actors it is supposed to coordinate.

5.3 Reforestation is a necessary step towards rehabilitation of degraded water towers. However, the success of any reforestation exercise is dependent on several factors, including; maturity stage of the seedlings, timing of planting, travel distance during transportation of seedlings, security of the planted areas, and maintenance of the planted seedlings. Despite the investments in tree planting activities, the Agency did

not pay close attention to the success factors, hence most planted sites recorded low seedling survival rates.

5.4 The objective of easing pressure from forest resources remains elusive despite the Agency's investments in several nature-based projects meant to provide alternative livelihoods to communities living adjacent to forests. The Agency has failed to address the sustainability component of alternative livelihood interventions, leading to low success rates.

Chapter 6: Recommendations

6.1 In view of the findings and conclusions of the audit, the following is recommended for consideration by the Agency to improve on the conservation of water towers: -

I) To ensure adequate protection of water towers, the Agency should:

i) Work closely with the State Department for Environment and Climate Change to fast-track the finalization and enactment of the Water Towers Conservation and Coordination Policy, 2019 and Kenya Water Towers Bill, 2019. This will strengthen the Agency's mandate as a lead coordinator and overseer in water tower conservation;

ii) Implement the Framework for Resource Mobilization and Engagement of Development Partners, giving priority to operationalization of the Water Tower Conservation Fund and Adopt-a-Water Tower Programme; and

iii) Fast track the development and implementation of the Guidelines for Engagement With the Joint Enforcement Unit (JEU). The Guidelines should outline clear roles and responsibilities for each party, with a focus on sustainable operations of the Unit.

II) To ensure adequate rehabilitation of water towers, the Agency should:

i) Survey and map the gazetted water towers and undertake comprehensive assessment of the extent of encroachment;

ii) Develop and implement guidelines on tree planting in water towers. The guidelines should emphasise on shift of focus from not just planting of trees but to growing trees for sustainability. The guidelines should also address critical issues such as quality of seedlings to be planted, sourcing of seedlings, security of planted sites, maintenance of the planted sites, and seedling survival rate requirements; and

iii) Develop tree planting targets, with clear and measurable deliverables. This will ensure tracking of progress in reforestation interventions.

III) To ensure sustainability of community alternative livelihoods, the Agency should:

i) Coordinate with the relevant stakeholders to ensure that beneficiary groups are adequately trained before engaging them on nature-based enterprises, including seedling production; and

ii) Coordinate with relevant stakeholders to ensure that they provide technical assistance to beneficiary groups throughout the timeline of nature-based projects.

IV) To ensure active involvement of stakeholders in conservation of water towers, the Agency should develop and implement a comprehensive stakeholder engagement framework. The framework should provide guidance on strategic partnerships, information sharing, and coordination.

V) To facilitate monitoring of water tower conservation activities, the Agency should:

