

# **SAND DAMS EXPERIENCE**

**Prof. Gideon-Cyrus Makau Mutiso**

## **INITIATING SAND DAMS**

SASOL was not the first organization to build sand dams in Kitui district. In 1928, Nzamba, an ex-WW1 soldier, built Mung'eto wa Nzamba in Mathima Location, in Mutomo Division. He had seen them in Ethiopia! It still functions!

The African Land Development Board, between 1947 and 1963 built a few all over Kenya, Kitui included. They have lasted more than sixty years. They are at some of the best sites. The Kenyatta government built a few more in the sixties. The Kitui Catholic Diocese, USAID and DANIDA built some before SASOL. Those built by the last two were all carried away!

In 1980, Utooni built the first sand dam in Kalama, Machakos district. It was used to irrigate the group's vegetable nursery. Three consultants created SASOL out of frustration. They had been given consultancies to advise a donor in Kitui on how to improve water supply for drinking, farming and environmental protection. They were specialists in hydrology, environment and development management. Their recommendation for sand dams was rejected. Therefore, they decided to implement them. Since 1990, SASOL has been involved in construction of water sources in Kitui District. Initial efforts were water tanks and wells, to supply schools. From 1995, community water supply, through sand dams, became its central focus. Efforts were initially in Central Division and later Yatta Division. Currently, (2013) work is concentrated in what used to be Mutomo Division.

Utooni and SASOL staff have extended the technology to African countries like Ghana, Tanzania, Ethiopia, Somaliland, Somalia, Burkina Faso, Mozambique, Zimbabwe, Cameroon, Uganda, and Eritrea etc.

SASOL's major sand dam innovation was construction of dams in cascades thereby maximizing channel water retention, ground water recharge and making of ephemeral rivers run all year round. Its major social technology contribution was organizing community groups for construction. Typically, they finance 40-50% of dam costs. Of the construction crews, 80% are women. 60% of Kitui households are female headed. Given this, reducing water fetching time and energy-mainly of women and girls- transfers the saved time to production, education and leisure. Improvements in food security, health, housing, and diversification in the farming systems logically follow. All these translate into improved incomes thereby attacking poverty. These improvements are afoot in communities within a year of permanent sand dam water being available.

When SASOL launched the Kitui sand dam programme, it was a leap of faith for it did not understand two key variables: community ability to invest in production water and the positive dramatic environmental and socio-economic changes. The technology is so simple that nobody else had implemented it on large scale. Most of the ideas existing about sand dams in 1995, when SASOL did the pilot project on a cascade of dams, were patchy and unconvincing at the physical and social technology levels. Further, in a world reeling with technological advances of the 80's and 90's, simple structures had no place in the knowledge systems.

The strength of the initial programme was firstly the belief that, though simple, underneath the simplicity there was enormous underlying potential for social organization, which could be tackled on a dam-to-dam basis. Secondly, scarcity of water was usually associated with lack of drinking water, but the programme focused on green water and blue water in the longer term. Thirdly, the community was to be involved totally in the development of the sand dams as a platform asset on which their developmental processes were to be built. The implication was that sand dam construction was an experiment in social engineering.

This was based on several conceptual ideas found in tradition but tempered by the emergent social systems as well as choosing a project technology and a development strategy, which did not enrich poverty. The overall vision was to enable the Kitui poor to generate life and assets. This was to be achieved by relying on collective self-help which enhances individual and collective accumulation through community control and equitable distribution of development assets.

The primary impact of sand dams is the availability of water all year round at shortened distances from the households. Incomes and health of sand dam communities improved and continue to improve quite markedly as shown by Isika and Muyanga (2001) and subsequent evaluations.

It was in mobilizing local communities to undertake sand dam construction that the development salience of **Kathambi-the traditional female deity controlling all water and thus sacred to women- was revealed. To date, the role of the deity is still ignored by social scientists and development practitioners.** There are many dam sites where **Kathambi** women had refused Kenya Government, bilateral donors, local and international NGOs and churches from constructing water structures. There were times where SASOL had to negotiate with **Kathambi** women to be allowed to build on specific sites.

## **MANAGING DONORS, GOVERNMENT AND POLITICIANS**

Up front, we should note that securing funding was a problem. The technology was not sexy. Feeding schools was. So the first funding was for water supply to schools to enable feeding. SASOL's most ingenious praxis

was to immerse donors into specific communities. Representatives from donor agencies were required to become engaged directly with the respective benefiting community groups without the inhibiting presence of SASOL staff or board members. Transparent access to communities effectively deflected the clandestine probing of SASOL's activities by donors, ministries, politicians and their cohorts.

On donors, initial funding was by a Dutch NGO through one of the founder board members. It was not nosy. The second funding tranche was through an international British NGO which turned to looting project money and giving instructions to SASOL field staff! They were getting funding from their government, through Kenya bilateral funds. SASOL resorted to exposing them whilst lobbying the High Commissioner-note not the AID office, to give it funds directly! It also led to a policy of banning donors from giving operational directives to SASOL staff and/or community groups. This funding lasted for over five years. It also enabled SASOL to get other bilateral funds.

A donor representative of a church, from Canada, wanted school and community representatives to dance as was done for Kenyan politicians. SASOL got him and his money exported the same day he made the demand!

On the ministry responsible for water, there has never been a relationship for the engineers argued that the technology was **shenzi (primitive)**! This was so in spite of SASOL and Utooni holding a National Conference on the technology which was attended by its high officials. Ministry planning experts supported the technology at high levels but the engineers sneered!

