

Kenya Resilient Arid Lands Partnership for Integrated Development (RAPID) Activity: Impact Evaluation: Overview and Key Findings

BACKGROUND

The Kenya Resilient Arid Lands Partnership for Integrated Development (RAPID) was a US\$35.5 million public-private partnership/Global Development Alliance activity implemented from 2015 to 2020 and funded jointly by USAID, Swiss Agency for Development and Cooperation (SDC), private sector partners, and Millennium Water Alliance (MWA) members. One piece of Kenya RAPID's broader suite of activities involved the installation of sensors on water borehole pumps to transmit information to data dashboards in real-time to improve water management. This Information and Communication Technology (ICT) intervention was paired with budget facilitation for borehole pump repairs and clarification of roles and responsibilities to create dedicated pump maintenance teams. Of the 400 sensors installed on water borehole pumps, a sub-set of 69 sensors were installed on "strategic" water boreholes, or boreholes that local authorities identified as important due to the risk of drought in the borehole area.

The USAID/Kenya and East Africa (USAID/KEA) mission in conjunction with SDC commissioned a quasi-experimental impact evaluation to understand the effect of Kenya RAPID's ICT intervention on strategic borehole pump use and functionality during drought periods. The evaluation team used a propensity score matching design to match strategic boreholes in Kenya RAPID's five implementation counties with a set of 132 strategic boreholes across eight comparison counties. The evaluation team installed sensors on the comparison county borehole pumps to compare how long borehole pumps ran in a given day on average. The evaluation team supplemented this quantitative analysis with qualitative interviews and focus group discussions to understand how water managers perceived the impact of the sensor-based system and to see whether or not user perceptions of borehole pump functionality and access changed.

SUMMARY OF FINDINGS

Strategic boreholes that received the Kenya RAPID ICT intervention performed similarly to strategic boreholes in comparison counties. Across multiple analyses, our results suggest that, on average, Kenya RAPID did not have a statistically significant or meaningful impact on borehole pump functionality during the drier months of the intervention, from 2018 to 2020, relative to comparison county strategic boreholes. At most, our analysis suggest that the sensor-based intervention resulted in less than an hour of additional borehole pump-on time per day in Kenya RAPID counties compared to comparison counties. It is important to note that Kenya experienced historical rainfall during the intervention period, which qualitative interviews and government reports suggest affected water borehole use with people using non-borehole water sources during higher rainfall periods, as well as the operational status of strategic boreholes.

Water managers reported similar timelines for borehole repairs in Kenya RAPID and comparison countries, but officials in Kenya RAPID counties had a positive perception of the ICT intervention. County- and sub-county-level water managers in Kenya RAPID counties viewed the sensor-based system favorably and said it provided useful data to support water management activities. However, these officials also pointed out that lack of access to resources for repairs continues to limit borehole functionality in Kenya RAPID counties. Officials in Garissa, a Kenya RAPID county, reported that they did not yet have full access to the data dashboard, and others reported that a lack of office internet and issues with network connectivity for using mobile devices limited access to the data dashboard. A lack of dedicated resources for borehole repairs remains a key barrier to improved functionality in both Kenya RAPID and comparison counties

The sensor-based intervention did not improve users' perceptions of borehole functionality and water access in Kenya RAPID counties relative to comparison counties. All strategic borehole users continued to identify a range of water access and supply issues not directly addressed by the intervention, including breakages in distribution pipes and taps bringing water from boreholes to people's homes and villages. Crowding and congestion at boreholes lead to long waiting times. Access issues vary seasonally and have a particularly large effect on vulnerable groups, including women and the elderly.

KEY USAID PROGRAMMING RECOMMENDATIONS

The Kenya RAPID borehole sensor intervention was unable to compensate for inadequate investment in the areas that pose the biggest constraints facing water managers for achieving major improvements in functionality and improve water users' experience. The evaluation team offers the following recommendations to USAID:

1. Continue to focus on water system governance, clarifying roles and responsibilities for water management and establishing dedicated and sustainable funding sources for water system maintenance and repairs.
2. Address community concerns carefully in planning for delivery of water services. Our results identified a number of problems cited by users that were not directly addressed by the sensor-based intervention.
3. Consider rural water ICT intervention costs and context. Use of ICT to collect and share information in some contexts may be worthwhile. USAID should consider implementation costs and systemic challenges in thinking about the theory of change for ICT interventions given large structural constraints, such as limited budgets and climate change.
4. For future evaluation efforts, make sure that implementation monitoring is included as a key, funded component. Sparse implementation data on specific activities outside of the ICT intervention and detailed budget information limited the evaluation team's ability to track progress over time. These data are key to understanding how and why impacts (or lack of impacts) are observed.