Daniel Collins
Red Cross Climate Centre
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Strengthening Water Resource Resilience in Apac District: Preliminary Technical Recommendations

Water resources in Apac are constrained by a variety of factors, principally among them are climatic and social. Natural climate variability brings with it droughts and floods, which strain communities' ability to meet their needs. Climate change, be it natural or anthropogenic in origin, has the potential to exacerbate the situation, though exactly how is unknown. Paradoxically, what is certain with climate change is that the future becomes less certain. Social factors behind water resources stresses are the increasing demand for water for drinking and agricultural activity, and the increasing delivery of human wastes to waterbodies and the health risks which subsequently arise. Both social pressure trends ultimately stem from population growth.

Alleviating water resource stress requires a portfolio of approaches, each of which must be tailored to fit both the cause of the particular stress and the needs of the community. Apac, and Uganda in general, has little capacity, if any, to inhibit climate changes. This necessitates an adaptive approach: one in which climatic extremes are to be expected, sooner or later, but effort is invested in activities that can collectively withstand these natural hazards, and thus preventing them from becoming disasters. In responding to the social pressures, a mitigating approach is more apt: an ounce of prevention is worth a pound of cure.

Highlighted here are four strategies for augmenting community resilience to both climatic surprises and increasing societal pressures. These recommendations draw upon field visits around the region and consultations with various stakeholders.

1. Data Gathering, Assessment and Sharing

The basis for targeted policies is knowledge, yet with regards to water resources, very little is actually known. How much water do people use or need? How much water is available to meet this need, and when? In choosing where to site a new reservoir, for example, it would be useful for the local government to know the relative needs of the different communities, and thus how much water they use and need, and how much they actually have access to. NGOs, including disaster response organisations such as Uganda Red Cross Society, may direct their activities more efficiently and equitably by knowing who is most susceptible to natural hazards, and the precariousness of communities. Data are also required to detect and attribute climate change, though this particular focus must be a long-term investment, given the long-term nature of climate change.

It is thus recommended that a concerted effort be invested in gathering and synthesizing existing data, identifying data gaps, and striving to fill these gaps. Identification of data gaps should be conducted by any and all stakeholders that would use the missing information to better inform their activities. Stakeholders include communities, local government and any NGOs that would improve their activities with better knowledge (e.g., URCS).

2. Reservoir Design, Rehabilitation and Operation

Reservoirs have served societies for millennia, as means of saving water during times of plenty for use in times of shortage. In Apac, small reservoirs – be they valley tanks or dams – provide good opportunities to increase drinking water and production. A fair number of reservoirs are scattered

around Apac, but their quality is not ideal. Some have become silted and eutrophic[1], reducing their cost-effectiveness and compromising their objectives. The situation can be improved with more sustainable design, rehabilitation, and operation.

It is thus recommended that a comprehensive approach to design, rehabilitation, and operation of reservoirs be implemented. Elements of this approach include the following: bank-sloping, erosion-control barriers, livestock-exclusion fences, dredging, and community education on optimal usage practices. Reservoirs also offer an opportunity to measure the balance between water supply and demand. If they are also fitted with gauges, regular monitoring of water depth would ultimately help the local government meet the needs of the communities. Key stakeholders include the neighbouring communities, local government and community-based NGOs (e.g., Uganda Red Cross Society).

3. Lakeshore Sanitation

Landing sites along Lake Kyoga are not short of water, they are short of safe water. This deficiency stems largely from poor sanitary conditions among the lakeshore communities – unconfined human wastes. These practices have at least one key consequence: the rise of water-borne illness, particularly in the wet seasons, given that the major source of drinking water is the lake itself. It is also likely that the movement of human wastes to the lake, combined with the relatively slow exchange rate of lake waters, increases the lake's nutrient status to the point where water hyacinth expands and fish decline. Eutrophic waters are also more difficult to treat in order bring it to potable standards.

It is thus recommended that a concerted effort be invested in improving lakeshore sanitation, through education and expansion of latrine coverage. Furthermore, the latrines should be designed to be emptied and the waste relocated or treated anew as a resource itself. Improving sanitation in this way would likely achieve more than just sanitation goals – various economic activities would be directly improved. Key stakeholders include the affected communities, local government, community-based NGOs (e.g., Uganda Red Cross Society), and sanitation organisations (e.g., Water For People).

4. Tree planting for economic resilience

Tree planting is a popular response to environmental degradation, particularly in regions that had been forested in the recent past. However, trees are not a panacea to all environmental problems. Contrary to belief they do not "attract rain," but tend to deplete soil and groundwater water stores (eucalyptus is a vivid example of just this). Trees are thus not a solution to water shortages, but can be part of a portfolio of solutions to other problems, namely landslides, flooding, and economic shortfalls brought about by drought and flooding. For Apac, it is the trees' economic benefit that appears most relevant. Fruit and timber trees can provide food and revenue through times of drought and flood, when more sensitive crops may be lost – trees are a low risk, long-term investment.

It is thus recommended that tree planting become more widespread through Apac. The various stakeholders – communities, local government, forestry experts, and NGOs – should come together and identify viable and productive species. They should then, in parallel, foster the establishment of for-profit nurseries of the locally-beneficial species, as well as encourage early uptake of tree planting, perhaps with seedlings donated from the national government.

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[1] Euthropication is the ecological phenomena whereby water bodies become enriched in nutrients, leading to higher turbidity and an abundance of algae and other aquatic plants, at the expense of water clarity and fish. Causes of eutrophication are excess loading of fertilizers, soil erosion, manure, and human wastes. Eutrophic water can range in quality from unpleasant to a health risk. Eutrophic lakes tend to be less productive in terms of fishing.