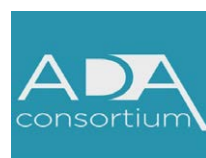


January 2017

Event Report

Recommendations to the County Government of Isiolo for Preparation of a Strategic Plan on Water, Energy and Climate Change



Author information

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Published by IIED, January 2017

<http://pubs.iied.org/10183IIED>

ISBN 978-1-78431-465-1

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Executive Summary

The Ministry of Water, Energy and Climate Change requires a multi-sectoral Strategic Plan, underpinned by a strong community consultation process to prioritize investments. These include investments that are made from the County budget, and also by other actors intending to contribute to water, energy and climate change in the County. Lack of such a strategy and consultation process in Isiolo County, held back progress and limited the effectiveness of many County and donor-supported interventions in the past.

This report gives the main findings from a series of Sub-County level consultations and preparatory technical meetings. The meetings were conducted by County Government's Ministry of Water, Energy and Climate Change, RAP and IIED. The meetings included participation by over 100 representatives of local customary resource user associations, women's groups, formal water resource user associations, water committees, irrigation committees, ward adaptation planning committees and others. These included women. The sub-county consultation meetings were conducted in appropriate languages, depending on the mix of participants. The technical meetings were primarily in English, and included some discussion of translation issues and challenges for the facilitation of effective local consultations.

This was the first time that such an approach to planning had been explored by the County Officers. It was appreciated and enjoyed both by the officers and by the participating community representatives.

Strategic planning is needed in order to rebalance the threats and opportunities created by the annual cycle of droughts and floods and coordinate the efforts of local, national and international actors. Key elements of the strategic planning approach include:

- i) Scientific tools, databases, systems and capacities to observe and monitor climate effects, extractions and flows through the catchment;
- ii) Clean, affordable and friendly technological solutions to redistribute and conserve water and energy supplies where they are needed within the catchment, particularly during both drought and floods;
- iii) Inclusive institutions, including active local participation both formally established and customary, to prioritize, guide, supervise and maintain the necessary information systems and infrastructure.



Lively discussion of water service levels and priorities with Isiolo Water and Sewerage Company representative. Caroline King-Okumu

Priorities have been identified in relation to these three essential aspects of strategic planning for water, energy and climate change in arid environments. The next step toward the preparation of Isiolo County Officers' Strategic Plan for Water, Energy and Climate Change (2017-21) consists in a multi-stakeholder meeting to be organized by the County Officers. The Sector Strategic Plan is intended to feed into the preparation of the next County Integrated Development Plan (5-year timeframe), as well as the annual budgeting for the County Government and its development partners.

The recommendations should also support and feed into ongoing catchment level planning, as well as broader national planning debates in Kenya, particularly those concerning the Arid and Semi-Arid Lands (ASALs). The overall objective of the Strategic Plan is to enable Isiolo County and its neighbouring ASAL counties in Kenya and the Horn of Africa to achieve their full potential as the crucibles of national and global prosperity, security and spiritual well-being.



Focus Group discussion on domestic and institutional uses of water and energy. Caroline King-Okumu



Bashir Jillo, County Director for Water, discussing plans for dams on the Ewaso Ng'iro river. Caroline King-Okumu

Introduction

The Kenyan County Governments Act (2012, 104 (3)) requires county governments across Kenya to designate departments, sub-counties and Wards as planning authorities in order to plan how best to protect and develop their natural resources. In Isiolo County, the Ministry of Water, Energy and Climate Change is developing the multi-sectoral strategic plan to achieve the following objectives:

- Sustain and enhance the natural resource base, including water, energy and other resources;
- Enable the county officers to provide required services to the populations in the County, including safe and affordable access to water, energy, sanitation and environmental services;
- Ensure effective participation and coordination in prioritizing and decision-making;
- Provide a framework for collaboration/partnerships between Isiolo County Government and other stakeholders/actors in the sector.

Sub-County level planning structures are not yet established in Isiolo or other parts of Kenya. However, the County Government Officers have worked with County- and Ward-level Adaptation Planning Committees to prepare and series of technical meetings and 3 sub-county level consultations for a Sector Strategic Plan for Water, Energy and Climate Change. The consultations included representatives of the Isiolo Water Service Company, as well as more than one hundred water management committees, resource user groups, women's groups, community leaders and religious associations that were mobilized through 5 Ward Adaptation Planning Committees. Technical support, preparation and discussion was provided by the officers of WRMA, KMD and various research institutes who took part in the preparatory technical meetings.

Strategic planning is needed in order to rebalance the threats and opportunities created by the annual cycle of droughts and floods and coordinate the efforts of local, national and international actors. Key elements of the strategic planning approach include:

- i) Scientific tools, databases, systems and capacities to observe and monitor climate effects, extractions and flows through the catchment;
- ii) Clean, affordable and friendly technological solutions to redistribute and conserve water and energy supplies where they are needed within the catchment, particularly during both drought and floods;
- iii) Inclusive institutions, including active local participation both formally established and customary, to prioritize, guide, supervise and maintain the necessary information systems and infrastructure.

This report summarises priorities in relation to these three essential aspects of strategic planning for water, energy and climate change in arid environments, as identified through the 3 Sub-County level planning consultations and preparatory technical meetings. It is intended to inform the preparation of Isiolo County Officers' Strategic Plan for Water, Energy and Climate Change (2017-21). The recommendations also support and feed into ongoing catchment level planning, as well as national planning debates in Kenya. They are intended to enable Isiolo County and its neighbouring counties in Kenya and the Horn of Africa to achieve their full potential as the crucibles of national and global prosperity, security and spiritual well-being.



County Planners Adaka and Mirianga engaging participants in Garbatulla meeting. Ibrahim Jarso



Lively participation in Merti meeting. Ibrahim Jarso

Background to the Cross Sector Strategic Plan

The major challenges identified in the Sector are:

1. **Water scarcity:** 65% of the county is classified as 'very arid'. Accessing reliable water sources in some areas is a major constraint. This has led to continual use of water bowsers which is an expensive undertaking. Water use efficiency is not well promoted and understood.
2. **Dynamic ecosystems:** Seasonal and inter-annual climatic changes can have dramatic effects on the balance processes affecting ecosystem productivity and water and food security, particularly during droughts and floods
3. **High cost of energy for water supplies:** Due to fluctuation of fuel costs, including unpredictable price-rises, it has been very costly to run the water supply facilities using diesel-powered Gensets
4. **Poor water quality:** the high salinity of water from some boreholes has resulted in their underutilization. The county has no capacity to put up modern water purification plants. Catchment management is also required to ensure quality and prevent contamination.
5. **Institutional challenges:** Underfunding, lack of capacities, and governance issues.

The Strategic Plan will follow the County Policies for the Water Sector and for the Energy and Climate Change Sectors (now under development). It will guide the County Government in its endeavors to address these challenges in partnership with all stakeholders and donors with interest in the Climate Change, water and energy sectors in Isiolo. Consultation will be an essential and iterative part of the development and implementation of Strategic Plan. The County Adaptation Planning Committee (CAPC), Ward Adaptation Planning Committees (WAPCs) and local customary institutions (*Dedha*) will play a key role in these consultations. The Draft Strategic Plan will be in place by May, 2017, as part of the budget planning for the County that will be decided in June, 2017.

In line with the County Integrated Development Plan (CIDP), Strategic planning at the County level focuses on 5-year periods, with annual rolling plans submitted for funding in of May each year. Only one year remains with the current strategic planning period (2013-2017). Therefore, this Strategic Plan may be considered a critical forerunner to the following CIDP and Sector Plan for 2017-21, bearing in mind the established national targets for improved water, energy and environmental services by 2030. It is also worthy of note that indicators and targets relating to the international Sustainable Development Goals are now under consideration. Information is available concerning current international targets for safe and affordable access to water, sanitation, energy and environmental services¹, using the JMP definitions of safe water and sanitation².

The Strategic plan is guided by Vision 2030. In parallel to the County Level Strategic Planning, Catchment level planning for the Ewaso Ng'iro North Catchment Area (ENNCA) is ongoing at the National Water Resources Management Authority (WRMA). Also, the national Water Policy (2002) is under revision to ensure alignment with the new Constitution. The County Level Strategic Plan will therefore strengthen the inputs from the county to these broader processes.

1 <http://www.un.org/sustainabledevelopment/water-and-sanitation/#>

2 The Joint Monitoring Programme (JMP) has defined safe drinking water as follows:

- *Drinking water* is water used for domestic purposes, drinking, cooking and personal hygiene;
- Access to drinking water means that the source is less than 1 kilometer away from its place of use and that it is possible to reliably obtain at least 20 litres per member of a household per day;
- Safe drinking water is water with microbial, chemical and physical characteristics that meet WHO guidelines or national standards on drinking water quality;
- Access to safe drinking water is the proportion of people using improved drinking water sources: household connection; public standpipe; borehole; protected dug well; protected spring; rainwater.

The strategic plan takes a systemic and holistic approach to strengthening the resilience and productivity of the economy of Isiolo. This involves integrating within one Sector:

- a) **Water and Irrigation Services.** Including water supplies for domestic, livestock, agricultural and other institutional, social and economic uses. Also sanitation and water treatment services.
- b) **Climate Change and Energy Services.** Including contributions by both public sector and private actors that provide power to water and sanitation systems either from diesel or renewable sources³ and as well mainstream how to cope and mitigate climate change in future.

The success of the strategic plan will depend on coordination and integration of local/customary institutions for community-led management of natural resources with formal government institutions at the county-level that are responsible for policy, planning and budgeting. It will also build on the foundations put in place by the draft legislation now under consideration by the County Assembly on Natural Resource Management, Climate Change and intended draft policies for Water and Environment, Natural Resources and Energy.



Community members and planners during focus group on productive uses of water and energy in Merti meeting. Ibrahim Jarso

3 Electrification is dealt with under a separate strategy

Water, Energy and Climate in Isiolo County

Water resources in Isiolo County are shared with other upstream and downstream users of the surrounding Catchment (WRMA, 2013b, WRMA, 2014). ENNCA home to around 4 million people, 60% of whom live in water stressed downstream counties of Isiolo, Marsabit, Wajir, Garissa and Mandera. The catchment includes transboundary water, grazing resources, and populations that interconnect with the neighbouring areas of Ethiopia and Somalia.

Following the rains in the high elevation parts of the catchment, water flows down through the catchment along riverbeds and aquifers into the Ewaso Ng'iro North river that runs through the centre of Isiolo County. This makes the population in the low-lying areas of Isiolo vulnerable to floods. Water users, including humans and livestock, from the surrounding counties and countries also migrate in toward the Ewaso Ng'iro riverbed at the centre of the County, particularly during dry seasons and droughts. Providing water, pasture and other services to the expanded population increases pressures on the local and national institutions during the drought periods.

The Ewaso Ng'iro North Catchment Area (ENNCA) has a total extent of 210,226km² (36% of the total area of Kenya), average annual rainfall of 411mm, and an estimated 1,933 m³/year/capita of total renewable water resources per capita (WRMA, 2013b). Yet in Isiolo county, which is located at the centre of the catchment, each year the National Drought Management Authority (NDMA) reports that vulnerable households have been surviving on as little as 8 litres per person per day (GoK, 2016, GoK, 2015a). This is partly because during the dry seasons and droughts, humans and livestock migrate in to Isiolo from other counties and countries across the catchment, in search of water and pasture around the riverbed. This means that the population that is in the county at these times is far larger than its water service infrastructure can support and sustain without pressure.

Some water service investments set up through proper participation of the community are vulnerable to destruction from outside pastoralists because of lack of ownership. During the periods of extreme climate and water stress, it has been difficult to estimate how large the population in the county actually is, let alone to plan to meet their needs. At the present, local management associations and the Isiolo water service company maintain continual observation of extractions but they are not formally monitored and accounted for through the existing catchment management framework (WRMA, 2014).

Existing pipelines and pumping systems that transfer water from one part of the system to another frequently malfunction and break down due to poor engineering and harshness of the environment to some of the facilities used in its construction. Additional transfers and dams are periodically recommended to regulate flows through the catchment (e.g. in WRMA, 2013b). But in the meantime, the natural flows through the catchment that used to transfer water from upstream are continuing to reduce due to increasing upstream extractions for irrigation and other uses.

Although an increase in rainfall has been predicted by 2030 (WRMA, 2013b), uncertainty and variability mean that this cannot be expected to counterbalance the effects of increasing extractions that are already being observed (Mutiga et al., 2010, WRMA, 2013a).

