

POPULAR VERSION



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Introduction

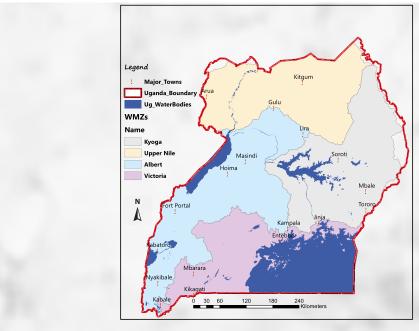


Figure 1: Water Management Zones

Water Resource demands, challenges, risks, threats, and opportunities in a particular catchment create a unique set of management issues and environmental pressures that need to be considered together to provide guidance on the use and management of catchment water resources. The guidance provided in form of development and management activities formulates a Catchment Management Plan (CMP). This popular version of the CMP for the Mpologoma Catchment provides a summary of the main CMP and has been prepared for use by various stakeholders.

1.1 Catchment Planning (CbWRM in Uganda)

The Directorate of Water Resources Management (DWRM) is implementing Catchment-based Water Resources Management (CbWRM) as part of its water resources management reforms. This process deconcentrates management of water resources along hydrological units called catchments; areas that contribute water to a common outlet and are, therefore, independent of administrative boundaries. The CbWRM links the management of land, water, ecosystems, and socio-economic systems, and allows to plan towards using water resources effectively and efficiently to achieve long-term sustainable

development by balancing growing water demands with limited water resources amidst the unique challenges, risks, and threats within the catchment. As part of the CbWRM framework, Uganda has been divided into four Water Management Zones (WMZs): Upper Nile, Albert, Victoria, and Kyoga as shown in Figure 1.

Each of the WMZs contains a number of catchments and the Mpologoma lies within the Kyoga Water Management Zone. The CbWRM recognises that many water use and management issues are interrelated, and is founded on early, open and inclusive stakeholder involvement. DWRM is the institutional lead for all CbWRM aspects, including stakeholder involvement, at national level.

The WMZs coordinate CbWRM at regional level, but most important is the Catchment Management Organisation (CMO) that promotes coordination and integrated planning among stakeholders in the catchment. Thus, the CMO is a platform that brings together stakeholders in the catchment for planning and coordination of the development and implementation the CMP as shown in Figure 2.

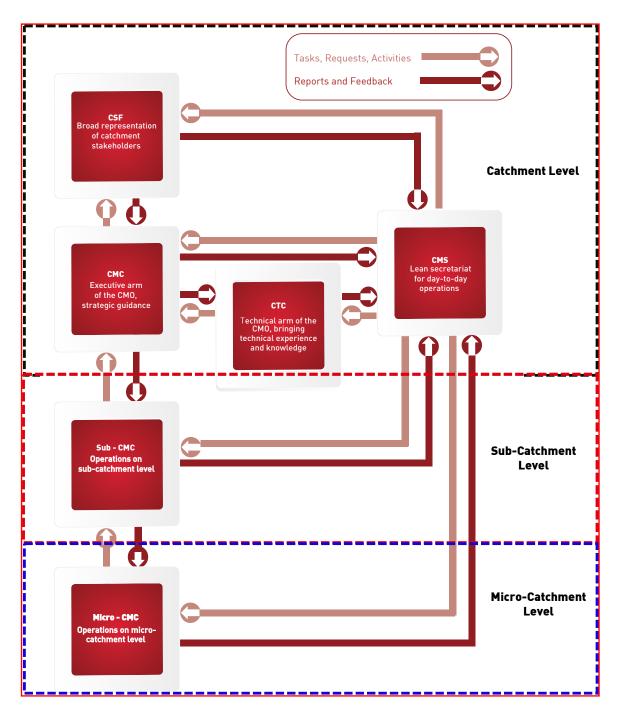


Figure 2: Relation between the different elements of the Catchment Management Organisation

1.2 Purpose and Objective of the CMP

The purpose of this CMP is to provide guidance for the sustainable development and management of the water resources in the catchment by the stakeholders in an integrated manner.

The objective of the CMP is to provide information and shared motivation that will initiate interventions and/or investments, which can be implemented to realise sustainable management and development of water resources within the catchment.

