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Empowering farmers by design

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Empowering farmers by design

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1. CONTEXT

Sustainable development of irrigation is seen as crucially dependent upon farmer participation in management. This may take two forms:

(i) If farmers control, operate and maintain the hydraulic infrastructure and the water that flows through the system, then the system is 'farmer-managed'.

(ii) If staff employed by an external agency control and operate major elements of the system, while the farmers are responsible for other parts, then the system is said to be 'jointly-managed'.

In this latter case the system as a whole is generally designed by engineers, who subsequently hand-over responsibility for certain components to the farmers. In the first case the majority of farmer-managed irrigation systems (FMIS) have been developed entirely by the farmers themselves. Such systems tend to be rather small (less than 100ha).

In recent years there has been a proliferation of literature on farmer participation in irrigation development. For example Speelman (Ref. 1) reviews seven recent international meetings on irrigation in Africa, all of which dealt extensively with this issue. This is not surprising in view of the disappointing performance of many of the schemes developed without sufficient regard to subsequent management in recent decades. So, what have we learnt from these past failures? Also, and perhaps more important, can we implement these lessons?

The goal is more than just the construction of functional structures of in a well-planned layout, rather it is that the scheme actually delivers water as planned and that it continues to do so under farmer management. We are therefore led to two conclusions, concerning:

(i) the design outcome
(ii) the design process.

The design outcome is ultimately a socio-technical system. The designers' choice of technology largely determines management options and dictates whether farmer participation is possible. The essential interactions between technical infrastructure and management have been most eloquently described by Horst (Ref. 2 & 3). In essence a good design is one that is best suited to local capacity for management.

The design process should be seen as a vital enabling mechanism, through which active participation of farmers is developed and the appropriate design outcome is assured. When engineers' designs are misunderstood or do not adequately meet local requirements then structures may be modified, destroyed or neglected and canals may be relocated (Ref. 4). Such occurrences are often the consequence of failing to assimilate local experience and perceptions during the design process.

These considerations have guided the involvement of ACORD (a European NGO) in an attempt to promote farmer management of a 1300 ha irrigation scheme at Sablaale in Southern Somalia. The scheme was developed between 1975 and 1981, as a state-farm with no 'beneficiary' participation. Since 1985, as government involvement has gradually eroded, ACORD has provided development assistance. It is seen as critical to ACORD that local management by farmers should emerge.

2. SABLAALE IRRIGATION SCHEME

The Sablaale irrigation scheme was developed as the economic base of a resettlement project in response to the severe drought of 1973/74. Several thousand members from a wide range of nomadic tribal groups from north, north-west and central Somalia were moved to a newly created settlement on the lower reaches of the Shabeelle river (1°10'N, 43°45'E) approximately 25km inland from Baraawe (Brava), a small coastal town. This initial development was described as a 'crash programme' and received minimal technical planning. Originally some 3000ha of bush were cleared for the scheme

and a rudimentary canal layout was constructed.

Engineering and agro-technical inputs increased during the period 1976-81 and the scheme was partly remodelled. At this time it was conceived as a semi-mechanised state-farm with settlers as wage-earning labourers although also receiving substantial food-aid. In 1981 the notion of a state-farm was abandoned and individual one-hectare allocations were distributed to farmers as subsistence plots. A total of approximately 1000ha was allocated within six farms of 130 to 300 ha. At this time a strong degree of centralised control and subsidy was maintained through a government agency.

In 1984 with declining economic support for the scheme its status was again altered. It became clear that government was not able to sustain the subsidies to the scheme and was therefore effectively withdrawing its control and handing-over to the farmers. ACORD, which had earlier become involved as part of a community development project within the settlement township, recognised that prospects for a successful transition to farmer-management were poor because of

(i) dependency on centralised management, poorly developed organisational structure and limited farming skills among the settlers;

(ii) structural inadequacies with the scheme resulting in poor water control and fears regarding non-sustainability due to salinity problems.

