GUIDELINES FOR PARTICIPATORY WATER MANAGEMENT AND DEVELOPMENT IN KARAMOJA

Karamoja Resilience Support Unit (KRSU)

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I would like to thank the Karamoja Resilience Support Unit (KRSU)/Tufts University for spearheading the preparation of the *Guidelines for Participatory Water Management and Development in Karamoja*. These Guidelines will be utilized in a stakeholders' driven process that is key in ensuring that water resources are effectively planned for and sustainably developed and managed so as to support the achievement of the country's vision 2040.

Special thanks go to all the stakeholders especially in Karamoja, the WMZ East and other MWE regional structures for their active participation and involvement in the preparation of the Guidelines.

Finally, I wish to thank USAID and the Embassy of Ireland for funding the preparation of the Guidelines.

Alfred Okot Okidi
Permanent Secretary, Ministry of Water and Environment

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The Guidelines draw on well-established participatory resource management approaches with their origins in customary resource management systems that, in Karamoja sub-region, are more than 200 years old. More recently, development actors have pioneered participatory approaches that are modelled on customary institutions, including Karimojong sub-sections. For example, the Lutheran World Federation's (LWF) Karamoja Agro-pastoral Development Programme (KADP) adopted sub-sections as the basis for its extension work in the mid-1990s. This approach was informed by work carried out by Oxfam in northern Turkana District, Kenya, in the mid-1980s.

Similar approaches to natural resource management were developed quite separately in southern Ethiopia and are documented in the following:

Irwin, B. 2007. The Key Steps in Establishing Participatory Forest Management: A Field Manual to Guide Practitioners in Ethiopia. FARM-Africa, SOS Sahel Ethiopia, Oromiya Bureau of Agriculture and Rural Development, and Southern Nations and Nationalities Peoples' Region Bureau of Agriculture and Rural Development.
https://www.farmafrica.org/us/downloads/resources/Key%20Steps%20in%20Establishing%20Participatory%20Forest%20Management.pdf

Flintan, F. and Cullis, A. 2010. Introductory Guidelines to Participatory Rangeland Management in Pastoral Areas. With the assistance from Members of the Natural Resource Management Technical Working Group, Ethiopia.
https://www.fsnnetwork.org/sites/default/files/introductory_guidelines_prm.pdf

Irwin, B., Cullis, A., and Flintan, F. 2015. Mapping Guidelines for Participatory Rangeland Management in Pastoral and Agro-Pastoral Areas. Compiled by:
https://agri-learning-ethiopia.org/wp-content/uploads/2016/06/PRM-Mapping-Guideline.pdf

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ACRONYMS

C&D	Cooperation and Development
CBMS	Community-based management system
CIA	Collective impact approach
DWO	District Water Office
EU	European Union
FEWS NET	Famine Early Warning Systems Network
HPM	Hand Pump Mechanics
HPMA	Hand Pump Mechanics Association
IGAD	Intergovernmental Authority for Development
IWRM	Integrated Water Resources Management
KALIP	Karamoja Livelihoods Programme
KDA	Karamoja Development Agency
KIDDP	Karamoja Integrated Disarmament and Development Programme
KIDP	Karamoja Integrated Development Programme
KPIU	Karamoja Project's Implementation Unit
KRSU	Karamoja Resilience Support Unit
KWMZ	Kyoga Water Management Zone
LC	Local Council (local councils consist of elected members with political and judicial responsibilities to manage local affairs)
LWF	Lutheran World Federation
MEAL	Monitoring, evaluation, accountability, and learning
mm^3	Million cubic meters
MoWE	Ministry of Water and Environment
MoWLE	Ministry of Water, Lands and Environment (precursor to Ministry of Water and Environment)
NGO	Nongovernmental organization
O&M	Operation and maintenance
PDM	Parish Development Model
PRA	Participatory rural appraisal
PWMD	Participatory water management and development
RWSN	Rural Water Supply Network
SDG	Sustainable Development Goal
SLF	Sustainable Livelihood Framework
UPDF	Uganda Peoples' Defence Force
USAID	United States Agency for International Development
WASH	Water, sanitation, and hygiene
WHH	Welthungerhilfe
WUC	Water User Committee

FOREWORD

Water resources support key sectors of the economy namely: hydropower generation, agriculture, fisheries, domestic water supply, industry and navigation among others. However, the efficiency and sustainability of water utilization has recently been a concern in Uganda mainly due to inadequate sectoral collaboration in planning and implementation, increasing frequency of floods and droughts, environmental degradation and pollution of water resources. This situation, therefore, calls for development of mechanisms for promoting integrated planning, development and management of water resources so as to create synergy among various sectors, promotion of efficiency in utilization of available water resources, reduction of water and environmental degradation, and ensuring more sustainable exploitation of water resources to meet various social and economic demands.

The *Guidelines for Participatory Water Management and Development in Karamoja* were developed by the Karamoja Resilience Support Unit (KRSU)/Tufts University and provide an easy to use three-phase and 12-step approach for preparing Sub-County water plans. They were produced for the Karamoja sub-region to ensure sustainable utilisation and management of the scarce water resources. This approach to water management and development reflects Government localisation priorities as detailed in the National Water Act (1997), Local Government Act (of the same year), Water Policy (1999), Water Sector Gender Strategy (2018-2022) and Uganda Vision 2040. The Guidelines will also support capacity building efforts of locally tailored 'soft skills' that is aligned with the Government's Parish Development Model (PDM) that involves local people in all stages of water management and development. They offer important complementary guidance to existing Ministry of Water and Environment (MWE), technical guidelines and manuals.

The Guidelines were developed in response to findings and recommendations from recent rangeland and water studies carried out in the Karamoja sub-region, which confirmed low levels of maintenance and repair of water facilities in the sub-region's rural areas. The MWE, together with the Ministry of Agriculture, Animal Industries and Fisheries (MAAIF), and the National Planning Authority (NPA) endorsed a recommendation made by the Karamoja Development Partners Group (KDPG) to develop 'participatory guidelines and tools' to help District Water and Agriculture officers, as well as Non-Government Organisation (NGO) counterparts to work more effectively with communities, identify and meet local water needs and priorities, and address issues of water sub-catchment improvement and sustainability.

The Guidelines could not have come at a much better time than now, when the Karamoja sub region is facing increasing demands for drinking water from its human and livestock populations, while rainfall is becoming ever more erratic due to the impacts of global climate change. In addition, the MWE is now putting increasing focus and investments on catchment management planning and implementation of various water resources catchment management and source protection measures for sustainable management of the country's water resources.

The approach offered in the Guidelines is supported by two framing chapters that provide an overview of Karamoja's unique development history, people, customary institutions, natural resources, and agro-pastoral livelihoods, as well as an historical overview of water management

and development. The Guidelines also recognise the sub-region's diversity and the fact that community needs are area specific. The Guidelines are therefore not overly prescriptive and do not promote one water technology over another. Rather they encourage practitioners to identify and verify local water priorities and needs and select appropriate water technologies with communities.

Sam Cheptoris (MP)
Minister for Water and Environment

In line with the provisions of Section 5 of the Water Act Cap 152, I therefore, formally approve these *Guidelines for Participatory Water Management and Development in Karamoja* and hope that they will be useful in your work to provide appropriate water management and development services to the people of Karamoja.

HOW TO USE THESE GUIDELINES

What is the purpose of the Guidelines?

These Guidelines for Participatory Water Management and Development (PWMD) in Karamoja, hereafter referred to as the Guidelines, provide a step-by-step guide for the planning, development, and management of domestic and livestock water.

They include an easy-to-use 3-phase, 12-step approach for preparing sub-county water plans and a sub-county water agreement. When shared with a district water office (DWO), such an agreement can inform sub-county, district, and sub-regional water sector investment plans and improve coordination of water management and development approaches.

Who should use the Guidelines?

The Guidelines are written for district water and agriculture officers and teams working in the sub-region, and their counterparts in international and national development organizations. The Guidelines may also assist other development professionals in health, environmental management, and market town development, as the participatory approach described in the Guidelines has broader application.

The Guidelines may also provide guidance to DWOs in Karamoja's neighboring sub-regions of the Uganda's "cattle corridor,"[1] as many of the water-related issues are similar.

What do the Guidelines contain?

The Guidelines are structured around three framing chapters followed by a fourth chapter that details the 3-phase, 12-step PWMD approach. It is important that users read the framing chapters, as they provide context that informs the approach. The framing chapters include:

Chapter 1: An introduction to Karamoja sub-region—provides an overview of Karamoja's development history, people, customary institutions, natural resources, and livelihoods. While livelihoods are more diverse than at any time in history, agro-pastoralism remains the primary livelihood, and cropping and the extensive herding of livestock form the basis for sub-regional well-being and economic development.

Chapter 2: A history of water in Karamoja—provides a historical overview of water management and development, structured around locally recognized periods of history:

- Customary, 1800–1920
- Protectorate, 1921–1961
- Early Independence, 1962–1979
- Cattle raiding, 1980–2001
- Disarmament, 2002–2009
- Peace dividend, 2010–2018
- Renewed cattle raiding, 2019–2024

1 The cattle corridor represents around 35% of Uganda's land area, from Karamoja in the northeast to the southwest. Rangelands in the corridor share many characteristics, including seasonal and uncertain rainfall, periodic drought, and savannah grassland ecosystems.

For each of these seven historical time periods, information is presented on water management and development approaches, and key lessons learned. The chapter also presents examples of standalone water programs, and lead national institutions and policies.

Chapter 3: The principles of participatory water management and development introduces seven principles that guide the PWMD approach:

- Principle 1: The importance of localization
- Principle 2: The importance of participation
- Principle 3: The importance of gender-sensitive approaches
- Principle 4: The importance of livelihood-based programming
- Principle 5: The importance of climate change
- Principle 6: The importance of coordination
- Principle 7: The importance of monitoring, evaluation, accountability, and learning.

Why are the Guidelines needed?

The Ministry of Water and Environment (MoWE) has produced an extensive range of technical water development guides and how-to manuals. Amongst others, these include:

- National Framework for Operation and Maintenance of Rural Water Supply Infrastructure in Uganda. 2020. Directorate of Water Development, Rural Water Supply and Sanitation. Ministry of Water and Environment
- Strategy for Catchment Based Integrated Water Resource Management in Uganda (2020–2030). 2020. Ministry of Water and Environment
- Catchment Management Planning Guidelines. 2019. Ministry of Water and Environment
- The Manual for Drilling Supervision. 2019. Water Supply and Sanitation Programme. Ministry of Water and Environment
- Rural Water Supply and Sanitation Handbook for Extension Workers. Volume 2. 2016. Ministry of Water and Environment with European Union Water Facility and WaterAid Uganda.

The Ministry of Local Government (MoLG) has also produced guidance on the Parish Development Model:

- Implementation Guidelines for Parish Development Model. 2021. Ministry of Local Government.

While these guides and how-to manuals provide all the technical information required to deliver high-quality water programs, it is widely recognized, including by the MoWE, that many water facilities are non-functional and that technical guidance alone will not address this problem. The Guidelines therefore tap into the Parish Development Model to provide locally tailored "soft skills" guidance that involves local people in all stages of water management and development.

The need for the Guidelines was first articulated as a recommendation in the 2023 Water and Rangeland in Karamoja study:[2]

"*Develop guidelines and tools to enable practitioners to work closely with communities at all stages of a typical project cycle: initial assessment; design; implementation; monitoring; and evaluation. Develop indicators and methods to measure localization at each stage. Additionally, draw on experiences with effective localized approaches to land and water planning from other dryland areas of East Africa when developing these guidelines, as well as experiences with participatory methods for the joint analysis of water and range issues*." The recommendation and the wider study findings were endorsed by the Karamoja Development Partners Group (KDPG). The importance of such Guidelines is also recognized at the global level, including by the Rural Water Supply Network's (RWSN).[3] The Network's 2024–2030 plan highlights the importance of the local development of guidelines and standards, to fill gaps.

How were the Guidelines developed?

The Guidelines are informed by the 2023 Water and Rangeland Study and other studies, reports, and assessments carried out by the Karamoja Resilience Support Unit (KRSU). KRSU resources (available on their website: https://karamojaresilience.org/krsu-publications/) were complemented by a wider literature review of studies carried out in Karamoja and pastoral areas of the Horn of Africa region. With a view to make the text as user friendly as possible, references are presented both by chapter and section in Annex 1.

The Guidelines are also enriched by key informant interviews with water sector and other technical specialists in the MoWE, Ministry of Agriculture, and the National Planning Authority at national, sub-regional and district levels, and in international and local development partner organizations.

The guidance on mapping that is presented in the Guidelines was pretested with communities in Moroto and Napak Districts and the findings shared at a stakeholder workshop in Moroto District on March 6, 2024. Details of the mapping approach are presented in Annex 2.

What do the Guidelines not cover?

The Guidelines focus on "blue" or rainwater runoff that collects in pools, ponds, swamps, and rivers, or liquid water that moves below ground or is stored in aquifers. This blue water can be harvested and used for domestic purposes (drinking, cooking, personal hygiene, and laundry), household-level productive purposes, and for livestock drinking water. The Guidelines do not address blue water for business or manufacturing purposes. Similarly, the Guidelines do not address "green" water that is held in soil and plants and managed by the people of the sub-region in their seasonal cropping and extensive livestock production systems.

