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WATER SECURITY FOR NUTRITION

LEARNING BRIEF

INTRODUCTION AND RATIONALE

In Kenya's Arid and Semi-Arid Lands, communities are vulnerable to multiple stressors and frequent shocks. In this complex and rapidly changing context, there are linkages between climate, water availability, infrastructure functionality, household water insecurity, and impacts on women's time burden, household finances, and nutrition status. While rural and urban pastoralist households face water insecurity, during the dry season rural water insecurity is more extensive (92% vs. 71%) and more rural households are highly water insecure (38% vs. 23%).¹ Drought exacerbates water insecurity as wells and surface water dry up. Across all measures of access to improved water, the two counties score poorly compared to averages for rural Kenya. This overall trend is similar to that observed globally by the World Health Organization for less developed countries: investments in improving access are not keeping pace with population growth and, therefore, in absolute terms, increasing numbers of households are without access to improved sources.² Yet globally, research on and interventions

¹ Balfour, Nancy, Joy Obando, and Deepali Gohil. 2020. "Dimensions of Water Insecurity in Pastoralist Households in Kenya." *Waterlines* 39 (1): 24–43. <https://doi.org/10.3362/1756-3488.19-00016>

² WHO & UNICEF. "Progress on Household Drinking Water, Sanitation and Hygiene, 2000-2017: Special Focus on Inequalities." United Nations Children's Fund (UNICEF) and World Health Organization (WHO), 2019.

addressing acute malnutrition tend to overlook systemic, underlying drivers, such as water insecurity. During Phase I, USAID Nawiri gathered information on the constraints and opportunities of water governance and resource management to better understand the root causes of water insecurity and how they tie in with nutrition. This included close engagement with authorities and stakeholders in Samburu and Turkana Counties to identify:

- Needed governance arrangements, such as policy, legal, and regulatory frameworks
- Needed technical, administrative, and managerial capacity for water service delivery and resource management
- Potential private sector models for professionalizing water point maintenance and repair
- Possible financing opportunities for investments in the water sector
- Knowledge, data, and funding needs to develop water master plans and catchment plans and to improve monitoring, particularly for droughts
- Climate and water resource trends influencing water insecurity

This research has informed the design of a theory of change (ToC) and activities that will enhance water security, improve the productivity of water for livelihoods, and ultimately reduce persistent acute malnutrition in Samburu and Turkana Counties. It has also provided insight into the bottlenecks to achieving effective, gender-responsive, and inclusive water governance, service delivery, and resource management. These insights and the ToC will be used to guide Activity design, implementation, and ongoing adaptive learning.

LEARNING JOURNEY

Initial information on water security came from stakeholder group discussions and a desk review of existing literature and data. The team then administered UNICEF's Water, Sanitation, and Hygiene Bottleneck Analysis Tool, adapted to the context in each county and the COVID-19 pandemic. The Bottleneck Analysis and ensuing dialogues allowed the team to better understand systemic constraints and promising solutions to improve WASH service delivery in urban and rural contexts of Samburu and Turkana. The team conducted key informant interviews with key stakeholders – including development partners, private sector WASH actors, and technical partners – to gather input on pathways to more effective governance, management, and oversight of the limited water resources in the counties. Next, we shared and validated findings with a broad group of county stakeholders, which provided additional insights and helped synthesize learning and next steps. As part of USAID Nawiri's Longitudinal Study, we collected and analyzed primary data, including data on household WASH dynamics and the Household Water Insecurity Scale tool.³ We also gained additional insight from USAID Nawiri's COVID-19 response, in particular the need to holistically address water governance and water point challenges as a long-term strategy for sustainable access to safe drinking water in underserved areas, recognizing the

³ The Household Water Insecurity Experiences (HWISE) scale was developed and validated by Young, et al (2019) to measure household experiences of water insecurity across low- and middle-income country contexts. The HWISE scale collects data across 12 items related to household water insecurity to quantify its prevalence, causes, and consequences.

critical role water plays in ensuring households have uninterrupted access to essential services, including in marketplaces.