ACORD therefore initiated a multi-facetted approach to promoting farmer-management of the scheme within the scope of an expanded development project in the settlement and surrounding villages.

An engineering appraisal (Ref. 5 & 6) identified the key requirements for necessary technical improvements to the scheme, including:

(i) securing diversions to the scheme from R. Shabeelle;

(ii) controlling water distribution within the scheme;

(iii) improving drainage at times of excess.

Irrigation takes place during the twice-yearly flood seasons in the river. Diversions to the scheme's four operational main canals depend upon the control of the river at a point where it emerges from a swamp. Each canal had its own independent gated control structure - all of which were damaged to some degree. There was no structure in the river itself and control was achieved rather precariously by creating an earth bund (1-2 metres high) across the channel as the flood receded. This was possible only with the use of heavy earth-moving machinery operated by the government agency responsible for developing the scheme. In the long-term this dependency was likely to be a severe problem.

Within the scheme there were found to be severe water control problems arising from inadequate and/or damaged structures. Surveys showed that, provided there was success in controlling river levels, there was adequate command over all fields and adequate capacity in the canals to meet requirements. However, in practice many farmers experienced extreme difficulty in watering their fields while others experienced regular flooding.

Given the large scale of the scheme and the interdependency of large numbers of farmers, it was necessary to restore control through rehabilitation and/or replacement of many canal structures. In view of the importance attached to farmer-management key issues were:

(i) construction methods and materials should be such that realistically the system could be maintained by the farmers;

(ii) design should be adapted to farmers' management capability with water distributed in a way that is locally perceived to be equitable.

To a large extent, localised control could be introduced by developing a block structure within the layout with each block operating more or less independently.

Drainage was a problem. A drain layout existed but was ineffective due to:

- inadequate provision for disposal of excess water away from the scheme;

- inadequate water control within the scheme creating flooding in some areas;

- many drains had been blocked by farmers and converted to use as part of the irrigation distribution scheme.

Long term sustainability of the scheme was a matter of concern in view of salinity problems experienced elsewhere in the valley of the R. Shabeelle. The salinity

level in the river is variable with significant peak at the start of the flood season. Intensive drainage works could not be supported by the scheme either economically or technically. However, it was concluded that improved water control was the most important factor.

Disposal of excess rainwater would still be a problem and pumping could not be avoided. This necessitates operation and maintenance of a commonly-owned facility and its sustainability will depend upon success in promoting farmer-management. There were no local alternatives.

Organisational surveys (Ref. 7) have included consideration of experience within the scheme itself and in surrounding villages. These "off-site" investigations provide valuable insights into "spontaneous" organisation of farmer-managed schemes that have received little or no external intervention. Some documented studies (Ref. 8 & 9) also deal with organisation of water-users.

Irrigated land at the river in the Sablaale district amounts to 2300 ha including the 1000 ha of the settlement scheme. Existing village irrigated farms are operated by three distinct groups.

(i) agro-pastoralists who migrate seasonally between their irrigable land and rainfed pastures;

(ii) sedentary agriculturalists of Bantu origin (descendants of former slaves) who own virtually no livestock;

(iii) religious communities under the leadership of a sheekh and cutting across tribal/clan distinctions.

Except in the religious communities, village land is farmed individually, but cooperation in certain tasks is regarded as essential. Communal work is organised by those with delegated responsibility from village or farm committees. Canal construction and maintenance are important communal tasks and organisation of this work, together with water distribution, is the responsibility of a controller ("sagaale" or "aw keli") appointed by the farmers. The controller settles disputes between the users and may punish those who take water out-of-turn. Women are generally excluded from the committee, although they are sometimes involved in irrigation. However, there are a few examples of women committee members reported by de Jong (Ref. 9).

