THE RIVER BARRAGES
CONSTRUCTION COSTS AND CHANGE AFTER 1 YEAR

The river barrage is a structure for storage of rain water in the sands of seasonal rivers. It provides bulk water for human and livestock consumption. It increases the absolute amount and extends the period of availability of water during the dry season.

Sasol builds river barrages of stone masonry and the following costs have been experienced in construction of barrages in rivers with a width of 20m and up to a maximum depth of 5 m at the deepest point.

COSTS

1. **Material**

120 bags cement 50kg @ 500.00 per bag	60000
8 Pcs Round bar 1/2" @ 480.00	3840
8 Pcs Round bar 1/4" @ 230.00	1840
2 Rolls Barbed wire 25kg 16 G @ 2250	4500
100ft 2"x2" timber @ 7.00	700
1kg 4" Nails @ 70.00 per kg	70
Sub total	**70950**

2. **Labour**

Artisan one month	6000
Supervision	30000
Excavation, stone sand, water & artisan help 500 mondays @ 100.00 day	50000
Sub total	**86000**

3. **Community Mobilisation and Training**

Initial contact meetings and barazas	10000
General PRA - Sensitisation	30000
Topical PRA - Conservation	30000
Impact Assessment PRA	30000
Sub total	**100000**

TOTAL BARRAGE COST KSH. 256950

Sasol has so far constructed a series of 33 barrages on the Kiindu river catchment system.

The pilot project which comprised of 5 barrages was completed in August 1995. This was followed by 25 barrage project immediately.

8 barrages were completed and retained water during the October 1996 rains.

A further 12 barrages were completed by the onset of the April rains 1996.

The full compliment of barrages was completed by the time the October 1996 rains started.

In addition to the construction of barrages on the river beds, the community is trained and mobilised for conservation of the environment. The idea of conservation is to retain water on the land for production. The first step in conservation, is the construction of terraces and associated structures in the cultivated land in the catchment. The second step is the increase in tree planting in the catchment. This allows for increased percolation, nutrient cycling, shade, animal feed and in the long term increase in the received precipitation in the area.

CHANGES ALREADY OBSERVED IN THE KIINDU PROJECT

Barrages in the pilot project received water in the 1995 November rains.

20 barrages received water from the April 1996 rains.

All the 33 barrages received water during the October 1996 rains.

As a result of this water charges the following changes have been observed:

(1) During the extended drought in 1996 as a result of the very low rainfall in the April rains, the people survived throughout with water from the Kiindu.

(2) New points of water offtake have been developed by the community where they have never extracted water before.

(3) Whereas water in the Kiindu sands depleted completely in only 2 months it has lasted in 1996 until the advent of the November rains.

(4) Grasses and other annuals in the river banks lasted much

longer than expected. They did not die out in the dry season as expected. This is an indicator to the coming of a major vegetative change.

(5) Where as the scoop holes in the Kamumbuni area used to go down to more than 12 ft before drying the level of water by the coming of rains in October 1996 was only 3 ft. A significant rise of the water table.

(6) Long waits at water holes which charge only slowly is a thing of the past. There is less time spent in collecting water at the site.

(7) As the water is nearer to the homestead and to the sand level, children can draw water safely after school. They do not have to miss school on account of water.

(8) There is more liberal use of water in the household as it is available, washing is bound to benefit.

(9) Bucket irrigation in the Kiindu valley has increased significantly.

(10) The time available for brick making is extended and more people are planning to build using bricks.

(11) As a result of nearness of water terracing activities were pronounced at Kwa Muli than usual.

(12) Animal health has improved substantially as they don't walk the long distances to water.

(13) Shambas near the banks had a higher harvest than the surroundings due to the stored water during the October 1996 rains.

SUPPLY

Each barrage supplies water to 2000 - 3000 people on average. However, during droughts, many more people would come to use the facility when their own sources dry up. Under these circumstances the population served by a barrage may double or even triple.

Sasol Kitui. 4 April 1997.