



## Cement lined tanks for rainwater harvesting

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OXFAM (UK/I) HAS been working in the northern regions of Somalia/Somaliland since 1991 following the civil war. OXFAM originally donated emergency water equipment for the rehabilitation of rural boreholes and urban water supply systems. Operating conditions in Somaliland were extremely difficult, with widespread rural and urban insecurity. The implementation of the programme ceased in September 1992, due to a deterioration in security. During this time we learned that deploying high value equipment to a small number of sites and communities was counter productive because it created jealousies and competition for resources resulting in tensions and conflict, and the equipment was easy to loot. Sustainability was lacking because of these tensions and the lack of any maintenance and support structures.

Rural Somaliland is a clan based, mainly pastoralist society, very individualistic and competitive, especially regarding pasture and access to water. Wells and boreholes are sites where conflict can erupt. In 1993 Oxfam's work was reformulated, since when we have focused on the rehabilitation of reservoirs and small open sunken cement lined tanks (known as "birkads"), usually rectangular in shape and about 15m x 12m x 3m in size. There is sufficient surface run off so that a "birkad" can be filled in a single rainstorm. "Birkads" are privately owned, and they serve both human and livestock water needs.

Initial planning included consultations with elders, ministry officials and other agencies. This was followed by a field survey to identify priority needs of villagers in the Galbeed region of Somaliland. We used the following criteria: areas where refugees would return to; not being duplicated by other agencies; sites of water shortages; sites where the communities were ready to take responsibility for the rehabilitation of their water facilities but required small inputs and technical assistance; sites where our intervention will not create environmental problems such as overgrazing nor upset the balance of clan interests. A mixed survey team met with villagers, men and women separately. The team learned about the problems facing villagers, their priority needs, their constraints, and what role they would play in rehabilitating their water sources. It took 20 days to complete the survey, and we established that the majority of the communities covered by the survey were ready to participate. Sustainability was stressed at the outset.

Oxfam agreed with the communities to donate cement plus wire mesh for reinforcement of the mortar and also technical assistance. The "birkad" owners had to provide

the sand, water and payment of the labour force both skilled and unskilled.

During the survey we saw wide variations of "birkad" workmanship, both in original construction and in subsequent repairs. The combined effects of war, absence of maintenance during the displacement years, and poor workmanship between them had caused significant deterioration: out of some 3,200 few were capable of holding water. Rehabilitation needs ranged from fixing numerous cracks to major reconstruction. The survey led to a decision to rehabilitate some 430 "birkads" as part of Oxfam's programme to improve rural water resources.

The opportunity was taken to introduce new and improved skills to village masons, such as ferrocement techniques - reinforcing the mortar with a layer of chicken wire mesh, spread at the floor base and rolled up the vertical walls. We included training for the village masons.

An initial training course lasted 5 weeks. 28 village masons in 5 village centres were trained to rehabilitate the "birkads" using ferrocement techniques rather than cement mortar alone. Training included practical demonstrations in the making and use of reinforced cement such as the cement mixing ratio, water quality, selection and cleaning of sand, reinforcement and use of the wire mesh, and curing. The training was very successful and provided good motivation, a key factor in the implementation of the project.

An analysis of people's use of "birkads" during the year indicated that peak dependency occurs during the dry season between the "Deir" rains (Oct-Nov) and "Gu" rains (April-June). Although it would have been desirable to complete the work as swiftly as possible, it is practically impossible to carry out the cement work during the dry season for lack of water for mixing the mortar and for curing. The community advised Oxfam to wait for the wet season as only then would sufficient water be available and also the rain would wash the sand, which is freely available from sandy tracks and gullies, so that there would be less impurities in it.

So, from the beginning, the elders, men and women were involved in the planning. They selected the "birkads" to be repaired, appointed which masons were to be trained and agreed to pay for the masons' services. They agreed also to look after the material inputs such as cement and wire mesh, and store these without charge in their villages. They also dealt collectively with trouble makers.

We have identified two key aspects of the sustainability of our work with "birkads". Firstly there is the

sustainability of the project; secondly the sustainability of the "birkads" themselves.