The organisation of the settlement scheme has not evolved spontaneously but has been imposed. Between 1981 and 1984 the scheme was managed as 6 distinct farms each of which had a farm committee. Each group of 50 farmers had a representative (cudud leader) but this grouping related to arrangement of the settlement township rather than the irrigation layout. Also these representatives were outnumbered by government workers - farm supervisor and several extension workers. In effect each farm was managed by the supervisor.

Late in 1984 a new set of economic farm charges was introduced and at the same time a reform of the committee structure took place. Extension worker posts ceased to exist and the sole remaining government worker was the farm supervisor. The role of chairman was occupied by a farmer and additional farmer members were appointed. However, members of the committee were not elected by farmers. Surveys in 1986 indicated that the status, authority and role of these committees were unclear and they were largely ineffective.

3. ACORD INTERVENTION

As an integral part of the essential physical rehabilitation of the scheme, ACORD has promoted the establishment of self-managing farmers' organisations. Their structure is based upon the arrangements of physical works, such that farmers sharing access to water are organised into a hierarchy of cooperative groups.

It was first proposed to base the organisation around the existing 4 main canals and 152 secondary canals with minimum change. After consultation this option was rejected because of the maintenance burden and operational difficulties that would be associated with such a large number of canals and control/inlet structures. A revised plan was then prepared with the aim of reducing the number of secondary canals to around 100.

All farmers sharing access to a secondary canal constitute the 'Farmer Group'. In all, 97 such groups were proposed for the 1354ha scheme. These groups are then clustered into units based upon their arrangement along the main canal which they share. In all, 19 units were proposed varying from 40 to 110ha. Each unit committee is represented on the canal committee, one for each main canal. All members of the four canal committees then constitute the scheme committee.

In recognition of the special difficulties experienced by women farmers, a parallel organisation was proposed providing for representation of women at the unit, canal and scheme levels. A Woman Farmers' Group will be formed for each Unit, the members of which will select a representative to the Unit Committee. The women members of the various unit committees will then select a representative to each Canal Committee.

The formation of the farmer-management organisation has been prompted by the observation of the severe problems experienced previously in relation to equitable water distribution and adequate infrastructure maintenance. Future responsibilities at the various levels of the organisation will therefore be focused on

(i) water allocation and control
(ii) maintenance
(iii) resolution of disputes.

The farmer organisations could also assume responsibility for synchronising cropping schedules. Many of the problems experienced by farmers in the past appear to be linked to the different planting dates of neighbouring farmers. This is largely due to difficulty in hiring tractors for cultivating the very heavy clay soil. As long as tractor hire remains the prerogative of individual farmers this problem will remain. Cooperative action based around Farmer Groups is essential.

Maximum involvement of farmers in the process of physical rehabilitation is being promoted through the intermediary of the new organisational structure. All farmers will be expected to contribute labour for construction and to accept responsibility for security of materials and equipment. In this way it is intended that twin benefits will be derived:

- stimulation of a feeling of joint ownership of works completed by collaborative effort.

- training in construction skills that will be important for future maintenance of the works.

Ownership is a key issue that has received some attention in the literature on irrigation (Ref. 10 & 11).

In the past there has clearly been no sense of ownership by the Sablaale farmers. The ACORD intervention aims to promote the feeling of common ownership. Current political uncertainties within Somalia create serious complications.

