File g-Sand Dam

A. AGRICULTURE AND FOOD SECURITY, CONT.

5. FINAL REPORT FOR CFGB FOOD SECURITY CASH PROJECT (A005) – The Kitui Sand Dam Project

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Introduction

Ukambani or Kambaland, densely populated by the Wakamba people and consisting of four Districts – Machakos, Makueni, Kitui and Mwingi –ESE of Nairobi in Kenya traditionally has been quite treeless, hilly, gullied, semi arid, agricultural (as opposed to pastoralist) area which often has suffered from famine. Over the past 50 years the increasing use of more traditional soil and water conservation methods such as terracing accompanied by agro forestry have increased food crop production significantly. In fact, the area was the subject of a book entitled " More People, Less Erosion". But, still two to three weeks after heavy rains, the intermittent streams and rivers in the area are dry except for that water trapped in the sand of some rivers. Fortunately, much of the parent material and soils of the area are quite sandy such that any heavy rains result in sand saturated with water being deposited in some waterways. But, several months after heavy rains, people must dig dangerously deep (sink holes) in order to obtain water for people, animals and irrigation and many rivers are so steep that little or no sand remains after the rains, such that people and animals often must travel 15 to 20 kilometers for water. But, the construction of cement and stone barrages (sand dams) at 0.5 – to 1 kilometer intervals in a river bed results in the collection of sufficient sand and water in most rivers such that water is available at shallow depths year round.

The NGO entitled Sahelian Solution Foundation Kenya (SASOL) with financing from many donors such as the EU, SIDA, World Neighbours (and CFGB) began in 1994 catalyzing the local communities (one community unit around each sand dam) to work together in constructing such sand dams in the northern portion of the Kitui District on the eastern side of Ukambani. To date, SASOL has catalyzed the construction by local communities of 300 sand dams. One hundred additional sand dams will be constructed in the northern part of Kitui District in the near future. SASOL's great success would not have been possible without the presence of sandy parent material and soil, the traditional Kamba spirit of working together known as "Mwethia" and SASOL's unique ability to harness "Mwethia" such that the community around each dam truly "owns", values, and takes care of its dam. The result has been that much of northern Kitui District has been transformed into an "oasis" surrounded by a much more barren landscape.

SASOL plans to facilitate the construction of a further 500 sand dams in the southern portion of the Kitui District. To date, only 50 of the 500 dams have financing. It is likely that SASOL may request financing from CFGB for some of these dams, each of which now costs $8,500 U.S. Partly for this reason, a number of attachments were sent by DHL and will arrive at MCC Canada on Monday or Tuesday, January 21st or 22nd. The attachments in that packet are the following:

1. 12 photographs of sand dams, etc.
2. SASOL's final report for A005.
3. The bulletin entitled "Where There Is No Water". You probably have a copy and also a copy of the video which was not sent because of its bulkiness.
4. Proceedings of a sand dam workshop, Oct, 1999 for which $2000 of the total $50,000 for A005 were used.
5. SASOL's progress report dated March, 2000.
6. SASOL's progress report dated Sept, 1999.
7. SASOL's report on remote nurseries for the EU.
8. SASOL's progress report dated, 12 July, 1999.
9. SASOL's activities, March, 1999
10. Initial Proposal

A social-economic study of the impact of the sand dams in the northern Kitui District will be released in a few months and if I don't send you a copy please remind me. That report and a technical evaluation of SASOL's sand dams are

both very positive about SASOL's work. A second video is about to be released (I assume you have the first video) concentrating upon the impact of SASOL's sand dams which also will be sent to you when released.

This report and all of the aforementioned reports/pictures/videos should indicate that SASOL's technical work is good and their financial accountability excellent. Such work needs very little co-ordination from MCC-Kenya and if funding is available I would strongly recommend CFGB's financing more sand dams. But, at this time I do not know when you will get a proposal.

Receipts for major expenses are available and will be sent as soon as SASOL can get them organized and photocopied. A financial summary is part of this email.

To what Extent were the Planned Activities Carried Out?