ISIOLO WATER POINTS AND COURSES MAP

Prepared by:
Ibrahim Jarso, RAP

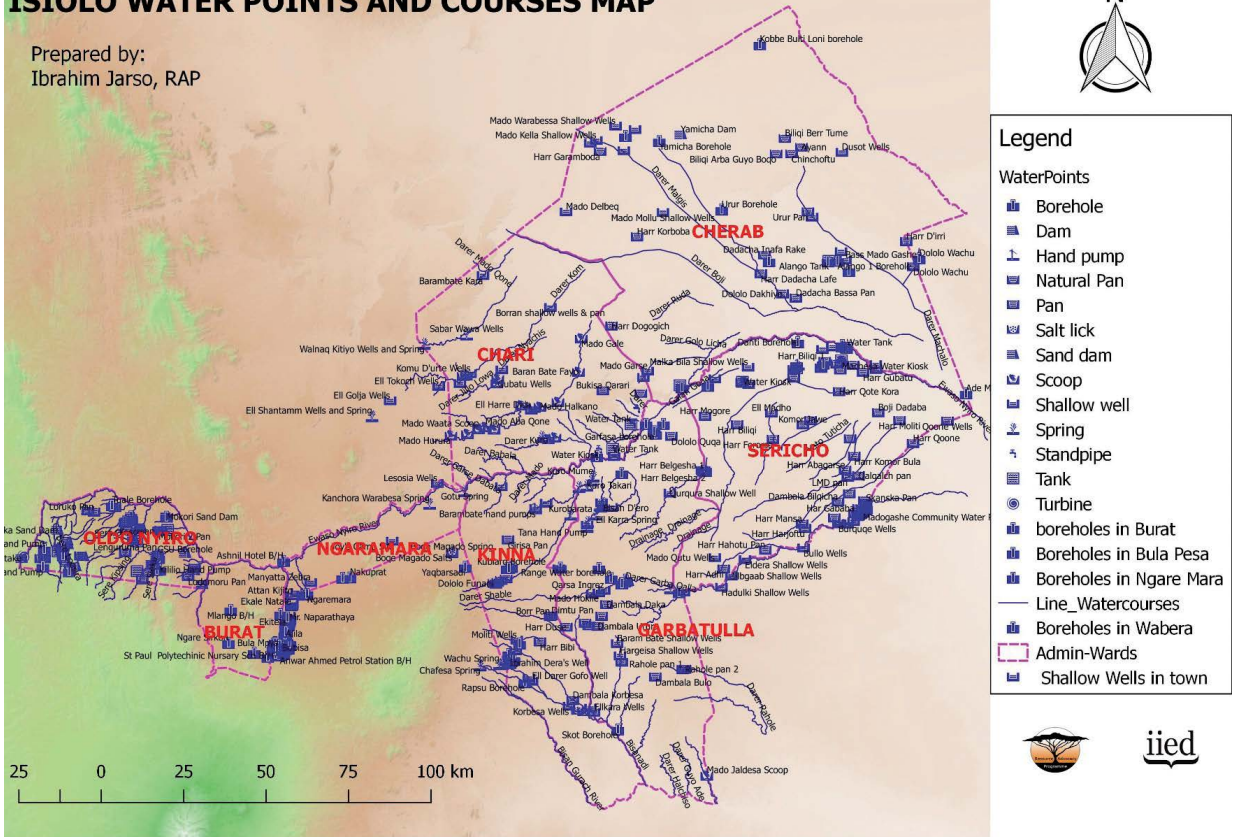


Figure 1: Isiolo Water Points and Courses



County planners visiting a water point. Ibrahim Jarso

Preparatory Process

Identification of Need for Support at the County Level

The Isiolo county government requested support from IIED. IIED agreed to provide technical support and allocated resources from its own budget to cover staff time, travel and activities.

The county technical officers requested financial support from the County Adaptation Fund. The County Adaptation Planning Committee (CAPC) reviewed the proposal, discussed and agreed to support it.

The technical support team held several preparatory meetings and prepared plans for the community consultations. Information about the intended process was shared with the CAPC. The CAPC and WAPCs reviewed the information, offered improvements and translations and shared it within their wards.

Design of Sub-County Consultation Meetings

The County Technical Officers worked with RAP and WAPCs to identify participants for the Sub-County level consultation meetings. The numbers of representations from the various local institutions were agreed on considering factors like vastness of the sub county, influence and interests of stakeholders.

The tables below indicate the key community and government institutions represented in three sub-county level consultation meetings that were convened by the County Government Officers with support from WAPCs, RAP and IIED.

Each of the consultation meetings lasted for two days. All of the meetings followed the same format. The first day consisted in plenary presentations and discussions so that the officers and participants could clarify and agree the objectives and priorities for the strategic planning. The WAPCs played an important role during the meetings, raising issues on behalf of their constituencies.

The second day was devoted to three focus group sessions and restitution on the following topics;

1. Water, energy and natural resource management (including urban and rural, formal WRUAs and informal/customary)
2. Domestic and institutional uses of water, energy and other natural resources (including settled and mobile households from urban and rural areas)
3. Commercial water, energy and natural resource uses (including pastoralists, agro-pastoralists, water vendors, restaurateurs and food vendors, hotels, barbers, and others)



Ward Administrator addressing Isiolo and Oldony'iro Consultation Meeting. Caroline King-Okumu



Focus Group discussion on ways forward for to improve services to domestic and institutional users of water and energy. Caroline King-Okumu

Next Steps

- County government to confirm support for a multi-stakeholder meeting
- RAP to finalize all the community consultation reports and present the overview report in the coming Multi-stakeholder Meeting
- Community representatives to consult widely and prepare for the multi-stakeholder meeting to be held in early 2017
- Draft plan on county website

Table 1: Participants in Isiolo and Oldony'iro Sub-County Consultation Meeting

Area/Organization	Participants	Gender	
		Male	Female
Water management committees (one person from each center) (Oldonyiro, Kipsing, Ienguruma, Ngaredare, Mlango, LMD, Ngaremara, Manyatta Zebra, Arimet, Daaba and Nakuprat)	11	5	6
Water Resource Users Associations (WRUAs) (Isiolo River users' association (IRUA), Oldonyiro-WRUA,)	2	2	0
Ward administrators (Burat and Ngaremara)	1	0	1
Iwasco Representative	1	1	0
WAPC	2	1	1
Religious leader	2	2	0
Opinion leaders and local radio	9	6	3
Chiefs	2	0	2
Irrigation committee members	8	5	3
Women groups	4	0	4
Total	42	22	20

Table 2: Participants in Garbatulla Sub-County Consultation Meeting

Area/Organization	Participants	Gender	
		Male	Female
Water management committees (one person from each center) (Kulamawe, Garbatulla, Kinna, Duse, Malkadaka, Gafarsa, Iresa boru, Sericho, Modogashe and Rapsu)	12	8	4
Water Resource Users Associations (WRUAs) (Galan Gofu-WRUA, Kulamawe-WRUA, Sericho-WRUA and Gafarsa-WRUA)	4	4	0
Ward administrators	1	0	1
Dedha	6	6	0
Chiefs	4	3	1
Irrigation committee members	8	5	3
WAPCs	6	3	3
Women groups	2	0	2
Total	43	29	14

Table 3: Participants in Merti Sub-County Consultation Meeting

Area/Organization	Participants	Gender	
		Male	Female
Water management committees (one person from each center)(BiliqoMarara, Dimaado, Biliqo, Bulesa, Awarsitu, Merti, Korbasa, Malkagalla, Dadachalafa and Dadachabasa)	10	5	5
Water Resource Users Associations (WRUAs) (Merti-WRUA, Kom-Yamicha-WRUA, Kuro bisanowo-WRUA and Duqesa-WRUA)	4	4	0
Rangeland Users Association (RUA)	2	1	1
Ward administrators (Chari and Cherab)	2	2	0
Religious leader	1	1	0
Chiefs and Dedha	4	3	1
Irrigation committee members	8	5	3
WAPCs	4	2	2
MID-P	2	1	1
Women groups	3	0	3
Total	40	24	16

Table 4: Summary of Participants in all Sub-County Consultation Meetings by Gender

	Male		Female		Total
	Number	%	Number	%	
Isiolo & Oldony'iro	23	55	19	45	42
Garbatulla	29	67	14	33	43
Merti	24	60	16	40	40
Total	75	60	50	40	125



Meeting participants express their views during Isiolo and Oldony'iro Consultation Meeting. Caroline King-Okumu



Community members during Garbatulla meeting. Ibrahim Jarso



Restitution during Merti meeting. Caroline King-Okumu

Major Findings

1. Monitoring flows in and out (scientific tools and databases)

Upstream and downstream relations and cooperation are very important for the management of water, energy and climate in Isiolo County. A clear and factually sound understanding of the flows of resources and people across the county boundary should provide the basis for managing these relations and interdependencies. The presence of resource users in the county is monitored and managed at the local level by the resource- user associations, through their water-point managers (additional recommendations in relation to these institutions are included in section 3).

Climate and hydrological effects are monitored through a network of meteorological stations. At present this network is in poor condition and information is not available to planners to help them to estimate runoff and recharge patterns and flows that could be captured and conserved for productive uses (Njoroge, 2017). Underground conditions are also not well understood (WRMA, 2013a, Blandenier, 2015). This causes waste of expenditure on drilling of unproductive boreholes to provide water during the dry seasons. There is therefore a need for better hydrogeological information management and training of surveyors (Jarso, 2016).

Priority strategic actions include:

- Improve databases on water resource extractions and economic uses of water downstream to strengthen the economic case against over-extraction upstream (feeding into national report on SDG 6.4.2).
- Improve local observation networks for climate, ground and surface water levels and quality to be connected to a centralized database at the county, and also to educational and capacity building institutions, as well as to WRMA, NDMA and KMD;
- Improve ex-post analysis and forecasting of drought and flood events and decision-support for necessary actions – e.g. diversion of floodwaters, water harvesting, etc.;



Water, energy and resource managers meeting. Ibrahim Jarso

2. Improving water and energy service infrastructure (hardware)

In 2010, Isiolo Water and Sewerage Company (IWASCO) was serving a population of 34,168 (around 20% of the registered resident population in the county) with a capacity of 3,220m³/day. Non-revenue water was estimated to amount to 51% of the total supply to the town (WRMA, 2013bMG – T – 2, WRMA, 2011). Ongoing efforts to improve the piped water network have encountered set-backs due to reduced flow volumes in the Isiolo river. To source sufficient water supply for distribution through the network, the latest plans now involve rehabilitating water networks, reducing leakages and non-revenue water, digging twelve new boreholes and construction of two water treatment plants to provide water that will be sufficiently clean to reuse. The county government is experimenting with new financing models in hopes to enable the use of renewable energy at the treatment plants.

High priority improvements to extend the reach of other water supply systems in the other towns in Isiolo County, such as Merti and Garbatulla towns, also involve installation of additional storage infrastructure and pipes. Garbatulla town reticulated network is also in need of rehabilitation. This is not operated by IWASCO, but is maintained and operated by a water management committee. Outside the towns, the population are directly dependent on water from boreholes, shallow wells, pans, sand-dams (and also directly from the river where and when it is flowing) (GoK, 2015b). These sources are managed by resource user associations, including customary associations (Tari and Pattison, 2014). When there are breakdowns or needs that they are not able to handle unassisted for improved infrastructure, fuel or trucks, the local associations call on their County Government for support.

The costs to water users in all of the supply systems are still mainly determined by the energy costs for pumping and transporting the water either through pipes, canals or trucking systems. Some reductions in these costs have been enabled through investments in solar-powered systems, and further such reductions may still be possible. However, increased investments in human resources and capacities to maintain and operate the systems are still needed (see meeting reports at: www.adaconsortium.org).

Information available to planners concerning energy access in Isiolo County

Of the 31,326 households in the county; only 2,500 have access to electricity (GoK, 2013, KNBS, 2009). 85% of the households rely on fire wood as their main source of power, mainly for cooking. This has partly contributed to a decline in tree cover. 9% of the residents use petroleum products for cooking. For lighting, 29% use electricity, 41.5% use petroleum products, 8.5% use wood fuel while 13.8% use solar. The rest of the population (7.3%) use other means.

In addition to supplying basic human needs, water and energy uses in Isiolo include institutional, commercial and industrial uses. 85 percent of the trading centres and the majority of schools and health facilities are not connected with electricity.

To secure an electricity connection for a radio station in Garbatulla required over one year and 150,000Ksh (personal communication, Ibrahim Jarso). Around 2000 businesses are presently registered in Isiolo (RoK, 2016). The volumes of water and energy that they require and use are not well understood. Nor are the relative values to society of these various different commercial uses.

It has so far been estimated that 1.36 million cubic metres (MCM) of water was used to support livestock production in Isiolo during 2013/14, contributing US\$13–22/m³ to the economy through meat and milk production (King-Okumu et al., 2016). Irrigation and tourism were estimated to consume more and earn less. Yet over the coming decades current plans still indicate increases in the volumes of water to be used in irrigation (WRMA, 2013a, WRMA, 2013b). New demands for water that will be associated with a resort city and international airport, planned almost a decade ago for construction in Isiolo (GoK, 2007) have still not yet been assessed.

Priority strategic actions include:

- Continue to increase the extent, duration, quality affordability of access to water for household uses by settled, mobile and transient households in consultation with the water users
- Increase revenue available for investments in human capacities while reducing operating costs to individuals and public authorities by converting to low-cost and renewable energy sources, and avoiding breakdowns and high-cost emergency solutions
- Plan for and invest in the volumes of water and energy needed for present and future commercial and industrial uses. Assess their value and identify opportunities for cost-recovery



Working Group on Domestic and Institutional Uses of Water and Energy, Garbatulla. Ibrahim Jarso

3. Building local institutions and capacities (software)

Droughts and water stress persist due to poor catchment management, slow responses, disconnected institutions, information blockages and lack of capacities. Strategic planning should include investments in improving institutions, information systems and capacities. Without improved institutional support to ensure sustainability, the recommendations presented in previous sections will not be achieved. Attention to these challenges is needed both upstream and downstream, and across sectors and levels of government, from local to national and international (WRMA, 2013b).