The Guidelines recognize the diversity of the sub-region's topography, geology, and natural resources, and that community needs are area specific and vary between neighboring sub-counties and even between parishes. Hence, the Guidelines are not prescriptive and do not promote one water technology

2 Egeru, A., Arasio, R. L., and Longoli, S. P. 2023. Water and Rangeland in Karamoja: Trends, Preferences, and Status of Indigenous and Introduced Resources and Systems. Karamoja Resilience Support Unit, Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Kampala.

3 The RWSN is a global network that is dedicated to supporting rural water professionals engaged in the delivery of universal access to safe, affordable water for drinking and livelihoods.

over another. Rather, they present the PWMD approach that can be used in all sub-counties and parishes to identify, triangulate, and verify local water priorities and needs, and identify and confirm appropriate water technology and operation and maintenance (O&M) approaches.

How can the Guidelines help improve water sector coordination?

The Guidelines are designed to help water teams in the sub-region to address the vexed issue of functionality, and to build the necessary knowledge, skills, and capacities to improve sustainability and "value for money." The PWMD approach places local knowledge, skills, and wisdom center-stage, together with communities' capacity to act to address issues of concern.

Uptake of the Guidelines at district and sub-regional levels will also improve the coordination and harmonization amongst water actors.

CHAPTER 1: An introduction to Karamoja sub-region

Chapter overview

This chapter provides a general introduction to Karamoja sub-region, beginning with a preamble that includes information on administrative structures, ethnic composition, and demography. This is followed by a summary of the sub-region's history. The chapter also includes sections on people and institutions, natural resources, and livelihoods.

Preamble

Karamoja sub-region lies in Uganda's far northeast. It shares international borders with Kenya to the east, South Sudan to the north, and sub-regional boundaries with Acholi, Lango, and Teso to the west, and Elgon to the south. The sub-region is administered in 9 districts and 82 sub-counties.

The sub-region is home to 11 ethnic groups, including the largest or "true" Karimojong (the Matheniko, Pian, and Bokora), together with the Jie, Dodoth, and the Pokot (part of the Kalenjin ethnic group). Smaller groups living in the sub-region include the Tepeth, Nyakwae, Ik or Teuso, Napore, and Ethur. The Karimojong are Paranilotic-speakers; the Napore, Ethur, and Nyakwae are Lwo speakers; and the Tepeth and Ik are Cushite speakers. Hence, the sub-region's ethnic composition is diverse.

When Uganda secured its independence in October 1962, the population was 8 million,

and Karamoja home to an estimated 175,000 people. The population of Uganda today is 49 million and an estimated 2 million people live in the sub-region. Almost 90% of the people live in rural areas, with increasing numbers of "settlers" in the wetter, western "Green Belt" who have migrated from drier central areas.

Development history

There is general agreement amongst scholars that the Karimojong occupied the Magos Hills in Moroto District by 1800. Thereafter the Dodoth, Teso, and Turkana splintered off amicably, while the Jie broke away by force. The Karimojong's occupancy of the sub-region forced the indigenous Cushite-speaking hunter-gatherers into the sub-region's mountain areas.

Karamoja was administered under customary law until the arrival of the British in the 1860s, after which the sub-region became a contested area, as Karamoja was not easily subdued. It was placed under military restriction in 1911, and, in 1913, the Protectorate government carried out a forceful disarmament campaign.[4] The first District Commissioner was appointed in 1921, and the sub-region was managed as a "closed district." A sign posted at Iriri Police Station read: "*You are entering Karamoja closed district. No visitor may enter without an outlying district permit.*"

The demarcation of Protectorate borders resulted in the loss of a vast swath of dry season grazing (and water) to Kenya in the east and Teso in the west. Additional resources were subsequently lost to wildlife reserves within the sub-region. By the 1950s, almost 50% of the sub-region was designated to wildlife reserves. These demarcations concentrated livestock in areas not previously heavily grazed, and central Karamoja was transformed from a grassland to mixed grass and shrubland. This transformation was interpreted by the British as "over-grazing" and local government taxes increased, as it was well understood taxes were paid through the sale of livestock.

Livestock markets were established in which the British were the sole buyers. In 1948 livestock marketing was formalized in the "Karamoja Cattle Trading Scheme," and some 55,000 cattle were exported in the next six years. In the mid-1950s, the British opened a meat canning factory at Namalu. Cattle thieves learned they could dispose of cattle for cash with few if any controls, and the "commercialization of cattle raiding" was written into the sub-region's history.

Isolated and stigmatized by the British, Karamoja was brutalized in the Amin years. Following the regime's collapse in 1979, the Karimojong accessed the armory of the abandoned barracks in Moroto, and thousands of small arms were taken. In the following 20 years, young men raided more than half a million cattle from Karamoja's neighbors. While some cattle were retained to rebuild local herds, many more were exported. Raiding also took place within the sub-region. The loss of livestock, insecurity, and associated reduced access to fields and markets, injuries and deaths, poor rains and harvests of 1982, 1984, and 1986–7 resulted in famine.

In the late 1990s, Karamoja's neighbors petitioned the President to address cattle raiding, and the Government launched a voluntary disarmament campaign in 2001. The campaign faltered, and raiding took on more violent forms as raiders operated increasingly outside customary governance structures. A second disarmament campaign in 2006–2009 included "cordon and search" and "protected kraals." Livestock in the protected kraals

4 There was however a resurgence of raiding after the drought of 1943 in which spears, bows, and arrows were the main weapons.

grazed only in the area immediately around Uganda Peoples' Defence Force (UPDF) barracks and detaches, and this restricted grazing and poor animal health resulted in high levels of mortality. Numbers of livestock in the sub-region fell by an estimated 75% for cattle and 65% for sheep/goats in four years. Local livelihoods were decimated, and many are yet to recover.

Improving security after 2009 supported a period of unparalleled public sector investment: roads were tarmacked; administrative centers connected to the national grid; market infrastructure developed; and health, education, and water, sanitation, and hygiene (WASH) services were upgraded. Private sector investors also arrived to develop the mobile phone network and mine the rich mineral resources.

In 2016, UPDF detachments were replaced by local police, and within two years tit-for-tat livestock thefts had escalated into commercialized cattle raiding. The UPDF returned in 2019, and a third round of disarmament began that continued into 2023. Cattle theft however continues both within and beyond the sub-region.

The collective impact of the sub-region's Protectorate history, raiding and insecurity, harsh climate and periodic droughts, poor harvests, and the limited "trickle-down" effect of private sector investment has entrenched poverty. The most recent multidimensional poverty headcount remains around 85%, which is not only the worst in Uganda but is significantly higher than the next-poorest sub-regions—Acholi (64%), West Nile (59%), Lango (57%), and Teso (56%).

People and institutions

The sub-region's ethnic groups are structured in sections and sub-sections. For example, the Jie are divided into 2 sections and 11 sub-sections, and the Karimojong into 10 sections and 9 sub-sections, that, by the early 20th century, had morphed into 3 large groups, the Pian, Bokora, and Matheniko. These 3 groups became quite separate ethnic groups and started to challenge each other for grazing, water, and to raid each other's cattle.

Each section and sub-section has established cultivation and grazing rights that are separated from the neighboring sub-section by a dry riverbed, rocky outcrop, or other natural feature. These boundaries are recognized and respected and, in many cases, have been adopted as sub-counties. While sub-counties in the central zone remain largely unchanged, the mass migration of settlers to the sub-region's wetter Green Belt has resulted in the mixing of sections and sub-sections.

All men in the sub-region's ethnic groups are also members of clans (*ateker*), lineage-based groups that share a common ancestor. The number of clans however varies markedly, as the Jie record 70 clans, while the Karimojong list only 19 clans. Members of different clans are distinguished by ceremonial rites, different clan-based ornamentation, and women and children dressing their hair differently. All cattle are also branded with distinctive clan marks.

Decision-making is vested in generation- and age-sets into which all males are initiated. There are two generation-sets, and each is sub-divided into age-sets, comprising members of the same initiation ceremony. Senior generation- and age-set elders are responsible for grazing and water management, recovering stolen animals, organizing raids, and initiating ceremonies for rain or protection from a disease outbreak. When decisions need to be made, senior generation- and age-set elders meet, analyze the available information, and make decisions. These meetings are conducted at the akiriket, a ceremonial and social meeting place where the elders meet.

Women's social, economic, and ceremonial roles are different from men: men are responsible for managing the livestock; and women are responsible for the fields and

management of the homesteads. Young women are free to marry whom they chose and to visit relatives and friends. In times of plenty, women organize their own initiation ceremonies.

The arrival of small arms and commercialization of cattle raiding has affected this customary governance, as the authority of senior generation- and age-sets and the influence of women has been weakened. Disarmament has not reversed these changes, and younger men continue to exercise more independent decision-making that disadvantages other groups. Matters have been made worse by the distribution of *waragi* (crudely distilled liquor) that has significantly increased levels of alcoholism.

Natural resources

Topographically, Karamoja is a plain that slopes down to the west and is punctuated by mountain massifs and isolated hills. The mountains include Mount Morungole in the north, Mount Moroto in the east, Akisim and Napak Mountains to the west, and Mount Kadam to the south.

Unlike other parts of Uganda that receive spring and autumn rains, Karamoja receives a single rainy season that starts in early March and continues through to September. A peak in April–May is followed by a June break and renewed onset in July. Rainfall is characterized by variability and uncertainty between, at times, extreme weather events. While parts of the sub-region receive more rain than Paris and London, the single rainy season, prolonged dry season, and high mean annual temperatures that drive high evaporation and transpiration rates combine to result in Karamoja's semi-arid classification.

Livelihoods

Livelihoods, or the assets, activities, and capabilities that households require to secure a living, in Uganda were first defined by the Famine Early Warning Systems Network (FEWS NET) in 2009. In Karamoja sub-region, six livelihood zones were identified, and in 2010 baselines were developed for the three major livelihood zones. Using key geography, production, markets, and consumption data, the livelihood zones were reviewed in 2013, resulting in the identification of five broad livelihood zones, of which zones 1 and 5 were identified as the most food insecure (see Figure 1):

1. North Eastern Highland Apiculture and Potato (K01)—households are dependent on seasonal cropping and honey production, with few livestock. Yields are restricted as only hand tools are used. This is the poorest of the zones.

2. Western Mixed Crop Farming (K02)—households are again dependent on seasonal cropping, but with more plentiful rainfall and better soils, they can meet their needs and have market surpluses. Cropping is supplemented by the sale of firewood, charcoal, bricks, building poles, bamboo, thatching grass, and stone aggregates. Better-off households also brew beer, make bricks, and conduct petty trade.

3. South Eastern Cattle Maize (K03)—households are better off than in other zones, as cropping generates surpluses and significant income. In poor years, households are dependent on milk and livestock sales. Other economic activities include honey production and sales of qat, which grows on Mt. Kadam.

4. Mountain and Foot Hills Maize and Cattle (K04)—cattle are the main livelihood, providing food and income, and are a store of wealth. In recent years, there has been a shift to cropping. Poorer households provide labor for wealthier households, keep bees (in the eastern mountains), harvest qat (off the slopes of Mt. Kadam), and trade in firewood, charcoal, grass, and poles.

5. Central Sorghum and Livestock (K05)—households are dependent on cattle as

cropping is unreliable. However, in a good year, crops can contribute up to 60% of household food income. Households also engage in other economic activities, including firewood, grass, pole, and charcoal sales; unskilled agricultural labor; brewing; and mining.[5]

Livelihoods in the sub-region are more diverse than at any time in history, including a ten-fold increase crop-based agriculture since 2000. Large-scale cropping is however dominated by a wealthy elite as poorer households lack the resources and labor. Their livelihood diversification strategies are typically more modest: beer brewing, charcoal production, firewood trade, brick making, bee keeping and small-scale vegetable production (near sources of permanent water); the collection and processing of wild fruits, roots,