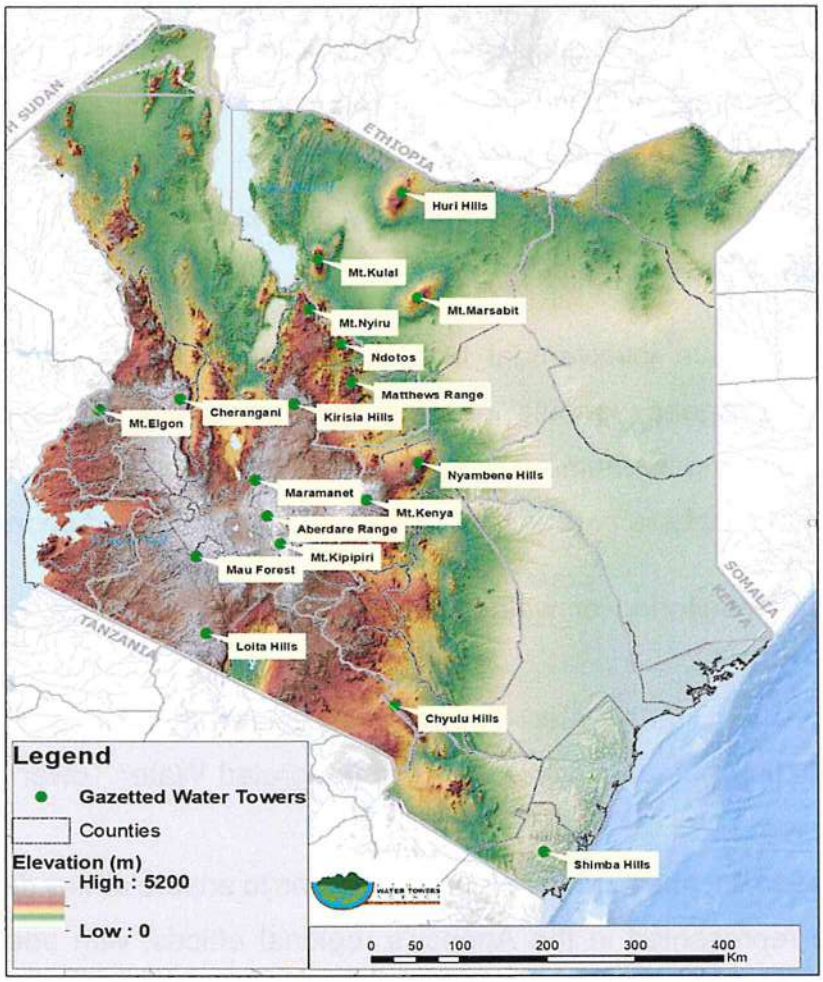
i) Implement the Water Towers Ecosystem Monitoring Framework, including operationalization of the Integrated Water Tower Monitoring System;

ii) Streamline the human resource functions to ensure all key departments are represented in the Agency's regional offices, with adequate and skilled staff; and

iii) Develop intervention specific activity-level indicators. This will ensure that monitoring of the conservation interventions is carried out at the activity level.

Appendices

Appendix 1: Distribution of Gazetted Water Towers in Kenya



Source: Kenya Water Towers Agency

Major Water Towers

1. Aberdare Ranges
2. Cherangani Hills
3. Mau Forest Complex
4. Mt. Elgon
5. Mt. Kenya

Minor Water Towers

1. Chyulu Hills
2. Huri Hills
3. Kirisia Hills
4. Loita Hills
5. Mt. Kipipiri
6. Mt. Kulal
7. Mt. Marsabit
8. Mt. Nyiru
9. Marmanet
10. Matthews Range
11. Ndotos
12. Nyambene Hills
13. Shimba Hills

Appendix 2: Methods Used to Collect Audit Evidence

a) List of People Interviewed

Person Interviewed	Reasons for Interview
Director Ecosystem Research, Planning and Audit	- Obtain information on water towers assessment - Obtain information on water tower monitoring and mapping of critical biodiversity
Acting Director, Community Partnership and Sustainable Livelihood	- Obtain information on the legal and institutional framework for conservation of the gazetted water towers - Obtain information and background information on water towers - Obtain information on the mandate of Kenya Water Towers Agency - Obtain information on activities and processes involved in water towers protection, restoration and conservation - Understanding institutional capacity for KWTA
Acting Director, Ecosystem Protection Rehabilitation and Conservation Directorate	
Assistant Director, Ecosystem Research Planning and Audit	
Assistant Director Community Livelihoods	- Obtain information on the activities implemented by the agency - Obtain information on the beneficiaries of the intervention activities
Manager, Finance - KWTA	- Obtain information on the source of funding - Obtain information on the trends in funding for KWTA with regards to conservation of water towers
Regional Officers	- Obtain information on the role of the regional offices in conservation of water towers - Gather more information on the challenges facing water towers in those regions - Gather more information on activities implemented in water towers in the sampled regions
Corporate Secretary	- Gather more information on the challenges to do with water towers conservation legal framework - Gather information on why the Water Tower Fund has not been operationalized
Senior Community and Empowerment Officer	- Obtain information on resource mobilization which is also under the department of strategy and Quality Assurance - Gather more information on how resource mobilization is carried out