At the local level, there is a need for improved capacities, transparency and accountability to ensure the performance of the water service provider, water management committees, and resource user associations (both customary and formally established) (King-Okumu, 2015, Tari and Pattison, 2014). Through their strategic planning process in 2016, County water planners in Isiolo have engaged with over one hundred such institutions, representing upward of 150,000 water and energy users in the County (see meeting reports at: www.adaconsortium.org). The objective of this engagement was to ensure that the resource users' priorities could drive the formulation of a Strategic Plan ensuring that the devolving County Government can provide more effective support to them as they manage their resources and adapt to climate-related challenges.

At the county level there is an acknowledged need for improved cross-sectoral coordination, and prioritization of investments in water, energy and climate change agendas. This includes investments that are made from the County budget, and also by other actors intending to contribute to sustainable water, energy and environmental service delivery in the County. The lack of such coordination has limited the effectiveness of many County and donor-supported interventions in the past.

A temporary improvement to coordination was briefly provided when an NGO (UNICEF) established a water coordination forum (WESCORD). More recently, a County Steering Group and County Adaptation Planning Committee have been convened by the NDMA. However, as the county government is strengthened, it could be able to progressively assume this necessary function more directly. A recent step in this direction, taken in 2015, was a flood response task force that was headed by the County Directorate for Water, with support from the NDMA.

Priority strategic actions include:

- Transparency and accountability improved for water management committees through investment in institutional processes and training of staff
- Cross-scale linkages connecting and strengthening the existing local associations and linking upward through ward, sub-county, county, catchment, national and transboundary level institutions
- Capacity building of County Officers for Water, Energy and Climate Change, and training of a new cadre of water, energy and climate technicians and managers with skills to operate under variable and uncertain climatic conditions



Taking stock of gaps in water supply to institutions in Garbatulla. Ibrahim Jarso

Conclusions

The devolved strategic planning process that the Isiolo County Water Officers have led at the Sub-county level has achieved a notable success, thanks to the support from the CAPC and WAPCSs. The representatives of the 100+ local natural resource management associations were able to discuss the strategic planning challenges and priorities for water energy and climate change together with the County Officers and identify ways forward. This process could be extended to the rest of the catchment, starting through the CAPCs and WAPCs that have recently been established in the neighbouring counties of Wajir and Garissa and a transboundary resource management dialogue begun with resource users from the county of Marsabit. The strategic planning process should be accompanied by a corresponding expansion of necessary technical support and capacity building.



Bashir Jillo, County Director for Water, discussing important choices for strategic planning in Isiolo County. Caroline King-Okumu



Focus Group discussion on ways forward for managing water and energy in Isiolo and Oldony'iro. Caroline King-Okumu

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Appendix 1: List of Participants

1.1: Participants in Isiolo and Oldony'iro Consultation Meeting

S. No.	Name	Area/Organization	Gender (M/F)
1.	Cosmus Sike	Manyatta Zebra Committee	M
2.	Joseph Lokuniyat	Kiwanja water Project	M
3.	Jane Njeri	Mfinyanzi Group	F
4.	Abdi Boru	Kilimani Water Project	M
5.	Jacob Egen	Youth	M
6.	Mohamed Jattani	Isiolo Youth	M
7.	James Mami Lechakwei	Oldonyiro water committee	M
8.	Grace Lolim	Isiolo Water Committee	F
9.	Hussein Huka	Radio Administrator	M
10.	Loloibon Bernard	Oldonyiro water	M
11.	Kuterei Lemantile	Oldonyiro water	M
12.	Francisco Letimalo	Oldonyiro WAPC	M
13.	Francis Lomkuny	Chumvi Yare water	M
14.	Lawrence Ekiru	Arimet	M
15.	Noah Esekon	Tractor	M
16.	Madina Dima	Tuluroba Women Group	F
17.	Celina Kathure	Mwangaza Isiolo	F
18.	Mohamed Ali	Isiolo water	M
19.	Habiba Kotile	Kambi Garba	F
20.	Joseph Waciuri	Isiolo Water	M
21.	Antanas Ekwam	Ngaremara Water	F
22.	Veronica Leagile	Oldonyiro Water	F
23.	Jackline Napoore	Chokaa Water	F
24.	Magdalene esokon	Attan Water	F
25.	Daud Mwingi	Waso water project	M
26.	Sadia Ibrahim	Waso water project	F
27.	Peter Moika	Oldonyiro WAPC	M
28.	Kadija Ibrahim	Kambi juu water project	F
29.	Guyo Abduba	Irrigation Officer	M
30.	Junius Njeru	Water Officer	M
31.	Ahmed Set	Islam Leader	M
32.	Abdia Gethi	Kilimani Water project	F
33.	Josphine Eregai	Ward Admin-Ngaremara	F
34.	Mary Waititu	Isiolo Water	F
35.	Lucy Ntepenika	Oldonyiro water	F
36.	Ali Godana	Isiolo Farmers Group	M
37.	Lordman Lekalkuli	NDMA	M
38.	Daoud Tari	RAP	M
39.	Ibrahim Jarso	RAP	M

S. No.	Name	Area/Organization	Gender (M/F)
40.	Gerald Nyari	Isiolo Water	M
41.	Luiza Lenyangui	Oldoniro water project	F
42.	Daniel Kathukumi	Assistant Chief East location	M
43.	Lucy N. Mbaya	Kulamawe water	F
44.	Jarso Haro	Energy and Climate Change	M
45.	Lucia Ekwam	Assistant Chief	F
46.	Purity	Administration Police Isiolo	F
47.	Paul Egeny	Isiolo Water	M
48.	Yusuf Liman	KU Phd student	M
49.	Caroline King	IIED	F

1.2: Participants in Garbatulla Consultation Meeting

S. No.	Name	Area/Organization	Gender (M/F)
1.	Arero Molu	Dedha	M
2.	Hussein Abato	Chairman Water	M
3.	Adan Gababo	Sericho	M
4.	Mariam Huka Sama	Board RAP	F
5.	Omaru Abduba	Chairman Water Kinna	M
6.	Abduba Wario	Irrigation committee	M
7.	Abdi Siad Maalim	Duse Water	M
8.	Ibrahim Mohamed	Rapsu	M
9.	Mohamed Durow Adan	Modogashe	M
10.	Adan Bulle	Iresa boru	M
11.	Mohamed Abdikadir	Garbatulla	M
12.	Hassan Guyo	Kinna	M
13.	Mohamed Galgalo	Kinna	M
14.	Habiba Abdul	Garbatulla	F
15.	Hussein Duba	Radio Manager	M
16.	Hussein Golicha	WRUA-Kulamawe	M
17.	Abdullahi Dansoye	WRUA-Sericho	M
18.	Somo Jirmo	Gafarsa	M
19.	Mumina Gobo	Ward Administrator	F
20.	Edin Boru	Kinna Dedha	M
21.	Somo Roba	Chairman Dedha	M
22.	Mohamed Jillo	KICBI	M
23.	Hassan Kanu Jirma	Garbatulla	M
24.	Adan Denge	Garbatulla Water Board	M
25.	Habiba Abduba	Gafarsa	F
26.	Nura Salesa	Malka Daka	F
27.	Fatuma Madera	Chief Garbatulla	F
28.	Amina Katelo	Kinna	F
29.	Nasibo Ali Jare	Rapsu	F

S. No.	Name	Area/Organization	Gender (M/F)
30.	Rukia Diba	WAPC-Kinna	F
31.	Rukia Ali	Garbatulla	F
32.	Hawai Gufu	WAPC-Sericho	F
33.	Adan Guyo Bankare	Kinna	M
34.	Mohamed Digaji	Irrigation Committee	M
35.	Hussein Konso	WAPC-Garbatulla	M
36.	Boru Jarso	WAPC-Sericho	M
37.	Abdikadir Salesa	Kulamawe-Dedha	M
38.	Kosi Iyya	Dedha-Kulamawe	F
39.	Victor Adaka	Ministry of Water	M
40.	Romano Mirianga	Sub county water officer	M
41.	Osman Bagaja	Director Environment	M
42.	Dahera Huka	Malka Daka	F
43.	Ibrahim Jarso	RAP	M
44.	Daoud Tari	RAP	M
45.	Malelo Adan	Dedha Garbatulla	F
46.	Josephat Anjiri	Irrigation Officer	M
47.	Roba Galgalo	Garbatulla	M
48.	Julius Lemomo	D.O Garbatulla	M
49.	Francis Macharia	D.O Office	M
50.	Bashir Jillo	County Water Director	M

1.3: Participants in Merti Meeting

S. No.	Name	Area/Organization	Gender (M/F)
1.	HawoDabaso	Youth	F
2.	Boru Godana	MID-P	M
3.	Caroline King	IIED	F
4.	KassimGufu	WAPC	M
5.	DibaGolicha	RUA	M
6.	Mohamed Koricha	Dedha	M
7.	Turo Buke	RUA	F
8.	Mohamed Wako	RUA	M
9.	Adan Fayo	Irrigation Committee	M
10.	Mohamed Molu	Merti sub county water Officer	M
11.	Victor Adaka	County water Services	M
12.	Bashir Jillo	County Director	M
13.	Jarso Haro	Merti sub county irrigation officer	M
14.	Ibrahim Jarso	RAP	M
15.	Adan Kullo	Irrigation Committee	M
16.	Osman Bagaja	County Energy Officer	M
17.	Abdullahi Huka	Cherab Ward Administrator	M
18.	NasiboKanu	WAPC	F

S. No.	Name	Area/Organization	Gender (M/F)
19.	AbdirahmanHalkano	Dedha	M
20.	JedidaNkirote	MID-P	F
21.	FatumaDuba	WAPC	F
22.	KuleHalkano	WRUA	F
23.	HadijaHuka	Water Management Committee (Korbesa)	F
24.	Mumina Ali	Kiondo women group	F
25.	Abdikadir Jattani	MID-P	M
26.	Abdi Roba	Water Management Committee (Bulesa)	F
27.	Hassan Dida	Chief Merti	M
28.	Abdi Mohamed	WAPC	M
29.	Mohamed Abduba	WRUA	M
30.	BoruBidu	Water Committee mataarba	F
31.	Rehema Jillo	Water Committee bassa	F
32.	Halima Godana	Merti-Water	F
33.	MalichGuyo	Biliqo-Water	M
34.	Abdi Olo	WRUA	M
35.	Boru Wako	Irrigation Committee	M
36.	Abdi Hussein	RUA	M
37.	Hussein Bidu	WRUA	M
38.	HawoGolicha	Dima Adho-Water Committee	F
39.	Hassan Sime	Irrigation Committee	M
40.	DadheKampicha	Dedha	F
41.	Salad Godana	MID-P	M
42.	OrgeDuba	Chief-Goda	F
43.	Charles Wambugi	Sub county Crops Officer	M
44.	Bonu Hassan	Irrigation Committee	F
45.	DokatuHalkano	Machesa Women Group	F
46.	Gimbe Godana	Merti Water	M

Appendix 2: Resource database

2.1: Isiolo and Oldonyiro

Name	Type	Use	Management	Quantity	Notes	Extraction
Oldonyiro Ward						
Dam and Intake	Dam	NULL	NULL	NULL	abstracts water to 715	NULL
Turbine	Turbine	NULL	NULL	NULL	electric turbine pumps water to Oldonyiro Water Tank	NULL
Lobarishereki Pan	Pan	Domestic/Livestock/ Wildlife	customary	too small! (100,000L max) 500 goats per day, lasts 2 months after rains	enhanced natural pan	open water
Namekok Hand Pump	Borehole	Domestic/Livestock	customary	100,000L per day	NULL	handpump
Ntipes Hand Pump	Borehole	Domestic/Livestock	customary	50,000L per day	pump broken	handpump
Lobarishek Hand Pump	Borehole	Domestic	NULL	50,000L per day	not functional, damaged by high river flows	handpump
Ngorika Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	RAAP	2000 goats per day for 6 months	NULL	buckets
Oldonyiro Water Tank	Tank	Domestic	Oldonyiro Water users Association	delivers to over 100 kiosks	six partitions, total capacity 800,000L	gravity fed from wassonyiro
Looseketet Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	100,000L per day	NULL	diesel genset and buckets
Oldonyiro Catholic Mission Borehole	Borehole	Domestic	catholic mission	100,000L per day	NULL	diesel genset
Protected Well	Shallow well	Domestic	Management committee	Serves about 3000 households	funded by actionaid	diesel genset
Adabal Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	2000 goats per day 6 months after rains	NULL	buckets
Loolching Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	2000 goats per day for 6 month after rains	NULL	buckets
RAAP Borehole	Borehole	Domestic	RAAP	100,000L per day	NULL	diesel genset
Lempoe Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	3000 goats per day permanent	NULL	buckets
Oldonyiro Catholic Mission Shallow Well	Shallow well	Domestic	catholic mission	50,000L per day	NULL	solar