1.3 Approach to Catchment Management Planning

The development of this CMP was based on the guidelines for Uganda's Catchment based Water Resources Planning (MWE 2014). The process stipulated in these guidelines provides for various steps including development of a knowledge base, water resources planning analysis, stakeholders' participation, and social and environmental context as indicated in Figure 3. From these thematic assessments, major issues/challenges within the catchment, the available opportunities, potential threats and risks are identified, options

for managing the identified issues also identified, and this forms the basis for strategic analysis in order to meet the catchment vision and objective. A set of agreed interventions are then mapped and an implementation and investment plan laid, constituting of the associated timing and costs to form the main body of a Catchment Management Plan and the Implementation Plan.

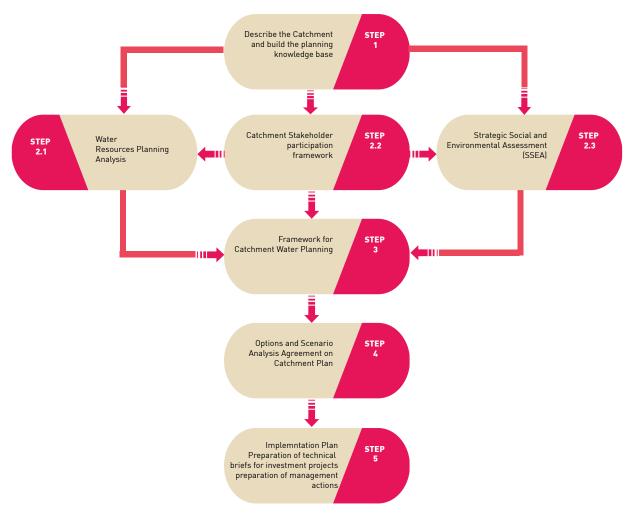
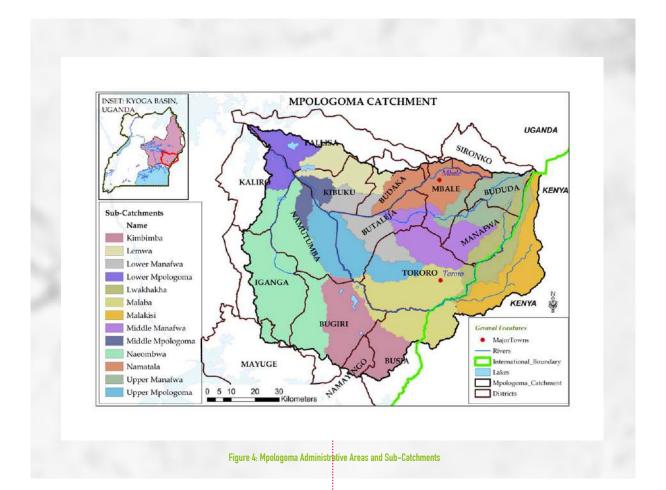


Figure 3: Catchment management planning process (MWE 2014)



Tree nurseries beds in Tororo

Status of the Catchment



2.1 Catchment Description

The Mpologoma Catchment covers about 7,862km2 of land and 1,127km2 of water. It overs, wholly or partially, 16 districts of Budaka, Bududa, Bugiri, Busia, Butaleja, Iganga, Kaliro, Kibuku, Manafwa, Mayuge, Mbale, Namayingo, Namutumba, Pallisa, Sironko, and Tororo as shown in Figure 4. The catchment is characterised by the presence of Mount Elgon (altitude of 4,321masl) at the extreme northeast corner of the catchment, where the steepest slopes are found and a few extinct volcanoes and ridges along its southern and eastern rim at lower elevations along the border with Kenya. The altitude of the remainder of the catchment is between 1,150m and 1,033m, with the latter being the mean altitude of Lake Kyoga. The catchment traverses a wide range of landcover types including settled agricultural areas, bushland, swamp/riverine, wetlands of different types and forested areas. There are numerous wetlands in the catchment. Around 16% of the

total area of the catchment is covered by wetlands (mainly seasonal wetlands). The main wetland systems include the Naigombwa, Namatala, Malaba, Mpologoma, Manafwa, Lumboka, and Lwakhaka wetland systems.

Land degradation which results into soil erosion and declining soil fertility, is significant in this catchment and the most affected areas (hot spots) are the slopes of Mt. Elgon in Bududa, Mbale, and Manafwa districts.