Senior Water Towers Officer-KWTA	- Obtain information on rehabilitation interventions in water towers - Obtain information on enforcement, rehabilitation activities in water towers - Gather information on the successes and challenges in conservation of water towers
Ecosystem Research and Monitoring Officer	- Obtain information on the frequency of the survival audits
Resource Mobilization Officer	- Obtain information on the Agency's source of funds - Obtain information on how the agency meets its budget deficits - Obtain information on how the agency carries out resource mobilization
KWS and KFS offices in the sampled water towers	- To understand the role these two institutions play in conservation of water towers - To obtain information on stakeholder engagement

b) List of Documents Reviewed

Document Reviewed	Information Obtained
Constitution of Kenya, 2010	Gather information on constitutional provisions on water towers conversation and access to safe water in adequate quantities
Kenya Water Towers Agency Order, 2012	Obtain information on the legal framework establishing and governing the operations of KWTA
KWTA Annual Work Plans	Gather information on the planned activities and how they relate to KWTA management
Water Towers Status Reports	Obtain information on the status of water towers and the conservation trends
KWTA Strategic Plans covering 2016-2020 and 2021-2026	Gather information of the entities' strategy for executing their KWTA mandate
KWTA Financial Documents	Gather information on the trend in funding and expenditures of KWTA
Sustainable Development Goals Document	Gather information on SDG 6 targets and indicators relating to Water and Sanitation
Taskforce reports of 2018 and 2009	Gather information relating to activities that threaten the existence of Water towers and suggested recommendations
Activity reports	Obtain information on the status of implementation of various KWTA activities
JEU Correspondence file	Gather information on JEU operations in Maasai Mau
Seedlings survival rate audit reports	Gather information on survival rate of seedlings
Signed Memorandum of Understandings	Gather information on the obligations of the Agency and the adoptees
Water Towers Ecosystem Monitoring Framework	- Gather information on monitoring targets and indicators

c) List of Activities Verified

Water Tower	Activity Verified
1. Shimba Hills	- Reforested sites within water towers - Boundary fence - Reforested sites in the buffer zone (Magombani and Dima Primary Schools) - Tree nursery establishments (Kwale G.K prisons and Pet Mazumalume Self-Help Group)
2. Chyulu Hills	- Jipange Mapema Women Group: Baobab value addition - Nzeeveni Bee Keepers
3. Cherangani Hills	- Tumaini Women Group: bee keeping intervention - Embobut Forest Block: level of degradation - National Bamboo Demonstration site at Elgeyo Hills
4. Mau Forest Complex	- Reclaimed and rehabilitated area within "Status Quo" area - Eden Restoration Tree Nursery Establishment - Nkoben CBO Tree Nursery Establishment - Kirum CBO: bee keeping intervention - Nkareta area: extent of encroachment - Maasai Women Environment and Conservation Champions: charcoal briquette intervention - Ol Pusimoru CFA: bee keeping intervention - Kiptunga CFA: bee keeping intervention - Enapuipui Swamp: wetland rehabilitation
5. Loita Hills	- Olmoseti Spring: spring protection - Kibulkeny Spring: spring protection
6. Aberdare Ranges	- Zaina Forest Station: conservation status - Aberdares National Park: boundary fencing
7. Nyambene Hills	- Reforested site at Athi beat - Nyambene CFA: Bee keeping intervention
8. Kirisia Hills	- Bawa spring: spring protection - Samburu Bee Keepers
9. Mt. Marsabit	- Reforested site at Badasa Beat

Appendix 3: Expenditure on Water Towers Conservation Activities

Department	Item Description	Amounts (Ksh.)					Total Expenditure (Ksh.)
		2017/18	2018/19	2019/20	2020/21	2021/22	
Ecosystem Protection, Rehabilitation & Conservation	Audit of rehabilitation activities	641,300	6,303,400	1,760,300	3,187,200	1,631,300	**13,523,500**
	Rehabilitation of gullies & tree planting	17,635,319	14,248,600	17,791,278	3,482,200		**53,157,397**
	Rehabilitation works - governance and co-ordination	42,840,245	128,606,209	-	-	-	**171,446,454**
	Water towers conservation plans (WTCPs)	14,886,115	11,130,072	-	-	-	**26,016,187**
	Mau Phase II Restoration Programme	-	-	40,004,700	-	-	**40,004,700**
	10% National Tree Cover	-	-	48,770,330	42,396,653	82,640,023	**173,807,006**
	Establishment of tree nurseries	-	-	-	4,673,100	289,800	**4,962,900**
	Community scouts	-	-	-	598,596	1,560,000	**2,158,596**
	Water Towers Emergency Fund	-	-	986,300	1,041,700	940,800	**2,968,800**
	Construction of JEU camps	-	-	-	-	546,644	**546,644**
	Fencing of the Mau Forest Complex	-	-	-	41,739,387	41,746,988	**83,486,375**
Community Partnerships and Sustainable Livelihoods	Community investments towards climate change adaptation	7,027,784	-	-	-	-	**7,027,784**
	Establishment of bamboo enterprise	13,466,955	103,877,123	16,954,896	6,030,500	7,376,281	**147,705,755**
	Water systems in schools	-	7,988,980	-	-	-	**7,988,980**

