

# **KITUI SAND DAMS AND FOOD SECURITY**

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SASOL, founded in 1990, assists Kitui communities to address household and production water scarcity through the sand dam technology.

The planning objective was to shorten the distances to water sources to below two kilometres whilst making water available for alternative production systems. Typically, women walk 10-15 km to water sources in the district. To date, 320 dams have been constructed in central Kitui. Globally, this project has the highest number of sand dams. The distant second project, globally, is found in Machakos- the neighbouring district, at Utooni, with 120 dams. These two projects have the highest concentration of sand dams anywhere in the world.

Construction of sand dams is economically and socially effective since the technology is simple and lends itself to participatory development. Communities contribute labour, sand and stones, artisan housing and food for the people working on dams as well as the artisan.

Sand dams are not new in Kitui. An ex-World War 1 soldier, Mr. Nzamba, constructed the oldest dam, in 1928, at Mathima Location, Mutomo division. He had seen the technology in his travels. It is still functioning. The colonial government built a few more in the fifties. Since then a few more have been built by an assortment of development organizations. The technology has gone through the most severe test of all - time. The lifetime of the newly constructed dams is expected to be more than 100 years with minimal maintenance. The dense construction adapted in Kitui regenerates ephemeral rivers run all year long.

Data from an ongoing Social and Economic Impact Study indicates that the sand dams have immediate impacts on cost of water. For example, at Mbitini market the price of water was reduced by 75%, from Ksh. 20 to Ksh. 5, as a result of the construction of the sand dams. But perhaps most significant is the transformation of production. With increased quantity of water, the local people grow kales (*Sukuma wiki*), tomatoes, onions, improved varieties of mangoes, bananas, sugarcane, bee keeping and horticultural and tree seedling nurseries. Fishing, which was uncommon in the area, is a new economic activity. Brick making is on the rise.

In year 2001, Ithumula/Maluma Sub-location, Chuluni Division, was able to meet tomato demand for Kitui town, thereby blocking suppliers from outside the district. At this rate, this technology and maximum utilization of the availed water for production will definitely reverse the vegetable and fruit supply chains in the District for the district has been a net importer. Kitui District, an ASAL district has begun to export some vegetables and fruits, mainly improved mangoes, among other products.

District wide interview data from the study shows that households owning land adjacent to the regenerated rivers are now earning over Ksh 100,000 in the dry three months of August, September and October from bucket irrigated vegetables. Income from horticultural trees is on the rise, though yet to be aggregated and documented. There are 1,969 households in Maluma/Ithumula sub-location. 38.5% of the interviewed households reported that they were engaged in vegetable planting the first year after completion of the dams. Conservatively assuming that only 2% of the households did serious planting, the first year, and further averaging down the household earned income to Ksh 90,000, with an average household having 8 people, the dry months per capita income is Ksh. 3,750. This compares to the mean income from food sales of Ksh. 125 as reported in the 1999 Welfare Study by CBS. The vegetable household incomes translate to Ksh 3.1m. during the first year of adoption for the entire Maluma/Ithumula region. This figure is collaborated by the local councillor who estimated that Ksh.4 m. was earned in the sub location. For the whole district, keeping the same assumptions, the dams could generate Ksh. 118 m. during the dry three months whilst using the land for other production during the rest of the year. We should note that there was no extension effort on this new production. With these incomes, the whole district can move into a higher economic plane dramatically. Further, from a health point of view, consumption of vegetables and horticultural produce has impacted positively on health, especially of women and children. This is the way to fight poverty.

The impact of the dams is not just in terms of incomes and health. Sociologically organising for the dam construction has led communities to improve leadership, more systematic community organisation and prioritisation of development, including identification of interrelationships between sectors. They are more conscious of the fact that they can bring positive development with their own skills and resources. More systematic organising has led to dealing with community issues like shortage of wood for cooking and construction etc. Households are able to plan their consumption of farm products. Sanitation has also improved. Key in this is the construction of toilets. These issues are part of the training for dam construction.

SASOL sought technical cooperation with the ministry responsible for water and the local universities and failed for the first ten years. It sought and got technical backup from Department of Civil Engineering, Technical University-Delft, The Netherlands. Technical evaluation of the sand dams technology was done in the 2001. This year technical evaluation of water quality, especially for human consumption, will be done. A trans-disciplinary group from Amsterdam, Technical University-Delft, Leiden and the University of Nairobi, will study the sustainability of the dam system this year. Video documentation of construction techniques is done and is available from Ukweli studio. An impact assessment video will soon be available from the same source.

Four staff members of SASOL have trained with TU-Delft and IRC. It is expected that each year a number of SASOL staff will be send for training. At the same time a project of training University of Nairobi students in the project area will start this year.

Water AID (UK), DFID, SIDA and SIMAVI are the main development collaborators in this project.

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