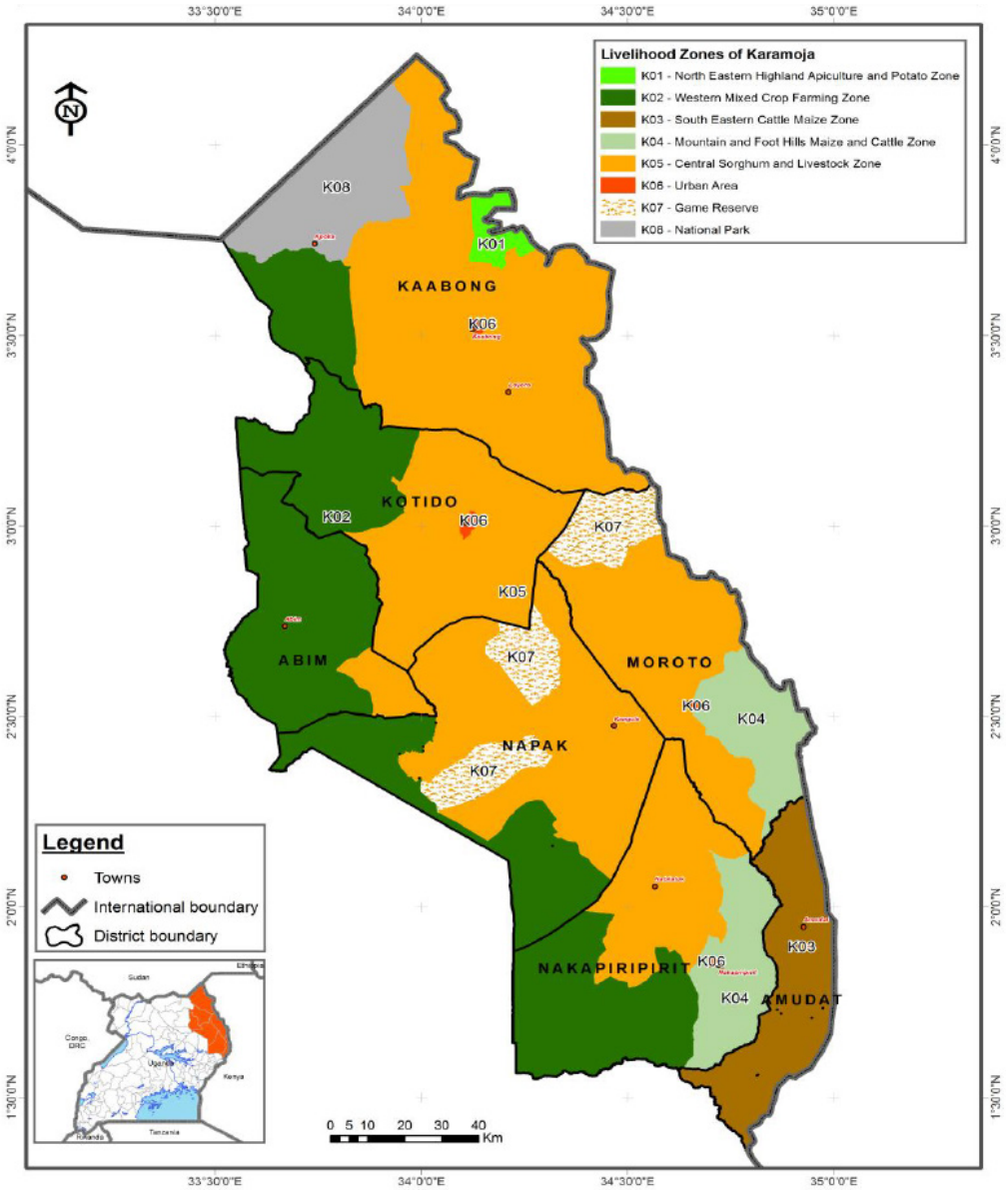

Figure 1. Livelihood zones.

Source: FEWS NET (2013).

5 FEWS NET (2013).

Economic value of livestock in Karamoja sub-region and the cattle corridor

A 2019 study of the value of livestock in Karamoja estimated that livestock products, and physical and financial services, together with an assigned monetary value of non-marketed goods and services, were valued at US$440 million in a 12-month period of 2018–2019.

A total economic value of pastoralism in Uganda's cattle corridor is based on i) livestock assets and flow of goods and services, ii) flow of rangeland goods and services, and iii) attributes of an ecosystem. The contribution to the national economy is valued at more than US$4 billion annually.

and tubers; and artisanal gold, marble, and semi-precious stone mining. Beer brewing, charcoal production, and mining are poorly regulated and have negative outcomes.

For those with livestock, day-to-day decision-making is dominated by three objectives: maximizing herd growth, supplying milk for household consumption, and the sale of animals to generate cash to meet food and non-food needs, including school fees, health costs, and veterinary medicine. Herders in the drier eastern zone move their livestock on north-south migratory routes, while herders in the central zone—including the Bokora, Jie, and Pian—move their herds west and south in the dry season, to the wetter grasslands and swamps on the borders with Acholi, Lango, Teso, and Elgon sub-regions. Following the onset of the wet season, herds are returned to the main homesteads in the central zone.

In times of drought, resource-sharing arrangements between communities within and across national borders ensure that cattle herds are protected. These reciprocal arrangements have been formally recognized in the 2019 Cross-Border Resource Sharing Agreement between the governments of Uganda and Kenya.

Livestock keepers in the sub-region are serviced by 20 major livestock markets, and livestock are transported and resold in transit and terminal markets in neighboring South Sudan, Kenya, and in other parts of Uganda. Despite drastic reductions in numbers compared to former years, the annual revenue from livestock sales is estimated to be US$6–8 million and is forecast to increase to more than US$10 million, as livestock numbers recover from the losses associated with disarmament.

For households both with and without livestock, access to adequate clean water can improve health outcomes through improved personal hygiene and clean water for laundry (especially to prevent locally prevalent diseases such as trachoma and scabiesAccess to adequate clean water is also useful in food preparation and in improved nutrition outcomes. Improved health and nutrition are important for women (as women have demanding workloads, in particular in the annual cropping season) and children who attend school and therefore are important in building sub-regional human capacity.

Sustainable water management and development can also play an important role in supporting household diversification, including beer brewing, brick making, and the sub-region's many and varied small-scale agro-processing and retail outlets.

CHAPTER 2: A history of water management and development in Karamoja

Chapter overview

The chapter presents information on the management and development of water in the sub-region since 1800. The information is presented in seven time periods that are locally recognized periods of history. They are:

- Customary, 1800–1920
- Protectorate, 1921–1961
- Early Independence, 1962–1979
- Cattle raiding, 1980–2001
- Disarmament, 2002–2009
- Peace dividend, 2010–2018
- Renewed cattle raiding, 2019-2024

For each period, the information presented includes water management and development approaches, the different technologies together with impacts, and outcomes. This information is supplemented by short summaries of examples of standalone water development programs, and lead institutions and policies.

Water management and development in customary times, 1800–1920

During this period, semi-permanent settlements were established near permanent rivers in a north-south axis along Karamoja's central spine. In the wet season, water was collected from streamflow and pools while in the dry season, it was accessed from wells excavated by wealthy herders to water their

herds and flocks. These wells were privately owned but water was shared with family and clan members, according to the well's yield.

In the wet season, women cultivated their fields and livestock were grazed and watered nearby. In the dry season, livestock were trekked to far eastern and western areas to grazing that had been left unoccupied for months. In this way, elders "managed-in" rangeland and water resources within the sub-section and "shared-out" these resources with neighbors in times of acute need—drought, human and livestock disease, or conflict. Such sharing-out practices are informed by a common understanding that reciprocal rights are fundamental to survival. This understanding continues to the present, as the Bokora hosted the Matheniko in Lopei sub-county during the 2023 drought.

Accessing reciprocal grazing and water requires:

- *The meeting*—visiting elders detail their grazing, water, and security needs to their potential hosts and Local Councillors (LCI, II, and III), and terms and conditions are agreed, e.g., the duration of the sharing of grazing and water rights (typically until the next rains) and a shared responsibility for peace and security
- *The agreement*—a bull is ritually slaughtered, and the agreement is sealed with the sharing of the meat.

Water management and development in the Protectorate period, 1921–1961

The British drilled the first borehole in Karamoja in 1924 and subsequently drilled more in many of the sub-region's parishes. However, they restricted the drilling to areas of semi-permanent settlement, where groundwater was known to be found. A number of these early boreholes remain functional to the present, although hand pumps have been upgraded to Indian Mark II hand pumps.

The British also encouraged communities to excavate *atapar*[6] (village ponds) to ease the pressure on boreholes in the wet season, when livestock were herded close to the homesteads. For the dry season, valley tanks and dams were constructed in all sub-counties, some of which are still functional, including Lokisile dam in Moroto District. These structures harvested rainwater runoff to reduce the Karimojong's search for dry season water. In the late 1990s, health workers encouraged communities to abandon *atapar* as a source of domestic drinking water as many became infected by Guinea worm disease.

Throughout the Protectorate period, the British were responsible for the maintenance and repair of all water facilities, in much the same way that wealthy livestock keepers were responsible for the maintenance and repair of customary wells. For the desilting of *atapar*, the British would however mobilize community labor.

Water management and development during early Independence, 1962–1979

It appears that except for maintenance and repair work, there was little or no new "Independence investment" in the development of water in rural areas, although new boreholes were drilled in Moroto and Kotido townships.

Institutions

- *Ministry of Mineral and Water Resources*—established at Independence, and H.E. J. W. Lwamafa appointed as the first Secretary of State.

6 Elders describe how they used their customary wooden hand hoes and wooden water-lifting containers to carry the excavated material to deposit it on the earth bund.

Water management and development and cattle raiding, 1980–2001

International nongovernmental organizations (NGOs) arrived in response to the famines of the 1980s. Once famine was contained, some NGOs turned their attention to the improvement of social services, including the development of water. For example, more than 350 boreholes were drilled in Moroto District to 1995, including in the wetter Green Belt to support "settler" communities, and to encourage further settlement and farming.

With no hydrogeological maps, drilling was something of a hit-or-miss affair. For some organizations, the success rate of boreholes that yielded at least 0.5 m^3/hour was around 60%. In part, this was because local leaders exerted undue influence on drilling teams to drill in their locality.

As the stock of boreholes increased, so too did the number of breakages and failures. Breakages typically peaked in the dry season when surface water was exhausted, and boreholes were used for both domestic and livestock water. Some studies also suggest that boreholes located on cattle raiding routes were strategically "disabled" (bolts removed, and rocks even dropped into casing shafts), to deny would-be cattle raiders access to water and deter them from using these routes.

NGOs increasingly fitted Uganda Mark II hand pumps as they were more robust than the "pitcher pumps" and could be serviced by locally trained pump mechanics.

Programs

- *Cooperation and Development* (C&D)—arriving in Moroto in the late 1970s, C&D drilled its first borehole in 1983. Drilling and rehabilitation of boreholes continued through the 1980s and 1990s.
- *Lutheran World Federation* (LWF)—LWF established an office in Moroto in 1980 and drilled several hundred boreholes across the sub-region to 1998.
- *Karamoja Development Agency* (KDA)—established in 1987 by Parliamentary decree, KDA implemented a range of large infrastructure projects in the 1980 and 1990s, including water projects.
- *Karamoja Projects Implementation Unit* (KPIU)—funded in 1992 by the European Union (EU), KPIU's main purpose was to "improve living conditions" through water and agriculture projects. KPIU drilled boreholes and rehabilitated valley tanks and small dams to provide water for livestock.

Institutions and policies

- *Ministry of State for Karamoja Affairs* (MoSKA)—established in 1987 as KDA's accountable body in the Office of the Prime Minister
- *Ministry of Local Government* (MoLG)—established in 1992 to operationalize decentralization, including the formulation and approval of district budgets.

Uganda enacted policies and strategies that decentralized water management to the local level:

- *Integrated Water Resources Management* (IWRM)—Uganda was the first country to follow the 1992 Rio Earth Summit that recognized: freshwater is a finite resource; water management and development should be participatory and involve users, planners, and policy-makers at all levels; women play a central part in the provision, management, and safeguarding of water; and water has an economic value and should be recognized as an economic good. The IWRM strategy was adopted in 1993.
- *Constitution* (1995)—the Constitution enshrines access to clear and safe water as a right under Objective 21.
- *National Water Action Plan* (1995)—provided a road map for the IWRM

delivery and included sections on urban and rural water, water for production, and water resources management

- *Water Act* (1997)—provided for the formation of Water User Committees (WUCs)/Associations to manage local water facilities, including the collection of user fees for maintenance and repair
- *Local Government Act* (1997)—empowers different levels of government to plan and implement water development interventions according to identified local priorities, including the allocation of resources towards O&M support. WUCs are empowered to propose bylaws to be adopted by Village Councils to support the management and maintenance of communal water facilities.
- *Water Policy* (1999)—provided for the collection of funds for preventive maintenance and repairs. The Policy promotes the community-based management system (CBMS) and stipulates the roles and responsibilities of caretakers (at least two per facility), WUCs (with half the members women), sub-county water and sanitation committees (SCWSCs), and District Water Officer. The Policy supports private hand pump mechanics and spare parts dealers.
- *Land Act* (1998)—vests all water resource rights to Government and empowers the responsible Minister to regulate the management and utilization of water, including the compulsory purchase of land with water resources
- *National Gender Policy* (1999)—enshrines affirmative action in support of gender equity and encourages women to engage in decision-making. Women and children are recognized as key stakeholders in water resource management and development.

Water management and development and disarmament, 2002–2009

The first studies to document the impact of water development were carried out in the early 2000s, and it soon became apparent that the sub-region's stock of boreholes, valley tanks, and small dams were in a poor state of repair. Reasons cited included:

- *Boreholes*—poor siting (in areas with low groundwater recharge and in remote and insecure areas, where communities once lived but no longer do so), poor O&M, corruption, and inadequate coordination
- *Valley tanks and small dams*—poor siting (in remote areas), rapid siltation, the cost of desilting and repair, and the damage caused by high concentrations of livestock around the facility. Almost none were viable as a result.

Programs

- *C&D*—launched its Water in Karamoja activity in 2003, and this continues to the present. From 2003 to 2009, C&D drilled some 250 boreholes, of which 200 were productive (80%), and clean water was provided to an estimated 240,000 people.
- *Karamoja Integrated Disarmament and Development Programme* (KIDDP)—established in 2005, KIDDP was aligned with Uganda's Poverty Eradication Action Plan (2004), and was mandated to improve security, accelerate disarmament, and support peace-building through development, including water development
- *Ministry of Water, Land and Environment* (MoWLE)—working in support of KIDDP and other Government programs in the sub-region, the MoWLE constructed 16 valley tanks and small dams under the Water for Livestock Project, of which 11 were considered successful. In addition, 9 wind pumps were installed to increase

the capacity of boreholes for livestock drinking water.