Department	Item Description	Amounts (Ksh.)					Total Expenditure (Ksh.)
		2017/18	2018/19	2019/20	2020/21	2021/22	
	Installation of solar in schools	-	7,028,051	-	-	-	**7,028,051**
	Construction of biogas in schools	-	19,486,398	24,450,362	1,228,400	1,130,188	**46,295,348**
	Honey production	-	8,332,933	9,545,576	2,869,600		**20,748,109**
	Environmental awareness education	-	-	-	257,900	285,600	**543,500**
	Nature based enterprises	-	-	-	3,596,120	5,588,900	**9,185,020**
	Baobab value chain development	-	-	-	390,800	-	**390,800**
	Implementation of CLIP: Interventions in water towers- CDAPs and promotion of ease of doing business	18,691,882	10,079,335	7,664,816	3,919,800	540,300	**40,896,133**
	Hay production	-	4,460,530	-	-	-	**4,460,530**
	Capacity Dev-WRUAs					1,284,300	**1,284,300**
Ecological Research, Planning and Audit	Mapping and assessment of critical catchments, wetlands and biodiversity hotspots	24,832,452	29,268,300	14,843,011	6,565,800	1,905,900	**77,415,463**
	Monitoring framework	9,667,383	12,492,738	2,800,693	2,428,200	-	**27,389,014**
	Environmental Impact Assessments	-	-	2,249,456	714,000	-	**2,963,456**
	Survey and Gazettement of water towers	-	-	14,992,706	-	-	**14,992,706**
	Feasibility studies				1,421,600		**1,421,600**
	Water towers status reports and total economic valuation	13,533,236	36,668,813	28,113,048	6,311,663	4,567,300	**89,194,060**

Department	Item Description	Amounts (Ksh.)					Total Expenditure (Ksh.)
		2017/18	2018/19	2019/20	2020/21	2021/22	
	Regional project planning and implementation	-	-	11,707,352	841,500	1,980,000	**14,528,852**
Other Departments	Communication, corporate branding and ICT	-	26,953,370	11,854,110	10,286,400	4,209,516	**53,303,396**
	Development of water towers management policy	20,224,385	34,771,799	14,595,770	7,845,400	2,449,410	**79,886,764**
	Corporate social responsibility	-	-	-	-	4,636,000	**4,636,000**
	Multilateral engagement and strategic plan and policy and bill	-	-	18,855,100	7,144,227	3,612,698	**29,612,025**
	Monitoring and evaluation and corporate engagement	42,879,860	42,975,838	12,646,300	10,343,300	9,675,700	**118,520,998**
	Resource mobilization	-	-	-	-	1,679,924	**1,679,924**
Total		**226,326,916**	**504,672,489**	**300,586,104**	**169,314,046**	**180,277,572**	**1,381,177,127**

Source: KWTA's financial documents

Appendix 4: Status of Capacity Building for Beneficiaries of Community Alternative Livelihoods

