Photo: Women fetch water at a rainwater harvesting facility, Mokori Rock Catchment (Credit: ADA)

Assessing the effectiveness of locally-led public good climate investments in water infrastructure in Isiolo County

Findings from a 2023 functionality and governance longitudinal study

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Key Messages

- It is important to invest in water infrastructure that can provide water throughout the driest months - for example, some water pans in Isiolo County (e.g. Manyangab). Other examples include boreholes that can serve greater numbers of livestock and households during the drier months.
- Inadequate maintenance at several of the investments in Isiolo limits their long-term functionality. It is essential to plan for regular maintenance, such as desilting water pans and borehole component repairs. Establishing a financing mechanism for operations and maintenance would help to ensure investments are repaired and remain functional throughout their lifespan.
- Inter-community conflict at several of the investment sites resulted in damage to the infrastructure (e.g. storage tanks, gates). Security concerns also meant communities and water users chose to use alternative sites and assets (e.g. inverters) had to be relocated to prevent further damage.
- Some investments were so well-used they would benefit from additional facilities - for example, extra troughs around the Bibi Water Pan, to ease congestion during the dry season when large numbers of herds visit, or sanitation facilities for water users at Harr Buyo Water Pan where there are multiple users (domestic, livestock and wildlife).
- Integrating local knowledge into identifying, planning and implementing investments, helps to ensure the long-term success and sustainability of the investments. In Isiolo the community follows a practice of ensuring the sustainability of rangeland and pasture for grazing during the dry season by using some of the boreholes as strategic water points only during the rainy season.

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Summary

Climate change poses significant challenges to water security in arid and semi-arid regions, necessitating innovative and sustainable approaches to water resource management. This technical brief outlines the key findings and recommendations derived from a comprehensive functionality and governance study that assessed nine public good climate investments in water infrastructure implemented through the County Climate Change Fund (CCCF) mechanism between 2014 and 2016 in Isiolo County. The study was conducted in 2023, nine years after the investments were implemented, by the Adaptation Consortium (ADA), Merti Integrated Development Programme (MID-P), and the County Government of Isiolo, supported by the Climate and Development Knowledge Network (CDKN) programme.

The brief provides valuable insights into the technical and governance factors influencing the success of locally-led adaptation (LLA) investments implemented through the CCCF mechanism in Isiolo County. It offers recommendations to support the successful and sustainable implementation of locally-led projects to enhance their long-term impact.

Study Background

Isiolo County is situated in the arid and semi-arid lands of Kenya. About 80% of the land is non-arable and is used for grazing. Isiolo County has three agro-ecological zones: semi-arid (5% of the total land), arid (30%), and very arid (65%). The population of Isiolo County is primarily composed of pastoralist communities. Livestock production remains the biggest economic activity with approximately 80% of the population relying on it for their livelihoods. The remaining 20% rely on agropastoral, trade and casual labouring activities.[5] The county is a member of Frontier Counties Development Council, which promotes cooperation, coordination and information sharing between counties to strengthen devolution, enhance socioeconomic development and promote peaceful coexistence among its members.

Isiolo County grapples with the formidable challenge of water scarcity, facing a delicate balance between the demand for water resources and the inherent limitations imposed by its ecological and climatic conditions. It also experiences prolonged droughts, amplifying the vulnerability of its residents who rely heavily on rain-fed agriculture and pastoralism. The Ewaso Nyiro River, a crucial watercourse, faces threats from upstream activities, including deforestation and unsustainable agricultural practices, diminishing the quantity and quality of water available downstream. As water scarcity intensifies, pastoralists find it increasingly challenging to provide adequate water and pasture for their livestock. This has led to heightened competition for limited resources.

The County Government of Isiolo, cognisant of the climate change issues and water scarcity challenges, partnered with ADA and MID-P to support the establishment of 39 public good climate investments in water infrastructure funded by CCCF in three sub-counties as pilot community adaptation initiatives. The investments were prioritised through a consultative process led by the Ward Planning Committees and aligned with relevant national and county policies. Among these investments, were projects aimed at enhancing water access and management, that included the construction of water pans and boreholes and the promotion of water conservation practices.