The catchment has a tropical climate with comparatively small seasonal variations in temperature, humidity and wind throughout the year. The mean annual rainfall is around 1,375mm. The catchment generally experiences two rainy seasons, with heavy rains from March to May and lighter rains from October to December. Rainfall is spatially distributed, with a more pronounced

gradient in the eastern Mpologoma Catchment. The catchment experiences natural disasters including landslides, mudslides, droughts, and floods. Landslides and mudslides occur in Mount Elgon region, especially in Bududa and Mbale districts and the foothills of Mount Elgon are the most flood-prone areas in the catchment. The EMDAT disaster database (EM-DAT 2011) indicates high risks of landslides in Mbale District on the slopes of Mount Elgon. In the EM-DAT disaster

database, six flood events have been registered

since 1997 in Mbale district: Nov/1997; May/2002;

May/2003; July/2003; Sep-Oct/2007; Aug/2011.

2.2 Water Resources Potential (Surface and Groundwater)

The average monthly outflow from the Mpologoma Catchment to Lake Kyoga as well as that under dry conditions (each month being a dry month with a 5-year return period) is presented in Figure 6. Due to inter-annual variability, monthly flows during a dry year can be up to less than half the flows during an average year.

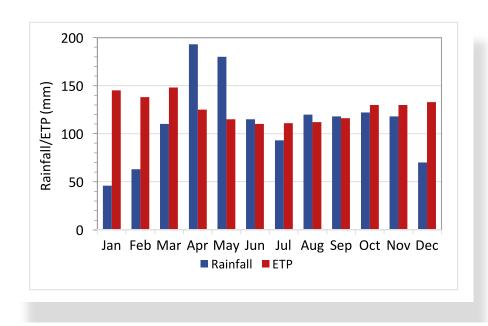


Figure 5: Mean monthly rainfall and potential evapotranspiration

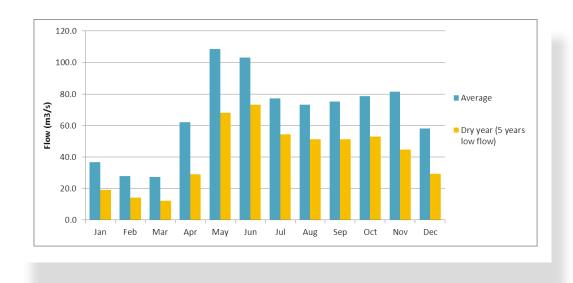


Figure 6: Total surface water resources of the Mpologoma Catchment

The exploitable groundwater of the aquifer systems in the catchment has been estimated in different studies and varies from 117mcm/year (JICA, 2011) to 390mcm/year (NWRA, 2013). Most boreholes have been drilled in the gneisses and granites of the Basement Complex, having an average yield of 2.8m³/hr and a maximum of 30m³/hr, at an average drilled depth of 54m. The highest yields are for boreholes drilled in the Nyanzian System.

There are some areas in Budaka, Butaleja, and Tororo districts with high TDS values, above the guideline value in Uganda of 1,000mg/L or acceptable maximum of 1,500mg/L. Also iron content is above maximum allowable concentrations of 2mg/L in parts of Mbale, Bududa, and Manafwa districts. The aquifers near the shores of Lake Kyoga contain water with high Total Dissolved Solids (TDS) values. In the rest of the catchment, the groundwater is generally of good quality.

2.3 Water Demand and Water Balance

Water demand within the catchment was categorised as water for Industry, Irrigation, Water Supply, and Livestock. The reference water resource was subjected to climate change impact assessment to determine its effect on water demand. Although the water resource decreases under the effect of climate change, annual resources available remains largely above annual water demand in the Mpologoma Catchment as shown in Figure 7. However, for the different climate change scenarios tested, a reduction of available water resources between May and November leads to an increase in the water stress and implies larger deficits to meet the demand (both in frequency and intensity). Figure 7compares the annual water demand-water resources balance under current climate and under the most optimistic and most pessimistic of the different climate change scenarios.