INSIGHTS AND IMPLICATIONS

INSIGHT N°1: Women’s time burden collecting water contributes through both direct and indirect pathways to malnutrition in rural and urban households, requiring a whole-of-system approach as it relates to the governance and management of water services and water resources. (TOC reference: SP: 2.1)

One, if not the primary, pathway between water insecurity and malnutrition in the arid and semi-arid lands of northern Kenya is *women’s time burden collecting water* to meet the minimum drinking and hygiene needs of their households. Water collection is performed exclusively by women and girls and remains one of the most pervasively gender inequitable elements of pastoral life. Only 37% and 48% of households in Samburu and Turkana, respectively, have access to an improved water source, lagging behind the national average. Over 40% of households in the counties must travel more than 30 minutes on foot each day to fetch water; in one study of a rural Turkana village, women took 6-9 hours to fetch water from local rivers every other day during the dry season.⁴ This burden has severe consequences for both women and their households. Time spent collecting water constrains women’s ability to complete other important tasks, including livelihood activities like small-scale gardening and livestock production that contribute to household nutrition and income, caring for household members, and engaging in personal self-care, rest, and leisure. The time burden also reduces the amount of time women have to focus on caring for children and impedes exclusive breastfeeding in line with global nutrition standards (see also MIYCN Learning Brief). The time and effort to meet water and household obligations must be weighed against the choice to buy water, which depends on the availability of cash and other household priorities and requires negotiation with male household members. This decision only gets harder and more critical to the health of family members as the dry season or a drought progresses, and as both are worsened by climate change, the distance to available sources and the cost of purchasing transported water are increasing.

Traditional and socio-cultural norms and time burdens also limit women’s agency in contributing to community decisions and collective action to improve resilience. This narrows the perspectives that shape community discourse and governance, and impedes collective and community responses to malnutrition, water scarcity, and other challenges to family well-being.

⁴ KNBS: 2019. “2019 Kenya Population and Housing Census, Volume IV: Distribution of Population by Socioeconomic Characteristics.” Nairobi: Kenya National Bureau of Statistics; KNBS. 2018. “2015/16 Kenya Integrated Household Budget Survey: Basic Report.” Nairobi: Kenya National Bureau of Statistics; Fischer, Rebekka. “Changes in Societal Time Use as a Consequence of Development Interventions in Turkana County, Kenya.” Alpen-Adria-Universität Klagenfurt, 2015.

Implications: Advancing water security and nutrition outcomes requires addressing women’s time burden. Household WASH interventions to improve knowledge, attitudes, and practices are warranted, but a systems approach is critical to address the problem, including efforts to:

- Improve governance of water and water services (Insight 2)
- Professionalize management of utility systems and improve rural sources (Insights 3&4)
- Generate small-scale irrigation opportunities (Insight 5)
- Replenish water sources (Insight 6)

Building off the findings of the Longitudinal Study, USAID Nawiri will pursue further learning about the market systems, formal and informal transport and distribution systems, and the economics of rural and peri-urban water (described in the concluding section) to identify interventions that will increase market access to improved water supplies.

INSIGHT N°2: underdeveloped county governance and management capacity for water service delivery require the creation of policy, legal, and regulatory arrangements and the strengthening of technical and management capacity for planning and operating these services. (TOC reference: IO: 2.1.3; outcome 2.1.3.1)

In response to the devolution of water service authority, Turkana County has established a Water Policy and Water Act, but still lacks the regulatory and administrative capacity to implement these and develop a Water Sector Master Plan. Such a plan would chart a long-term course towards improved service levels and facilitate strategic and comprehensive investment in the sector - unlike the current County Integrated Development Plans that are merely ad hoc collections of selected projects. Samburu County has yet to develop a Water Policy or Act and suffers from limited technical and management capacity to oversee water systems and services. Turkana County has a stronger technical basis for developing a Master Plan due to prior mapping and assessment work carried out by JICA and USAID (under the RAPID program) and is therefore better able to design and implement water resource management activities to augment freshwater supplies that address long-term demands and the changing climate.

Implications: USAID Nawiri will assist Samburu County to draft its Water Policy and Act, while strengthening the capacity of county staff and Water Resource User Associations (WRUAs) in technical assessment; data collection and analysis for planning, financing, implementation, and monitoring of improved water sources; and resource management. In Turkana County, we will engage with like-minded partners to increase technical capacity and facilitate resourcing for the master planning process. This work will be influenced by the upcoming elections that present both risks and opportunities (see the Governance for Nutrition Learning Brief for more detail).