Name	Type	Use	Management	Quantity	Notes	Extraction
Loosira Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	500 goats per day for 1 month after rains	NULL	buckets
Milma Chui Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	60 households for 2 months after rains	NULL	buckets
Nitumodet Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	2-300 goats per day during rains only	NULL	buckets
Sheek Borehole	Borehole	Domestic	customary	not functioning	NULL	no extraction
Sheek Borehole	NULL	NULL	NULL	NULL	NULL	NULL
Parkuruk Pan	Pan	Domestic/Livestock	customary	2000 goats per day 3-4 months after rains	NULL	open water
Turra Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	3000 goats per day for 6 month after rains	NULL	buckets
Rumate Pan	Pan	Domestic/Livestock/ Wildlife	customary	600 goats per day for 1.5 months after rains	built 2011 soils drain quickly	open water
Rumate Sand Dam	Sand dam	Domestic	customary	Not used much, contains little water	NULL	buckets
Nontudu Pan	NULL	Domestic/Livestock/ Wildlife	customary	previously 2000 goats per day for 4 months after rains, now 900 for 2 months due to leakage	Pan	open water
Loruko Pan	Pan	Domestic/Livestock/ Wildlife	customary	3000 goats per day for 6 months after rains	built jun 2012 ground truth	open water
Tuale Borehole	Borehole	Livestock	customary	500 goats per day permanent	NULL	handpump
Tuale Pan	Pan	Domestic/Livestock/ Wildlife	customary	2000 goats per day for 3 months after rains	NULL	open water
Longopito Hand Pump	Borehole	Domestic/Livestock	customary	50,000L per day	NULL	handpump
Lenguruma Pan	Pan	Domestic/Livestock/ Wildlife	customary	2000 goats per day for 4 months after rains	heavily silted, not used for a year as of sept 2012	open water
Longopito 2 Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	200 goats per day only during rains	broken	buckets
Longopito Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	600 goats per day, 2 months after rains	NULL	buckets

Name	Type	Use	Management	Quantity	Notes	Extraction
Mlima Tatu Pan	Pan	Domestic/Livestock/ Wildlife	customary	1000 goats per day for 2 months	Badly silted intake damaged	open water
Longopito 2 Hand Pump	Borehole	Domestic/Livestock	customary	50,000L per day	dry	handpump
Ngoro Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	700 goats per day, 3 months after rains	NULL	buckets
Longopito 3 Hand Pump	Borehole	Domestic/Livestock	customary	50,000L per day	damaged by floods	handpump
Longopito 3 Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	400 goats per day, 1 months after rains	NULL	buckets
Longopito Pan	Pan	Domestic/Livestock/ Wildlife	customary	1000 goats per day for 3 months	built nov 2011, breached	open water
Lolgiriai Hand Pump	Hand pump	Domestic/Livestock	customary	500 goats per day, 2 months after rains	NULL	hand pump
Lolgiriai Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	500 goats per day, 2 months after rains (almost permanent)	NULL	buckets
Kawalash Rock Catchment Tank	Tank	Domestic	VVC	2x100,000L for ~ 4 months after rains	donkeys visit 3 times per week with jerry cans	buckets
Nomotoyi Rock Catchment	Tank	Domestic	NULL	100,000L capacity lasts ~2 months	NULL	tap
Lagaaman Sand Dam C	Sand dam	Domestic/Livestock/ Wildlife	customary	300 goats per day for 3 months after rains	NULL	buckets
Lagaaman Sand Dam B	Sand dam	Domestic/Livestock/ Wildlife	customary	400 goats per day, 4 months after rains	NULL	hand pump
Lagaaman Sand Dam A	Sand dam	Domestic/Livestock/ Wildlife	customary	700 goats per day, 6 months after rains (almost permanent)	NULL	hand pump
Chulumai Pan	Pan	Domestic/Livestock/ Wildlife	customary	1500 goats per day for 3 months after rains	NULL	hand pump
NdonyoLawai Pan	Pan	Domestic/Livestock/ Wildlife	customary	1000 goats per day for 2 months	built mar 2012	open water
Nontomia Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	300 goats per day, 1 month	NULL	buckets
Lengwenyi Pan	Pan	Domestic/Livestock/ Wildlife	customary	500 goats per day for 1 months	affected by siltation, then breached by high river flows	buckets

Name	Type	Use	Management	Quantity	Notes	Extraction
Steku Handpump	Hand pump	Domestic	customary	3000L per day	NULL	hand pump
Sieku Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	2000 goats per day, Permanent	NULL	buckets
Lengwenyi Hand Pump	Borehole	Domestic/Livestock	customary	700 goats per day, Permanent	NULL	handpump
GSU Borehole	Borehole	Domestic	GSU	30,000L per day	NULL	diesel genset
Kipsing Sand Dam	Sand dam	Domestic	catholic mission	60,000L per day	used by mission and primary school, has filtration gallery	diesel genset
Kipsing Sand Dam 2	Sand dam	Domestic/Irrigation/ Livestock	customary	2000 Livestock per day	used for irrigation and livestock	diesel genset (small)
Mokori 2 Pan	Pan	Domestic/Livestock/ Wildlife	customary	2000 goats per day for 4 months after rains	built jan 2012 ground truth	open water
Catholic Mission Borehole	Borehole	Domestic	catholic mission	1000L per day	NULL	diesel genset
Kililio Hand Pump	Borehole	Domestic/Livestock	customary	50,000L per day	damaged by floods	handpump
Mokori 1 Pan	Pan	Domestic/Livestock/ Wildlife	customary	1500 goats per day for 3 months after rains	built mar 2012 ground truth	open water
Mokori Hand Pump	Borehole	Domestic/Livestock	customary	50,000L per day	NULL	handpump
Mokori Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	800 goats per day, 3 months	NULL	buckets
Nolmurgusian Rock Catchment	Tank	Domestic	customary	2x50,000L lasts ~ 2 months after rains	donkeys visit 3 times per week with jerry cans	buckets
Samanderi Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	1000 goats per day for 2 months	built mar 2012	open water
Lodomoru Pan	Pan	Domestic/Livestock/ Wildlife	customary	1000 goats per day for 2 months	built mar 2011	open water
Noloroi Sand Dam	Sand dam	Domestic/Livestock/ Wildlife	customary	5000+ goats per day permanent	built mar 2011	open water
Ndonyolengala pan						
ndoyolashau pan						

Name	Type	Use	Management	Quantity	Notes	Extraction
Bula Pesa Ward						
Isiolo Farmers Self Help Group	B/H		Traditional		The B/H is capped and not installed with a pump	N/A
Bula Mpya	B/H	Domestic, Irrigation, livestock	Open access		No storage infrastructure	N/A
LMD Livestock office B/H	B/H	-	Government			electric
Uhuru Polytechnic B/H	B/H	N/A	Government		The B/H/h is capped	N/A
Kambiyajuu catholic church B/H	B/H	Domestic	Institution		the B/H is fully automated	Solar
LMD B/H	B/H	Domestic	Management committee			electric
St Paul PolytechnicNur-sarySch B/H	B/H	Domestic	Management committee			Hand Pump
wilmag Kenya Ltd	B/H	Domestic , irrigation	Individual		The B/H is used by the community during extreme drought conditions	electric
Burat Ward						
Game KWS sobi Seal Unit	B/H	-	Institution		The B/H is dry	N/A
Abotua Slaughter House B/H	B/H	Industrial	Institution		the B/H is awaiting commissioning	electric
catholic game area	B/H	Domestic	Water Committee			Solar
catholic game area old B/H	B/H	None	Water Committee		The B/H has very high salinity	N/A
Mlango B/H	B/H	Domestic, livestock	Government			Genset
MOL Burat B/H	B/H	None	Government		The B/H is not in use; some equipment has been vandalized	Genset
NgareSirkon	B/H	Domestic & Livestock	Government		B/H not operational,awaiting repairs	Genset
Ngaremara Ward						
Claretian Missionaries IT centre	B/H	DOMESTIC	Institution		The B/H is not equipped	N/A

Name	Type	Use	Management	Quantity	Notes	Extraction
Ngaremara	B/H	Domestic	Management committee			Genset
Nakuprat	B/H	N/A			B/H is fit but insecurity led to abandonment	Electric
Daaba community CPK (7632)	B/H	Domestic and Livestock	Management committee			Solar
Ariemet Water project (C-6877)	B/H	Domestic and Livestock	Management committee		Airline poorly positioned.	solar
Ashnil Hotel	B/H	Domestic	Institution			electric
RedcrossKwanja	B/H	Domestic				Solar
Kiwanjani SW 1	SW	Domestic, Livestock	Community		Hand pump needs repair	Buckets
Kiwanjani SW 2	SW	Domestic, Livestock	Community			Buckets
Mr. Naparathaya	SW	Domestic, Livestock	Individual			Buckets
Mr John SW	SW	Domestic, Livestock	Individual			Buckets
Mr Dapalii SW	SW	Domestic, Livestock	Individual			Buckets
Mr. Nturen SW	SW	Domestic, Livestock	Individual			Buckets
Mr.Nadira Leer SW	SW	Domestic, Livestock	Individual		the well was recently dug	Buckets
Mr. Joseph Lepalo SW	SW	Domestic, Livestock	Individual			Buckets
Mr AyanLowalan SW	SW	Domestic, Livestock	Individual			Buckets
Ngwarat SW	SW	Domestic, Livestock	Individual			Buckets
Epidin SW	SW	N/A	Community		The well is not in use	Buckets
					the well was backfilled with stones during inter-ethnic clashes	Buckets
MCM church	SW	Domestic, Livestock	Open access			Buckets
Lowangira community	SW	Domestic & Livestock	Management committee			N/A
Lowangira B community	SW	Domestic & Livestock	Management committee			Furrow
Lowangira Pry. School	SW	Domestic	Institution			N/A
EkaleNatale	SW	Domestic & Livestock	Management committee			N/A

Name	Type	Use	Management	Quantity	Notes	Extraction
Attankijito	SW	Domestic & Livestock	Management committee			Pipeline
Joy's Camp SW	SW	Domestic & Wild animals	Game reserve			Pipeline
Christopher Lukuruka	SW	Domestic & Livestock	NGO			Buckets
Joseph Lowasa	SW	Domestic & Livestock	Individual			Buckets
LoswuaAyemuni	SW	Domestic & Livestock	NGO			Furrow
AyaniEtono	SW	Domestic & Livestock				Buckets
Mariam Lengonyekie	SW	Domestic & Livestock	Management committee			Buckets
Joseph Lukuniati	SW	Domestic, Irrigation & Livestock	Management committee			Buckets
Nicholas Kaman	SW	Domestic, Irrigation & Livestock	Management committee			Buckets
Alila	SW	Domestic & Irrigation	Management committee			Buckets
Angelina Achuka	SW	Domestic & Livestock	Management committee			Buckets
David Lemuya	SW	Domestic, Irrigation & Livestock	Traditional			Buckets
Robert Lotak	SW	Domestic & Livestock	Traditional			Buckets
Ekitela	SW	Domestic, Irrigation & Livestock	Individual			Buckets
Epiding Community SW	SW	Domestic & Livestock	Management committee			Buckets
Samuel Eloilo	SW	Domestic, Irrigation & Livestock	Individual			Buckets
Apethe Women Group	SW	Domestic & Irrigation	Management committee			Buckets

Name	Type	Use	Management	Quantity	Notes	Extraction
NamangaKisima	SW	Domestic & Livestock	Management committee			Buckets
EturiLokwawi	SW	Domestic & Livestock	Individual			Buckets
Monica Agure	SW	Domestic & Livestock	Traditional			Buckets
James Nakamchura	SW	Domestic & Livestock	Management committee			Buckets
Andrew Aemun	SW	Domestic & Livestock	Individual			Buckets
Justin Elo	SW	Domestic & Livestock	Traditional			Buckets
Consolata	SW	Domestic & Livestock	Management committee			Buckets
Ngaremara Sec. School	SW	Domestic	Institution			Buckets
Manyatta Zebra	SW	Domestic, Irrigation & Livestock	Management committee			Pipeline
Wabera Ward						
IWASCO	B/H	Domestic	Institution			electric
KiwanjaniPri. Sch.	B/H	N/A	Government		B/H not in use despite installation	electric
Kiwanjani Chiefs Camp B/H	B/H	Domestic	Government		B/H capped; awaiting installation	electric
Kiwanjani Catholic Mission B/H	B/H	None	Institution		Water quality is very poor	Hand Pump
Anwar Ahmed B/H	B/H	Domestic	Individual		Water used only during the dry season	electric
GADDA Lodge B/H	B/H	Domestic, Irrigation	Institution			electric
ENNDA (13623)	B/H	Domestic, Irrigation	Institution		Airline blocked at 3.5m	electric
Isiolo District Hospital (C15703)	B/H	Hospital				Electric
Loreto Nursery School B/H	B/H	Domestic	Institution		during School holidays only the Non-student population is present	electric

