KISASI SUB©SURFACE DAMS PROJECT

SASOL PROJECT PROPOSAL TO SIMAVI

INTRODUCTION

Lack of water is one of the most important causes of ill health in the Arid and Semi Arid lands (ASALS). The water problem in the ASALS is usually not that of absolute lack of water but that of a high percentage loss of the received precipitation. Water, usually lost due to run off, cannot be used either for human consumption or for crop and livestock production. To contain water on the land in the ASALS, intervention measures must be taken to prevent runoff (horizontal water flow), while increasing vertical flow (percolation) and retention so that it can be exploited.

Sub©surface dams are a cost effective method of holding water on the land thereby allowing for improved percolation and raising water tables. The net result of water retention is improved availability for human use, crop and livestock production and revegetation resulting from the raised water table. Coupled with this is extended cropping periods and reduced dry soil periods with an overall improvement on productivity. Such improvements should have a direct impact on the health of the populations of the arid and semi©arid lands.

Subsurface dams have been constructed in Kenya since 1946. In the last few years new designs, which are cheaper have been developed by community groups, particularly in Machakos district, next to Kitui district. In Kitui district, some donors have used this technique to supply water in areas where other techniques were not suitable.

PROJECT AREA

Kisasi Location in Kitui District of Kenya is characterised by many small and temporary rivers. Whilst they are flooded during the rains, the only retained water during the dry season is under the sand in the river beds. These rivers are thus amenable to the construction of barriers to hold water.

Kisasi is an area of relatively recent settlement. The limiting factor to settlement has been availability of water. The water table is low. The soil is fairly good for agricultural production. In times past, the area was used for livestock production but as the population has increased more people have to get livelihood in crop production. This is limited by moisture availability as well as the time spent in foraging for water. In the dry periods women walk more than ten kilometres to collect water for family use.

The area is characterised by bimodal rain regime. The long rains start in April and terminate in June. The short rains, which are less variable and thus more important for farmÔ p-p-p-
production, start in October and terminate in December. As there are few soil and water conservation/retention structures, coupled with wholesale clearing of the natural vegetation, runoff is rampant and soil erosion is increasing. Crop failure frequency is increasing as the length of dry soil periods lengthens. To reverse this trend, measures for retaining water in the soil must be undertaken now. This is the thrust of the project.

The population in Kisasi Location in the last census, 1979, was 30,522 in 5,259 households. The location covers an area of 277 square kilometres thereby giving a average density of 110 persons per square kilometre. However, parts of the location have densities as high as 144 persons per square kilometre. It is proposed to start construction on the 22 square kilometres of the location embracing Mbusyani sublocation so as to maximise impacts.

There are no health facilities in the sublocations and most of the locations people have to travel more than fifteen kilometres to reach the one public health facility in the location which does not normally have drugs. There is no systematic data on the health conditions of the population. However aggregate data on the health conditions of the district show that it is one of the poorest in the country.

During the past year, as part of SASOL schools programme, a preliminary health survey of four schools in the location was conducted. Malaria was chronic. There was significant malnutrition driven by the lack of adequate nutrition, especially vegetables which need more water than is available in the farming system. Out of about a thousand school children, 192 had ring worms. 11 had scabies and 192 had intestinal worms. No data exists for the whole population to show how diseases exacerbated by shortage of water are distributed. It is clear to field workers that improvements in water availability would go a long way in improving the health of the population by making water available for improving hygiene as well as production of food.

PROJECT OBJECTIVES

The initial objective is to organise the community to construct subsurface dam water retention structures in the river channels which in Kenyan law are public lands. This will slow flow and loss of water from a catchment. The retained water is thus allowed time to percolate into the soil recharging soil storage and raising water tables to facilitate its effective extraction.

The improved water retention has a bearing in an agricultural

community as it is the major limiting factor to improved production. Soil and water conservation structures will be constructed on individual land holdings by individual labour or group/community labour.Ô
Increasing water availability, coupled with effective extraction, will lead to improvements in the health of the community.

PROJECT STRATEGIES

To be effective, sub©surface dams, coupled with other soil and water conservation techniques, terracing and afforestation, should be constructed in Ð
series not in isolated spots on a
catchment basis. This will facilitate both the harvesting and spreading of water in the catchment to minimise its erosive power.

The project proposes to construct 200 subsurface dams and associated water wells for human consumption in Kisasi location of Kitui District over a period of 2 years in two phases. During the first six months of construction, twenty five dams will be constructed in the 22 square kilometre pilot area.

The project proposes to extend better hygiene: soil and water conservation knowledge for food production and reforestation improvements to the communities.

For sustainability and transfer of knowledge, communities will be organised and trained in the construction of the relevant structures.

PROJECT ACTIVITIES

Construction of sub©surface dams requires social organisation to conscientize and organise the community into viable community work groups as an initial step.

Location of sub©surface dams and water holding structures for the most effective layout is the next step. Once suitable sites are located stone must be collected at the site for construction.

The actual construction is carried by masons with the help of the community. Community masons are trained during the construction.

Once the major water retention structures, subsurface dams, are constructed, other on farm soil conservation measures will be implemented on individual land holdings by individuals and groups.

Better utilisation of available water to secure personal

hygiene, community health and improvements in food production, especially vegetables for children consumption, will be extended by field workers.

After subsurface dams have functioned for a season, wells forÔ human use will be constructed to take advantage of the improved water table.

PRELIMINARY BUDGET 200 SUBSURFACE DAMS

1. CEMENT
200 dams x 100 bags/dam @ Ksh.600/bagÁ`ê
DFl.340,000*f*

2. PURCHASE TRACTOR WITH TRAILERÁ`B
84,000
3. TRACTOR TRAILER OPERATING Á`B
22,000
4. MASONS
3 Masons/site @ Ksh. 5,000/month/mason
x 12 months x 8 teamsÁ`B
81,000
5. COMMUNITY CONSTRUCTION GROUP ORGANISING
400 Sites to choose 50% @ Ksh. 4,000/siteÁ`B
45,000
6. SUBSURFACE DAM SITE LOCATION
400 sites to choose 50% @ Ksh. 2,000/siteÁ`B
22,500
7. WELL LOCATION
200 Sites @ Ksh. 2,000/siteÁ`B
22,500
8. COMMUNITY HEALTH AND NUTRITION EXTENSIONISTS
2 Extensionists @ Ksh. 6,000/month x 18 monthsÁ`B
10,000
SUBTOTALÁ`Ê
627,000Ä
SASOL OVERHEAD 18%Á`Ê
113,000Ä
DFl. 740,000*f*
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