

possible but are unwilling to accept measures to improve the whole area if their individual settlement has no direct and visible benefit. These topics are also understood as problems which concern all farmers despite their economic background and they were traditionally solved by the whole community or within tribal groups. Therefore the planning activities dealing with these topics were left to the local informal institutions (the various akhyaars, the WUAs and the formal representatives), who have to seek for solutions. Whereas diversification and intensification of agricultural production is regarded as an individual problem which requires individual activities and knowledge, traditionally the local institutions do not interfere in this field of problems. It is common practice, for the farmers themselves to be responsible for their agricultural production and they insist on work only for their own benefit. Cooperation is appreciated only if it contributes to the individual production in terms of benefit visible after a period of 6 months to one year.

In cases when farmers can recognize and understand that activities will have positive effects for them, they are willing to contribute either in terms of money, kind or labour. Local planning therefore uses the traditional institutions to organize the amount of individual contributions in respect of the farmers' economic capacity.

7. Social Environment and Project Activities - Conclusions and Recommendations

As a result of the socioeconomic study in the SHIRA Project Areas, carried out from March 1989 until August 1989, the Team of the Centre for Development Studies (ZELF) suggests some recommendations, which could strengthen and improve the ongoing and future SHIRA activities in the Lower Shabeelle region:

- A. Measures to Increase Confidence
- B. Better Incorporation of the Target Group in Project Activities
- C. Training of Farmers
- D. Land Registration
- E. Improvement of Infrastructure and Transportation
- F. Energy Supply
- G. Agricultural Inputs
- H. Animal Traction
- I. Production of Fodder
- J. Female Farmers and Development
- K. Impact of Forms of Self-help and the Water User Associations on Development
- L. Further Studies

The following chapter describes aspects of the social environment with considerable influence on project activities and describes conclusions and recommendations for further project development activities.

A. Measures to Increase Confidence

1) With regard to the impact of the ethnic constellations in the villages of both project areas, the project activities should include contacts with all groups within one settlement by contacting their respective headmen (tribal akhyaar). This could improve the cooperation with the target group and decrease undesired influence of the leading groups through the control executed by the members of the akhyaar.

2) The centralized political administration has not yet succeeded in obtaining the support of the population of the both project areas, and the majority of the population in most cases does not accept interventions from governmental institutions. Frequently farmers are asked for contributions to governmental development programmes without recognizing any benefits and at present they deeply mistrust official activities.

The SHIRA Project should take into consideration that its staff cooperates with the official institutions and is therefore regarded as part of the policy which the farmers have experienced as negative for them. Therefore the SHIRA Project should explain and discuss the tasks of its activities with the target group in each village and keep regular formal and informal contacts with the official and traditional leaders of the villages and region.

As the flow of information from the officials to the farmers is poor it is common that the members of the target group are not sufficiently informed about planned activities and they tend to regard the Project as a "source of money". Regular contacts with the farmers and their traditional leaders could establish trustful communication and improve the local contributions to the project's activities.

B. Better Incorporation of the Target Group in Project Activities

Although the population of the project area is to a certain extent accustomed to external interventions by governmental institutions and foreign agencies there are significant doubts among the population about possible positive effects for the individual and the village economy. The mostly unsatisfactory experiences caused a lasting mistrust towards all governmental interventions whereas foreign agencies are regarded to be more trustworthy. Their efforts, especially those for the local and individual development, are usually appreciated by the members of the target group. Therefore the members of the target group should be contacted and involved as directly as possible. The traditional administrative institutions of the villages should be included in local activities performed by the project.

This approach of direct incorporation of the farmers in the project activities improves the supervision of the means used for development and allows the traditional leaders and the members of the target group to intervene if their interests are not respected.

C. Training of Farmers

At present maize, sesame and tomatoes are the major cash crops while the cultivation of vegetable and fruit trees is not widespread in the project areas. As the reasons for the emphasis on the above mentioned crops, farmers mentioned mostly lack of available water and lack of knowledge to intensify their production, e.g. by cultivating vegetable and by growing fruit trees. Therefore farmers, including female farmers, should be trained in intensifying and improving their production. These activities should be carried out in close cooperation with other governmental organizations, above all with AFMET and ITOP.

This activity should be designed for small scale farmers. As a result they could be encouraged to diversify their farm production and to increase their income by intensively cultivating also small farm plots for the local and external markets without putting a high risk on their subsistence. The cultivation of vegetable could be a positive income generating activity especially for female farmers with own land.

D. Land Registration

Land registration is not commonly practised by small-scale farmers but it has to be regarded as an important precondition for further development activities and as a chance to secure the farmers' right to their farm land even though the possession of the respective official documents can not exclude land grabbing.

Up to now large-scale farmers and absentees have been the dominant groups who could handle the time consuming and complicated registration process and afford the expenditures involved. Moreover the study of the project areas has shown that owing to this ongoing registration process the potential farm land around the villages is occupied by the above mentioned groups (see ANNEX 2). Therefore the small-scale farmers could be assisted in registering their farm land. The registration, which should be promoted through the existing Water User Associations (WUAs), is to be a precondition for the rehabilitation of irrigation canals to reduce possible changes of land ownership to the disadvantage of the target group within the reach of those areas improved by the project's activities.