Name	Type	Use	Management	Quantity	Notes	Extraction
Loreto Pri. Sch. B/H	B/H	Domestic	Institution			electric
Isiolo TB Manyatta	B/H	Domestic	Institution			electric
Pepo la Tumaini	B/H	Domestic, Irrigation	Institution			Solar
Bishop Ileri's Residence B/H	B/H	Domestic	Institution		Airline is blocked	electric
Isiolo Market B/H	B/H	N/A	Government		The B/H is capped and is illegal	N/A
catholic diocese of isiolo	B/H	Domestic	Institution			electric
catholic diocese of isiolo	B/H	Domestic	Institution		The B/H has no airline	Electric
Al-Falah B/H	B/H	Domestic	Institution			electric
Isiolo Girls High Sch. (11340)	B/H	Domestic	Institution		No informant on site	electric
MwangazaPri. Sch. B/H	B/H	Domestic, Livestock	Government		The B/H is awaiting pumping and conveyance equipment installation	electric
holy trinity of sisters B/H	B/H	Domestic, Livestock, irrigation	Institution			Solar
Anwar Ahmed Petrol Station B/H	B/H	Domestic, Industrial	Individual		The B/H is not installed and the petrol station is under construction	N/A
Kambiyajuu Integrated Pri. Sch. B/H	B/H	N/A	Institution		The B/H is not functional as is not installed with a pumping system	N/A
Isiolo Agriculture Training Institute	B/H	Domestic, irrigation, livestock	Institution			electric
Sacred Heart Seminary	B/H	Domestic	Institution			electric
Isiolo Police Station	B/H	N/A	Government		Abandoned due to drilling difficulties	N/A
Ramadhan Prisch	B/H	N/A	Institution		Th B/H is awaiting installation of the pumping and conveyance systems	electric
KambiGarba Islamic Centre	B/H	Domestic	Institution			electric

Name	Type	Use	Management	Quantity	Notes	Extraction
KambiGarbaPriSch B/H	B/H	N/A	Institution		The B/H is awaiting installation	electric
Nomads children home B/H	B/H	Domestic	Institution			electric
Brothers of Charity	B/H	Domestic	Institution			electric
Desert Trail SW	SW	Domestic	Institution			Pipeline
Isiolo Boys High Sch. SW 1	SW	Domestic	Institution		SW only used for clothes washing	Buckets
SDA church SW 1	SW	Domestic	Institution			Buckets
SDA church SW 2	SW	Domestic	Institution			Pipeline
Felix Kariba	SW	None	Individual		The household is currently using water from Iwasco	N/A

2.2: Garbatulla

Name	Type	Use	Management	Quantity	Notes	Extraction
Garbatulla Ward						
Garbatulla North Location						
Range Water borehole	NULL	NULL	NULL	NULL	Borehole	no extraction
Qarsa Ingrez	Shallow well	Domestic/Livestock/Wildlife	customary	ephemeral, 500 goats only during rains	Mado	buckets
Taiboto borehole	Borehole	NULL	LMD?	very large used to water 20,000 head of cattle when there was a central market here	abandoned – owned by LMD, huge capacity, but no longer market cattle here	no extraction
Mado Hokile	Shallow well	Domestic/Livestock/Wildlife	customary	permanent, 800 goats per day	NULL	buckets
Harr Abaloni	Pan	Domestic/Livestock/Wildlife	customary	1500 head per day for 3 months after rain	NULL	open water
Qobo Shallow Wells	Shallow well	Domestic/Livestock/Wildlife	customary	600 goats per day	NULL	buckets
Boji borehole 2	Borehole	Livestock	customary	20000L in 8hrs (daily limit)	NULL	diesel Gensets
Tana Shallow Wells	Shallow well	Domestic/Livestock/Wildlife	customary	permanent 500 cattle per day	3 shallow wells	buckets
Tana Hand Pump	Hand pump	Domestic	customary	1000L per day	1 shallow well	hand pump
Elli Guyo Orma Shallow Well/Spring	Spring	Domestic/Livestock/Wildlife	customary	1500 goats per day permanent	well also here	NULL
Garbatulla South Location						
Bana Cook	Pan	Domestic/Livestock/Wildlife	customary	2 months after rain, 400 head per day	NULL	open water
Boji Ires Dharmi Spring	Spring	Livestock/Domestic/Wildlife	customary	6000 head per day	Livestock in transit also use this point	NULL
Dambala Buyo	Pan	Domestic/Livestock/Wildlife	customary	5 months after rain, 2000 head of livestock	NULL	open water
Elikara Wells	Shallow well	Domestic/Livestock/Wildlife	customary	700 head of cattle per day	3 wells	buckets

Name	Type	Use	Management	Quantity	Notes	Extraction
Dambala Daka	Pan	Domestic/Livestock/ Wildlife	customary	1 month after rain, 400 head per day for that period	NULL	open water
Qarsa Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	4000 head of cattle per day	4 wells	buckets
Mado Jaldesa Scoop	Scoop	Livestock/Domestic/ Wildlife	customary	1500 head per day permanent	NULL	NULL
Rahole pan 2	Pan	Domestic/Livestock/ Wildlife	customary	2000 head goat/camel per day for 6 months	constructed '79	open water
Dambala Urura	Pan	Domestic/Livestock/ Wildlife	customary	3 months after rain, 1000 head of livestock	NULL	open water
Bamba Shallow Wells	Shallow well	Livestock/Domestic/ Wildlife	customary	2000 head per day permanent	~20 wells, some salty and some sweet	buckets
Rahole pan 1	Pan	Domestic/Livestock/ Wildlife	customary	2000 head goat/camel per day for 6 months	constructed '79	open water
Benane Borehole	Borehole	Domestic	customary	very high	NULL	diesel
Bubisa borehole	Borehole	Livestock/Domestic/ Wildlife	customary	2000 head per day permanent	NULL	solar pump
Dambala Bulu	Pan	Domestic/Livestock/ Wildlife	customary	500 head per day for 3 months	NULL	open water
Garbatulla High School Intake	Sand dam	Domestic	school board	no threshold reached	Sand dam, with a well dug, extracted by machine. Only used by school.	diesel Gensets
Garbatulla Hospital borehole	Borehole	Domestic	hospital management	no threshold reached	hospital bh	solar
Eil Borte Shallow Well	Shallow well	Livestock	customary	1000 goats per day permanent	abandoned – GT was founded on this well	no extraction
Sister Waliyana borehole	Borehole	Domestic/Irrigation	Garbatulla water CBO	40000L per day	two boreholes at this location, one used for irrigation by women groups, one for domestic use	mains electric
Tula Shallow Wells	Shallow well	Livestock	customary	4000 goats, 300 cows per day permanent	NULL	buckets
Mata Gari Tinga borehole	Borehole	Domestic	Garbatulla water CBO	80000L per day	2 bhs at this location the other one is named islamic foundation borehole	diesel Gensets

Name	Type	Use	Management	Quantity	Notes	Extraction
Qone Shallow Wells	Shallow well	Domestic/Livestock	customary	1000 head per day permanent	NULL	buckets
Skot Borehole	Borehole	Domestic/Irrigation	customary	very high	sunk 2012	solar pump
Baram Bate Shallow Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	3000 head per day, ephemeral provides for 3 months	29 shallow wells – provides for 3 months from May to August	buckets
Hargeisa Shallow Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	4000 goats per day permanent	8-10 shallow wells, new wells are dug as required	buckets
Malika Daka Location						
Eil Karra Spring	Spring	Domestic/Livestock/ Wildlife	customary	500 goats per day permanent	NULL	NULL
Kuro Mume	Spring	Domestic/Livestock/ Wildlife	customary	no threshold reached	medicinal properties, deworming, minerals	NULL
Kuro Gaqalo	Spring	Domestic/Livestock/ Wildlife	customary	no threshold reached	medicinal properties, deworming, minerals	NULL
Kuro Takari	Spring	Domestic/Livestock/ Wildlife	customary	no threshold reached	medicinal properties, deworming, minerals	NULL
Kuro Bisiqa	Spring	Domestic/Livestock/ Wildlife	customary	no threshold reached	medicinal properties, deworming, minerals	NULL
Marado Dadacha	Spring	Domestic/Livestock/ Wildlife	customary	2000 goats per day permanent	NULL	buckets
Marado Haa Gedi Spring	Spring	Domestic/Livestock/ Wildlife	customary	1500 goats per day permanent	NULL	NULL
Marado Urura Shallow Wells	Shallow well	Domestic/Livestock	customary	800 goats permanent	NULL	buckets
Bisan D'ero	Spring	Domestic/Livestock/ Wildlife	customary	seasonal, 300 goats and 200 camels per day	well also here (this is used to access cleaner, less contaminated water from underground)	buckets
Kuroftu Molu Shallow Well	NULL	Domestic/Livestock/ Wildlife	customary	1000 goats plus 200 cattle per day permanent	4 man well	buckets
Malika Daka Shallow Wells	Shallow well	Domestic	customary	50000L in 6hrs	NULL	diesel Gensets
Malika Daka Borehole	Borehole	Domestic/Livestock	customary	1500 people/ 300 households	not yet operational	diesel Gensets

Name	Type	Use	Management	Quantity	Notes	Extraction
Gafarsa Location						
Gafarsa borehole	Borehole	Livestock	customary	800 head per day permanent	abandoned	solar pump
Much'uro borehole	Borehole	Domestic/Livestock	customary	2000 head per day permanent	NULL	diesel Gensets
Qurqura Shallow Well	Shallow well	Domestic/Livestock	customary	500 goats plus 100 camels per day permanent	NULL	buckets
Dololo Quqa	Pan	Livestock	customary	500 head per day for 1 month	NULL	NULL
Harr Belgesh 3	Pan	Domestic/Livestock/ Wildlife	customary	1000 head per day for 6 months	NULL	open water
Belgesh Borehole	Borehole	Domestic/Livestock	customary	permanent, 2000 goats & 200 camels per day	NULL	diesel Gensets
Harr Belgesh 1	Pan	Domestic/Livestock/ Wildlife	customary	1000 head per day for 6 months	NULL	open water
Hadulki Shallow Wells	Shallow well	Livestock/Domestic/ Wildlife	customary	500 head per day for 2 months after rains	Ground truth	buckets
Jilibgaab Shallow Wells	Shallow well	Livestock/Domestic/ Wildlife	customary	500 head per day for 2 months after rains	Ground truth	buckets
Harr Hahotu Pan	Pan	Domestic/Livestock/ Wildlife	customary	2000 goats per day for 6 months	NULL	open water
Kinna Ward						
Kulamawe Location						
Girisa Pan	Pan	Domestic/Livestock/ Wildlife	customary	2000 per day for 4 months	NULL	open water
Shauri Yako Borehole	Borehole	Domestic/Livestock	Borehole committee	3000 livestock per day	NULL	Diesel
Kulamawe Borehole	Borehole	Domestic/Livestock	Borehole committee, charge money	4000 cattle, 2000 other	Since 1954, lifeline for Kulamawe	Diesel (Lister)
Barambate wells	Shallow well	Domestic/Livestock/ Wildlife	customary	1800/day permanent	8 well, 200 head per day each	buckets
Dololo Urura	Natural Pan	Domestic/Livestock/ Wildlife	customary	maximum 3 months after rain, 300 head of cattle per day	NULL	open water
Barambate hand pumps	Hand pump	Domestic/Livestock/ Wildlife	customary	1800/day permanent	2 wells, 200 head per day each	buckets

Name	Type	Use	Management	Quantity	Notes	Extraction
Eil Jajaba Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	Permanent, 450/500 head of livestock per day	7 deep wells	buckets
Kanchora Warabesa Spring	Spring	Domestic/Livestock/ Wildlife	customary	Permanent, 400 head per day	NULL	NULL
Kurobarata	Spring	Domestic/Livestock/ Wildlife	Loose weakening of customary institutions	Permanent, 10,000 head per day big spring	Salty spring also used as a salt lick	NULL
Lesosia Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	5/6 months serves 600/700 head per day	6-10 wells	buckets
Boqe Magado Spring	Spring	Domestic/Livestock/ Wildlife	customary	1000 head per day	no camels to steep to access	NULL
Boqe Magado Salts	Salt lick	NULL	NULL	NULL	NULL	NULL
Gotu Spring	Spring	Domestic/Livestock/ Wildlife	committee	very high	NULL	NULL
Madoyaqa Salt Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	Capacity not reached, permanent	2 wells, buckets from well but put in a trough by customary law for wildlife	buckets
Yaqbarsadi	Borehole	Domestic/Livestock/ Wildlife	committee	600 head per day	NULL	Diesel
Dololo Funani	Natural Pan	Domestic/Livestock/ Wildlife	customary	maximum 2 months after rain, 300 head of cattle per day	NULL	open water
Dololo Qalqalcha	Natural Pan	Domestic/Livestock/ Wildlife	customary	maximum 2 months after rain, 300 head of cattle per day	NULL	open water
Dololo Harken	Natural Pan	Domestic/Livestock/ Wildlife	customary	3 months after rain, 300 head of cattle per day, largest Dololo	NULL	open water
Borr Pan	Pan	Domestic/Livestock/ Wildlife	customary	2 month, 1000/per month	NULL	open water
Kubiario Borehole	Borehole	Domestic/Livestock	Borehole committee (same as 39)	NULL	Waiting for control panel	diesel
Dololo Dadacha	Natural Pan	Domestic/Livestock/ Wildlife	customary	maximum 2 months after rain, 300 head of cattle per day	NULL	open water

