



Photo: The water in the Dambas Borehole is used for domestic and livestock use (Credit: ADA)

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

Findings from a 2023 functionality and governance longitudinal study

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Key Messages

- It is essential to consider the type of water infrastructure to be implemented as it affects the ongoing functionality of the investment. In Wajir, boreholes were found to be more resilient to seasonal changes than water pans - almost all of the fully functional projects were boreholes, while seasonal rainfall affected the water pans' functionality. Boreholes are sited where the water source is not influenced by the season and they are also not as easily vandalised as water pans.
- The community was involved in a comprehensive consultation process that included needs assessment, prioritisation, site identification and project development. This ensured that local knowledge and adaptation best practices were included in the planning, budgeting and implementation of most investments. Broader water resource entities should also be included in planning processes (e.g. water service providers, water resource user associations), especially when communities need to collaborate with them to ensure the sustainability of water infrastructure.
- Wajir showed that it is key to build capacity on technical and project management skills before an investment is handed over to the site committee and update this training as needed to account for changes within the committee. Regular monitoring and evaluation by a site committee is also important as a feedback mechanism for improving an investment, enabling the early detection of challenges and their timely resolution.

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Summary

Climate change poses significant challenges to water security in arid and semi-arid regions, necessitating innovative and sustainable approaches for water resource management. This technical brief outlines the key findings and recommendations for meeting these challenges derived from a comprehensive functionality and governance study that assessed 23 public good climate investments in water infrastructure implemented through the County Climate Change Fund (CCCF) between 2016 and 2017 in Wajir County. The study was conducted in 2023, seven years after the investments were implemented, by the Adaptation Consortium (ADA), Arid Lands Development Focus (ALDEF) and the County Government of Wajir, 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 Wajir County. It offers recommendations to support the successful and sustainable implementation of locally-led projects to enhance their long-term impact.

Study Background

Situated in north eastern Kenya, Wajir County grapples with the challenge of water scarcity. The region is characterised by arid and semi-arid conditions, making access to clean and reliable water a critical concern for the livelihoods and well-being of its residents. Traditional water sources, such as shallow wells and seasonal rivers, are becoming unreliable due to prolonged droughts and diminished water tables. Models of future climate projections show that Wajir County will remain highly susceptible to drought and high temperatures. Over the next decades, there will likely be high increases in the length of drought spells, moderate increases in mean temperatures and moderate decreases in intense rain in both the first wet season (January-June), and the second wet season (July-December).⁵

Climate change adds an additional layer of complexity to Wajir's perennial water challenges. Increasing temperatures accelerate evaporation, reducing the already limited water availability. Unpredictable rainfall patterns lead to both intense and sporadic precipitation, contributing to flash floods and soil erosion when it rains. This exacerbates the livelihoods and well-being of the predominantly pastoralist communities living in the county.

Recognising the current and projected challenges resulting from climate risks, and the urgency to address them, in 2016/17, Wajir County Government partnered with ADA and ALDEF to implement 24 investments in water infrastructure in Wajir County through the CCCF mechanism. The CCCF mechanism seeks to mobilise resources for public good climate investments, tailored to the unique needs of the county. Through the participatory climate risk and vulnerability assessments, the communities in Wajir identified water scarcity as a priority area for intervention. Finance was allocated to implement the 24 investments that could enhance some of the existing water infrastructure, such as the rehabilitation of boreholes, and construct new infrastructure (e.g. water pans and other water harvesting systems), to strengthen the communities' resilience to climate change.

⁵ MoALF. 2017. *Climate Risk Profile for Wajir County: Kenya County Climate Risk Profile Series*. The Ministry of Agriculture, Livestock and Fisheries (MoALF), Nairobi, Kenya. Available from: https://cgspace.cgiar.org/bitstream/handle/10568/96286/Wajir_Climate_Risk_Profile_Final.pdf?sequence=1&isAllowed=y#:~:text=Models%20of%20future%20climate%20projections,intense%20rain%20in%20both%20seasons (last accessed on 7 August 2024).