Institutions and policies

- *Ministry of Water and Environment* (MoWE)—established in 2007 following Government restructuring, the Ministry's mandate was to establish and monitor national water policies and standards, manage and regulate water resources, and determine national water development priorities. Administratively, the Ministry was divided into three directorates:
    - Water Resources Management Directorate—responsible for developing and managing water resources in an integrated and sustainable manner, to provide water of adequate quantity and quality for the social and economic needs of present and future generations.
    - Water Development Directorate—responsible for providing overall technical oversight for the planning, implementation, and supervision of the delivery of urban and rural water and sanitation services, and water for production across the country
    - Environmental Affairs Directorate—responsible for environmental policy, regulation, coordination, inspection, supervision, and monitoring of the natural resources, restoration of degraded ecosystems, and mitigating and adapting to climate change.
- Water Sector Gender Strategy (2003–2008)—this was the MoWE's first strategic framework for implementing the National Gender Strategy within its mandate.
- Water Resources Management Reform Strategy (2005)—established water management zones that went some way to recentralize water resource development management in Uganda. The zones were based on the country's four catchments, each with a Catchment Advisory Committee, Secretariat, and Stakeholder Forum. The greater part of Karamoja falls within the Kyoga Water Management Zone (KWMZ), with its headquarters in Mbale, while the far northern areas of Karamoja fall within the Upper Nile Water Management Zone.

Water management and development and the peace dividend, 2010–2018

The peace dividend era was effectively launched by the First Lady and also the Minister for Karamoja Affairs in a 2010 address to Karamoja's leaders, in which the need to break with sub-region's turbulent past was stressed, reflecting the new urgency to settle and solve the "Karamoja problem." Certainly, improved security yielded a peace dividend, and development assistance grew year-on-year. Uganda's development partners—European Union, Germany, Ireland, Italy, Korea, Sweden, United Kingdom, United States, and the World Bank—invested US$60 million in 2016 and US$86 million in 2017 of new funding in the sub-region.

Part of this investment support targeted the water sector, including rebuilding Karamoja's broken community-based water management system (CBMS), the result of insecurity and cattle raiding. WUCs[7]

7 Comprising five men and four women (with a minimum of three women), WUC members are selected based on the following:
- *A representative* of the user villages
- *A leader*, a good mobilizer, good speaker, well-respected in the community
- *Willing* to volunteer.

were reformed around the following responsibilities:

- *Fencing*—to protect the borehole from livestock
- *Cleaning*—ensuring that excess water drains well away from the site
- *Maintaining*—according to the hand pump's specific requirements
- *Repairing*—ensuring that minor repairs are carried out in a timely and effective manner.

A series of water-related studies in the sub-region documented the following:

- A study reported a high concentration of valley tanks and dams in some districts and near absence in others, which led to high livestock concentrations and over-grazing in some areas. The study also reported poor water quality in valley tanks, the result of the direct watering of livestock and poor periphery management. Amongst others, the study recommended the alignment of water facilities with grazing sites and the need to strengthen customary water management institutions.
- A study in two catchments confirmed that the 50% target for women's representation on WUCs was not always achieved. This was attributed to women's high workload as well as male domination that restricted women's participation in meetings. In some cases, men used the monthly users' fee as a stipend. Securing women in key positions was also not achieved for the same reasons. Amongst other things, the study recommended the following:
  - *Addressing practical and strategic gender needs*—including workload, community participation, and decision-making, including WUCs and water user savings and loans associations
  - *Gender training and capacity building*—for catchment management organizations, Kyoga Water Management Zone (KWMZ), and Umbrella Karamoja[8]
  - *Monitoring and evaluation*—ensure that gender indicators are included in monitoring and evaluation and ensure that gender-disaggregated data are collected and analyzed.
- A study of more than 500 water facilities in Moroto District confirmed a 90% domestic dependency on boreholes. While 75% of water facilities were functional, more than 85% had breakdowns in the last two years. Fewer than 15% of users regularly paid water user fees.
- The Arechek dam (Napak District) was constructed by the Directorate of Water in 2009–2010 and has a storage capacity of 5 million cubic meters (mm^3). The dam provides water for domestic, livestock (served by a network of 8 cattle troughs), irrigation, and aquaculture purposes. A study confirmed that a road construction company applied for a water user permit in 2017 but drew water before it was issued. Concerned about the dry season rate of draw-down, local people blocked the road to prevent abstraction. The construction company continued to access the water after the rains, but through a valve system and not directly from the dam. The study learned that the people received no compensation

8 Umbrella of Water and Sanitation–Karamoja, has a purely piped water and sanitation focus.

and confirmed that industrialization will play an increasingly important role in the future of water management and development in the sub-region.

Programs

- *Cooperation & Development*—drilled an additional 300 boreholes in this period, of which around 210 were productive and provided water to an estimated 150,000 people.
- *Karamoja Livelihoods Programme* (KALIP), 2010–2015—funded by the EU, KALIP rehabilitated 23 valley tanks and 50 water ponds, drilled 14 boreholes, and constructed 9 sub-surface dams and 6 rock catchments. Valley tanks and water ponds were constructed under a cash-for-work program. An internal program review questioned levels of sustainability due to high rates of silting and poor maintenance, and recommended future programming be "evidenced-based."
- *Karamoja Integrated Development Programme* (KIDP), 2010–2015—the successor to KIDDP (2005–2010) dropped the word "disarmament," as peace had been restored and the priority had shifted to development. Water resource development was one of five productive sectors targeted.
- *Karamoja Integrated Development Programme* (KIDP), 2015–2020—the development goal was to contribute to security and promote conditions for recovery and development. Strategic Objective 4 identified the need to increase the functionality of dams and valley tanks for water production, through the mobilization of community labor for desilting.
- *Enhancing Resilience in Karamoja Programme* (ERKP), 2013–2016—this UK-funded program aimed to address resilience to climate and weather events through strengthening nutrition, food security, and livelihoods. As an addendum to the project, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) was funded to undertake a gender assessment in two catchments (see section above).

Institutions and policies

- *UN General Assembly* (2010)—Resolution 64/292 acknowledged that clean drinking water and sanitation are essential to the realization of all human rights.
- *Water and Sanitation Sub-sector Gender Strategy* (2010–2015)—this revised strategy recognized the importance of empowering women, men, and vulnerable groups through improved access to and control of water resources in contributing to poverty reduction.
- *National Framework for Operation and Maintenance of Rural Water Supplies* (2011)—provides guidelines for all sector actors in the use and maintenance of rural water supplies
- *Uganda Vision 2040* (2013)—outlines Uganda's vision for a transformation from a peasant to a modern and prosperous society in 30 years. Water development is recognized as one of the opportunities for fostering rapid economic growth.
- *National Development Plan II* (2015/16–2019/20)—the second six-year national development plan aimed at achieving Uganda's Vision 2040 and progress towards middle income status. The plan's water focus is on increasing access to safe water, functionality of water supply, and promotion of catchment-based IWRM.
- *United Nations* (2016)—Sustainable Development Goals (SDGs) include SDG 6: Ensure access to water and sanitation for all.

- *Water and Sanitation Sub-sector Gender Strategy* (2018–2022)—the third such Strategy, with a vision to "empower men, women and vulnerable groups to access and manage water resources in an integrated, equitable and sustainable manner."

Water management and development and renewed cattle raiding, 2019-2024

In a 2021 rally in the sub-region, the President of Uganda expressed support for water development, especially dams. Momentum for dams was boosted by a study that confirmed the annual dry season arrival of up to 200,000 cattle from Kenya and South Sudan, which pushes the Karimojong westwards, including into neighboring districts. The study concluded this migration could be eased by the construction of three additional large dams, supported by a network of valley tanks, to prevent the concentration of livestock, reduce conflict, and limit the spread of animal diseases.

These plans were derailed by the COVID-19 pandemic that fuelled a sub-regional food security crisis. Driven by pandemic-related restricted travel and market closure, the cost of food and other household commodities, livestock services, and agricultural inputs for land preparation increased sharply. Jobs were also lost as development partner-funded projects closed and were not renewed or replaced.

After the pandemic, a 2023 water and rangeland study confirmed that the sub-region's livestock were serviced by 16 earth dams and 29 valley tanks, with a combined capacity of 2mm^3, and that 7 additional dams with an estimated capacity of 7.2 mm3 were under review.

The study estimated the sub-region's stock of boreholes to be around 3,000 (see Figure 2).[9] At current prices, this stock is worth an estimated US$50–60 million. Despite this level of investment, the study found only 15 of 35, 6 of 25, and 4 of 23 boreholes were functional in three sub-counties, or only 30%. This is well below Uganda's average reported functionality rate of 65%. It may be that some of these boreholes were poorly sited and could be decommissioned and therefore lost from the database (however, decommissioning requires the written approval of the MoWE).

Of interest, the MoWE now recognizes that where boreholes are located near the homes of and named after respected elder's, that the named elders often assume the responsibility for maintenance and, in case of breakdown, mobilise the users around the area to contribute towards the repairs. In such cases, the MoWE recognises this as good Operation and Maintenance practice.[10]

The study also referred to the increasing number of upgrades of high-yielding boreholes from hand pumps to wind and solar pumps (the latter valued at US$50,000 each). These upgrades typically pipe water to an institution—a school, training center, or health post—and several homesteads, including water for livestock through a reticulated water trough. Importantly, not all these upgrades are functional, and, in some

9 For this reference, see Egeru, A., Arasio, R. L., and Longoli, S. P. 2023. Water and Rangeland in Karamoja: Trends, Preferences, and Status of Indigenous and Introduced Resources and Systems. KRSU, Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Kampala. https://karamojaresilience.org/wp-content/uploads/2023/10/Water-and-Rangeland-in-Karamoja_FINAL.pdf

10 Ministry of Water and Environment. 2021. Karamoja Strategic WASH Investment Plan (K-WASHIP – 2021-2030) https://thewashroom.waterforpeople.org/wp-content/uploads/sites/2/2023/08/Uganda-Karamoja-Water-and-Sanitation-Investment-Plan-K-WASHIP.pdf

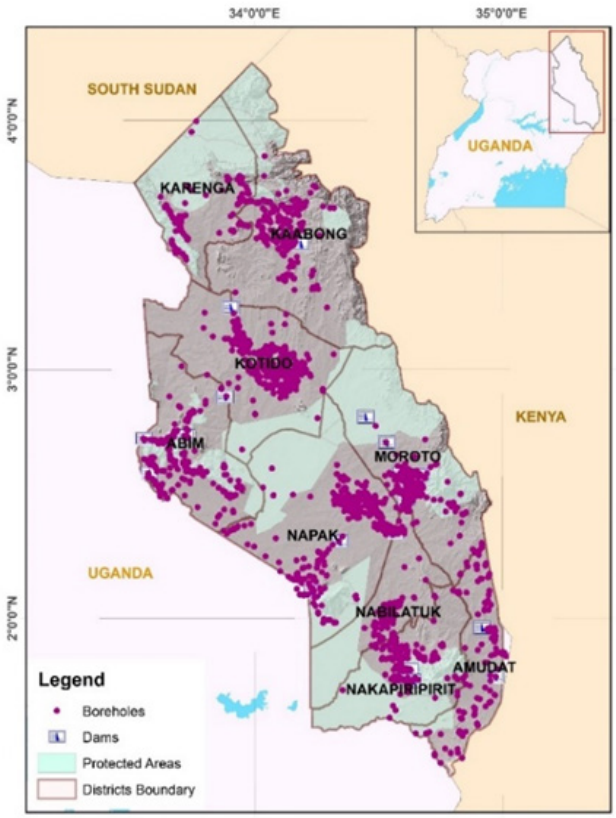

Figure 2. Map of boreholes.

areas, local people have expressed frustration that once fully functional, hand pumps have been replaced by more complex technologies that are more difficult and costly to repair. In some cases, these motorized schemes have been vandalized.

This and other studies confirm that challenges identified over more than 20 years are ongoing challenges, including: limited and poor communication between key actors and communities; poor siting of some water facilities, with inadequate participation of livestock keepers with long-standing customary rights, resulting in both the under- and over-utilization of available grazing; limited ownership by local communities and little or no community contribution to maintenance and repair (this despite very modest monthly user rates that most if not all households in the sub-region can afford[11]). Fortunately, in recent times there have been no more attacks on contractors' plants and personnel as occurred in the predisarmament period.