Name	Type	Use	Management	Quantity	Notes	Extraction
Kinna Location						
Chafesa Spring	Spring	Domestic/Livestock/ Wildlife/Irrigation	irrigation committee	Never dries up	NULL	NULL
Wachu Spring	Spring	Domestic/Livestock/ Wildlife/Irrigation	customary	Never dries up	NULL	NULL
Burqa	Spring	Livestock/Domestic/ Wildlife/Irrigation	irrigation committee	Never dries up	NULL	NULL
Kinna Spring	Spring	Domestic/Livestock/ Wildlife/Irrigation	village water committee	Never dries up	Gravity piped to Kinna	NULL
Fish pond	NULL	NULL	NULL	NULL	1 pond supporting Tilapia, mudfish	NULL
Fish pond	NULL	NULL	NULL	NULL	~15 ponds supporting Tilapia, mudfish	NULL
Livestock Holding Ground Borehole	Borehole	Domestic/Livestock	ministry of livestock	unknown	Newly sunk in 2013	NULL
Mosque Well	Shallow well	Domestic	NULL	permanent	NULL	buckets
Ibrahim Dera's Well	Shallow well	Domestic	NULL	permanent	1 well	buckets
Eil Darer Gofu Well	Shallow well	Domestic/Livestock/ Wildlife	customary	Permanent, 300 head of livestock per day	2 wells	buckets
Galmadido Primary School Hand Pump	Hand pump	Domestic	school managed	dried up	NULL	hand pump
Charabdich Shallow Wells	Hand pump	Domestic	NULL	permanent	1 well with storage tank	buckets
Qone Qalo Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	Permanent, 300 head of livestock per day	1 well	buckets
Darga Hand Pump	Hand pump	Domestic	private	permanent	NULL	hand pump
Taqwa Mosque Hand Pump	Hand pump	Domestic	private	permanent	NULL	hand pump
Mosque Borehole	Borehole	Domestic	Mosque committee	capacity not reached	NULL	NULL

Name	Type	Use	Management	Quantity	Notes	Extraction
Jilo Dima Borehole	Borehole	Domestic	Borehole committee (Kinna water users association committee along with government)	14.4 m ³ per second	now operational with 5 water kiosks	NULL
Eil Guhad	Shallow well	Domestic/Livestock/ Wildlife	customary	Permanent, 500 livestock per day	1 well	buckets
Moliti Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	18,000L/day	25 shallow wells, into trough	buckets
Bibi Location						
Harr Bibi	NULL	Domestic/Livestock/ Wildlife	customary	Over 3-6 months, 2000 animals per day	Pan	open water
Maika Magado	Salt lick	NULL	NULL	NULL	NULL	NULL
Dambala Korbasa	Pan	Domestic/Livestock/ Wildlife	customary	2.5 months 300 per head per day, but pasture attracts buffalos and elephants, so durability variable	Ground truth	open water
Bibi Borehole	Borehole	Domestic/Livestock/ Wildlife	Borehole committee	NULL	Pumps water to Duse via 18km pipe (straight, not along road)	Diesel/solar
Rapsu Location						
Korbasa Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	2000 head of cattle permanent (1000 each)	2 wells	buckets
Boji Onn Wata	Salt lick	NULL	NULL	NULL	NULL	NULL
Rapsu Borehole	Borehole	Domestic/Livestock	Borehole committee	tested as sufficient	NULL	NULL
Sericho Ward						
IresaBoru Location						
Harr IresaBoru	Pan	Domestic/Livestock/ Wildlife	customary	500 goats per day for 1 months after rains	NULL	open water
Harr Biliqi	Pan	Domestic/Livestock/ Wildlife	customary	500 cattle per day for 2 months after rains	also used for hardcore abstraction	open water

Name	Type	Use	Management	Quantity	Notes	Extraction
Harr Mogore	Pan	Domestic/Livestock/ Wildlife	customary	1000 goats per day for 3 months after rains	built 2010	open water
Eil IresaBoru Gotu Borehole	Borehole	Domestic/Livestock	IresaBoru Water Committee	9.8 cubic metres per hour	NULL	diesel Gensets
Harr Galan Qala	Pan	Domestic/Livestock/ Wildlife	customary	1000 cattle per day for 3 months after rains	NULL	open water
Maika Bila Shallow Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	~12,000 cattle per day Permanent, have to dig deep in drought	24 shallow wells in this area used predominantly in drought. There is a hand pump	buckets
Eil Madho	Shallow well	Domestic/Livestock/ Wildlife	customary	400 goats per day for 4 months after rains	NULL	buckets
Mado Qiti Shallow Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	500 cattle per day for 3 months after rain	Ground truth, ~6 wells	buckets
Eidera Location						
Eidera Shallow Wells	Shallow well	Domestic/Wildlife	customary	ephemeral – very high for 3 months after rains	2000 people use it	open water
Mado Qutu Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	100 goats per day for 2 months after rains	mostly for domestic use – some goats	buckets
Harr Adhi	Pan	Domestic/Livestock/ Wildlife	customary	600 cattle per day for 3 months after rains	NULL	open water
Sericho Location						
Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from Eil IresaBoru Borehole	NULL
Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from Eil IresaBoru Borehole	NULL
Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from Eil IresaBoru Borehole	NULL
Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from Eil IresaBoru Borehole	NULL
Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from Eil Iresaboru Borehole	NULL
Harr Fororsa	Pan	Domestic/Livestock/ Wildlife	customary	3000 cattle per day permanent in a good year	NULL	open water

Name	Type	Use	Management	Quantity	Notes	Extraction
Harr Badana 3 *	Pan	Livestock/Wildlife	customary	3000 cattle per day for 2 months after rains	NULL	open water
Harr Biliqi 1	Pan	Domestic/Livestock/Wildlife	customary	1000 cattle per day for 1 months after rains	NULL	open water
Ei Qone Rimetri Wells	Shallow well	Domestic/Livestock/Wildlife	customary	2000 cattle per day for 2 months after rains	Ground truth	buckets
Badole Wells	Shallow well	Domestic/Livestock/Wildlife	customary	3000 cattle per day for 3 months after rains	Ground truth	buckets
Harr Biliqi 3	Pan	Domestic/Livestock	customary	2000 cattle per day for 3 months after rains	NULL	buckets
Harr Galgalo Kura	Pan	Domestic/Livestock/Wildlife	customary	200 cattle per day for 1 months after rains	NULL	open water
Harr Badana 1	Pan	Domestic	customary	3 months after rain	NULL	open water
Biliqi Water Kiosk	Standpipe	NULL	NULL	NULL	supplied by the Sericho system (545)	NULL
Harr Badana 2	Pan	Livestock	customary	1000 cattle per day for 3 months after rains	NULL	open water
Badana Water Tank	Tank	Domestic	committee	48,000 l3	NULL	NULL
Eil Biliqi Borehole	Borehole	Livestock	customary	1.7 cubic meters per hour	NULL	diesel Gensets
Harr Qote Kora	NULL	Domestic/Livestock/Wildlife	customary	500 cattle per day for <1 months after rains	Pan	open water
Sericho Pan	Pan	Domestic/Livestock/Wildlife	customary	2000 cattle per day for 2 months after rains	NULL	open water
Water Tank	Tank	Domestic (Livestock in emergency)	bisan Sericho water project	120,000L	stores water from 545, 546 and delivers to 533, 536, 537, 541-544	diesel Gensets
Central Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from 542	NULL
A.P. Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from 545	NULL
Biliqi Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from 542	NULL
Machesa Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from 545	NULL
Badana Water Kiosk	Standpipe	Domestic	committee	48,000 l3	Ground truth, 3 kiosks	NULL
Mulanda Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from 545	NULL

Name	Type	Use	Management	Quantity	Notes	Extraction
Ires Golompo Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from 543	NULL
Water Tank	Tank	NULL	NULL	NULL	stores water from 545, delivers to 531	NULL
Walda Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from 545	NULL
Bisan Sericho Handpumps	Hand pump	Livestock	NULL	600 cattle per day, permanent	5 handpumps	NULL
Bisan Sericho Borehole	Borehole	Domestic (Livestock in emergency)	bisan Sericho water project	7 cubic metres per hour	feeds standpipes 533, 536, 537, 541-544, 2sh per 20L, yield drops drastically in drought, water tankers can be needed to supplement	diesel Gensets
Town Water Kiosk	Standpipe	NULL	NULL	NULL	first kiosk, delivers water from 542	NULL
Harr Gubatu	Pan	Domestic/Livestock/ Wildlife	customary	3000 cattle per day for 2 months after rains	NULL	open water
Gubatu Mosque Water Kiosk	Standpipe	NULL	NULL	NULL	delivers water from 544	NULL
Harr Bari	Pan	Domestic/Livestock/ Wildlife	customary	3000 cattle per day for 1 month after rains	NULL	open water
Harr Biliqi 2	Pan	Domestic/Livestock	customary	2000 cattle per day for 6 months after rains	operates as one unit with Biliqi 5, both fenced using bucket and Gensets extraction	buckets
Harr Adhi Badana	Pan	Domestic/Livestock/ Wildlife	customary	500 cattle per day for 2 months after rains	also used for hardcore abstraction	open water
Komor Jawe	Pan	Domestic/Livestock/ Wildlife	customary	200 cattle per day for 3 months after rains	NULL	open water
Badana Hand Pump	Hand pump	Livestock	customary	500 goats per day for permanent	Ground truth	NULL
Modogashe South						
Harr Mansa	Pan	Domestic/Livestock/ Wildlife	customary	100 cattle per day for 1 months after rains	heavily silted	open water
Gababa Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	600 cattle per day for 3 months after rains	NULL	buckets
Bullo Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	300 cattle per day for 4 months after rains	NULL	buckets

Name	Type	Use	Management	Quantity	Notes	Extraction
Harr Harjoftu	Pan	Domestic/Livestock/ Wildlife	customary	300 cattle per day for 2 months after rains	NULL	open water
Dambala Kosaye 1	Pan	Domestic/Livestock/ Wildlife	customary	300 cattle per day for 2 months after rains	NULL	open water
Dambala Kosaye 2	Pan	Domestic/Livestock/ Wildlife	customary	200 cattle per day for 2 months after rains	NULL	open water
Mulanda Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	1000 goats per day for 3 months after rains	NULL	buckets
Sileti Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	1500 goats per day for 3 months after rains	NULL	buckets
Har Gababa	Pan	Domestic/Livestock/ Wildlife	customary	300 cattle per day for 3 months after rains	NULL	open water
Qoti Kore Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	1000 cattle per day for 8 months after rains	NULL	buckets
Har Chachu	Pan	Domestic/Livestock/ Wildlife	customary	1000 cattle per day for 3 months after rains	NULL	open water
Dambala Bilqicha	Pan	Domestic/Livestock/ Wildlife	customary	500 cattle per day for 2 months after rains	NULL	open water
Burque Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	500 cattle per day for 6 months after rains	NULL	buckets
El Ilman Fayo Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	300 cattle per day for 4 months after rains	NULL	buckets
Harr Abagarse	Pan	Domestic/Livestock/ Wildlife	customary	2000 cattle per day for 3 months after rains	NULL	open water
Chachu Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	300 cattle per day for 4 months after rains	NULL	buckets
LMD pan	Pan	Domestic/Livestock/ Wildlife	customary	1000 cattle per day for 1.5 months after rains	lmd = livestock marketing division	open water
Dambala Mata Bofa	Pan	Domestic/Livestock/ Wildlife	customary	300 cattle per day for 2 months after rains	NULL	open water
Modogashe North						
Harr Komor ijole Nuro	Pan	Domestic/Livestock/ Wildlife	customary	500 cattle per day for 1 months after rains	NULL	open water
Harr Komor Bula	NULL	Domestic/Livestock/ Wildlife	customary	2000 cattle per day for 5 months after rains	Pan	open water

Name	Type	Use	Management	Quantity	Notes	Extraction
Qalqalch pan	Pan	Domestic/Wildlife	customary	1000 per day for 2 months after rain	NULL	open water
Modogashe Community Water Project *	Tank	Domestic	Modogashe Water Committee	Fluctuates with season 120,000L per day can be pumped (tank capacity) during rains	Water pumped from sand dams (614, 635, 636) into tank at pump house then to another tank across the B9 (6'16) before distribution to Modogashe Standpipes	Mains electricity
Modogashe Community Water Project	Tank	Domestic	Modogashe Water Committee	Fluctuates with season 120,000L per day can be pumped (tank capacity) during rains	Water pumped from sand dams (614, 635, 636) into tank at pump house then to another tank across the B9 (6'16) before distribution to Modogashe Standpipes	Mains electricity
Sand Dam	Sand dam	NULL	NULL	NULL	NULL	gravity
Central 1 Water Kiosk	Standpipe	NULL	NULL	NULL	serves 160 households water from Modogashe Community Water Project Tanks and Sand Dams	NULL
Central 1 Water Kiosk	Standpipe	NULL	NULL	NULL	serves 132 households water from Modogashe Community Water Project Tanks and Sand Dams	NULL
Many gab	Pan	Domestic/Wildlife	customary	2000 cattle per day for 4 months	NULL	open water
Central 2 Water Kiosk	Standpipe	NULL	NULL	NULL	serves 150 households water from Modogashe Community Water Project Tanks and Sand Dams	NULL
Angele Kiosk	Standpipe	NULL	NULL	NULL	serves 130 households water from Modogashe Community Water Project Tanks and Sand Dams	NULL
Omar Kiosk	Standpipe	NULL	NULL	NULL	serves 140 households water from Modogashe Community Water Project Tanks and Sand Dams	NULL
Qone Wells	Pan	Domestic/Wildlife	customary	500 head per day for 2 months after rains	NULL	buckets
Barrier 2 Kiosk	Standpipe	NULL	NULL	NULL	serves 170 households water from Modogashe Community Water Project Tanks and Sand Dams	NULL
Didimtu Water Kiosk	Standpipe	NULL	NULL	NULL	NULL	NULL