More interesting is the reaction of three ministers. The first one claimed she had never seen one of the board members in her party campaigns! This disqualified support to the organisation! The second one gave a broker consultant the power to decide who got what funds. The broker did not like SASOL for it would not pay! The third one campaigned to some SASOL bilateral donors to get borehole funds for the same areas it was working in. She argued in many fora that SASOL was not in the district! SASOL to date has not got any support from the ministry responsible for developing water sources!

SASOL also attracted adverse interest from the highest source in the land. He sent an Assistant Minister from his area and a politician from Meru to investigate why SASOL was organizing groups. For two months, both SASOL management and board members suffered sleepless nights. Staff and one board member' personal and family bank accounts and all SASOL accounts were stopped! Ultimately the board member had to threaten high security types to activate accounts! Who said development is not political?!

## **THE DUTCH CONNECTION**

SASOL could not interest Kenyan Universities to study the social and physical issues arising out of sand dam construction. Fortunately one of the directors, who was Dutch, and had good connections, introduced SASOL to water related institutes and Universities in Holland. This enabled SASOL to send many potential employees for free short term studies. More important initially, was a relationship with TU Delft University. It made it possible for Dutch University students to come to Kitui and to study the phenomena of sand dams. Although SASOL cut the relationship -because of intellectual property rights conflict-this link led to some serious studies over and above attracting other universities, research institutions and lower level training institutions to take interest in sand dams.

Three key institutions have had relations with SASOL to its benefit. Through Henk Haring, Dutch middle level institutions' students raised money to come to Kitui to build sand dams. They and their parents have become SASOL unpaid ambassadors! Within their fundraising was a component of money to support attachment of students from Kenyan Universities. Out of this pool of Kenyan attachments, SASOL has hired the bulk of its permanent staff, including the current CEO. It has managed to achieve gender balance.

Acacia Institute-linked to Amsterdam University- introduced the technology and SASOL not only to key water researchers globally but to the global water and climate change fraternities. Consequently, SASOL participates in the global discourse on the relationship of sand dams and climate change. Some of the research out of this link has spread to other institutions. Recently one researcher, from the UK, verified some of the work done in Kitui in a study based in Utooni.

One of the most interesting connections is a leading water specialist who works for Amsterdam Water Company. He was so intrigued to hear about storing water under sand that he signed on. Amsterdam's water is first filtered through sand. He therefore could not imagine storing it in sand. Out of his work in Kitui and his professional networks, SASOL has attracted significant researchers who self finance.

The point about the Dutch connection is not about financing operations in Kitui, although that is important. It is about getting intellectual resources. SASOL was not able to get that either from the Kenyan Universities or the Kenyan Government institutions who were charged with responsibility over water. That the Dutch intellectual resources were free and respected SASOL's supervision is the point. Having said all this perhaps monetising all activities of the Dutch connection would make it the largest financial contributor to SASOL.

## **THE MCC CONNECTION**

Seriatim SASOL has had funding from a Dutch NGO, British bilateral aid intermediated by a British NGO, British bilateral aid directly to SASOL, Swedish bilateral aid, three other Dutch NGO, Mennonite Central Committee (lately including CIDA sourced money) and a local insurance company.

MCC is the development arm of the Mennonite churches in Canada and the USA. It started as long ago as the First World War. Till recently, the bulk of its development work was done mainly through missionaries and Mennonite initiated churches on this continent.

MCC is the biggest donor to SASOL field activities. It came about through one board member participating in evaluation of MCC development work in Africa and globally. There is no unified development approach among the many Mennonite churches that are independently governed. Some prefer to support local NGOs outside the local Mennonite churches. Others want to continue working through missionaries, MCC volunteers and local Mennonite churches.

The SASOL board member who participated in both the Africa and the global evaluations was of the view that supporting local organisations – outside the missionary initiated churches- was central to delivering meaningful development in Africa. This was ultimately accepted and an initial grant was made to SASOL for 350 sand dams and 150 for Utooni. MCC still walks with the two organisations. Out of the Mennonite tradition of healing the land for human development, grants go beyond water, a fact reflected in the two organisations' current programmes.

## **DISSAPOINTMENT**

It is deplorable that local universities and the water ministry have not been FORMALLY interested in the sand dam technology. As a country we are short of water. 82% of our land is arid and semi-arid. WE must harvest and store the little that we get. The most effective way is to store it underground for evaporation rates are astronomical. Kitui's open pan evaporation is estimated at a metre a yea! This is way above current rainfall!

There is no technology I know of that can address the needs for water given our population explosion and the attendant drying of the recharge areas in both the dry and the high potential lands.

In the dry lands, population growth has led to clearing of the hills and valleys and movement to more marginal lands. In the wetter regions, carrying capacities, at existing technologies peaked as early as the nineteen thirties and forties. People have over-cultivated all the bottom lands thereby killing the wetlands. Flows of the major rivers have accelerated thereby eroding and eliminating ground water recharge.

It is imperative that the Kenya Government and knowledge centers address the issue of water availability urgently. SASOL and Utooni have something important to say about water and human development. It is ironic that we claim the digital age, whilst paying no attention to this viable technology not just for ASALS but also for high potential areas as climate change, population explosion and accelerated migration to the dry lands wrecks livelihoods of more than 80% of our population.

*(This paper is a personal view and not that of SASOL where I was Chair of the Board till end of 2009)*

27/07/2013