Programs

- *C&D*—drilled an additional 125 boreholes in this period, of which around 95 were productive (76% success rate) and provided water to an estimated 55,000 people[12]
- *Kreditanstalt für Wiederaufbau* (KfW)—has plans to construct two large dams under the Karamoja Drought Resilience Programme

11 Typically, only Ugandan shilling (UGX) 1,000/month per household.

12 In total, C&D have drilled and rehabilitated more than 1,500 boreholes in Karamoja.

- *Welthungerhilfe (WHH)*—has worked in Uganda since 1986, including the delivery of clean drinking water and safe sanitation. Implemented in Rwenzori, West Nile, Teso, and Karamoja sub-regions, WHH's integrated WASH program was funded in 2021 to deliver infrastructure, capacity building, and support to improved sector coordination. In Karamoja, WHH is operational in Moroto, Nabilatuk, Nakapiripirit, and Napak Districts. In addition to hand pumps, WHH has installed around 30 solar-powered systems. WHH is also engaged in improved O&M through training and support to the private sector to improve the provision of spare parts.
- *Ministry of Water and Environment*—is implementing the Intergovernmental Authority for Development (IGAD) led '*Strengthening Drought Resilience for Small Holder Farmers and Pastoralists*' (2020-2024). Also implemented in Djibouti, Kenya and Sudan, this Adaption Fund financed project improves smallholder farmer and pastoralist resilience to climate change risks through drought adaptation actions including water resource development.

Government ministries with water-related responsibilities and policies

- Ministry of Agriculture, Animal Industry and Fisheries—leads on water use and management of on-farm agricultural water facilities
- Ministry of Tourism, Wildlife and Antiquities—leads on water management use for wildlife and tourism
- Ministry of Trade Industry and Cooperatives—leads on water use and management for industries and commerce
- Ministry of Energy and Mineral Development—leads on water use and management for hydropower generation and mining
- Ministry of Health—leads on quality assurance of water in health facilities
- Ministry of Works and Transport—leads on water use for navigation, and management of water resources during road and bridge construction
- Ministry of Local Government—leads on the establishment of structures and frameworks for governance of districts.
- *Karamoja Strategic WASH Investment Plan (2021–2030)*—this MoWE investment plan provides users with accurate and localised strategic investment plans for Karamoja sub-region to achieve access to safe drinking water for all by 2030 as per the Sustainable Development Goal (SDGs) and Uganda's Vision 2040
- *Catchment Management Planning Guidelines (2019)*—these MOWE planning guidelines are informed by the Ministry's experience implementing the 2014 and the up-dated 2017 Catchment Management Planning Guidelines, and are designed to assist planners develop water resources sustainably, at all levels.
- National Framework for Operation and Maintenance of Rural Water Supply Infrastructure in Uganda. 2020. Directorate of Water Development, Rural Water Supply and Sanitation. Ministry of Water and Environment

CHAPTER 3: The principles of participatory water management and development

Chapter overview

This chapter introduces the seven PWMD principles that have been identified through an analysis of lessons learned in Karamoja's history of water management and development since the early 1800s:

- Principle 1: The importance of localization
- Principle 2: The importance of participation
- Principle 3: The importance of gender-sensitive approaches
- Principle 4: The importance of livelihood-based programming
- Principle 5: The importance of addressing climate change
- Principle 6: The importance of coordination
- Principle 7: The importance of monitoring, evaluation, accountability, and learning.

Guideline users are encouraged to build these principles into each phase and step of the PWMD approach and to monitor, reflect, and report on their application, lessons, and associated outcomes.

Principle 1: The importance of localization

The 2016 World Humanitarian Summit (WHS) highlighted some of the shortcomings of international development and recognized the continued domination of Global North interests and the undervaluing of local knowledge, skills, and capacities. Most

attendees signed the "Grand Bargain" that pledged a shift in power and that 25% of humanitarian resources will go to local organizations by 2020.

A post-summit study identified several key barriers to change, including resistance to relinquishing financial control, following the enactment of more stringent anti-money laundering and combating the financing of terrorism regulations. The study recommended:

1. *Partnership*—regard local partners as long-term, rather than implementing, partners
2. *Funding*—support partner organizations through multiannual core-cost funding
3. *Capacity*—value context-specific knowledge of culture, politics, and governance
4. *Coordination*—strengthen international/local coordination platforms
5. *Policy and decision-making*—integrate local actors into program and project cycles and policy- making, decentralize decision-making, and align incentives
6. *Participation*—increase accountability to local communities and contextualize standard localization frameworks to local conditions.

In Uganda, the Ministry of Local Government is responsible for localization, including through the 2021 Implementation Guidelines for Parish Development Model (PDM). The model recognizes the need to bring service design and planning closer to communities through strengthening sub-county planning (the lowest tier of planning) and Parish administrative and operational capacity. Specifically, the PDM recognizes the need to:

- *Strengthen participatory planning*—by involving communities to collectively identify and address systemic bottlenecks that affect their economic development (see Principle 2 below)
- *Address vulnerability*—amongst youth, women, and people living with disability (PWD) by developing action plans for their inclusion (see Principle 3 below)
- *Monitoring and evaluation*—to report on and enforce compliance (see Principle 7).

The strategic importance of localization is implicit in *Chapter 1: An introduction to Karamoja sub-region* and *Chapter 2: A history of water management and development in Karamoja*. The benefits of localization that Uganda seeks to secure through the Least Developed Countries Initiative for Effective Adaption and Resilience (LIFE-AR) program are presented in the case study from Kenya below.

Principle 2: The importance of participation

Participation is central to the PDM approach and to sustainable development. It is recognized however that participation means different things to different actors, as captured in Arnstein's ladder of community participation (see Figure 3). The different levels of participation are categorized as:

1. *Non-participation*—including the "manipulation" and "therapy" rungs, which describe development objectives to "improve" communities or "make them better," but without their active involvement
2. *Tokenistic participatory*—comprising the "informing," "consultation," and "placation" rungs of the ladder, which restrict participation to listening, but with no subsequent encouragement to engage in decision-making
3. *Degrees of community power*—involving the "partnership," "delegated power," and "community control" rungs

Case study: The benefits of localization in Kenya's arid and semi-arid lands

Kenya's County Climate Change Fund (KCCF) is pioneering new ways to disburse climate finance, including through improved levels of localization. Reviews of the progress made confirmed:

- Improved access to water for all households and livestock
- Two-hour savings per household per day on water collection (700 hours a year). This provided direct benefits of £3 million (net annual benefits £109/household or an 8% increase in mean annual income)
- Women are the key beneficiaries, using the time saved on other domestic work, supporting children's schoolwork, other livelihood activities, or setting up small businesses.

The study affirmed that the financial and technical empowerment of sub-district structures had resulted in investment that met local priorities and needs.

Source: Crick et. al. (2019).

of the ladder and reflect ascending levels of community-managed investment that result in outcomes that they themselves have prioritized.

A global study of participatory development in pastoral areas identified seven enabling characteristics:

- *Multistakeholder engagement*—different groups and institutions with different claims and interests are encouraged to engage in the development process
- *Continuous dialogue*—the participatory approach is carried through all phases of the planned activity
- *Inclusivity*—the needs, interests, and aspirations of men, women, young people, children, and disadvantaged households in different ethnic and socioeconomic groups and institutions are all recognized and encouraged
- *Mobilizing local knowledge*—knowledge from different ethnic and socioeconomic groups and institutions complements scientific knowledge in decision-making
- *Visioning*—existing rangeland and water resources are considered the basis for sustainable resource management
- *Action orientation*—shared plans shape how agreed investment prioritize are implemented
- *Learning*—all groups are involved in monitoring, reviewing, and adapting operations, according to emerging lessons.

As can be seen, the institutionalization of participatory approaches at the parish, sub-county and water sub-catchment level requires a departure from tokenistic participation approaches. To do this, development actors need to equip staff to become facilitators of an iterative learning process that builds mutual trust and confidence and makes local people partners in their own water management and development.

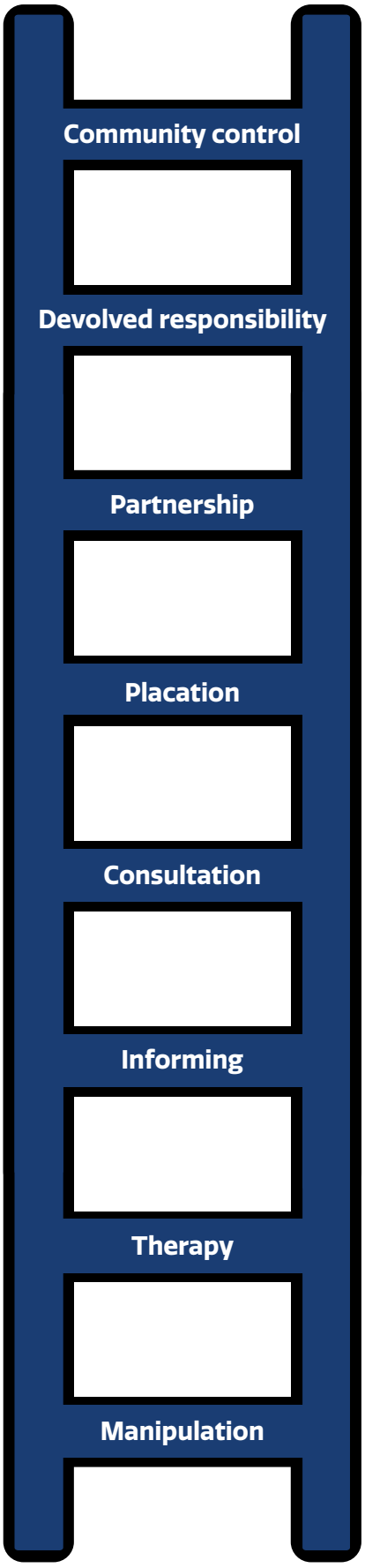

Figure 3. Arnstein's ladder of community participation.

Principle 3: The importance of gender-sensitive approaches

Both the PDM and MoWE recognize the importance of gender-sensitive approaches. The MoWE's Water and Sanitation Gender Strategy (2018–2022) is structured around the following development objectives:

1. *Gender integration*—in policy, guidelines, plans, and budgets
2. *Capacity enhancement*—promotion of a gender-sensitive work environment
3. *Economic empowerment*—through equitable access to and control of water supply, sanitation, and hygiene
4. *Gender reporting*—monitoring, documentation, and reporting
5. *Gender coordination*—including networking and partnerships.

Despite the progress being made, the Strategy recognized the need for more women WASH professionals, including at senior levels.

Reference has been made above to a gender-based water study that confirmed poor attendance of women in WUCs. This was attributed to women's workload (including the long distances women and girls walk to collect water in the dry season) and to male domination and cultural restrictions around women's participation in community-level meetings. No mention was however made of the alien nature of WUCs that requires men and women to participate in the same forum. Far from empowering women, it may be that this requirement unwittingly exposes them to being undermined further and hence to becoming even more marginalized from decision-making.

Ironically, some water facilities that are located near to homesteads would, under customary water management practice, doubtless be left to the women to manage themselves, while men busied themselves with high-yielding water facilities at which

livestock are watered. More research is therefore required to assess whether the current CBMS approach empowers or disempowers women in the sub-region and what alternative and remedial steps are required.

There are clear links here between *Principle 3: The importance of gender-sensitive approaches* and *Principle 7: The importance of monitoring, evaluation, accountability, and learning*, as it is important to monitor and report on the involvement of women through the 3-phase and 12-step PWMD approach.

Principle 4: The importance of livelihood-based programming

Livelihoods can be defined as a set of capabilities, assets, and activities that are required to secure a means of living. A sustainable livelihood can cope with and recover from hazards and shocks and maintain and enhance its capabilities and assets, while not turning to negative coping strategies that undermine the natural resource base. Hence, livelihood-based programming delves into an understanding of the lives, capabilities, and assets of the communities it seeks to support.

As referenced in the Livelihoods section of Chapter 1, livelihoods in Karamoja are more diverse than at any time in history, including significant increases in crop production for wealthier households; the production and sale of beer, charcoal, and bricks, and the collection and sale of firewood, wild fruits, roots and tubers, semi-precious stones, and minerals for poorer households.

The Sustainable Livelihoods Framework (SLF) can be used to understand people's analysis of their assets and vulnerabilities, how these may have changed over time, and the role of institutions and associated processes in these changes (see Figure 4). Once complete, the analysis can inform program delivery and the monitoring, evaluation, accountability, and learning (MEAL) of activities designed to build on local strengths and reduce and eliminate vulnerabilities.

The SLF has also been used as a research tool in Karamoja and has increased understanding that livestock have financial, social, and

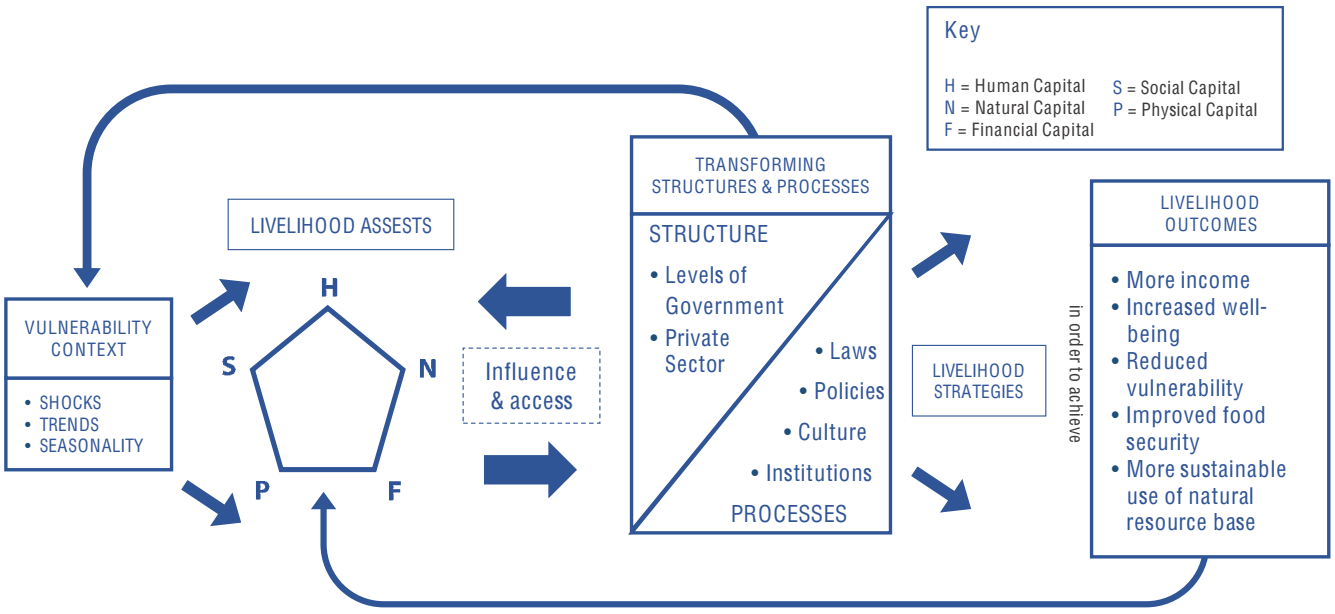

Figure 4. Sustainable livelihoods framework .