Up until the signing of the contract with SASOL in February 1999, 33 sand dams had been constructed in the Kiindu River. In addition, a further 61 dams had been constructed in the two river valleys just east of Kiindu. The El Nino rains of 1997 through 1998 severely damaged seven sand dams in the Kiindu River and caused considerable erosion in and near the Kiindu River bed. In February 1999, $48,000 (Ksh 2,880,000 at Ksh 60/US$; $2,000 were reserved for the sand dam workshop) were given to SASOL to rehabilitate the seven damaged dams, to construct an additional 3 sand dams to prevent further erosion to the streambed, to establish 20 tree nurseries to supply 100,000 trees for hedgerows, woodlots and orchards (primarily mango) and to plant bamboo near all sand dams to protect against the collapsing of stream banks during peak floods. It was also intended that this program would produce trees whose wood could be used by Kamba wood carvers. This then linked the SASOL program to the MCC- initiated European Union – funded Sustainable Wood Carving Programme also in the Ukambani area. While the CFGB sand dam project ended in late 2000, the Sustainable Wood Carving Program did not end until recently and the evaluation for that project has just now been released. The latter project took over the tree nurseries in the Kiindu river Valley in late 1999, added more tree nurseries in the two river valleys to the east of the Kiindu Valley, and through an intensive training program taught women-dominated groups to manage tree nurseries and generally instilled a "culture of growing trees" as opposed to one of cutting trees. Much, but not all of the "tree work" was done within the Sustainable Wood Carving Programme until the present time but that work is currently being taken over by SASOL again. It perhaps would be appropriate to mention now that the recently released evaluation report for the Sustainable Wood Carving Programme stated that although SASOL's sand dams are greatly improving food security the northern Kitui District, a greater achievement of SASOL's work and the work with the Sustainable Wood Carving Programme has been the change over to a "culture of growing trees".

Six instead of seven sand dams were rehabilitated whereas seven instead of three new sand dams were constructed; much more in the way of sand dam construction was completed than initially intended. Stabilization of sand dams using bamboo and other trees was carried out to prevent further riverbank erosion. Only 10 nurseries were started on the Kiindu River (but a further 15 nurseries were initiated on the two rivers to the E of the Kiindu within the Sustainable Wood Carving Programme). Two hundred eighty six people were trained in the Kiindu River Valley to manage tree nurseries and to grow trees whereas 210 people were trained on the two rivers to the E of the Kiindu, all by SASOL within the CFGB Sand Dam Program. Ninety five thousand trees (including 1,000 mango) were planted in the Kiindu River area by the end of the CFGB Sand Dam Program in late 2000. However, 30,000 trees (including 10,000 mango) were planted in the Kiindu area within the Wood Programme in 2001. It is anticipated that a very lucrative dried mango business will be developed in the Northern Kitui area. **It would appear that the intended activities were carried out by SASOL and no important changes in activities occurred.**

Another planned activity of the CFGB Sand Dam Project was to conduct a workshop which would bring together program implementers, researchers and artesians involved in constructing sand dams so that information could be exchanged concerning sand dams, to assess the potentials and constraints for sand dams as a method to improve water supply, to determine what research is needed to improve sand dams and to raise public awareness concerning the usefulness of sand dams as a means to increase water supply in arid and semi-arid areas. The workshop was organized and conducted by the Kenya Rainwater Association (KRA) under the guidance of Donald Thomas, a long time Kenyan soil and water conservationist and Vice Chairman of the KRA. It was financed by CFGB ($2,000) and by the Regional Land Management Unit (RELMA). The two-day workshop was enthusiastically attended by 52 sand dam project implementers, researchers and artesians (as well as the press) and the intended objectives of the workshop were achieved. (See Attachment 4)

Beneficiaries

Beneficiaries were those living within about 5 kilometers of the sand dams constructed or rehabilitated and probably numbered around 20,000. Their method of selection is self-evident.

Were the Expected Impacts Achieved, What Were the Indicators and How Were They Measured?

The primary expected impact was the availability of clean water close to the surface of the sand behind the barrages all year long. The indicator for this expected impact is obvious and it was measured qualitatively by observation by SASOL personnel as well as by MCC Kenya. Indeed, there was water close to the surface of sand behind the dams in the Kiindu River year round even in October of 2000, at the peak of the worst drought in living memory in Ukambani. There was no danger that people or animal would fall into deep sink holes in the river sands, even at the peak of the drought.

The major expected impact upon food security is its improvement as result of home consumption and sale of excess vegetables produced in irrigated gardens adjacent to sand dammed rivers. The indicator of course is the amount of vegetables produced. This was measured primarily by qualitative observation and indeed there was an increase in vegetable production. Preliminary results from the as yet to be released socio-economic study in the Northern Kitui District shows that in one sub location of about 5,000 people and 20 sand dams, $35,000 US worth of tomatoes alone were sold in the local market from May through October, 2001. In another sub location having 15 sand dams the similar figure was $45,000 US.