In 2019, ADA conducted a comprehensive functionality and governance study assessing 23 of the 24 investments,⁶ with the aim of evaluating the technical sustainability and governance of the investments, and with a specific focus on quality assurance, usability and sustainability. In October 2023, the County Government of Wajir, ALDEF, and ADA, supported by the CDKN programme, conducted a longitudinal functionality and governance study, a repeat study that assessed the same 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 how to facilitate climate finance flows to the local levels, gender and social inclusion in decision-making, and the suitability, efficacy, sustainability and impact of the 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.⁷ The study took place in September and October 2023 during the dry season in Wajir.

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 water 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 and found that 11 out of 23 investments in the study in Wajir County were functional, four were partially functional, three were non-functional, and four were not in use during the site visit. Nineteen out of 23 investments provided a sufficient water supply for both domestic and livestock use during the wet season. However, only 12 were able to do so during the dry season.

The main findings from the study include:

⁶ To enable a clear comparison as a longitudinal study, the same sites that were visited in 2019 were visited during this study in 2023. There were security concerns in the area of one of the sites, Konton, so only 23 out of a total of 24 sites were visited.

⁷ For more information, see CDKN's project page: [Building water resilience in Kenya's arid and semi-arid lands](#).

- The type of water infrastructure that was implemented affected the ongoing functionality of each project. For example, water pans accounted for 100% of non-functional projects and 80% of partially functional projects. Water pans are seasonal, harvesting water during the rainy season and storing it for a few months afterwards, which means that they lack resilience against extreme weather events - siltation occurs during floods and prolonged droughts can cause them to dry up. Almost all of the fully functional projects were boreholes, with only one partially functional borehole, which underlines the resilience of this type of infrastructure.
- There was limited or a lack of climate information used when designing and siting some of the investments, such as the water pans. The climate shocks over the years resulted in physical damage and functional disruptions to the investments, which required frequent rehabilitation.
- Investments that actively involved the communities' social groups in managing the investments were more successful at guaranteeing their long-term functionality. When the community members lead the prioritisation, planning and decision-making processes for investments, it fosters a sense of ownership that leads to the community implementing innovative, effective and sustainable strategies to ensure the investments serve their needs. It is important to carry out planning processes in collaboration with broader water resource management entities such as water service providers, water resource users associations, water trust funds, and water development boards, especially when communities need to collaborate with such entities to ensure the efficacy and sustainability of the infrastructure.
- Water user committees are responsible for operations and maintenance, scheduling water usage, determining tariffs, collecting revenue from the community, reporting issues and conducting repairs on the investments. Some of the key challenges identified related to a lack of technical skills to carry out routine maintenance on the investments, as well as a shortage of essential spare parts that resulted in delayed repairs and in some cases resulted in the deterioration of equipment (e.g. pumps and water distribution systems). There was also a lack of funds to carry out major repairs - above and beyond the funds reserve raised by the community through the collection of user fees.

Recommendations

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

- **Improve climate information services (CIS).** CIS for investments need to be improved, with the help of the Kenya Meteorological Department. Investments should incorporate local climate information at the design stage, with close monitoring during implementation to detect and rectify any arising issues for timely mitigation, and to ensure that investments can withstand extreme weather events, which would contribute to long-term sustainability.
- **Actively involve the community through meaningful participation.** Individuals are empowered and have equal opportunities to participate in planning and decision-making, and have control over how funds are spent. As such, it is imperative to incorporate gender and socially responsive approaches into an investment's life cycle, considering the differential impacts of the investments on all genders and social groups.
- **Carry out capacity strengthening.** There is a need to strengthen the communities' capacity to meaningfully participate in the investment life cycle. In addition, the site committee should receive technical and project management training before an investment is handed over to them to equip them with the skills required to manage the investment and ensure its long-term viability.

- **Allocate funds for monitoring and evaluating an investment.** CCCF only allocated funds for new investments, but did not budget for monitoring and evaluation. Monitoring and evaluation serves as a feedback and learning mechanism for improving an investment. Regular monitoring and evaluation by a site management committee will enable early detection of challenges and timely resolution to enhance the efficacy and sustainability of an investment. In addition, it helps to document the investment's usefulness as a climate adaptation or mitigation intervention.
- **Recognise the needs and wishes of community members and address them in the design, implementation and management of public good climate investments, to reduce gender and social disparities, and to foster a sense of empowerment and inclusion.** This should be accompanied by sensitisation and capacity strengthening to ensure the community's meaningful participation in the life cycle of an investment.

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