Water Tower	Name of Beneficiary Group Visited During Audit	Type of Activity	Evidence of Training Provided?	Date of Training	Issues Covered in the Training	Remarks
Chyulu Hills	1. Jipange Mapema Women Group	Baobab value addition	Yes	2022	- Baobab value addition in the areas of: a) Hair shampoo product b) Bath soap formation c) Lotion formation from baobab oil extracts	Training focused more on how to make the products
	2. Nzeeveni Bee Keepers	Honey production	No	-	-	-
Cherangani Hills	3. Tumaini Women Group	Honey production	No	-	-	-
Kirisia Hills	4. Samburu Bee Keepers	Honey production	Yes	2018	- History of beekeeping in Kenya - Challenges facing beekeeping in Kenya - Beekeeping as a business - Honey quality testing and processing - Climate change and forest conservation	Important issues such as apiary siting and management not covered
Mau Forest Complex-Maasai Mau	5. Nkaroni Tirap Beekeeping Self Help Group	Honey Production	Yes	2021	- Bee biology - Bee keeping technology and equipment - Bee pathology - Factors limiting bee industry in Kenya - Common practices in apiary management - Bee keeping as a business - Bee colonisation	Training covered most of the success factors
	6. Kirum CBO	Honey production	No	-	-	-

	7. Maasai Women Environment and Conservation Champions	Charcoal briquette production	No	-	-	-
	8. Ol Pusimoru CFA	Honey production	Yes	2018	- Establishing an apiary - Types of hives - Beekeeping project linkages to community - Harvesting honey and other products - Climate change and forest conservation - Record keeping	- Trained as Ogiek community bee keepers - Training did not cover bee colonisation, apiary management, and honey processing
	9. Kiptunga CFA	Honey production	Yes			
Nyambene Hills	10. Nyambene CFA	Honey production	No	-	-	-

Source: Review of KWTA's training reports

Appendix 5: Auditee's Management Response on Audit Findings

Audit Observation	Auditees' Management Response	OAG's Response
Significant positive findings		
Par. 4.1: The audit noted some significant positive achievements in the areas of reclamation of encroached water tower land and water towers status assessment.	- We note the positive achievements that the auditors appreciated. However, one of the major focus of the Agency is rehabilitation of degraded areas within water towers which we feel the Agency has made strides. For instance, since 2017 the Agency has rehabilitated 6,890.2ha in various water towers across the Country which in our view needed to be captured in the report. -	We have noted the auditee' comment. The finding has been amended in consideration of the Agency's response.
1(a) Inadequate Survey and Demarcation of Water Tower Boundaries		
Par. 4.14: The Agency spent approximately Ksh. 14million in the year 2019/2020 to survey and map 10 water towers, all of which were non-gazetted. This is despite the fact that the Agency was yet to finalize the development of water tower identification criteria.	- The Agency appreciates the audit observation that we have implemented activities in non-gazetted water towers. However, the Agency is mandated to identify important water catchment areas for protection. Some of those non-gazetted water towers where the Agency implemented activities are critical catchment areas facing threats where we need immediate information and intervention.	The finding remains as reported. We believe that good practice requires gazetted water towers to be given priority. Besides, identification and gazettement is a pre-condition before the Agency can utilise public resources on conservation of any ecosystem. In this case, resources were utilised to survey and map ecosystems which were yet to be subjected to the identification criteria.

Audit Observation	Auditees' Management Response	OAG's Response
1(b) Limited Mapping and Securing of Critical Water Catchment Areas		
Par. 4.18: The Agency spent approximately Ksh. 77.4million towards identification and assessment of critical water catchments, wetlands and biodiversity hotspots in nine (9) water towers during the period under audit. Out of the nine (9), six (6) were non-gazetted water towers.	- The Agency has undertaken assessment and mapping of 28 water towers which also includes identification and mapping of critical catchment areas such as springs and rivers within water towers. The budget of 77.4million is therefore the total amount used to undertake entire assessment of water towers, including mapping critical catchment areas.	The finding remains as reported. According to the Agency's financial documents presented for audit, Status Reports and Total Economic Valuation had a separate budget line. A total of Ksh. 89.2million was spent on the activity during the period 2017/18 to 2021/22. Ksh. 77.4million was for identification and assessment of critical water catchments, wetlands and biodiversity hotspots during the same period. While the Agency claims that identification and mapping of critical water catchment areas was done during water towers status assessment in the 28 water towers, the said reports only had general information on hydrology, without mentioning the critical water catchment areas.
1(c) Inadequacies in the Operations of the Joint Enforcement Unit		
Par. 4.24: Logging, especially for red cedar, was rampant in the Mau Forest	- It is important for the report to recognize that not all forest produce arrested is from the gazetted and community forests.	The finding remains as reported.