In 2019, ADA conducted a comprehensive functionality and governance study assessing nine of the 39 investments with the aim of evaluating the technical sustainability and governance of each investment,

[5] County Government of Isiolo (2023). *Isiolo County Integrated Development Plan 2023-2027*. Available from: https://repository.kippra.or.ke/bitstream/handle/123456789/4433/county-integrated-development-plan-iii-county-government.pdf?sequence=1&isAllowed=y (last accessed on 7 August 2024).

and with a specific focus on quality assurance, usability and sustainability. In October 2023, the County Government of Isiolo, Mid-P and ADA, supported by the CDKN programme, conducted a longitudinal functionality and governance study, a repeat study assessing the same nine investments as the 2019 study.

The lessons from the longitudinal study are intended to provide insights and guide the local, national, and regional conversations on the facilitation of climate finance flows to the local levels, gender and social inclusion in decision-making, and the suitability, efficacy, sustainability and impact of locally-led public good climate investments.

Methodology

The primary objective of the longitudinal study was to identify and assess the factors (challenges and successes) that affect the functionality and governance of the investments. Specific objectives included investigating technical issues, assessing community engagement, examining governance challenges, and analysing environmental factors that impact project sustainability. To achieve this, a mixed-methods approach was employed, combining focus group discussions and key informant interviews with videography, photography and observation checklists for technical assessments. Field data was gathered capturing the perspectives of communities, site committees and relevant stakeholders. These findings were collated and synthesised into a series of reports and videos to derive meaningful insights.[6] The study took place in October 2023, during the dry season in Isiolo.

Study Findings

Definition of terms

Functional: A functional water point is one that is operating as expected and serving the community well on the day of the visit and within the last month.

Partially functional: A partially functional water point is one where some of the components are absent, broken or damaged, but there is still some water available to the community.

Non-functional: A non-functional water point is one where some or all of the components are absent, broken or collapsed, with the result that water is not accessible or available to the community.

Not-in-use: This term applies to those waters points that may not be in use due to seasonality and low rainfall, but they are intact and functional during the wet season.

The longitudinal study considered the functionality status of the investments in Isiolo County and found that two out of the nine were functional, five were functional but not in use, and two were non-functional.

The main findings from the study include:

- The investments have increased access to water through investments in water infrastructure (e.g. boreholes, water pans), which has also had a positive impact on livelihoods.
- Inadequate maintenance has limited the long-term functionality of several investments. Four of the investments that were functional in 2019 were not in use in 2023. This change was mostly due to repair work being needed, such as desilting and the rehabilitation of components.

[6] For more information, see CDKN's project page: Building water resilience in Kenya's arid and semi-arid lands.

- Vandalism and conflict between water user groups have damaged the water infrastructure at several investments. For example, the fence pump house, storage tank and gate at the Harr Buyo Water Pan, were all vandalised during conflict between neighbouring communities.
- Insecurity at some of the investment sites (Urara Borehole and Yamicha Borehole) prompted communities to relocate away from the sites, and assets, such as the genset inverters, were moved to safer locations.
- Several of the investments were not in use during the visit because it was the dry season. The community follows a practice of ensuring the sustainability of rangeland and pasture for grazing during the dry season by using some of the boreholes as strategic water points only during the rainy season.
- Some investments would benefit from additional facilities, such as extra troughs around the water pan (e.g. Bibi Water Pan), to ease congestion during the dry season when large numbers of herds visit, or sanitation facilities for water users at water pans with multiple users (domestic, livestock and wildlife) (e.g. Harr Buyo Water Pan).
- The 2019 study had warned that siltation could affect future functionality at Raap Sand Dam. In 2023, partly due to a lack of seasonal rainfall, siltation had become an issue and rehabilitation that had been carried out incorrectly had caused further siltation rather than easing the problem.
- Rehabilitation in 2022 meant the rainwater harvesting facility at Mokori Rock Catchment was functional again having been non-functional during the previous study.