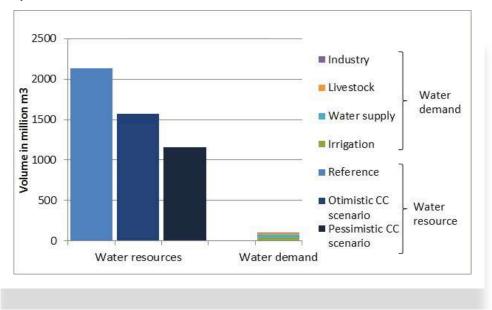


Figure 7: Annual Water Resources - Water demand balance under different climate change scenarios





Doho irrigation scheme rice fields

2.4 Key Stakeholders

During the development of the CMP, various stakeholders were involved through all the processes highlighted in Figure 3 mainly through

meetings and field visits. These stakeholders, categorised in Figure 8, will continue to be engaged during the implementation of the CMP.



Figure 8: Stakeholder groups interacting with Kyoga WMZ





Local stakeholder communities

2.5 Key Catchment Issues

Through stakeholder consultation, strategic social environmental assessment, and water resources analysis, the major social, environmental, and institutional issues were identified as indicated in Table 1.

Table 1: Key Catchment Issues

Category	Issues	Sub-catchment
Natural Disasters	FloodsLand slidesDroughts	Namatala, Upper Manafwa, Middle Manafwa, Lwakhakha, Malaba, Lemwa, Lower Mpologoma, Malakisi
Catchment Management	 Soil erosion Deforestation and encroachment of forests River bank /lakeshore degradation and loss of vegetation on riparian lands Limited natural resources monitoring 	All sub-catchments
Wetlands (Environmental services)	 Encroachment of wetlands for sugarcane, rice cultivation & subsistence farming Degradation of wetlands from various human activities (collecting materials, etc.) 	All sub-catchments
Agriculture (Irrigated & rainfed)	 Dependence on rainfed agriculture Low productivity of rainfed agriculture Poor crop variety Poor agricultural practices Lack of extension services for farmers Pests and diseases Predominance of informal irrigation on the fringes of wetlands and rivers 	All sub-catchments
Aquaculture and fisheries	 Use of illegal fishing methods Invasive weeds Limited access to good quality fingerlings and fish feed Limited skills and access to credit Inadequate facilitation of technical staff at district level (DFO) Limited fish processing facilities and access to basic social services 	Kibimba, Lemwa, Lower Mpologoma, Lower Manafwa, Middle Mpologoma, Naeombwa
Water supply & sanitation	 Low access to safe water supply Inadequate management and development of sanitation facilities 	All sub-catchments
Water quality and pollution	 Discharge of untreated municipal wastes into water bodies Low sanitation coverage and inadequate treatment (discharge below national standards) Discharge of untreated wastewater by industries Mining (sand & Murram) leading to soil degradation, biodiversity loss, and water pollution Siltation 	Namatala, Upper Manafwa, Middle Manafwa, Malaba, Upper Mpologoma, Lwakhakha, Malakisi, Lower Manafwa, Middle Mpologoma, Lower Mpologoma, Naeombwa
Institutional and management issues	 Insufficient finance Limited capacity Inadequate enforcement of legislation Inadequate manpower and weak institutional structures to support development of irrigation Limited knowledge and understanding of livelihosd Failure to maintain infrastructure 	All sub-catchments







Runnoff erosion in Lwakhakha

Vision and Objectives

The vision statement for the Mpologoma Catchment, which was developed by stakeholders in response to the major issues and driving forces is:



VISION

To sustainably use, manage and conserve water and related resources in the Mpologoma Catchment for socio-economic growth and improved livelihoods by 2040.

To achieve the common vision, three strategic objectives were selected by the stakeholders and they cover the different key challenges identified in the catchment; environmental degradation, low level of water resources development, low level of human and social capital and insufficient implementation of integrated resources management approach.

Strategic Objective 1:

To restore and sustainably manage the natural resources of the catchment. This strategic objective addresses the key water-related challenge of "environmental degradation."

Strategic Objective 2: To develop agriculture, alternative livelihoods and water resources for socio-economic growth. This strategic objective addresses the key water related challenge of "low level of water resources development."

Strategic Objective 3: To meet the institutional, technical, human requirements for integrated management of natural resources. This strategic objective addresses the key water-related challenge of "low level of human and social capital and insufficient implementation of the integrated water resources management approach."