Source: UNDP (2017).

human asset value and hence are more than commodities to be traded in and out of the local economy. To ensure the best livestock-related livelihood outcomes requires that natural assets—rangelands, forests, and water—are appropriately managed and are supported by local, sub-regional, and national institutions, policies, and laws that recognize the central importance of livestock and that to increase income, ensure well-being, reduce vulnerability, and improve food security, herds need to be seasonally mobile. The ill-informed promotion of cropping in prime grazing areas or reckless development of water without adequate consideration given to seasonal grazing can, therefore, have negative impacts on livelihoods.

The SLF also recognizes the importance of human capital and, in contemporary Karamoja, the importance of education. To attend school and do well, students require access to adequate and healthy food and clean drinking water. Adequate access to clean water is also required for food preparation, laundry, and health. It is therefore important that schools and colleges are sited in areas with access to adequate clean water and in this way that livelihood assets can be built through education and that livelihood outcomes are improved in the medium and long term.

The development and provision of water also plays an important role in employment creation and hence in building more diversified and resilient local economies.

Principle 5: The importance of addressing climate change

Climate scientists confirm what elders in the sub-region have been reporting for years, namely that rainfall is becoming more variable, with earlier cessation in the north, earlier onset and later cessation in the central sub-region, and an overall reduction of around 8% over the period from 1900–1970. Some climate models forecast declines of an additional 50–150 mm by 2050, while more encouragingly other climate models suggest annual rainfall increases of up to 20%. While there is little consensus about mean annual rainfall trends, most climate scientists agree that rainfall in Karamoja (and in other arid and semi-arid lands (ASALs) in the Horn of Africa) will become more variable and unreliable. This analysis appears to be shared by people in the sub-region as households continue to migrate from the central drier areas to the wetter, Green Belt areas.

To address increasing climate stresses—more erratic rainfall, heavier cloud bursts, drought, and flooding—households will need to become more adaptive and resilient. Development projects and extension can support adaptation by fusing indigenous technical knowledge and associated customary management practices with contemporary knowledge systems, to improve the management of green and blue water. At a time when increasing numbers of farmers in Europe and North America are turning to regenerative agricultural practices, sadly, districts and many development actors in Karamoja are promoting the cultivation of ancient grasslands. Not only do these grasslands support livestock, but they also offer a range of ecosystem services—carbon sequestration, water filtration, and infiltration—in the sub-region's unique biodiversity.

The lack of support for the sub-region's livestock sector may be born out of its long history of cattle raiding. However, it may also be that it is not helped by the international media's scrutiny of livestock production systems. Fortunately, it is increasingly recognized that much of scientific data relating to livestock's environmental consequences are specific to industrialized livestock production systems and not to extensive systems such as those in Karamoja. Using only local pasture and water, local livestock turn poor-quality rangelands into milk, meat, and blood, which are rich in protein and other essential nutrients.

Principle 6: The importance of coordination

Karamoja's unique development history (see *Chapter 1: An introduction to Karamoja sub-region*) and lessons learned in the water sector (see *Chapter 2: An introduction to water management and development in Karamoja*) make a compelling evidence base for more coordinated water management and development at district and sub-regional levels, for both domestic and livestock purposes.

Sector coordination at the district level is the responsibility of the relevant district office, while at sub-regional level, coordination is typically a UN responsibility. Both districts and UN agencies are however actively involved in the implementation of development actions. Even the most committed coordination efforts are therefore subject to competing demands, high staff turnover, and the whims of development partners and donors. More consideration therefore is required for appropriate coordination of water management and development of water for people and drinking water for livestock.

Interestingly, there are parallels between customary decision-making and the collective impact approach (CIA) that was pioneered in the US after the turn of the millennium. These include:

- *A common agenda*—participating individuals/organizations share a common vision for change [successful herd growth] and differences are discussed and resolved. Coordinated efforts are also made to build capacity of staff and systems.
- *A shared measurement system*—measures progress towards the common vision, encourages the sharing of lessons and experience, and holds participating individuals/organizations accountable, including through the *akiriket*
- *Mutually reinforcing activities*—participating individuals/organizations develop a joint plan that includes different activities that are shared [by elders] amongst different members, based on their experience, skills, and capacities.
- *Continuous communication*—regular meetings [at the decision-making tree] that require the participation of decision-makers. Skipping meetings or delegating subordinates is frowned on.
- *A backbone support organization*—CIA requires a lead organization with leadership and resources, as coordination takes time and effort. [As with customary elders,] successful lead organizations need to demonstrate the skills and capacities to focus participating individuals'/organizations' attention, create a sense of urgency, bring pressure on poor performers without being overbearing, and mediate between conflicting partners.

It may be therefore that a development partner might recognize and support the improved coordination of water management and development for people and livestock, as opposed to engaging in the rehabilitation and development of water facility infrastructure.

The successful delivery of Principle 6 requires progress in other PWMD principles including *Principle 1: The importance of localization*, *Principle 2: The importance of participation*, and *Principle 3: The importance of gender-sensitive approaches*.

Principle 7: The importance of monitoring, evaluation, accountability, and learning

Monitoring, evaluation, accountability, and learning, known as MEAL, is central to tracking the application of these Guidelines and any follow-on implementation phase.

The monitoring component involves the routine collection of information about the use of the Guidelines and follow-on implementation phase. This might include,

for example, monitoring the number of men and women attending planning meetings to track levels of inclusivity (see *Principle 3: The importance of gender-sensitive approaches*). In contrast, evaluation assesses higher-level outcomes to address the question, "what difference has use of the Guidelines made to the lives and livelihoods of people involved?" Such learning can help inform the use of the PWMD approach in other parishes and sub-counties.

Those responsible for the delivery of the PWMD approach are accountable for the routine collection, analysis, and sharing of information, together with the sub-county, DWO, and other development actors. The routine sharing of information and feedback helps reinforce the commitment to localization, participation, and gender sensitivity, and helps lay a solid base for the delivery of accountable water management and development actions.

The delivery of high-quality MEAL outputs requires:

- *Capacity*—the PWMD team has the necessary training, capacity, support, and resources to develop and deliver a MEAL plan.
- *Continuous monitoring*—the monitoring system starts immediately with *Phase 1: Investigating PWMD*, *Step 1: Establish a water team*, and it should continue throughout the 3 phases and 12 steps, and on into the delivery phase of the water activity.
- *Analysis*—the MEAL plan is supported by an experienced MEAL officer who is responsible for the delivery of the MEAL plan and supporting the PWMD team to collect, organize, analyze, and document the information collected during *Phase 1: Investigating PWMD*.

CHAPTER 4: The phases and steps of participatory water management and development

Chapter overview

This chapter presents the PWMD approach in a logical 3-phase and 12-step progression:

- ***Phase 1: Investigating PWMD*** (Steps 1–7)
- ***Phase 2: Developing a PWMD plan*** (Steps 8 and 9)
- ***Phase 3: Negotiating a PWMD agreement*** (Steps 10–12).

While presented in a linear manner, the PWMD approach recognizes that user teams may find it necessary and helpful to move back and forth between different steps and phases to collect additional new information and fill gaps.

The PWMD approach was developed for sub-counties and parishes and therefore reflects customary sub-sections and settlement patterns. It is recognized that the creation of new sub-counties may have weakened this link. This said, the sub-county remains an important planning unit.

Phase 1: Investigating participatory water management and development

Phase 1: Investigating PWMD comprises seven steps, namely: establishing an experienced team, engaging stakeholders, introductory visits, confirming community interest and conducting mapping, completing a baseline survey, exploring technology choice, and exploring maintenance practices.

Step 1: Establish a team

Aim: To build an experienced team

- ***Select, train, and equip a multi-disciplinary team***

Water engineers and technicians benefit from being part of multidisciplinary teams that include other sector specialists—rangeland, livestock, public health, anthropological, social, and gender specialists—and that comprise 50% women. It is helpful too if the team leader and half of the team originate from or have worked in the sub-region for a minimum of five years. In this way, the team will be familiar with the language, settlement patterns, local production systems, and cultural norms. The team will also have a good overview of what works well in the water sector and what does not.

It is important that the team is trained and experienced in using participatory rural appraisal (PRA) for co-analyzing and co-identifying water issues and needs. This encourages participation, builds trust, and fosters inclusive dialogue—whether in separate or mixed-gender groups. Experienced PRA facilitators can also manage power imbalances in groups and lay a foundation for positive long-term relations between the local community and development actors involved in water development.

Where an organization lacks staff who are trained in using PRA for water issues, it will be necessary to organize staff training from a local service provider, or to partner with a more experienced organization until in-house capacity is built through shadowing, mentoring, and collaborative ways of working. Having established a multidisciplinary team and addressed capacity issues, the team can move to Step 2.

Step 2: Identify and engage the main stakeholders

Aim: To engage key stakeholders to build good working relations

- ***Engage the district authorities.***

Before approaching sub-county officials, the team leader will need to clear the planned work program with the Local Council V and Chief Administrative Officer and to have made introductory visits to the DWO and planning offices. In addition to sharing plans, introducing the PWMD approach, and securing the necessary authorization, such meetings offer early opportunities for establishing positive long-term relations with district officials and the giving and receiving of feedback.

- ***Make introductory visits to the sub-county***

Communities and their leaders in the sub-region have a wealth of experience interacting with development actors and are familiar with the full range of operational approaches, leadership styles, and varying levels of participation (see *Principle 2: The importance of participation*). It is important therefore that the team's initial contacts with the LCIII and sub-county chief ensure that they are fully representative of the organization's development approach and that unrealistic expectations are avoided. It may be helpful therefore if introductory visits focus on listening and learning rather than immediately discussing plans for water management and development. It is also important that introductory meetings make clear the team's interest in customary organizations and working with customary leaders.

It is also helpful to make introductory visits to all the major settlements in the sub-county and to meet with as many customary and water sub-catchment leaders as possible. These meetings can be conducted under

shade trees where the elders meet to share news. Whatever the location, it is important that all participants are treated respectfully and that all shared information is valued. In these initial meetings, it is also important to make clear that the team's interest is in water management and development and in participatory approaches that are inclusive of women, minorities, and disadvantaged groups.

- ***Conduct follow-up visits to ascertain levels of interest in developing a water management plan***

In follow-up meetings, the team can explore levels of community interest in the PWMD approach with the elders, women, and any minority and disadvantaged groups. Community members will doubtless have questions that can be addressed, including perhaps the anticipated scope and duration of the proposed activity. When all questions are addressed, the team can request a senior customary leader to summarize the consensus of the meeting and to declare support in principle for the proposed activity, or to declare otherwise, in the same way that a customary meeting would do.

Whatever the response, it is important that the discussions are documented, dated, and filed in the project's sub-county database.

- ***Establish reference groups***

Where interest in engaging in the PWMD approach is confirmed, the team can request a meeting of the sub-county's customary and water sub-catchment elders with the LCIII and sub-county chief to establish a series of reference groups to represent the interests of men, women, and any minority and disadvantaged groups. Each group should comprise six to eight knowledgeable and trustworthy people who can commit to regular engagement with the team over a period of several months to work through the different phases and steps of the PWMD approach.

Step 3: Tour the operational area

Aim: To scout the sub-county, guided by the members of the reference groups

- ***Scout the rangelands***

The reference groups can appoint scouts to help the team to explore and become familiar with the sub-county, its settlements, grazing areas, water facilities, water catchments, and other social and economic infrastructure. During such drives, the guides can be asked to point out features of interest and answer the team's questions. It is likely that nominated guides will have a near encyclopedic knowledge of the area.

During the drives, the water team can make stops at water facilities and through the guides can collect information on the site history, level of functionality, maintenance system, community payments, and reliability of different service providers, from people living in adjacent homesteads.

It is also important that the team uses these scouting visits to meet with and develop relations with LCI and LCII representatives and other water actors and service providers operating in the sub-county.

- ***Identify all primary and secondary resource users***

During this early phase, the team can meet with the reference groups to make enquiries about different rangeland and water users. To do this, it may be helpful to meet in a central location that is convenient for all reference group members to access, providing as required transport for any people with disabilities.