INSIGHT N°3: address rural water system functionality and coverage through borehole rehabilitation, improved county management capabilities for strategic boreholes, and institution of a private sector maintenance and repair business model. (TOC reference: IO: 2.1.3; outcome 2.1.3.1; IO:3.2.3)

Past investments in rural water points have significantly overlooked the technical capacities, market services and supplies, and financing mechanisms for repairs, operation, and maintenance necessary to ensure long-term functionality. Community-managed water points suffer from poor governance, under-

collection of funds, and resulting high rates of non-functionality. Strategic boreholes - high-yielding bores relied on by counties during dry periods and drought - suffer from many of these same challenges. When other sources dry up, strategic boreholes are intended to serve large numbers of people, but they are currently insufficient in number, uptime, range, and reach to meet community needs. Natural resource competition and scarcity emerge as core factors influencing the two-way relationship between conflict and undernutrition across diverse contexts in each county. The way in which resources are governed and managed largely determines whether competition turns violent in times of scarcity (see Conflict Learning Brief for more detail).

A REACH 2019 survey showed that for sources of improved water, only 54% of boreholes and 34% of water kiosks were functioning. However, for unimproved water sources, close to 90% of wells and shallow pans were functional at the time of the survey. The intermittent and unreliable service levels from improved sources lead women and households to rely on traditional surface and groundwater sources with consequences for women's time and the quality of the water consumed in the household, and therefore for nutrition. USAID Nawiri cannot fix the shortage of capital funds that the counties face for investments in new and needed improved sources (or even rehabilitation) but through its community engagement and ward development planning process, it can work to elevate this crucial needs and to alleviate the most egregious problems by seeking to improve the capacity of counties to manage the strategic boreholes that are under their control and support the initiation of professionalized service delivery with the private sector.

Implications: USAID Nawiri will improve monitoring of strategic boreholes, rehabilitate boreholes (including solarization), and invest in more effective water distribution. In Samburu, we will also work with existing county and private sector maintenance and repair providers (from neighboring counties) to establish a private sector model to improve the functionality of community hand pump systems and strategic boreholes.

INSIGHT N°4: the under-performance of utilities has increased urban/peri-urban water insecurity, emphasizing the need for transformed and accelerated improvements in the performance of water service providers. (TOC reference: IO: 2.1.3; outcome 2.1.3.1)

As rural-to-urban migration drives population growth and crowding in peri-urban areas, the continued under-performance of water utilities poses an ever-larger challenge to community well-being and impedes sustainable progress towards the end of wasting in the two counties. In Samburu, peri-urban water insecurity rates were nearly as high as those of rural areas. Concerns are similar regarding the WASH sector more broadly: as land is being demarcated and people are settling-in, open defecation will contribute to increasingly poor health outcomes. Land use changes are emerging as a major trend that should be tracked and analyzed for decision-making, including, but not limited to, water.

Implications: Increasing the number, range, and efficiency of water utility services, while ensuring access of the poor and vulnerable to improved water sources will be a focus of USAID Nawiri's efforts in larger towns and settlements in both counties.

INSIGHT N°5: limited catchment planning and increasing physical water scarcity addressed by strengthening technical capabilities and engaging in catchment assessment, design, and implementation of recharge projects. (TOC reference: IO: 3.2.3; outcome 3.2.3.3)

In Samburu, a systemic lack of evidence as to conditions and trends in rainfall, runoff, recharge, and groundwater supplies limits the ability to appropriately plan for and invest in water resource governance and management. While the situation in Samburu is more severe, efforts to address the impacts of climate change on water scarcity are a challenge for both counties. This applies to the ever-present challenges of water stress as populations expand, and to the increasing frequency and magnitude of extreme events, particularly droughts and floods.

Implications: To improve catchment planning, USAID Nawiri will strengthen the technical capacity of counties (especially in GIS) to better assist WRUAs in planning and decision-making around climate resilience and water resources. In Samburu, USAID Nawiri will engage with WRUAs to carry out catchment assessments and design and implement community water resource management projects (particularly groundwater recharge) to prolong the seasonal availability of freshwater for water pans, sand dams, wells, and water points. Community-led activities will be linked to the Ward Development Plans when appropriate. In Turkana, USAID Nawiri will support similar efforts developed under USAID's RAPID program (and any successor programs). This catchment level work will complement the Resilience Design approaches USAID Nawiri is applying to support livelihoods (see the Extending Dry Season Lactation in Livestock Learning Brief). We will also pursue opportunities to integrate foundational concepts of flood resilience, building on Mercy Corps' experience with the [Zurich Flood Resilience Alliance](#).

