

DRAFT SUMMARY BRIEF: Water development and irrigation in Karamoja, Uganda ¹

Eng. Dr. Sean Avery, March 2014

Background

The 2010/11 drought has led to increased attention on resilience building and DRR in the region. It is clear that pastoralism cannot sustain the increasing populations in the drylands, particularly given: land fragmentation and degradation, the breakdown of the traditional systems of mobility and natural resource management. However, livelihood diversification options are limited for poor people due to the low human capital resource base, remoteness of the region and lack of infrastructure. Some potential for livelihood diversification exists in increasing benefit from eco-tourism, government employment, dryland and animal products and emerging mineral wealth, and some crop agriculture, however these and other options need major investments in education, communications and business service development to benefit the most vulnerable and absorb large numbers of the people.

In discussions on alternative livelihoods among both governments and development partners, most attention is given to crop agriculture. Many studies show that rainfall in the arid lands is too variable for sustainable rainfed crop production, and that many ASAL areas are already water deficient, thus irrigated agriculture can negatively affect water availability for other uses and cause negative environmental and social impacts. It is likely that crop production will take place in less arid areas of the drylands including dry season grazing areas which may negatively affect the resilience of large numbers of livestock producers who use these areas as their management strategy during drought, unless significant mitigation measures are put in place.

In Uganda, the Ministry for Karamoja Affairs (MKA), the Ministry for Water and Environment (MWE), and the Ministry for Agriculture, Animal Industries and Fisheries (MAAIF) are all promoting, albeit at differing levels of intensity, the need for large water investment projects that can support irrigated crop agriculture.

Irrigation potential

The pastoral livelihoods in Karamoja are traditionally supplemented by scattered rainfed cultivation of crops. Over 70% of the cultivated areas will comprise the cereal crop sorghum. Other cereal crops include millet, maize, and wheat showed promise in some areas. Three oil seed crops are planted, groundnuts, sunflowers, and simsim (sesame seed). Rain dependence in semi-arid lands has always been risky and crop failures frequent. The solution might seem to be the application of technology through supplementary water in the form of irrigation, but even if this was feasible, studies have shown that the irrigation requirement is huge and would exhaust and exceed the available water resource (even if it was economically and technically possible to abstract and store the water).

In some few areas where there is perennial water in Karamoja, there is some small-scale irrigated agriculture, and in some cases these water sources are being exploited with donor investment support in small drip irrigation schemes. But, limited numbers of people benefit, the communities lack the necessary farming skills at present, and natural pests are a challenge. The systems are generally not robust and require frequent maintenance and replacement.

The rivers of Karamoja are largely seasonal, and runoff tends to be flashy and difficult to manage. Reliable water supply requires storage systems, and these are widespread in the form of valley tanks and dams, and government is actively promoting these structures. Storage structures that capture runoff are however vulnerable to

¹ This brief is from the report: Water development and irrigation in Karamoja, Uganda, A review prepared by Eng. Dr. Sean Avery for DCA/REGLAP, February 2014 available at

http://www.disasterriskreduction.net/fileadmin/user_upload/drought/docs/REPORT%20DCA%20KARAMOJA%20FINAL_March%202014.pdf



Table 1: Water demand compared to water resource in the Okok sub-catchment of Karamoja ⁶

Water Resource		Water Demand in Year 2010 and 2017		
Water Source	Available Water MCM/yr	Water Demand Category	2010 Demand MCM/yr	2017 Demand MCM/yr
Surface water	180	Domestic	4.83	6.35
Groundwater	306	Livestock	8.12	9.99
-	-	Irrigation	505	665
-	-	Industrial	0.0024	0.0048
TOTAL	486	TOTAL	518	671

The Consultant has previously sought examples of success stories of large-scale irrigated crop agriculture interventions in the region’s arid and semi-arid lands. Schemes are underway in Ethiopia, albeit far behind programme, and amidst considerable controversy, and there are plans to hugely increase irrigated agricultural areas in Kenya too, with much of the targeted areas being in drylands. These irrigated crop agriculture schemes are often promoted in the drylands based on the misconception that the drylands are “unutilised”, and often no supporting comprehensive feasibility studies are released, and local people are being displaced from their traditional grazing areas. Researchers also argue that commercial agriculture in the drylands is less economic than pastoralism⁷. Hence, the whole topic of dryland crop agricultural development needs to be thoroughly studied before embarking on potentially futile ventures that could create social conflict and other problems. The World Bank is meanwhile calling for more large-scale irrigation in the Sahel, and the findings of these efforts need to be accessed to understand the reasons for expected success.