A meeting of water resources environmental group

Analysis of Options

4.1 Potential Options

The SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis was conducted from which a number of options emerged to (i) build on the identified strengths, (ii) take advantage of the identified opportunities, (iii) address the identified weaknesses, and (iv) mitigate against the identified threats in the catchment. Options are possible measures/interventions used to address (a) given issue(s) and are targeted to achieving

the catchment vision and strategic objectives. Broadly, the potential options identified are presented in Table 2. It is emphasised that all options should be accompanied by training and capacity-building activities specific to each option. Since the options are very broad and general, suboptions (implementation actions) were identified which are specific, suitable and tailored to the specific areas within the catchment.

Table 2: Potential Options

No	1. Catchment Protection and Conservation	Sub-Options	
		a) Create fish ponds	
		b) Provide water/organise access to resources for cattle watering	
1	Develor Water for	c) Develop large infrastructure	
	Develop Water for Production Infrastructure	d) Develop upland irrigation	
		e) Organise irrigation in wetlands (formal schemes)	
		f) Develop rice/aquaculture schemes	
		g) Develop rainwater harvesting and individual storage solution	
		a) Development of agro-forestry and conservation agriculture	
2	Develop the Agricultural	b) Implement soil and water conservation measures	
	Sector and Improve	c) Develop organisation and outlets for agricultural production	
	Practices	d) Develop and empower farmer groups and associations	
		e) Promote the use of quality inputs in agriculture	
		a) Promote development of quality fingerlings and fish seeds production	
3	Develop the	b) Develop fish farming	
	other Economic Activities	c) Develop small hydropower production	
		d) Improve livestock husbandry (extension, breeding, etc.)	
		e) Provide alternative livelihoods and promote environmentally sustainable socieconomic development (tourism, bee keeping, etc.)	
	Environmental Conservation and Protection	a) Development of tree nurseries and tree planting activities	
		b) Build a wetland classification according to their ecological interest and develop a wetland management and developmen strategy accordingly	
4		c) Clear demarcation of wetlands and forests	
		d) River bank protection (cultivation and sand mining)	
		e) Develop a forest management and development strategy	
		f) Use ofrenewable energy/alternative energy sources and development strategy	
	Improve Water Supply and Sanitation	a) Improve access to safe water supply	
5		b) Upgrade/improve existing waste water treatment plants and make sure effluents meet national standards	
		c) Promote sanitation facilities in rural areas and small towns	
		d) Plan sanitation associated with the new piped schemes being developed in small towns and rural growth centres	
	Control and Reduce Water Pollution	a) Improve management of solid waste	
6		b) Controlwaste water discharge and pollution from industries and artisanal activities	
7	Communication and capacity building		
8	Improvement of institutional context (related to the water sector, at catchment level)		
9	Improvement of knowledge and data collection on water resources.		
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Catchment Action Plan

5.1 Implementation Plan

A summary Implementation Plan that shows, for each of the identified options, the districts and sub-catchments where activities related to that option will be implemented, Table . The details regarding the specific locations in which these activities will be implemented are presented in the detailed Implementation plan.

Table 4: Summary Implementation Plan

п	D	Option	District	Sub-catchment
1		Develop water for production infrastructures	Tororo, Namutumba, Pallisa, Bugiri, Busia, Kibuku	Kimbimba, Malaba, Naeombwa, Upper Mpologoma, Lemwa, Upper Mpologoma, Lower Manafwa
2		Develop theagricultural sector and improve practices	Namutumba, Tororo, Manafwa, Bududa, Mbale, Iganga	Malaba, Naeombwa, Upper Manafwa, Namatala
3		Develop the other economic activities	Namutumba, Pallisa	Upper Mpologoma, Lemwa
4		Environmental conservation and protection	Mbale, Sironko, Bududa, Manafwa, Butaleja, Kibuku, Namutumba, Pallisa, Busia, Iganga, Bugiri, Mbale, Bududa, Tororo	Namatala, Upper Manafwa, Middle Manafwa, Lower Manafwa, Naeombwa, Lemwa, Malaba, Lower Manafwa, Upper Mpologoma
5	i	Improve water supply and sanitation	Bududa, Manafwa, Busia, Bugiri, Iganga	Upper Manafwa, Malaba, Naeombwa
6		Control and reduce pollution	Mbale, Tororo, Namutumba, Bugiri, Kibuku, Busia	Namatala, Lwakhakha, Naeombwa, Middle Mpologoma, Kimbimba, Malaba
7	'	Communication and capacity building	Namutumba, Tororo, Busia, Bugiri, Sironko, Kibuku, Bududa, Manafwa, Bududa, Pallisa, Iganga Mbale, Budaka, Butaleja	Upper Mpologoma, Malaba, Middle Manafwa, Upper Manafwa, Naeombwa, Namatala, Namatala, Lower Manafwa, Iower Mpologoma, Lemwa
8		Improvement of institutional context (related to water sector, at catchment level)	Bugiri, Manafwa, Mbale, Tororo, Iganga, Namutumba	Kimbimba, Upper Manafwa, Naeombwa, Namatala, Malaba
9		Improvement of knowledge and data collection on water resources	Mbale	Namatala