INSIGHT N°6: Poor and limited outcomes from prior productive water schemes can be improved through farmer-led natural regenerative practices and small-scale, climate-smart irrigation technologies. (TOC reference: IO:3.2.2; IO: 3.2.3; outcome 3.2.3.3)

Pervasive water insecurity diminishes the sustainability of traditional livelihood activities and limits the potential income of pastoralist and agro-pastoralist communities, contributing to the persistence of poor nutrition outcomes. The vast majority of agricultural production in the two counties is rainfed maize, millet, sorghum, and wheat. Past investments in irrigation with the hope of providing alternative livelihoods have largely taken place in Turkana along the Turkwel and Kerio Rivers, and have met with little success as schemes fall into disrepair or produce at low levels. Physical and engineering challenges include the shifting of river courses which disconnects irrigation diversions from channels, lack of drainage leading to waterlogging and salinization, and the siltation of conveyance systems during flood events. The development of irrigation sources also leads to competition between farmers, pastoralists, and households, resulting in multi-purpose systems and over-usage that complicate ongoing maintenance and repair. Conflicts with wildlife and encroachment by cattle as a consequence of cattle rustling have also reduced irrigation scheme viability. Smaller-scale household or community irrigation efforts have similarly had mixed success in contributing to improved food production, income generation, and availability of nutritious foods. These efforts face similar limitations to rural water points, such as maintenance issues and limited or irregular availability during dry periods.

Implications: USAID Nawiri will employ farmer-led regenerative and climate smart agriculture approaches where irrigation water sources are available and do not threaten existing downgradient human and livestock water usage. Irrigation and multiple-use systems will be rehabilitated with solar

pumps and improved via water conserving technologies and practices. USAID Nawiri will integrate resilience design approaches into farming practices to improve soil and water conservation and support catchment-level efforts to recharge groundwater supplies. We will also focus on strengthening natural resource management planning processes to address resource-based conflicts through Ward Development Planning activities and the hybrid peace and natural resource management committees (see Conflict Learning Brief).

CONCLUSION AND PRIORITY AREAS FOR ONGOING LEARNING

Under Purposes 2, 3, and 4, USAID Nawiri will work to create the necessary enabling environment for positive nutrition outcomes through collaborative efforts to improve and sustain water service delivery and resource management and facilitate household and productive water uses. Efforts will be layered with USAID Nawiri's drought response and Resilient Design pilots for improved natural resource management. Our systems approach begins with improved governance arrangements and county capacities to operate and manage existing services, as well as support for WRUAs and communities to engage in catchment planning and water resources management. Improved availability of water from groundwater replenishment and increased access to this water through improved peri-urban and rural water service delivery will drive down the time burden to collect water. Improved irrigation will increase income generation opportunities, facilitating access to clean water and payment for maintenance and repair. This approach will address gender inequities, improve water security, and contribute to sustainably reducing persistent acute malnutrition in Samburu and Turkana counties.

Priority Areas for continued learning include:

1. Increased the capacity of counties to manage and utilize water system and resource related data in a spatial manner (e.g., GIS) to plan and prepare for increasing climate change related stresses and shocks, including both scarcity and flooding. Improved understanding of how the water resource system connects to and supplies engineered systems of improved sources (as well as natural unimproved sources) over seasonal and wet/dry cycles is essential to stabilizing supply for households, livestock, and irrigation activities.
2. Improved understanding of women's decision-making related to water collection, transport, purchase, storage, and treatment needs to connect to the market systems that support or impede the government (county boreholes and trucking), formal (equipment suppliers and service providers), and informal (water transport) water economy. Assessment and learning from ongoing studies (like the Longitudinal Study) of the spatial co-incidence of household water insecurity and malnutrition, household willingness/ability to pay for water, women's role in the choice to purchase/fetch water, combined with a market systems assessment of water value chains should uncover inequities and inefficiencies that USAID Nawiri can address in the out years of the program with counties, wards, and market actors.
3. Further investigation on the water insecurity-climate change nexus, its impact on the nutrition enabling environment, and how information is communicated and acted upon, in particular by the National Drought Management Authority (NDMA). To support communities' resilience to climate change, USAID Nawiri and stakeholders will increase our understanding of how counties, communities, and NDMA relay information on early warning systems, and how this is synthesized to help communities cope, adapt and transform in the face of climate-induced shocks and stresses.

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