Recommendations

The recommendations are based on the study findings to enhance the efficacy and sustainability of the investments:

- **Adopt a community-led approach to identifying and implementing investments.** Ward Planning Committees are responsible for planning climate change interventions and response actions at the ward level. It was noted that all projects underwent identification and prioritisation by the respective communities, following a comprehensive process of community consultation and public participation. The community-led approach was a preferred development approach, as it effectively integrated local knowledge into the planning and execution of projects. Community involvement in decision-making processes, such as participation in processes to decide rotational grazing patterns and the reservation of water sources for dry seasons, facilitated better resource management and utilisation.
- **Plan for regular infrastructure maintenance and a financing mechanism for operations and maintenance of investments.** This could include borehole component repairs, regular desilting of water pans or leakage repairs. Regular maintenance ensures the investments are functional throughout their lifespan.
- **Use technical information in designing and siting investments in water infrastructure.** Issues like direction of surface water flow and drainage should be taken into consideration to ensure that the water pans are always recharged. Also, information such as the hydrogeological condition of an area is key to determining the siting of investments. Kobe Dadach Guracha Borehole was deemed unsuccessful due to incorrect siting of the investment. Poor siting decisions can lead to insufficient water yields, over-extraction of water resources, and inadequate infrastructure maintenance. All these challenges impact the functionality and longevity of water infrastructure projects.
- **Consider security issues due to conflicts that may erupt among targeted and potential users of the investment.** For example, at Belgesh, Manyangab and Harr Buyo Water Pans, the

storage tank, pump house and fence were destroyed due to resource-based conflicts between the target beneficiary communities and herders/pastoralists from the neighbouring Garissa and Wajir Counties.

- **Consider the accessibility of water by multiple users (domestic, livestock and wildlife) at the design stage of the investments.** Considering access for multiple users at the design stage ensures water quality does not deteriorate due to mixed access.
- **Consider a growing population when establishing an investment.** This consideration ensures an investment can serve increasing numbers of users and also ease congestion, especially during the dry seasons when a large number of herds visit the site.
- **Implement investments that are functional during all the seasons.** These investments, for example Manyangab Water pan, are preferred, as they continue to provide water during the driest months and therefore strengthen the pastoralists' resilience to climate change.
- **Carry out continuous capacity strengthening.** Comprehensive training programmes for local communities will enhance their capacity in project operation and maintenance, technical skills and community-led monitoring and evaluation. Despite the key role investment committees play in overseeing the various aspects of water resource management, it was noted that they have limited capacity in areas such as project management, repairs and leadership. In addition, the change of members when their term ends creates a 'brain drain'. Capacity strengthening, technical support and resource mobilisation is needed to ensure the sustainability of the investments.
- **Establish clearly defined roles for key water institutions, the county government, and the community.** This will ensure a sustainability plan is developed and implemented. The current lack of clearly defined roles and responsibilities between the County Government and community can lead to a limited sense of ownership of the investments, especially when investments require repairs beyond the communities' abilities. Administrative processes should be regularised to reduce bureaucratic hurdles that may delay a response.
- **Ensure inclusivity is genuine rather than merely a tick box exercise.** The visible face of inclusivity is the composition of the Ward Planning Committees, which was found to comply with the two-thirds rule.[7] While it was noted that women are included and participate in the investment committees, this was not universal. The gender consideration was not well-balanced as men significantly outnumbered women in most of the investment committees. A comparison on membership between the 2019 and 2023 studies shows that the balance has continued to tilt in favour of men. For instance, the seven site management committee members at the Belgesh Water Pan are all men.

[7] Article 27(8) of the Constitution of Kenya 2010. The rule states that no more than two thirds of any electoral or appointed body should be made up of one gender.

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