Collapsing river banks in Lwakhakha Sub-catchment

5.2 Funding Requirements

A summary budget for implementation of the Mpologoma CMP, indicating the costs associated with a specific option and sub-options is presented in Table 5.

Table 5: CMP Funding Requirements

		Cost per period (USD)		
	Activities	1-5 Yrs	6-10 Yrs	Beyond 10 Yrs
1	DEVELOP WATER FOR PRODUCTION INFRASTRUCTURE	47,484,178	91,930,957	97,415,554
1.1	Create fish ponds	1,121,047	384,867	747,384
1.2	Provide water/organise access to resources for cattle watering	1,798,815	436,455	600,110
1.3	Develop large infrastructure	2,508,830	34,078,050	1,054,290
1.4	Develop upland irrigation	90,570	44,854,375	11,731,810
1.5	Organise irrigation in wetlands (formal schemes)	41,485,120	9,131,260	82,910,760
1.6	Develop rice/aquaculture schemes	421,386	2,810,950	114,900
1.7	Develop rainwater harvesting and individual storage solution	58,410	235,000	256,300
2	DEVELOP THE AGRICULTURAL SECTOR AND IMPROVE			
_	PRACTICES	905,007	540,667	689,911
2.1	Development of agro-forestry and conservation agriculture	210,240	63,450	54,750
2.2	Implement soil and water conservation measures	390,482	357,992	433,881
2.3	Develop organisation and outlets for agricultural production	39,550	39,550	71,190
2.4	Develop and empower farmer groups and associations	6,780	-	
2.5	Promote the use of quality inputs in agriculture	257,955	79,675	130,090
3	DEVELOP OTHER ECONOMIC ACTIVITIES	522,851	272,300	25,769,950
3.1	Promote development of quality fingerlings and fish seeds production	291,591	65,200	117,360
3.2	Develop fish farming	146,060	93,900	84,400
3.3	Develop small hydropower production	-	-	25,451,910
3.4	Improve livestock husbandry (extension, breeding, etc.)	33,100	32,600	58,680
	Provide alternative livelihoods and promote environmentally sustainable			
3.5	socio-economic development (tourism, bee keeping, etc.)	52,100	80,600	57,600
4	ENVIRONMENTAL CONSERVATION AND PROTECTION	3,909,775	2,714,061	5,140,846
4.1	Development of tree nurseries and tree planting activities	838,175	187,411	343,799
	Build a wetland classification according to their ecological interest and			
4.2	develop a wetland management and development strategy accordingly	760,380	760,650	2,271,190
4.3	Clear demarcation of wetlands and forests	96925	27,725	39,997
4.4	River bank protection (cultivation and sand mining)	1130945	1,130,925	2,178,580
	Develop a forest management and development strategy	710900	358,300	307,280
4.6	Use of renewable energy/alternative energy sources and development strateg	372450	249,050	-
5	IMPROVE WATER SUPPLY AND SANITATION	23,586,855	3,916,345	10,616,074
5.1	Improve access to safe water supply	23,005,671	1,421,996	2,030,409
	Upgrade/improve existing waste water treatment plants and make sure			
5.2	effluents meet national standards	167,940		
5.3	Promote sanitation facilities in rural areas and small towns	329,274	1,767,079	7,125,665
	Plan sanitation associated with the new piped schemes being developed in			
5.4	small towns and rural growth centres	83,970	727,270	1,460,000
6	CONTROL AND REDUCE POLLUTION	640,240	2,942,514	5,595,814
6.1	Improve managementof solid waste	134,570	2,468,227	4,745,284
	Control waste water discharge and pollution from industries and artisanal			
6.2	activities	505,670	474,287	850,530
7	COMMUNICATION AND CAPACITY BUILDING	267,754	398,406	659,710
8	IMPROVEMENT OF INSTITUTIONAL CONTEXT			
9	IMPROVEMENT OF KNOWLEDGE AND DATA COLLECTION			
	TOTAL PER PERIOD	77,316,659	102,715,250	145,887,859