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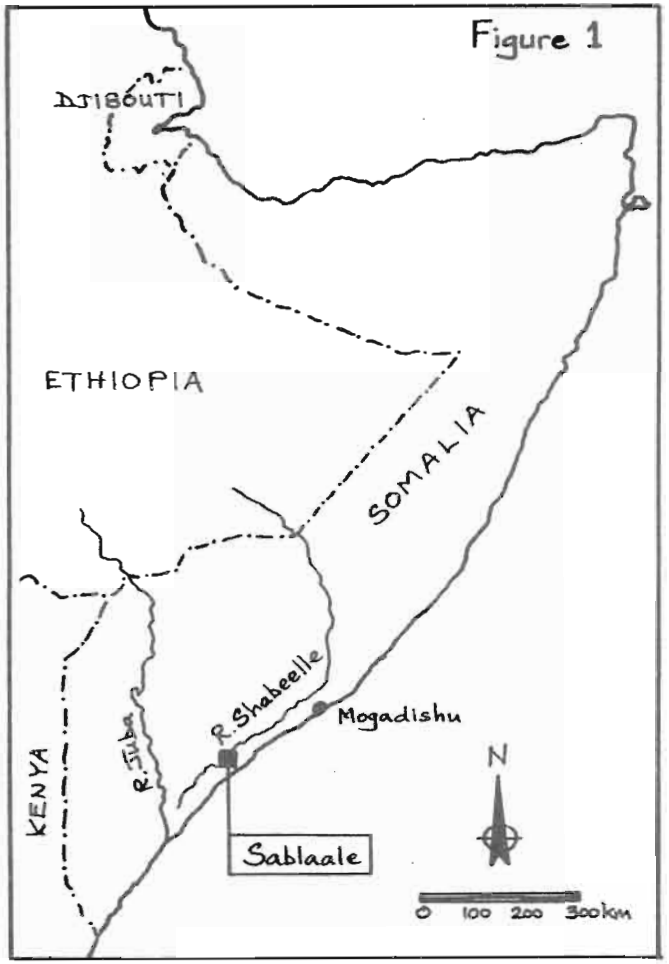
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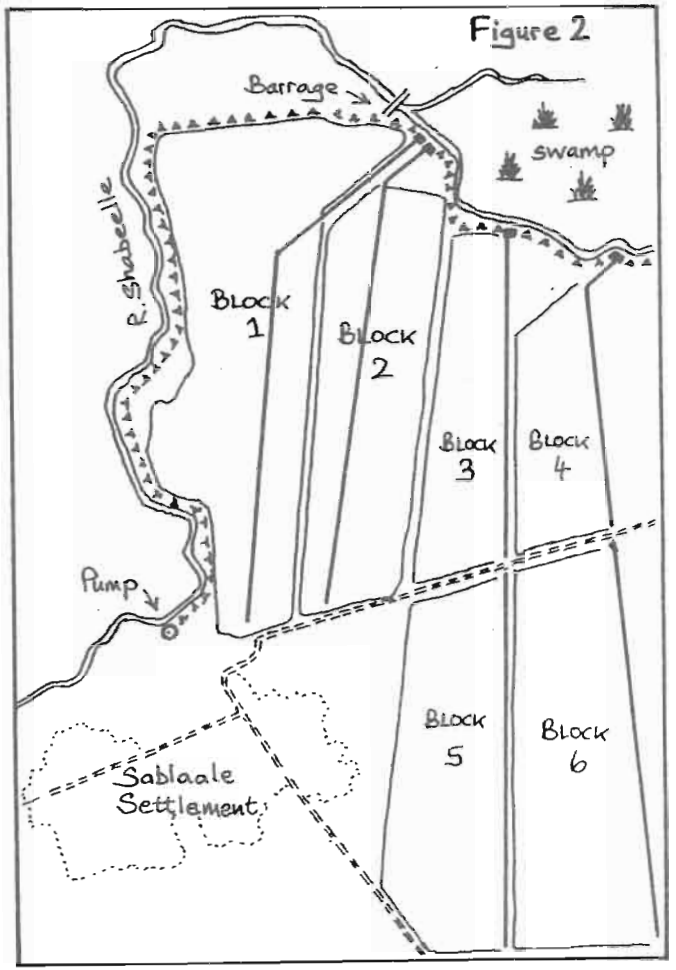
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Figure 1
DJIBOUTI
ETHIOPIA
SOMALIA
KENYA
R. Juba
R. Shabeelle
Mogadishu
Sablaale
N
0 100 200 300km


Figure 2
Barrage
swamp
R. Shabeelle
BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 4
BLOCK 5
BLOCK 6
Pump
Sablaale Settlement