Conclusion

The promotion of new irrigated crop agriculture initiatives to Karamoja should recognise the unique challenges of the drylands, in many respects, and should first build on traditional knowledge, and reinforce existing systems. Agricultural research has in the past focussed on humid zones that enjoy much higher rainfall. These humid farmlands are also becoming increasingly fragmented through sub-division, and there is need to set optimal farm sizes, and if possible consolidate. If crop agricultural production is to be seriously contemplated in the drylands, it must be supported by appropriate research before raising expectations, and this is an ongoing process that requires long-term investment commitment, and cannot depend on the sporadic inputs characteristic of the NGO sector. It will also require the government to prioritise meeting its staffing capacity expectations in Karamoja.

Based on documents reviewed by the Consultant, there is no technical basis in favour of large-scale irrigated crop production in Karamoja, and this should certainly not be at the expense of the livestock sector which is better suited to the area. Whereas national statistics show food crop agriculture contributing far more to agricultural GDP than livestock, the statistics undervalue the livestock contribution, and it would be unwise to extend the high crop agriculture expectation to Karamoja where climate is in stark contrast to the rest of Uganda. There is nothing wrong with seeking diversity of food production, but the traditional sub-sectors should not be neglected further in the process as they have a much more important role to play than is reflected by statistics.

Interventions in the water sector in Karamoja have mixed success records. In the drylands in particular, there is usually no hydrological data, and such data is hard and costly to collect. Where data is lacking, interventions can prove haphazard, and the consequences unpredictable and unknown. There is often insufficient follow-up provision

⁶ ACF, IUCN, FCL, draft Hydrogeological Study on Improvement of Water Resource Knowledge and Management in the Karamoja Region, Uganda, July to December 2011 (ECHO funded project, undertaken with support from the University of Avignon).

⁷ Replacing Pastoralism with Irrigated Agriculture in the Awash Valley, North-Eastern Ethiopia: Counting the Costs by Roy Behnke and Carol Kerven, Paper for Futures Agriculture Conference, June 2011



to monitor water sources, in order to assess impacts on water quality and quantity. Without this, there is no way to ensure appropriate mitigation measures.

Uganda's legislation is comprehensive and includes the necessary provisions for management of water. Similar legislation exists in neighbouring countries, and a common challenge is the achievement of capacity for consistent competent and persistent monitoring and enforcement. Regional water development plans are specified in Uganda's national planning documentation, and such planning is amongst the cornerstones for sustainable water sector development. These plans will quantify the distribution of water resources in relation to the natural resources from which they derive, and will take account of climate consequences. The development plans should thereby provide a basis for sustainable water exploitation that is regulated through competent licensing. This development planning process is ongoing, and requires sustained investment in data collection, principally hydrological, hydrogeological and climate data. The commendable ECHO-funded ACF/IUCN/FCL studies in the Okok sub-catchment of Karamoja should be given momentum by government, and should be extended throughout Karamoja, and water and natural resource monitoring should become a permanent feature of catchment management, as intended in the legislation.

A regional water development master plan for Karamoja is a top priority, and to achieve this, government capacity needs to be supported, as indicated in the 2013 Water and Environment Sector Status Report.⁵ This water master planning must be supported by the necessary crop studies that define the potential for irrigated crop production based on soil, topographical, climate and water availability considerations, and which evaluate the costs and benefits, and which compares these with alternative land uses. Such studies should form the basis for irrigated crop production and other interventions, and would include the new wetland policy and would take into account the importance of current wetland utilisation by pastoralists.

Engineered water interventions must be based on competent proven designs, with minimal operation and maintenance needs, requiring minimal energy consumption, and should be undesirable or difficult to vandalise, or be adequately secured. The designs should optimise on the use of local materials, and should fulfil all legal requirements in terms of approvals, and environmental and social impacts. The designs seen by the Consultant in Karamoja suggest there would be benefit taking into account lessons learned in neighbouring countries that have decades of experience in similar technologies.

In conclusion, the feasibility of irrigated crop development and the impacts have not yet been properly established for Karamoja. Whereas irrigated crop agriculture has a role to play in parts of Karamoja where soil, climate and water considerations are favourable, planners should not assume that this is a substitute for "backward" traditional livelihoods. Rather, a cautious approach is recommended, guided by robust technical studies that tap into all available experience, including indigenous knowledge, and including learning from past unsuccessful ventures into dryland irrigated agriculture in the Horn of Africa. It should also be remembered that the irrigation success records of dry countries like Israel should be viewed with caution, as they are heavily subsidised and have resulted in depletion of the country's renewable water resources.

For comments/suggestions on this brief, please contact vtilstone.dlci@gmail.com

This brief and other DLCI documents can be accessed at <http://www.disasterriskreduction.net/east-central-africa/reglap>



Humanitarian Aid
and Civil Protection

This brief was funded by the European Commission Humanitarian Aid and Civil Protection Department (ECHO)