5.3 Sources of Funds for Implementing the CMP

The implementation of the CMP plan will require funding from different sources, according to the type of action/intervention and of the relevant sectors involved in the implementation. These include mainly five sources:

- 1. Water and Environment Sector Budget, with the Ministry of Water and Environment supporting implementation of the CMP programmes and subprogrammes as the lead agency. Other relevant line ministries may also support parts of the CMP.
- 2. Joint Partnership Fund (JPF); a pooled fund managed by Ministry of Water and Environment that includes both non-earmarked funding and earmarked funding based on the different bilateral agreements between the GoU and sector development partners.
- 3. Sector Budget Support (SBS); is used to channel funds to the local governments for activities to be implemented at the de-concentrated level, through conditional grants, directly from the treasury MoFPED to the local governments, in line with Uganda's fiscal de-concentration policy.
- 4. Off budget operations; forms of government operations that are not fully reconciled with the national budget and sector budget. The main forms of off-budget expenditures are off-budget funds, direct loans, guarantees, and public-private partnerships (PPPs).
- 5. Private sector investments; private actors might include either international or national, regional and local operators, as well as joint ventures among private

operators with public institutions or utilities are considered as an important tool in Uganda's plan to bridge the infrastructure financing gap. The PPP Act, passed in 2015, provides methods for procurement and the engagement of private partners in PPPs.

The vital role of not-for-profit organisations (CBOs and NGOs) shall be included in the private sector contribution to the implementation of the catchment WRDM plan

5.4 Roles and Responsibilities

The CMP is implemented by the Mpologoma Catchment Management Organisation (CMO) in close collaboration with KWMZ. The KWMZ and/or Mpologoma CMC shall take the initiative and provide guidance to CMP implementation. However, project implementation can be done by any stakeholder willing to contribute funding, knowledge, skills or other resources. Hence, stakeholders ranging from water users to development partners and corporate sector can collaborate or contribute to the

Table 6: Roles and Responsibilities

Stakeholder	Roles and Responsibilities
MWE/DWRM/KWMZ	Coordinate in terms of planning, link national and catchment levels, mobilise funds, supervise CMP implementation, build capacity of the CMOs, and provide institutional and technical assistance to the CMOs.
Mpologoma CMO/CMC	Promote and coordinate CMP implementation, review the CMP on a regular basis; mobilise resources, monitor and evaluate implementation of the CMP, including impact monitoring.
District local councils	Facilitate and support CMP implementation, e.g. through incorporation of prioritised interventions in District Development Plans, actively participate in CMO activities, plan/prepare/implement interventions of the CMP, ensure compliance with the CMP, and support mobilisation of funds.
CB0s, CS0s, NG0s	Raise awareness on the CMP implementation activities, mobilise communities, mobilise resources, and implement parts of the CMP.
Development partners	Mobilise resources, conduct research, prepare proposals, build technical and institutional capacity, support stakeholder involvement, link government with primary users.
Private sector	Establish CMP proof businesses, invest in CMP proof interventions, support mobilisation of funds.
Water users	Align user and management practices with the CMP, and implement CMP projects.



Water testing after a suspected Cholera outbreak in Tororo

Acknowledgement

The Mpologoma Catchment Management Plan was developed by Kyoga Water Management Zone, of the Directorate of Water Resources Management, Ministry of Water and Environment of the Republic of Uganda, with financial support from the World Bank under the Water Management and Development (WMDP) Project.

Valuable contributions were made by the stakeholders of the Mpologoma Catchment during fieldwork and workshops.



Collection of water samples from open dug wells in Tororo District

This popular version of the Mpologoma Catchment Management Plan (CMP) summarises the main findings and the key messages. For more details on the approach, the results of the assessments, the interventions to be implemented, where and when how that implementation will take place, please refer to the main Catchment Management Plan, its corresponding Implementation Plan and the technical reports (Stakeholder Engagement Report, Water Resources Situation Report, and the Strategic Social and Environmental Assessment Report). Mpologoma Catchment Management Secretariat, Kyoga Water Management Zone (KWMZ)

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