Audit Observation	Auditees' Management Response	OAG's Response
Complex, even with the existence of JEU. A review of JEU monthly reports revealed that approximately 69,085 cedar posts and 5,000 bags of charcoal were seized by JEU officers during the period January 2017 to December 2022.	About 60% of forest produce confiscated is cut from private farms. The main reason why the produce from private farms is confiscated is lack of certificate of origin to show that the products were cut in individual farms and movement permits. The high number of arrests of cedar posts from private farms actually shows a high level of alertness of JEU officers and not necessarily destruction of forests.	Much as the produce may be from private farms, The Agency did not provide any evidence in support its response.
Par. 4.25: The JEU correspondences file reviewed did not have evidence of the Agency giving feedback on JEU monthly reports. The Agency's management explained that feedback was given during physical meetings. However, the evidence provided showed that only two (2) meetings were held during the period under audit, in 2019 and 2021.	- The Agency wishes to reiterate that interaction with JEU officers occurs on a daily basis through various channels including phone conversations, emails, social media groups etc.	The finding remains as reported. The Agency has not provided any evidence to support its response.
Par. 4.25: JEU did not have any documented guidelines or regulations to govern its operations.	- The report should recognize that there are draft JEU guidelines. The draft guidelines were shared with the Audit team.	The finding has been amended in view of new evidence presented.
2(a) Insufficient Reclamation of Encroached Water Tower Land		
Par. 4.31: The Agency did not provide information on the number of illegally acquired titles neither did it provide evidence to confirm revocation of titles. The audit therefore could not ascertain	- The report mentions that the Agency did not provide evidence to confirm revocation of titles. During the audit process, the Agency referred the audit team to the Ministry of Lands for more information on revocation of title deeds as this matter is handled by the Ministry of Lands.	The finding remains as reported. The Agency being the coordinator during the

Audit Observation	Auditees' Management Response	OAG's Response
whether the reclamation process was completed and land reverted back to forest reserve.		reclamation exercise should have provided information on the status of revocation of titles which the audit team would have used to follow up the issue with the Ministry of Lands.
2(b) Inadequate Reforestation of Degraded Sites		
Par. 4.44- 4.45: Document reviews and physical inspection revealed that the reforested sites recorded low seedling survival rates in most of the cases.	- The low seedling survival rate in the rehabilitated sites in some water towers was attributed to the effects of drought.	The finding remains as reported. No evidence has been provided to support the response. Besides, drought was not cited as a cause of low seedling survival rate in any of the seedling audit reports presented for audit neither was it mentioned in any of the interviews with staff of the Agency.
Par. 4.48: The seedling production partnership was mainly affected by low seed germination rate. This was attributed to the lack of guidance on seedling production in general.	- The main cause of low seed germination rate was poor/low viability of seeds which the Agency has noted and took corrective measures and not nursery management issues.	The finding remains as reported. The Agency has not provided any evidence to support its response.

Audit Observation	Auditees' Management Response	OAG's Response
Par. 4.53: A review of documents as well as physical verifications revealed that reforested sites had overgrown grass and bushes, hence chocking the planted seedlings.	- The report needs to acknowledge that spot weeding activities were affected by delays in exchequer release and/or partial disbursement of development funds.	The finding remains as reported. The Agency has not provided any evidence to support its response.
3. Community Alternative Livelihood Interventions		
Par. 4.56: The audit revealed that the Agency spent approximately Ksh. 147.7million to establish a national bamboo demonstration centre at Kaptagat forest, Elgeyo hills. However, physical verification revealed a site that had been neglected.	- From the budget amounts stated in the report, the Agency undertook several activities towards establishment of a National Bamboo Demonstration Site other than the establishment itself. The activities included; • Bamboo Stock Assessment for Elgeyo Hills Water Tower where the project exists, Nandi Hills Water Tower, Cherangany Hills Water Tower as well as South West Mau Water Tower. These are the bordering Water Towers that could be of great benefit to the project. • Bamboo Stakeholders Investment Forums and Meetings that were aimed at enhancing stakeholder participation and inclusion in the Bamboo investment and commercialization project and the rehabilitation of the degraded catchment to increase the bamboo stock. • Feasibility Study for the establishment of the Bamboo Investment and commercialization in Kaptagat Forest with the aim of ascertaining the viability of Bamboo Investment and commercialization in Water Towers including development of Bamboo Value Chain Business Plan. • Bamboo Environmental and Social Impact Assessment (ESIA) with the aim of guiding the Agency on the	The finding remains as reported. However, slight adjustment has been made in view of new information provided in the response.