The reference groups can be asked to identify people who have long-standing access and user rights that date back to pre-Independence times. Once these are listed, occasional users can be noted. These might include, for example, herders from a neighboring sub-section who

Table 1 The four Rs matrix.

Stakeholder	Rights	Responsibilities	Relationships	Revenue

water cattle en route to a livestock market. Whatever the number of livestock or duration of use, it is important to try to document all water users, as these uses are often overlooked, despite the legitimacy of these rights under customary law.

To help in the information collection (and recording the findings) the water team can use the four "Rs" matrix (see Table 1).

Step 4: Carry out a mapping exercise

Aim: To collate and present all information in a mapping exercise

- ***Work with the reference group***

Having concluded these visits, the team can organize sub-county and water sub-catchment mapping exercises. To do this, reference groups identify a convenient date, time, and location. The team will then work with each group in turn—or run concurrent exercises if the water team is strong enough—to develop a suite of sub-county and water sub-catchment maps. These generic maps identify major natural features, key infrastructure, major settlements, water catchments, seasonal grazing and herd movements by livestock type, field systems, and the main water points for people and livestock in both the dry and wet seasons and any threats to water access and quality. When completed, they can be transcribed to paper and photographed as a record.

Figure 5. A sub-section mapping exercise.

Full details of how to conduct a mapping exercise are available from the following links: https://agri-learning-ethiopia.org/wp-content/uploads/2016/06/PRM-Mapping-Guideline.pdf

https://www.participatorymethods.org/resource/participatory-impact-assessment-guide-practitioners

Step 5: Complete a baseline

Aim: To complement the sub-county map with other available data from secondary sources and key informants

- ***Gather key socioeconomic and environmental information***

Once the mapping exercise has been completed, the team can complete a review of available studies and documents to collect and collate key socioeconomic, ethnographic, rangeland management, and livelihood information (a detailed checklist is presented in Annex 3). In addition, the team can request and review sub-county/district development plans, making note of environment, livestock and rangeland, water, and agriculture issues, to identify synergies and any strategic differences.

- ***Gather detailed technical information on water***

The team's hydrologist and water engineers can also collect water-related data: rainfall, water sub-catchments, run-off, streamflow, and any local hydrogeological studies—including drilling records, yields, potential contamination—and other relevant water sector historic and contemporary information. During this information-gathering exercise, the team can also visit different district and water project archives to collect historic data that can help inform the preparation of a water plan, to better understand the lessons learned from different development approaches.

- ***Prepare a baseline report***

The maps and all relevant information are collated and documented in a baseline report. The key findings can be shared in simple summary form with the reference groups for review, comment, and validation. Once validated, the report can be finalized, formatted, and shared with LCIII and district water offices.

Step 6: Explore water facility preferences

Aim: To identify appropriate technologies for human and livestock populations

- ***Carry out a parish mapping exercise***

The issue of technology choice is potentially challenging as some development actors have strong views about which technologies should be prioritized. Lessons learned in Karamoja however confirm that there is no single technology that is appropriate for all locations and for all planned users. For example, in some areas the water table is deep, and drilling of boreholes is difficult; similarly in more sandy areas the construction of valley tanks and dams is not cost effective. For this reason, it is recommended that the team carry out parish-by-parish mapping of water facilities across the sub-county, to establish a detailed baseline of all water facilities. While the same approach to mapping is used as presented in Step 4: Carry out a mapping exercise, it is also possible to add more detail of water facilities as described in Annex 2. This approach was pretested in Moroto and Napak Districts in 2024.

- ***Carry out a technology preferences matrix scoring exercise***

Using the parish map as a reference, the team can carry out a matrix scoring exercise of different water facility types in the parish or adjacent grazing areas, for domestic and livestock water. This can perhaps best be done with the women on domestic supplies and the men on livestock watering points.

Type of water resource	Types of water source						
	Deep well	Earth dam	Borehole with hand pump	Pond	Valley tank	Borehole with solar pump	Borehole with windmill
"*Gives us enough water all year round*"	.	....	... ...	.	..	....	...
"*Water is clean and healthy for people*"	.		... ...			....	.. ..
"*This water is near to us*"	.. ..	.	... ...	... ..	..	....	...
"*Enough water for livestock in the dry season*"	..	....	.. ..	.	....	... ...	.
"*High user fees*"			....			....	....
"*Easy for us to repair when it breaks down*"	....		....	....		... ..	
"*Causes conflict*"	....		... .			....	... ...
"*Based or builds on indigenous knowledge and systems*"	....	.	... ..	... .	...	..	.
Overall preference	.. .	....	... ..	.	... ...	....	

Figure 6 Example of participatory matrix scoring of water sources.

Note: This example of a matrix scoring of waters sources was produced by a group of 23 women and 10 men in Atedewoi village, Lotisan sub-county, Moroto District.

In summary, the matrix scoring involves:

- Take each indicator in turn and score it against the types of water source using piles of counters/stones, e.g., 35 counters per indicator.
- Types of water source will vary by location; up to about 8–10 types of water source can be scored against each indicator. The width of the matrix can be expanded.
- The list of indicators can be expanded, up to about 10 indicators. The length of the matrix can be increased.
- When the scoring has been completed for all indicators, ask questions to check the scores and understand the reasoning behind the scores.

Explanation of indicators used in matrix scoring

"*Gives us enough water all year round*" is an indicator of water availability, including seasonal availability.

"*Water is clean and healthy for people*" is an indicator of water quality.

"*This water is near to us*" indicates water accessibility, i.e., the physical distance to the water source.

"*Enough water for livestock in the dry season*" is an indicator of how the water source supports livelihoods.

"*High user fees*" is an indicator of affordability. The actual cost of each source can also be recorded. Lower-cost facilities tend to be more sustainable.

"*Easy for us to repair when it breaks down*" indicates the level of external support or expertise needed for maintenance. Easily maintained facilities tend to be more sustainable.

"*Causes conflict*" is an indicator of acceptance and the need to avoid conflict. Facilities with low risk of conflict tend to be more sustainable.

"*Based or builds on indigenous knowledge and systems*" is an indicator of sustainability and localization.

Overall preference—this records the overall preferences for the different water sources.

Interviewing the matrix

An important part of the matrix scoring method is to "interview the matrix" when the scoring has been completed. This involves asking questions to understand the reasons behind the scores. The notes below accompany the matrix scoring above.

"*Gives us enough water all year round*"
- Earth dam—holds a lot of water, especially with enough rain
- Borehole with hand pump and borehole with solar pump—if well sited and drilled, provides enough water.

"*Water is clean and healthy for people*"
- Deep well—underground water and undergoes sand filtration. When water gets dirty, it is removed/cleaned.
- Borehole with hand pump + with solar pump + with windmill—underground water is safe.
- Earth dam, pond, valley tank—water easily contaminated by wild and domestic animals and by people.

"*This water is near to us*"
- Borehole with hand pump + with solar pump—established close to villages
- Earth dam and valley tank—established in the far grazing areas.

"*Enough water for livestock in the dry season*"
- Deep well—enough water with enough rain and also when dug deep
- Borehole with windmill—prone to breakdowns and difficult to repair
- Borehole with hand pump—pump mechanics available to repair when it breaks down
- Earth dam and valley tank—hold large volumes of water, especially with enough rain.

"*High user fees*"
- Borehole with hand pump, borehole with solar pump, borehole with windmill
  - Domestic use—UGX 1,000 per household only when it breaks down. When functional, no payment
  - Livestock use—UGX 10,000–15,000 per group/bunch of animals.

"*Easy for us to repair when it breaks down*"
- Deep well—we have the local skills and knowledge to maintain/repair.
- Earth dam—needs external support to maintain (a tractor to desilt)
- Borehole with hand pump—pump mechanics available and easily mobilized
- Ponds—we have the local skills and knowledge to maintain/repair.
- Borehole with solar pump—needs external support to repair
- Borehole with windmill—needs external support to repair
- Valley tanks—needs external support to maintain (a tractor to desilt).

"*Causes conflict*"
- Deep well—conflict arises when non-owners use without permission or want their animals to be watered first, yet they did not invest in digging.
- Earth dams—no conflict because water is enough for everyone
- Borehole with a hand pump—fighting is common due to push for preferential treatment.
- Pond—no conflict. It is a free-for-all facility.
- Valley tank—no conflict because water is enough for everyone
- Borehole with solar pump + borehole with windmill—conflict arises if someone wants to use without paying or without negotiating for a credit service.

"*Based or builds on indigenous knowledge and systems*"
- Earth dam—resembles traditional pond but technology and accessories are external
- Deep well—based on indigenous knowledge
- Pond—based on indigenous knowledge
- Boreholes (with hand pump + with solar pump + with windmill)—borehole resembles a traditional deep well but it is deeper and technology and accessories used are external.

Overall preference
- Borehole with solar pump—closer to villages; automatic pumping
- Earth dam—enough water all year round
- Borehole with windmill—if no wind, no water; difficult to repair when it breaks down.

As Figure 6 shows, matrix scoring is a powerful method for comparing water sources and understanding community preferences in different locations. Some of the information and scores can be triangulated with the information provided in the parish water facilities map.

- ***Add this information to the baseline report***

When this exercise is complete, the information collected is added to the baseline report.

Step 7: Explore local maintenance and repair practices

Aim: To identify good maintenance and repair practice

- ***Explore water point maintenance systems***

Chapter 2: A history of water management and development in Karamoja highlights the challenge of non-functionality of water facilities. Ahead of the operational phase, it is important to learn the lessons of the past. Again, the parish water facilities map may serve as a useful reference.

Using the "3 Ss" matrix below (Table 2), parish elders in separate groups of men and women can plot the different water facilities against the relevant maintenance system. Apart from those water points that are named and maintained by a local who mobilises users in the area to contribute towards the repairs, most facilities for domestic supply will be managed under CBMS. This is however not the case for facilities for livestock drinking water. It is therefore important to complete the matrix for both domestic and livestock water.

When the matrix has been completed, and the (different) systems described, a detailed maintenance record of each facility can be developed.

Once the 3 Ss matrix has been completed, the discussion can then be broadened to include an in-depth analysis of what is working and what is not, including the levels of activity of the facility caretakers, WUC, pump mechanics, sub-county Water Board, and the DWO. As part of these discussions, it may be helpful to explore how any shortcomings would have been addressed in customary times.

- ***Add this information to the baseline report***

When this exercise is complete, the information collected is added to the baseline report. This information can be shared with customary leaders, in summary point form, and lodged with the sub-county and DWO. This done, the team can move to Phase 2: Developing a PWMD plan.

Phase 2: Developing a participatory water management and development plan

Completing ***Phase 2: Developing a PWMD plan*** involves a 2-step process: developing a water plan; and confirming roles and responsibilities.

Step 8: Draft a sub-county water plan

Table 2 The 3 Ss matrix.

System	Sites	System descriptions
Self-supply/managed by a local elder		
Community-based management system		
Institution managed		
Government managed		

Table 3 A recommended phased approach to water management and development.

Phase	Year of activity life	Technology focus
Phase 1	Year 1	Implement the PWMD approach
Phase 2	Years 2–3	Maintenance and basic repairs
Phase 3	Years 3–4	Identification (Year 3) and rehabilitation (Year 4) of non-functional water points valued by communities
Phase 4	Years 4–5	Identification (Year 4) and development (Year 5) of new water sources

Table 4 Ranked sub-county water facility maintenance and repair priorities.

Investment priority phase	Ranked sites for domestic water	Ranked sites for water for livestock
Phase 1: Maintenance		

Aim: Identify sub-county water investment priorities

- ***Identify water facility investment priorities***

To identify investment priorities, it may be helpful to bring together parish elders (both men and women) to complete a parish prioritization process. Parish priorities are listed and ranked collectively in a proportional piling exercise that is overseen by sub-section senior elders. Working in gender-segregated groups, the women can prioritize water for domestic purposes and the men, water for livestock.

Full details of how to conduct a proportional piling exercise for domestic and livestock water are available at the following link: https://www.participatorymethods.org/resource/participatory-impact-assessment-guide-practitioners

While the operationalization of water activities is beyond the scope of these Guidelines, analysis of water development in Karamoja suggests that a phased approach could help avoid some of the shortcomings of the past. For example, the priority for the early years could be to develop PWMD capacity and to focus on maintenance and basic repair. In this way, more complex rehabilitation and development challenges can be reserved for later, when teams have developed skills and capacities to address such issues (see Table 3).

In addition to allowing the team to build its skills and capacity, this phased investment approach provides an opportunity to invest in building trust and developing a shared understanding for future water management and development. This is important, as the mapping pretest was a reminder that in one community there were seven non-functional boreholes, representing an investment of around US$100,000 at today's prices. This could not have happened if each development actor had invested adequately in learning, trust building, and developing a shared vision, before investing in water development.

A sub-county's prioritization of maintenance and basic repairs can be determined through the proportional piling technique referenced above. These priorities can be listed (see Table 4) and the information shared with all sub-country stakeholders and LCs.

In Year 3, a similar prioritization process can be conducted to identify parish and sub-county rehabilitation priorities for *Phase 2: Rehabilitation* and again in Year 4 for *Phase 3: Development of new water sources* and the results document (see Table 5).