As mentioned earlier Somali culture is strongly clan based. These clans show typical "fission and fusion" characteristics. This means that while people will come together and cooperate at different clan levels over issues of mutual interest or mutual threat, such as feuds or the payment of compensation, in other situations different clans and subclans are in competition with each other for resources for their own benefit. It is therefore very difficult to encourage people to come together to work for their mutual benefit, or where the immediate benefits are not equally shared.

There are continuous internal clan tensions, which can easily lead to conflict and rifts between different clan sections. It also means that there is a tendency towards individualism: it is very hard to encourage community cooperation and joint participation. "Community" in Somaliland is not easy to identify and this makes it very difficult for organisations such as Oxfam who try to work on community development projects and with community participation processes. Furthermore, most beneficiaries have previously been only passive recipients. This, combined with the strong competition for resources, has led to a situation characterised as "aggressive dependency" - a high expectation that others would do the job for them without any participation but very active seeking of benefits and resources.

As might be imagined, historically maintenance of and participation in communal resources proved very difficult to sustain in the Somali context. From the start of this project Oxfam consulted locally, but in implementing the project we chose to work through individual "birkad" owners, there being very few "birkads" which are publicly owned.

By working with "birkad" owners Oxfam has been able to appeal to their self interest, as they benefit from the inputs and the sale of water, while being sufficiently motivated to put in their own auxiliary inputs and employ the Oxfam trained masons. Consequently in this way we have been able to increase water supply in the rural areas, which is the main objective of the project, meeting a priority need as expressed in the initial survey.

The population of the project area, including "birkad" owners, is mainly self-repatriated refugees and they face many problems affecting the sustainability of the "birkads". Cement and chicken wire are imported and expensive: wire mesh cannot be purchased locally at the moment, while cement is expensive. This makes it difficult for the project to continue without Oxfam's assistance. Some of the "birkad" owners are still in the refugee camps and they find it hardest to start again since they lost so much during the war.

Having contributed towards the rehabilitation of a "birkad" its sustainability is then in the hands of the

owner. Much depends also on the consumers of water. Pastoralists are mobile with opportunistic search of pasture and water. Their herds are still being rebuilt after losses during the civil war, so their demand for water is still growing. If a water source dries up, the nomads move on another source. Their demand on the "birkads" will be contingent on rainfall and migrations. Sedentary and agro-pastoralists, many of whom also own "birkads", have smaller herds which graze in village enclosures, so they are a more constant market and more dependent on the "birkads". So their "birkads" are their water supply for the whole year and also a source of income as water can be sold to herd owners. Through management of the water in the "birkads" and by linking this to seasonal demands for water, the "birkad" owners should be able to ensure income to cover maintenance of their "birkads".

Although actual rehabilitation of the "birkads" is managed and carried out by the owners and the masons, Oxfam has exercised as tight control as possible over inputs and because this control is from an external agency we have overridden internal clan dynamics while appealing to the self interest of the owners and the needs of the rural population. The approach is to distribute a small amount of inputs, evenly, among a wide number of "birkad" owners, as chosen by the local population. Each specific input is not worth fighting for or looting. Each clan gets their share of the inputs and the decision making.

However, as Oxfam continues to maintain the control over the inputs it is arguable that we are not encouraging sufficient local management of the projects and capacity building at a local level. This may affect the long term sustainability of the project. This is a dilemma as there are worries, based on an analysis of the clan structures and of past experience, that local management will increase clan pressures for control over resources and therefore increase tensions and arguments arising from these pressures. Further more, accountability over the inputs might disintegrate in the rush to gain access to them. So within the project there is a tension between tight control and increased local participation.

The challenge is therefore to encourage greater local participation and capacity building without losing the momentum of the project and while maintaining as much accountability of inputs as possible. It is hoped that participatory rural appraisal will be one tool we can use to reconcile our dilemma.

Although the project has not yet been evaluated, it seems that people are grateful for Oxfam's assistance and there is a sense of happiness among the villagers to see someone who is encouraging them to do something for themselves. The project has generated a lot of good will at the grassroots level - and this has enabled nearly 350 "birkads" to be rehabilitated since April 1994 by the rural population with Oxfam's assistance.