Audit Observation	Auditees' Management Response	OAG's Response
	precautionary measures to be considered as the Agency plans to embark to roll out the Bamboo commercialization project in Kaptagat, Elgeyo Marakwet County. • Progress assessment of establishment of a Bamboo Eco-Park within which the demonstration centre was to be situated. The assessment was necessitated by the delays in the provision of land ownership documents for the Eco-Park site. The aim was to verify the actual situation on ownership of the proposed site to determine the advancement on implementation including establishment of the bamboo demonstration site. • The Agency also conducted the site surveying and demarcation whose aim was to delineate the Bamboo project site from the extensive Kaptagat forest block. In the establishment of the Bamboo Demonstration Site, the Agency undertook development of architectural designs to guide in fencing of the project site and actual fencing of the project site. Several bamboo seedlings (3,000 seedlings) were also purchased and planted during the launch of the project. • The Agency also constructed a borehole for generation of water and a solar pump to support in the establishment and management of the bamboo nurseries in raising the seedlings.	
Par. 4.58: Audit inspection at a beneficiary group in Maasai Mau revealed that the briquette making	- It is true that the Briquette Making Enterprises were small scale as indicated in Article 4.58 of the report. The Charcoal briquette making machines were Start-Ups which could be up-	The finding remains as reported.

Audit Observation	Auditees' Management Response	OAG's Response
enterprise was small scale and did not have any evidence of serious activity which could provide a livelihood to the group members. The group members reported several challenges in running the enterprise, namely; lack of a mechanical crusher and lack of training on charcoal briquette making.	scaled and this qualifies why they were small scale. Additionally, the Agency provided only briquette production machines as planned and budgeted for. Any other item was to be purchased from the proceeds from the enterprise. Again, the statement that the groups were not trained is not factual. The groups were capacity built and well trained upon installation and commissioning of the enterprises, as supported in the training reports.	The Office appreciates the Agency's explanation in the response. However, the Agency has only provided photos taken at the beneficiary's site, which cannot be considered as sufficient evidence for training.
Par. 4.60: Physical verifications of 665 out of the 1,135 beehives revealed low colonisation of 14% (93 out of 665 beehives). While Samburu Bee Keepers, in Kirisia Hills, reported general success in the implementation of the intervention, the audit could only verify 10 out of the 430 beehives issued due to terrain and security challenges.	- The reasons provided for low colonization of the beehives is not factual, contradictory and cannot justify, support and attribute the aspects of low colonization to 14% since for instance, Samburu Bee Keepers forms part of the bulk of beehives supplied by the Agency (430 out of 1,135 hives). The assessment and verification were only done on 10 hives out of 430 hives which cannot be representative.	The finding remains as reported. The 430 beehives issued to Samburu beekeepers were divided among 48 small groups who located their apiaries far apart inside Kirisia Hills. The limitation of scope has been expressed in the report explaining why only 10 could be verified.
Par. 4.62: Only Samburu Bee Keepers had set up a honey processing factory. However, the group officials reported that the Agency provided a manual	- The Agency provided a manual centrifuge machine instead of automated machine because at the time of implementation of the project (Provision of the honey production, harvesting and processing equipment), the refinery had not been operational. The building did not have power yet. They were also not	The finding remains as reported. The Office appreciates the explanation provided in the response.