Name	Type	Use	Management	Quantity	Notes	Extraction
Skanska Pan	Pan	Domestic/Livestock/ Wildlife	customary	1000 cattle per day for 1 months after rains	NULL	open water
Barrier 1 Kiosk	Standpipe	NULL	NULL	NULL	serves 200 households water from Modogashe Community Water Project Tanks and Sand Dams	NULL
Harr Qone	Pan	Domestic/Livestock/ Wildlife	customary	500 goats per day for 2 months after rains	NULL	open water
Sand Dam	Sand dam	Domestic	Modogashe Water Committee	Fluctuates with season 120,000L per day can be pumped (tank capacity) during rains	Water pumped from sand dams (614, 635, 636) into tank at pump house then to another tank across the B9 (6'16) before distribution to Modogashe Standpipes	Mains electricity
Sand Dam	Sand dam	Domestic	Modogashe Water Committee	Fluctuates with season 120,000L per day can be pumped (tank capacity) during rains	Water pumped from sand dams (614, 635, 636) into tank at pump house then to another tank across the B9 (6'16) before distribution to Modogashe Standpipes	Mains electricity
Didimtu Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	700 cattle per day for 3 months after rains	NULL	buckets
NULL	Shallow well	Domestic/Livestock/ Wildlife	customary	13000 cattle per day for drought period	Used strategically during drought mainly. 13 wells over ~3km. Pasture are limiting not water usually ~ 6 months. Settlement appears here during drought with all amenities. Privately owned under customary rules by those that dug them	buckets
Hawaye Wells	Shallow well	Domestic/Livestock/ Wildlife	customary	6000 cattle per day permanent	around nine wells at this location, using hand pumps and diesel Gensets in addition to buckets	buckets
Gubatu Location						
Boji Dadaba	Pan	Domestic/Livestock/ Wildlife	customary	800 cattle per day for 1 months after rains	natural pan, pastoralist camp	open water
Harr Moliti	Pan	Domestic/Livestock/ Wildlife	customary	3000 cattle per day for 2 months after rains	NULL	open water
Dololo Wachu	Pan	Domestic/Livestock	customary	1000 cattle for 1-2 months	NULL	open water

2.3: Merti

Waterpoints, energy sources, uses management arrangements and capacity by location

Name	Type	Use	Management	Capacity	Extraction
CHARI WARD					
Kom (BisanBiliiko) Location					
Eil Shantamm Wells and Spring	Spring	Domestic/Livestock/Wildlife	customary	extraction is limiting, 5000 per day permanent	buckets
Eil Golja Wells	Shallow well	Domestic/Livestock/Wildlife	customary	300 cattle per day permanent	buckets
WainaqKityo Wells and Spring	Spring	Domestic/Livestock/Wildlife	customary	5000 cattle per day permanent	buckets
Eil Tokoch Wells	Shallow well	Domestic/Livestock/Wildlife	customary	4000 cattle per day year permanent	buckets
MadoHurura	Scoop	Domestic/Livestock/Wildlife	customary	1000 cattle per day for 5 months after rains	spades
Komu Gala Wells	Shallow well	Domestic/Livestock/Wildlife	customary	2000 goats per day permanent	buckets
Eil Torobo	Salt lick	NULL	NULL	NULL	NULL
KomuRee Wells	Shallow well	Domestic/Livestock/Wildlife	customary	3000 goats permanent	buckets
Sabar Wawa Wells	Spring	Domestic/Livestock/Wildlife	customary	5000 cattle per day permanent	buckets
MadoGurbaHuqa	Scoop	Domestic/Livestock/Wildlife	customary	300 cattle per day permanent	buckets
KomuD'urte Wells	Shallow well	Domestic/Livestock/Wildlife	customary	2000 cattle permanent	buckets
MadoWaata Scoop	Scoop	Domestic/Livestock/Wildlife	customary	500 cattle per day gets low in drought	buckets
MadoWaata Scoop	Scoop	Domestic/Livestock/Wildlife	customary	500 cattle per day gets low in drought	buckets
Barambate Kara	Shallow well	Domestic/Livestock/Wildlife	customary	100 cattle per day	buckets
Mado Aba Qone	Scoop	Domestic/Livestock/Wildlife	customary	4-500 cows per day permanent	buckets
MadoQarsa	Scoop	Domestic/Livestock/Wildlife	customary	100 cattle per day for 2 months after rains	buckets
MadoMatoye Scoop	Scoop	Domestic/Livestock/Wildlife	NULL	500 cattle per day permanent	buckets
Gubatu Wells	Scoop	Domestic/Livestock/Wildlife	customary	2-300 cattle per day 3 months after rains	spades
Nyachis Shallow Wells	Shallow well	Domestic/Livestock/Wildlife	customary	3000 cattle per day gets low on average 5-6 months after rains	buckets
MadoQuuDulla	Scoop	Domestic/Livestock/Wildlife	customary	200 cattle per day for 3 months after rains	buckets

Name	Type	Use	Management	Capacity	Extraction
Eli Harre Dida	Shallow well	Domestic/Livestock/Wildlife	customary	2000 cattle per day permanent	buckets
Eli Tokotch	Shallow well	Domestic/Livestock/Wildlife	customary	3000 cattle per day permanent in a good year	buckets
MadoHalkano	Scoop	Domestic/Livestock/Wildlife	customary	3000 cattle per day permanent	buckets
Kuro BisanOwo Hot Spring	Spring	Domestic/Livestock/Wildlife	BisanBilloqo Conservancy	access is limiting, protected	open water
Kuro Qaqalo	Scoop	Domestic/Livestock/Wildlife	customary	2-300 cattle per day permanent	buckets
MadoBurquqe	Scoop	Domestic/Livestock/Wildlife	customary	200 cattle per day permanent	buckets
MadoBarambateHarsama	Scoop	Domestic/Livestock/Wildlife	customary	1000 cattle per day for 2 months after rains	buckets
Baran Bate Fayo	Scoop	Domestic/Livestock/Wildlife	customary	500 cattle per day for 2 months after rains	buckets
Mado Gale	Scoop	Domestic/Livestock/Wildlife	customary	200 cattle for 2 months after rains	buckets
Dima Adho Borehole	Borehole	Domestic	Management Committee	NULL	windmill
Bulesa Location					
Bulesa Borehole	Borehole	Domestic	Management Committee	NULL	diesel genset
MadoGuyowama	Shallow well	Domestic/Livestock/Wildlife	customary	300 cattle per day for 2 months after rains	buckets
BukisaDadacha	Natural Pan	Domestic/Livestock/Wildlife	customary	300 shoats per day for 2 months after rains	open water
BukisaQarari	Pan	Domestic/Livestock/Wildlife	customary	100 cattle per day for 2 months after rains	open water
CHERAB WARD					
Merti Location					
Merti Community Borehole	Borehole	Domestic	Merti Community Water Board	very high	diesel / electric
Harr Dogogich	Pan	Domestic/Livestock/Wildlife	customary	500 cattle per day for 2 month after rain	open water
MadoGarse	Shallow well	Domestic/Livestock/Wildlife	customary	300 cattle per day for 2 months after rains	buckets
Water Tank	Tank	Domestic	Management Committee	Large	NULL

Name	Type	Use	Management	Capacity	Extraction
Water Kiosk	Standpipe	Domestic	Management Committee	NULL	NULL
Water Tank	Tank	Domestic	Management Committee	Large	NULL
Water Kiosk	Standpipe	Domestic	Management Committee	NULL	NULL
Water Kiosk	Standpipe	Domestic	Management Committee	NULL	NULL
Water Kiosk	Standpipe	Domestic	Management Committee	NULL	NULL
Merti Water Tanks	Tank	Domestic	Management Committee	Large	NULL
Korbessa location					
Yamicha Location					
BiliqiArbaGuyoBogo	Natural Pan	Domestic/Livestock/Wildlife	customary	5000 cattle per day for 2-3 months after rains	open water
Harr Korboba	Pan	Domestic/Livestock/Wildlife	customary	1000 cattle per day for 2 months after rains	open water
Duma Borehole	Borehole	Domestic/Livestock/Wildlife	Rangeland users association	7.6 cubic metres per hour permanent	diesel genset
Harr Garamboda	Natural Pan	Domestic/Livestock/Wildlife	customary	1000 cattle per day for 2 months after rains	open water
MadoKuroftu Shallow Wells	Shallow well	Domestic/Livestock/Wildlife	customary	200 cattle per day for 2 months after rains	buckets
MadoWarabessa Shallow Wells	Shallow well	Domestic/Livestock/Wildlife	customary	200 cattle per day for 2 months after rains	buckets
MadoDedertu Shallow Wells	Shallow well	Domestic/Livestock/Wildlife	customary	200 cattle per day for 2 months after rains	buckets
MadoDelbeq	Shallow well	Domestic/Livestock/Wildlife	customary	1000 cattle per day for 2 months after rains	buckets
Yamicha Borehole	Borehole	Domestic/Livestock	rangeland users association	3000 (9.8cubic meters per hour) cattle per day permanent	diesel genset

Name	Type	Use	Management	Capacity	Extraction
MadoMollu Shallow Wells	Shallow well	Domestic/Livestock/Wildlife	customary	500 cattle per day for 3 months after rains	buckets
MadoKella Shallow Wells	Shallow well	Domestic/Livestock/Wildlife	customary	200 cattle per day for 2 months after rains	buckets
MadoFalama Shallow Wells	Shallow well	Domestic/Livestock/Wildlife	customary	200 cattle per day for 2 months after rains	buckets
BiliqBerrTume	Natural Pan	Domestic/Livestock/Wildlife	customary	5000 cattle per day for 2-3 months after rains	open water
Ayann	Natural Pan	Domestic/Livestock/Wildlife	customary	4000 cattle per day for 2 months after rains	open water
Chinchoftu	Natural Pan	Domestic/Livestock/Wildlife	customary	2000 cattle per day for 1 months after rains	open water
Urur Borehole	Borehole	Domestic/Livestock	rangeland users association	7.6 cubic metres per day permanent	diesel genset
Malika Galla Location					
Harr Dadacha Lafa	Pan	Domestic/Livestock/Wildlife	customary	200 cattle per day for 2 months after rains	open water
Dadachalnafa Rake	Natural Pan	Domestic/Livestock/Wildlife	customary	200 cattle per day for 2 months after rains	open water
Dadacha Lafa Borehole	Borehole	Domestic/Livestock	community managed	2000 per day permanent	diesel genset
DololoDakhiye	Pan	Domestic/Livestock/Wildlife	customary	200 cattle per day for 2 months after rains	open water
DadachaBassa Pan	Pan	Domestic/Livestock/Wildlife	customary	200 cattle per day for 2 months after rains	open water

Appendix 3: Population by sub-location

3.1: Isiolo and Oldony'iro

Ward	Location	Sub location	2009	2013	2020	2030	2050
Burat	West	Burat (rural)	8,590	9,519	11,392	14,726	24,606
		Isiolo West (urban)	14,132	58,887	82,860	122,653	268,748
Bulla Pesa	Central	Central (urban)	17,431				
		Bulla Pesa (urban)					
		Odha					
Wabera	East	Kiwanjani	18,774				
		Wabera					
Subtotal			58,927	68,406	94,252	137,379	293,354
Ngare Mara	Ngare Mara	Ngare Mara (urban)	3,593	4,044	5,322	8,668	33,543
		Gotu (rural)	1,927	2,135	2,760	3304	5520
Subtotal			5,520	6,179	8,082	11,972	39,063
Subtotal			64,447	74,585	102,334	149,351	332,417
Oldonyiro	Oldonyiro	Oldonyiro (urban)	6,972	7,547	9,282	12,474	27,331
		Lonkopito (rural)	2,856	3,165	4,091	4896	8181
	Kipsing	Lenguruma	2,153	2,386	3,084	3691	6167
		Kipsing (urban)	3,407	3,835	5,396	10,614	71,406
Subtotal			15,388	9,386	12,571	19,201	85,754

3.2: Garbatulla

Population							
Ward	Location	Sub location	2009	2013	2020	2030	2050
Garbatulla	Garbatulla	Garbatulla (urban)	3,733	4,202	5,529	8,184	26,248
		Garbatulla South (rural)	5,066	5,614	6,719	8685	14,511
	Gafarsa	Gafarsa (urban)	1,440	1,559	1,917	2,838	7,529
		Gafarsa (rural)	2,947	3,266	3,908	5,052	8,442
	Muchuro						
	Malka Daka	Malka Daka	Malka Daka (urban)	3,215	3,480	4,280	6,335
Malka Daka (rural)			3,215	3,563	4,264	5,512	9,209
Subtotal			19,616	21,684	26,617	36,606	82,749
Kinna	Kinna	Kinna (urban)	6,171	6,680	8,215	12,160	32,265
		Bibi Duse (rural)	1,218	1,350	1,615	2,088	3,489
	Rapsu	Rapsu (rural)	1,278	1,416	1,695	2,191	3,661
		Korbesa (rural)	1769	1960	2346	3033	5067
	Kula Mawe	Kula Mawe (urban)	3,093	3,348	4,118	6,095	16,172
		Modoyaka/Boji	1,089	1,179	1,450	2,146	5,694
Subtotal			14,618	15,933	19,439	27,713	66,348