Table 5 Ranked sub-county water rehabilitation and development priorities.

Investment priority phase	Ranked sites for domestic water	Ranked sites for water for livestock
Phase 2: Rehabilitation		
Phase 3: Development		

- ***Identify water source protection priorities***

In addition to the phased approach to PWDM, it is important to encourage communities to protect their sources of water through catchment-based integrated water resource management approaches. Proven approaches include catchment protection and restoration, harvesting rainwater runoff for use in the dry season, source protection and improved community hygiene and sanitation, to ensure the groundwater is kept free of faecal contamination. To improve catchment-based water source protection and community hygiene it is recommended to work with sub-section, sub-catchment and and parish elders (men and women) to tailor plans and investment to locally acceptable practices and interventions.

MoWE guidance on water source protection for Karamoja is available at the following link: https://thewashroom.waterforpeople.org/wp-content/uploads/sites/2/2023/08/Uganda-Karamoja-Water-and-Sanitation-Investment-Plan-K-WASHIP.pdf

Step 9: Confirm and strengthen operational roles and responsibilities

Aim: Agree on roles and responsibilities to deliver the water plan

- ***Identify all operational roles and responsibilities***

To help improve the delivery of more functional water facilities, it may be helpful to organize a Venn stakeholder exercise, to confirm levels of activity of different key stakeholders. This exercise should be carried out for each water facility within a parish. Details of how to conduct a Venn stakeholder exercise are available at the following link: https://www.participatorymethods.org/resource/participatory-impact-assessment-guide-practitioners

The findings of this exercise can be tabulated for monitoring and review purposes as in Table 6.

During this exercise, it may be possible to propose changes. For example, it may be possible to replace a poorly trained and motivated pump mechanic with a more suitable candidate. Similarly, it may be decided at some facilities that the WUC be delegated solely to women, while for large water bodies on which livestock are dependent, men are delegated to lead. Again, for some water facilities it may be decided to replace the WUC with a responsible elder (who the water source is named after) and in this way to revert to a customary governance system. Finally, it may be possible to re-negotiate grazing management systems and access routes to valley tanks to reduce siltation rates in valley tanks.

- ***Add the stakeholder analysis to the water plan***

The findings of this exercise can be shared with the customary leaders for review and comment and once finalized, can be added to the water plan.

Having completed the water plan, the team can move to *Phase 3: Negotiating a water management and development agreement*.

Table 6 Water facility Venn diagram analysis.

Stakeholder	Names	Roles and responsibilities
Customary water facility owner/manager		
WUC		
Caretakers		
Hand pump mechanics and Hand Pump Mechanics Associations		
LCIII		
Sub-County Chief		
Water sub-catchment elders		
Sub-County Water Board		
District Water Officer		

Phase 3: Negotiating a participatory water management and development agreement

Phase 3: Negotiating a PWMD agreement is a 3-step process based on securing, monitoring, and using the water agreement to inform policy and programming in the district and sub-region.

Step 10: Secure and deliver a water agreement

Aim: To secure district approval for the water plan and develop a water agreement

- ***Secure district approval for the water plan***

The sub-county water plan should be presented to the DWO and District Planning Office for review and comment. Any review comments are then addressed and the plan submitted to the district for endorsement.

- ***Secure legal representation to draft a water agreement***

Once the water plan is endorsed, a water agreement can be developed with the DWO to support the plan's legitimacy. It may be helpful to secure the help of a lawyer to identify relevant and appropriate articles for the drafting of such an agreement. Whether or not a lawyer is required, a draft agreement can be prepared and subsequently shared with the district authorities for review, comment, amendment, and approval.

By securing such an agreement, the LCIII, sub-county chief, and parish, sub-county customary and water sub-catchment leaders are more able to hold development actors to account regarding subsequent water investments.

- ***Disseminate the water agreement***

Once the water agreement has been approved, signed, and countersigned by the LCIII, sub-county chief, and customary elders (including both men and women representing different parishes), it can be shared with all relevant local government offices and other key development actors within and beyond the district. It is especially important to share the completed document with KWMZ sub-regional office in Moroto.

Step 11: Monitor and evaluate the delivery of the water plan

Aim: Develop a participatory monitoring and evaluation system

- ***Monitor the delivery of the water plan***

Monitoring, evaluation, accountability, and learning (MEAL) are core components of the delivery of the water plan, as accountability

and learning are continued into the operational phase. Done well, MEAL fosters an ongoing accountability relationship with sub-county and sub-section leaders and elders, with the reference groups, and with communities at the parish-level. As a minimum, therefore, the team's MEAL specialists should develop a MEAL plan that includes the following:

1. Theory of change and longer-term vision
2. Community-identified process, levels of participation, and outcome indicators, including gender-disaggregated data
3. Data collection methods, including participatory methods and inclusive of different genders, minorities, and disadvantaged groups
4. Sharing harvested data with customary leaders—men, women, minority and disadvantaged groups—to revise and improve activity delivery
5. Periodic participatory evaluation to include benefit-cost analysis
6. Documentation and dissemination of key learning.

Useful references for how to develop a community-led MEAL plan are available at the following link: https://www.participatorymethods.org/resource/participatory-impact-assessment-guide-practitioners

Step 12: Interact with the wider coordination and policy environment

Aim: Integrate the water agreement in coordination and policy processes

- ***Use the water plan and water agreement***

The time, effort, and resources invested in developing a sub-county water plan and securing a sub-county water agreement perhaps merit further investment in promoting the PWMD approach at district and sub-region level.

At the district level, the team could support the DWO to launch a district Rangeland and Water Group. This could ensure that the PWMD approach is mainstreamed through lesson sharing and capacity building, including shared support for skills training in PRA. Ways in which a group can be established and supported are outlined in *Principle 6: The importance of coordination*.

At the sub-regional level, it may also be possible to encourage the KWMZ and Karamoja Development Partners' Group to launch a sub-regional Rangeland and Water Group that could introduce and promote the PWMD and Participatory Rangeland Management (PRM) approaches, support capacity building, and monitor and evaluate the outcomes. As evidence bases for these approaches are developed, it could be expected that these Guidelines are periodically reviewed and updated.

It may be also that the PWMD approach might encourage the development of participatory planning approaches in other sectors such as agriculture, environment, and health, and in this way, support better livelihood outcomes at the sub-county, district, and sub-regional levels.

ANNEX 1: Key references by chapter and section

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ANNEX 2: Water facility mapping in Karamoja—a participatory spatial-temporal approach

Introduction

This participatory approach to water facility mapping was used in Moroto and Napak Districts by a team from the USAID-funded Karamoja Resilience Support Unit (KRSU) and a visiting consultant in February–March 2024. The purpose was to map facilities for livestock water at sub-county and domestic water at parish levels. The completed maps were used for a "lessons-learned" dialogue on sustainable water development.

Sub-counties were selected as the units for mapping water facilities for livestock, as sub-counties typically comprise people of the same ethnic group and customary "sub-section." Hence, communities are governed and structured by long-established cultural norms and decision-making processes that can play an important complementary role in development planning. This is despite the profound changes in settlement patterns in Karamoja the last 40 years as people have moved from the central drier zone to the wetter western Green Belt. Sub-counties are also the primary level approved government planning unit.

Getting started:

1. Collect and wash around 300 different colored plastic bottle tops and separate into color groupings of around 25–30 each (see Figure 7).
2. Make introductory visits to the sub-county where it is planned the mapping will be done and meet with sub-county officials.
3. Through discussions with the sub-county officials, identify the primary and any secondary customary sub-sections that are resident in the sub-county.
4. Visit the major settlements of both the primary and any secondary customary sub-sections and identify senior elders (men and women) who can be tasked by the sub-section to represent their views.
5. With these customary elders, confirm their interest in improving the functionality of water facilities and continue with the water facility mapping only if a high level of interest is confirmed. Once confirmed, move to the next step, "develop a timeline."

Develop a timeline:

Figure 7 Base-tier pink bottle tops denote "colonial," orange "early Independence," and green "livestock raiding"; the second tier denotes technology (in this case, all blue for boreholes); top-tier yellow bottle tops denote functional and purple non-functional facilities.

With the elders, develop a timeline of periods of local history with which they are familiar. The timeline developed with elders in the KRSU water facility mapping referenced above included the following periods:

- Customary, 1800–1920
- Protectorate, 1921–1961
- Early Independence, 1962–1979
- Cattle raiding, 1980–2001
- Disarmament, 2002–2009
- Peace dividend, 2010–2018
- Renewed cattle raiding, 2019–2024

Mapping water facilities for livestock at sub-county level:

Using standard mapping approaches (see Irwin et al. 2015[13]), ask senior male elders of the main and any smaller sub-sections to select 12–15 elders[14] to:

1. Map the parish boundaries in the sub-region and confirm the main sub-section of each parish. Distinguish each parish with a name card and symbol, e.g., a stone, stick, bundle of grass, etc.
2. Map the main wet and dry season grazing areas within and beyond the sub-county and add the directions of seasonal migratory routes in both normal and drought years.

Figure 8 Mapping water facilities.

3. Add details of all functional and non-functional water facilities that are used primarily for livestock, e.g., dams, valley tanks, *atapar*, and high-volume solar and wind-powered facilities.[15] Each facility can be represented on the map by a stack of colored plastic bottle tops (see Figure 8), as follows:
   - *By era*: each historical period as identified in the historical timeline, is denoted by a different colored bottle top, e.g., pink for "colonial," green for "livestock raiding," etc.
   - *By facility*: a second and different colored plastic bottle top is then added for the facility type, e.g., blue for borehole, two blue for a motorized borehole, dark green for atapar, and black for valley tank, etc.
   - *By functionality*: a third bottle top, e.g., yellow for functional and

13 Irwin, B., Cullis, A., and Flintan, F. 2015. Mapping Guidelines for Participatory Rangeland Management in Pastoral and Agro-Pastoral Areas. Compiled by https://agri-learning-ethiopia.org/wp-content/uploads/2016/06/PRM-Mapping-Guideline.pdf

14 Where there is more than one sub-section represented in a sub-county, it may be helpful to conduct separate mapping exercises to map their respective spheres of influence.

15 All water points will be used both for livestock and domestic purposes, but in this exercise identify those primarily associated with livestock.

purple for non-functionality, is finally added.

4. Identify and name each facility and add small name cards for each for ease of reference for the mapping team.
5. Identify areas of wet and dry season grazing provisioned with adequate water facilities for livestock and those that are not adequately supplied, in both normal and drought years. Mark these as different areas on the map. Add name cards.
6. Take a photograph of the map and transfer all the details to an A1 or flip chart paper.

Mapping domestic water facilities at parish level:

Using the same mapping approach, ask senior women at parish level to:

1. Identify and map all large homesteads (*ngereria*) using stones. Add name cards.
2. Identify and map all functional and non-functional domestic water facilities. Mark the location of each on the map, using the appropriate colored bottle tops for the era, technology, and functionality (as per the coding outlined above).
3. When all the water facilities are mapped, add name cards for each.
4. Take photographs and transfer all the mapped details to an A1 or flip chart paper.
5. Summarize the information in tabular form (see Table 7). Annotate the table with facility names using the facility name cards.

Using the map:

Use the sub-county and parish maps as visual aids to collect additional information by exploring the following with the relevant participants:

1. What did you think and feel about the maps that you have developed?

Table 7 Example of a parish water facility summary sheet.

Stakeholder	**Water technology**			
	Boreholes	**Motorized boreholes**	***Atapar***	**Etc.**
Customary: 1800–1920				
Colonial: 1921–1961				
Early Indepenence: 1962–1979				
Cattle raiding: 1980–2000				
Disarmament: 2001–2009				
Accelerated development: 2010–2019				
Renewed insecurity: 2020–2024				

2. What do you think stands out in particular?
3. For a sample of long-standing non-functional water facilities, develop a detailed operational and maintenance (O&M) timeline, from construction to the present.
4. Use the O&M timeline information to identify, score, and rank key maintenance and repair shortcomings, using the proportional piling technique (for information on proportional piling, see Catley et. al. 2008[16]).
5. Taking the top three shortcomings, identify different ways of working that the community would be willing to test to improve maintenance and repair, and hence functionality.
6. Explore ways in which customary water governance approaches might help improve functionality.
7. Document all the information provided, including all photographs in parish files.

Thank the participants for their time and their interest in sharing their knowledge and experience.

Use the information captured on the A1 flip chart sheets and photographs to recreate the map and use it as a visual aid for discussions with groups of pump mechanics, and again for sub-county administrators to gain different perspectives on O&M.

16 Catley, A., Burns, J., Abebe, D., and Suji, O. 2008. Participatory Impact Assessment: A Guide for Practitioners https://www.participatorymethods.org/files/Feinstein_Guide_Participatory_Impact_10_21_01.pdf

ANNEX 3: Checklist of key information to collect for developing a sub-county baseline

Preamble

- Name of sub-county and date established
- Number of parishes
- Population
- Major settlements
- Major markets, key infrastructure

Early history

- Sub-section and any minority groups or sub-sections
- Customary wet and dry season grazing and livestock routes
- Main cropping areas

Natural history

- Key natural resources
- Agro-ecology
- Main water points for human and livestock in dry and wet seasons

Livelihoods

- Primary livelihoods
- Secondary livelihoods
- Poverty profile

Development history

- Major development projects
- Development outcomes analysis