Audit Observation	Auditees' Management Response	OAG's Response
centrifuge yet the honey produced in the region was highly viscous, requiring heating during processing.	confident that they would be able to meet the cost of power at that time. After consultations with the beneficiary group (Samburu Bee Keepers), it was advised that the Manual Centrifuge Machine would be appropriate. The Samburu Bee Keepers Refinery business grew and when other partners stated in the report supported the Group, they were able to supply them with automated machines which could now use electricity.	
Par. 4.63: Some of the challenges affecting colonisation as reported by beneficiary groups included; pest infestation, lack of skills on apiary management, and poor siting of the apiary. For example, the beehives issued to a community group in Kiptunga forest were initially colonised but got infested by insects. Physical verifications revealed that although the beehive stands had provision for putting oil to deter insects, the group had not placed oil on the stands.	- The Agency undertook training of all Bee Keeping equipment beneficiaries and all the areas including establishment and management of the apiaries were considered. Just as from the omission to use oil on the hive stands by the beneficiaries to deter insects, some of the challenges experience could be as a result of negligence and the nature of the groups' dynamics. The overgrown grass could be kept low to the ground if it was found to negatively affect the levels of hives colonization by harbouring predators/insects.	The finding remains as reported. The Agency is trying to shift blame to the beneficiaries which is not acceptable. Some of the challenges cited by the groups would have been addressed had the Agency done continuous monitoring of the intervention.
Par. 4.66: A review of documents revealed evidence of beneficiary training in five (5) out of ten (10) sampled groups. Besides, a review	- The Agency offered requisite training to all project beneficiaries under nature-based enterprise, including Bee Keeping. These covered diverse areas like group dynamics, financial management and sustainability, record and book	The finding remains as reported.

Audit Observation	Auditees' Management Response	OAG's Response
of the reports revealed that the trainings did not address critical success factors.	keeping among other areas. For bee keeping, the areas sampled as critical issues are key when tackling bee keeping as a business venture hence could not be missed out during the training. This includes apiary establishment which also covers siting, bee colonization as well as apiary management.	Evidence provided to support the response is not for the sampled groups.
Par. 4.67: The audit did not reveal evidence of technical assistance during implementation of community alternative livelihood projects except for Samburu beekeepers who reported to have benefitted from Samburu County Government and Non-Governmental Organisations operating in the area.	- During the implementation of the projects under community livelihoods improvement, there were training sessions organized by the Agency and undertaken to each beneficiary group on the modalities of each nature-based enterprise to ensure the projects remain sustainable. Additionally, the Agency during the implementation of the projects, undertook engagement of relevant County Governments and National Government Departments, Agencies and Ministries existing in respective Counties where the projects are implemented. This was to ensure there is reliable technical support, assistance and guidance from the ground on various dimensions of the projects. This was a step towards ensuring sustainability.	The finding remains as reported. No evidence has been provided to support the response.
4. Water Towers Assessment and Monitoring of Conservation Activities		
Par. 4.73: The audit did not also find evidence of information sharing among the players involved in the conservation of water towers. Staff of the Agency interviewed reported that as part of the development of the Integrated Monitoring System, the Agency was	- The Integrated Water Towers Monitoring System is an information sharing platform in itself accessible through the link provided on the Agency's website http://kenya.restorationatlas.org/about/watertowers. In addition, all reports on the status of water towers are uploaded in the website as a way of information sharing www.watertowers.go.ke.	The finding remains as reported. As already noted in the report, an Integrated Monitoring System is under development and currently only has information as pertains to the

Audit Observation	Auditees' Management Response	OAG's Response
working with the stakeholders to develop information sharing protocols.		Agency's activities. There is no evidence of other actors sharing information on their activities.
5. Water Towers Assessment and Monitoring of Conservation Activities		
Par. 4.78: The Agency had conducted status assessment in twenty (20) water towers out of which eleven (11) were in draft form as at the time of audit. In addition, the Agency had assessed five (5) out of the twenty-two (22) blocks in Mau Forest Complex, bringing the total number of status assessments conducted to twenty-five (25).	- Assessments have been carried out in 28 water towers and not 20. All the reports were submitted to the audit team. Refer to minutes of meeting held on 12/4/2023.	The finding has been amended in view of the response and after counterchecking the data.
Par. 4.82: The audit revealed that the Agency did not have a monitoring framework for general monitoring of actors' activities. However, it was noted that a web-based Integrated Monitoring System was under development.	- A monitoring framework exists, a report on this was also shared with the audit team. The monitoring framework has guided development of the integrated monitoring system. See the link of the monitoring system- http://kenya.restorationatlas.org/about/watertowers. However, for proper functionality, the system requires continuous improvement. Limitation of funds has caused delays in full implementation.	The finding has been amended based on information presented in the response.

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