Population							
Ward	Location	Sub location	2009	2013	2020	2030	2050
Sericho	Sericho	Sericho (urban)	3,613	3,911	4,810	7,120	18,891
		Gubatu (rural)	1,170	1,297	1,552	2,006	3,351
	Modogashe	Modogashe (urban)	2,382	2,681	3,297	4,881	15,653
		Modogashe North (rural)	570	632	756	977	1633
	Iresa Boru	Iresa Boru (urban)	1,971	2,133	2,624	3,884	10,305
		Badana Garadida (rural)	1,021	1,131	1,354	1,750	2,925
	Eldera	Eldera (urban)	653	707	869	1,287	3,414
		Quri (rural)	719	797	954	1233	2060
Subtotal			12,099	13,289	16,216	23,138	58,232

3.3: Merti

Ward	Location	Sub location	2009	2013	2020	2030	2050
Chari	BisanBiliqu	Kom (rural)	528	585	756	905	1512
		Biliqu (urban)	1,349	1460	1796	2658	7053
	Bulesa	Bulesa (urban)	1,739	1882	2315	3427	9092
		Goda (rural)	1,165	1,291	1,669	1,997	3,337
Subtotal			4,781	5,218	6,536	8,987	20,994
Cherab	Merti	M. North (urban)	4,823	5,428	7143	10574	33912
		M. South (rural)	2,510	2,781	3,595	4,303	7,190
	Malkagalla	Malkagalla (urban)	2,176	2,355	2897	4288	11377
	Korbesa	Korbesa (urban)	1,810	1,959	2410	3567	9464
		Mata Arba (rural)	503	557	720	862	1441
		BultoBonsa (rural)	753	834	1,079	1291	2157
	Yamicha	Yamicha (rural)	1,571	1,741	2,250	2,693	4,500
		Duma (rural)	357	396	511	612	1023
		Urura (rural)	1,057	1,171	1,514	1,812	3,028
Subtotal			15,560	17,222	22,119	30,002	74,092
Subtotal			20,341	22,440	28,655	38,989	95,086

Appendix 4: Productive uses of water

4.1: Livestock use of water in the 3 wards of Isiolo South Sub County

Items	Population in Garbatulla Ward	Litres of water used per day per unit	Total litres of water used per unit
Cattle	5,000	40	200,000
Shoats	50,000	10	500,000
Camel	10,000	80	800,000
Grand Total	-	-	1,500,000

Items	Population in Kinna Ward	Litres of water used per day per unit	Total litres of water used per unit
Cattle	20,000	40	800,000
Shoats	75,000	10	500,000
Camel	15,000	80	1,200,000
Grand Total	-	-	2,500,000

Items	Population in Sericho Ward	Litres of water used per day per unit	Total litres of water used per unit
Cattle	40,000	40	1,600,000
Shoats	50,000	10	500,000
Camel	5,000	80	400,000
Grand Total	-	-	2,500,000

4.2: Irrigation database

Updated Irrigation database																						
Name of scheme	Existing Irrigation Area PIA (ha)	Proposed Irrigation area PIA (ha)	Type of Irrigation	Main crop	water Source	Type of Head-structured work	Year con-structured	Executing agency	Remarks	X	Y	TIA (ha)	AUI (ha)	% TIA	Wd (1/s)	WS	NoB	Water source	IRR ME	Crop	Status	
Kambi Sheikh	50	100	Piping	Vegetables	Isiolo River	Weir	2009	MWI	Ongoing	3E+05	1E+07	100	40	40	67.2	-	200	Isiolo River	Pipe	Fcr	0	
Gambella	48	140	Gravity	Vegetables	Ngare Naitin	Weir	2008	MWI	Piping Required	4E+05	1E+07	400	40	40	168	-	200	Isiolo River	Pipe	Fcr	0	
Game Galana	70	100	Piping	Vegetables	Isiolo River	Weir	2008	Community Devp Committee	Funds required													
Isiolo Central Self Help Group	20	200	Piping	Vegetables	Isiolo River	Weir	2006	Arid Lands	Operating													
Akore/AK Adeli	240	300	Piping	Vegetables	Lewa Spring	Weir	2007	Catholic Mission	Complete													
Lobarua	42	129	Gravity	Vegetables	Lewa Spring	Weir	Not yet con-structed	N/A	No funds													
Bulesa Dima	5	50	Gravity	Stalled	Lewa Spring	Weir	Not yet con-structed	N/A	No funds			200	100	50	168	-	500	Isiolo River	F	Fcr	0	
Oldonyiro	100	200	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Unknown	Catholic Mission	Require piping and generators			80	30	38	18.9	-	150	Ewaso Ng'iro	F	Fcr	0	
Befi	16	50	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators													
Dima Ado	2	30	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators													
Tokumma	40	120	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators													
Gummi	80	250	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators													
Samaar	2	25	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators													
Machesa	8	35	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators													
Rupa	12	300	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators													

Updated Irrigation database																					
Name of scheme	Existing Irrigation Area PIA (ha)	Proposed Irrigation area PIA (ha)	Type of Irrigation	Main crop	water Source	Type of Head-work	Year constructed	Executing agency	Remarks	X	Y	TIA (ha)	AUI % TIA (ha)	Wd (1/s)	WS	NoB	Water source	IRR ME	Crop	Status	
Gagaju	120	300	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators												
Awarsitu	40	260	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators												
Badada	20	100	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Weir constructions												
Tawakal	4	35	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators												
Gana	8	100	Piped/Gravity Canal	Vegetables	Ewaso Ng'iro	Pumb	Ewaso Ng'iro Low Flow	Community	Require piping and generators												
Merti	Nil	40	Pump to Reservoir the canal	Vegetables	Ewaso Ng'iro	Pumb	N/A	Community	Proposed												
Ngare Mara	-	-	-	-	-	-	-	-	-	4E+05	1E+07	7	2	29	11.6	-	40	Isiolo River	F	Fcr	0
Intrim	1172	-	Gravity	-	-	-	-	-	-	3E+05	1E+07	100	30	33	50.4	-	150	Isiolo River	F	Fcr	0
Rapsu Irrigation	-	-	-	-	-	-	-	-	-	4E+05	1E+07	200	75	38	126	-	250	Bisan Adi	F	Fcr	0
Kinna	-	-	-	-	-	-	-	-	-			336	86	26	144.8	-	336	Kinna	F	Fcr	0
Rako	15	-	Gravity	-	-	-	-	-	-			70	40	57	67.5	-	175	Kinna Spring	F	Fcr	0
Buleasa	-	-	-	-	-	-	-	-	-			200	120	60	201.6	-	300	Ewaso Ng'iro	F	Fcr	0

4.3: Irrigation water demand projection (Garbatulla)

County	Sub-County	Ward	Name of Scheme	Water Source	Total Irrigable Area (TIA) (Ha)	Actual (2016) Area under Irrigation (Ha)	%	Actual (2016) water Demand (WD) (l/s)	Potential (2020) Irrigation Water Demand (CWD) (l/s)	Total (2030) Potential Irrigation Water (l/s)	Total (2050) potential Irrigation Water (l/s)
Isiolo	Garbatulla	Kinna	Rapsu	Bisanadi	160	70	44%	126	127.89	131.67	131.67
Isiolo	Garbatulla	Kinna	Kinna	Kinna	100	33	33%	62	62.93	64.79	64.79
Isiolo	Garbatulla	Kinna	Darajani	Kanjoradi Springs	40	10	25%	18	18.27	18.81	18.81
Isiolo	Garbatulla	Kinna	Gubadida	Milla Springs	75	25	33%	45	45.68	47.03	47.03
Isiolo	Garbatulla	Kinna	Rako	Milla Springs	45	15	33%	27	27.41	28.22	28.22
Isiolo		Sericho	Iresa boru	Borehole	40	25	63%	45	45.68	47.03	47.03
Isiolo	Garbatulla	Garbatulla	Gafarsa	Ewaso Ng'iro	300	130	43%	234	237.51	244.53	244.53
Isiolo	Garbatulla	Garbatulla	Muchuro	Ewaso Ng'iro	40	20	50%	36	36.54	37.62	37.62
Isiolo	Garbatulla	Garbatulla	Kombola	Ewaso Ng'iro	30	10	33%	18	18.27	18.81	18.81
Isiolo	Garbatulla	Garbatulla	Malika Daka	Ewaso Ng'iro	150	76	51%	178	180.67	186.01	186.01
Isiolo	Garbatulla	Garbatulla	Various	Various	100	30	30%	54	54.81	56.43	56.43
Totals					1080	444	41%	843	855.65	880.94	880.94
Total water demand m³/day									73,928	76,113	76,113

Appendix 5: Example Meeting Schedule: Merti

Day 1

Draft Agenda for Community Consultations:

9.00-9.30	Climate setting and Introduction-Shandey
9.30-9.40	Welcoming Remarks: Ward Administrator
9.40- 9.55	RAP/Mid-P (including explanation of the need for the Strategic Plan and next steps in process to include small focus groups, multi-stakeholder meeting, etc)
9.55-10.10	Presentation: Overview of Strategic Plan objectives and challenges by a County Officer
10.10-10.25	Remarks: WAPC to make remarks on behalf of the community about the needs for the Strategic Plan and the importance of the community consultation process
10.25-10.40	Tea Break
10.40-11.10	Open floors for questions
11.10-11.40	Remarks: County officer to identify different categories of resource users in the Sub-County and their different types of needs for water, energy and natural resources to be provided for in the Strategic Plan (will include: institutional, commercial, domestic, men & women, etc) Molu/Bagaja/JJ
11.40-12.10	Presentation:State of knowledge on the characteristics, functioning and user groups of water and energy infrastructure in the Sub-County by Ibrahim Jarso, RAP
12.10-12.40	Plenary Discussions
12.40-2.00	Lunch Break
2.00-2.30	Activity:Community members propose improvements to the participatory resource maps and waterpoints database concerning: <ul style="list-style-type: none"> • Presence, functions, capacities and seasonal uses of the waterpoints (Molu) • Energy sources, functions and mgt responsibilities for the waterpoints (Bagaja) • Environmental hazards, pollution threats and other challenges for natural resource management (JJ)
2.30-2.40	Activity: Identification 3 focus groups to further define the needs of resource users, and recommendations for the Strategic Plan to address them (groups will include women and men). Selection of members to be facilitated by Caroline and Daoud (notes to be taken by Ibrahim); All the participants get in group which fits them.
2.40-3.00	Activity: Identification of community representatives from each of the focus groups to deliver recommendations to multi-stakeholder meeting (women and men) facilitated by Daoud and WAPC (notes to be taken by Ibrahim); three criteria of selection was agreed on; (2 people from each group which will be
3.00-3.30	Closing Remarks: County Director to recap different categories of resource users in the Sub-County and their different types of needs for water, energy and natural resources to be provided for in the Strategic Plan (will include: institutional (hospitals, schools, mosques, etc), domestic (women, men, youth, elderly), commercial (livestock producers, hotels, restaurants, water vendors, etc)
3.30-4.00	Closing remarks: RAP/Mid-P/IIED
4.00	Closing and house keeping

Day 2

Focus group Discussion

Leading questions (Probe more as per each question)

1. What is the current situation on access to water in relation to irrigation, Energy, Environment and Natural resources?
2. How much Water do you use per day in each Sector?
3. How much Water do you provide per day? (Managers) how much energy are you using per day?
4. How do you want to see your situation in the next 5 years?

The focus group discussions (ran in parallel)

1. Water and energy resource managers (Bagaja, Boru) (Daoud, Ibrahim and Shandey to ensure proper documentation)
2. Domestic and institutional users of water and other natural resources (Caroline, Molu and Adaka)
3. Commercial and productive water energy and natural resource users (JJ, Halkano and Bashir)

This report provides an overview of findings from a series of Sub-County level consultations and preparatory technical meetings intended to inform a county level multi-sectoral Strategic Plan for water, energy and climate change. Lack of such a Strategy and consultation process in Isiolo County, held back progress and limited the effectiveness of many County and donor-supported interventions in the past. This was the first time that County Officers in the Isiolo County Ministry of Water, Energy and Climate Change Isiolo County had explored such a consultative approach to strategic planning. Their sub-county level meetings included participation by over 100 representatives of local customary resource user associations, women's groups, formal water resource user associations, water committees, irrigation committees, ward adaptation planning committees and others, with facilitation from a local NGO (RAP) and IIED. This report describes the approach and the major findings. The recommendations generated through this process should inform planning and budgeting for the coming five years, and also support and feed into ongoing catchment level planning, as well as broader national planning debates in Kenya, particularly those concerning the Arid and Semi-Arid Lands (ASALs). The overall objective of the Strategic Plan is to enable Isiolo County and its neighbouring ASAL counties in Kenya and the Horn of Africa to achieve their full economic potential.



Event Materials

Political and social change

Keywords:

Water governance, Climate change, Adaptation, Energy access, Public engagement, Participatory research and dialogue



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