A third impact that of increasing income, prosperity and food security as the result of use and sale of tree products such as wood and fruit as the result of being able to water tree nurseries and trees has been mentioned already. This impact will be long in coming and cannot be measured as yet. But the precursor indicators – numbers of tree nurseries and the number of trees planted have been discussed already.

A forth impact is an increase in production of main food crops resulting from conservation of rainfall resulting from terracing whose construction increased as a result of time saved from fetching water. Terracing and use of agro forestry techniques both lead to increased food production and their use is part of the extension package of SASOL. But, increases in crop production are not yet great enough to be measured. But, it has already been determined that before sand dams were installed in the Kiindu Valley, 1 person from each household took 2-5 hours to fetch water whereas the figure now is 0.5 to 2 hours. Also, prior to construction of sand dams, women and animals walked 5 to 10 kilometers to fetch water but now walk only 0 to 5 kilometers.

Other indicators of impact include the observations that river line vegetation is now green all year round, animals are healthier due to decreased distances to water and greater availability of (irrigated) fodder, and there are more houses made of brick (because of greater water supplies) and/or having corrugated iron roofs (more disposable income).

To what extent have the objective been fulfilled and how has the Food Security situation changed?

These are lumped together because the primary objective of the SASOL Sand Dam Project was to increase the income of the community and reduce poverty resulting ultimately from the greater water supply from the installation/rehabilitation of sand dams and this objective is more or less the same as the objective of achieving greater food security. **It is quite clear from the aforementioned qualitative assessments that food security has already increased some in the Kiindu River Valley as the result of the CFGB Sand Dam Project and that it will continue to improve**. As implied earlier the socio-economic impact study will substantiate more quantitatively that food security has increased and will also give us a better assessment of how much and in what ways food security has been increased.

Financial Report (See Table 1)

At project initiation in Feb, 1999, $48,000 or Ksh.2,880,000 (Ksh.60/$) were given to SASOL whereas $2,000 were kept aside for the sand dam workshop to be held in October, 1999. In general, SASOL's expenses were fairly consistent with their budget. Their office costs were lower than budgeted because the Nairobi office expenses were

not figured in; only the Accomodation/Travelling costs of Gideon Mutiso, Chairman of SASOL are included. SASOL and field staff salaries were slightly above budget probably because of the greater project length. Accounting was above budget probably because SASOL has monthly audits as they are required by other donors. Tree training was slightly above budget but note that no tree seedling raising costs were included. Construction materials, windless, tools and pumps were above budget, probably because more dams were built than budgeted for.
The receipts will reach Winnipeg sometime in the next several months.

Table 1

CFGB SASOL SAND DAM PROGRAM FINANCIAL REPORT (Project A005)

Expenditures	Jan/Sep '00	Mar/Dec '99	Total (Ksh)	SASOL's proposed Budget (Ksh)	($50,000 at Ksh.59/$)
Telephone/Postage	28,125.00	0	28,125.00		
Rent	6,000.00	6,000.00	12,000.00	135,000.00	
Office cost/house keeping	16,580.00	9,222.00	25,802.00	73,886	
Accomodation/Travelling	7,959.00	0	7,959.00		
Maintenance/Insurance/Fuel (vehicle)	62,271.00	16,220.00	78,491.00	120,000.00	
Sasol Staff	370,500.00	70,000.00	440,500.00	336,000.00	
Field Staff	234,036.00	0	234,036.00	216,000.00	
Monitoring	100,000.00	0	100,000.00	90,000.00	
Bank Charges	450.00	8,853.00	9,303.00		
Board cost/Accounting	141,427.50	0	141,427.50	150,730.50	73,000.00	
Training Tree Nurseries	269,628.50	445,554.00	715,182.50	660,000.00	Nursery Total Budget
Tree Seedling raising	0	0	0	500,000.00	1,160,000.00
Construction material/Windlass	712,510.00	266,400.00	978,910.00	770,000.00	
Tools/Pumps	21,020.00	77,400.00	98,420.00	50,000.00	
Grand Total	**1,970,507.00**	**899,647.00**	**2,870,156.00**	**2,950,000**	
Budget (Actual Given to Sasol)			**2,880,000.00**	**$ 48,000 (60/$ at start, Feb, 1999)**	
Balance of Budget			**9,844.00**		

$ 2,000 (workshop, Oct, 1999 never given to SASOL)

Total **$50,000**