E. Improvement of Infrastructure and Transportation

1. At present the access to the agricultural areas is not adequate for the means of transport used for the transportation of the crops or agricultural inputs. The tracks used by the lorries, pick-ups and carts are mostly unpassable during rainy periods. Moreover these paths cause significant damages at crossing points of irrigation canals. Therefore the rehabilitation of the irrigation canal system should include improved allweather tracks and solid crossing points for better access to the farm land as well as better possibilities for the local and nomadic livestock to reach the watering places along the Shabeelle River.

2. In both project areas there are many villages with insufficient access to large agricultural areas on the left bank of the Shabeelle River. First of all, this is due to lack of facilities to cross the river. Consequently farmers in Daarasalaam and Mubaarak (Project Area B) have to transport their crop production and their agricultural inputs via Jannaale to the respective villages. Secondly the important agricultural areas between the Shabeelle River and the Farta Furuqley (Project Area A) have no crossing facilities from the right bank of the river. Presently all machinery used in this area has only access via Kurtunwarey. All these forced detours cause significant costs. Therefore in both project areas a study should prove the feasibility and possible locations of crossing facilities.

3. The village of Jawhar has no passable track to reach the gravel road in the rainy seasons and is not accessible by lorries or pick-up during these periods. This fact is a great hindrance for this village to take part in further development. Therefore the existing track to the gravel road should be improved to be passable during the whole year.

F. Energy Supply and Water Purification

In order to improve utilization of the existing energy supply the SHIRA Project has launched a Wood Saving Stoves Programme. These stoves which have been introduced in several settlements are appreciated by the majority of the interviewed households. Their advantages are basically: lower consumption of wood, better taste of the meal since less smoke enters the pots, the material for stove construction can be found in the vicinity of the villages. Furthermore these stoves are safer for the children. As a disadvantage some women mentioned that the stoves cannot not be moved to a different place.

The findings of the study show that in most villages the local authorities want to have light for the mosques and are ready to contribute to the expense. The private use of electricity appears to be limited to those groups with considerable income because of the costs involved.

The use of solar energy should be regarded with caution, since this technique is presently completely unknown. Moreover, it appears to be most likely that the batteries required for operating such an installation would be misused for other purposes, such as starting vehicles. Furthermore, the adequate maintenance of the solar panel and the repair of defects could be uncertain factors, since there is little awareness about the permanent control required.

When introducing this technique, it should be taken into consideration that the illumination of the mosque has priority to the authorities. Taking this religious background into consideration would improve the cooperation and the training for operating and maintaining such an installation.

The pilot trial of promoting the moringa tree (*moringa oleifera*) for water purification purposes is interesting and worth being continued. It is good that the trial is also accompanied by the agricultural faculty of the National University of Mogadishu. But as far as the introduction of water purification is concerned it should be taken into consideration that it would cause additional work for the women and that the advantages compared to adequate wells have yet to be tested. Furthermore, people would have to be willing to pay for water if this technique is organized on a centralized private basis.

G. Agricultural Inputs

Inputs such as fertilizer, pesticides, improved seeds and spare parts for technical equipment as well as sufficient quantities of diesel are not available in amount required in the villages and the increasing demand cannot be satisfied in the urban centres of the region. The shortage of these inputs often causes delays in the agricultural production. As a result farmers cannot rely on the availability of these inputs and are forced to use uneconomic traditional practices

(large-scale farmers) or are not willing to undergo risks by practising new methods of production which require these inputs (small-scale farmers). Therefore small-scale, private sector enterprises (e.g. local traders, workshops, new farmers' cooperatives) should be encouraged to provide requested inputs.

H. Animal Traction

Although the use of tractors gains an increasing importance to all farmers the availability of the equipment is unpredictable in both areas but more severe in Project Area A. Moreover the supply with fuel and spare parts for the machinery is unreliable. Even though the use of animal traction is hardly known the SHIRA Project should promote trials in the villages of Daarasalaam and Banaaney since there are farmers motivated to work with animals the Project should support them when they are willing to introduce ox-ploughing. These trials could include training in improved row seeding techniques in order to use animal traction also for weeding purposes. After successful introduction those farmers participating in the trials should be included in the training of other interested farmers.

Furthermore a study should be carried out to analyze the feasibility of animal traction considering the problems of trypanosomiasis, veterinary services, adequate feeding of the animals and training (man and animal).

I. Production of Fodder

The analysis of the land use in both project areas shows that farmers in Project Area A are increasingly growing grass on irrigable agricultural land to feed their animals and for selling. Moreover maize stalks are sold as fodder at comparatively good prices to traders from urban centres who buy them directly from the fields. Therefore in both project areas a study should be carried out to analyze the possibilities to grow fodder as it could also have positive effects on diversifying crop production and generating additional income to farmers.

J. Female Farmers and Development

The actual contribution of female farmers to the village economy is crucial for covering the basic needs of the farm families. Their influence on the local economy cannot be underestimated, nor their knowledge in agricultural production and processing of farm products.

The findings of the socioeconomic study show that presently female farmers face various constraints which hinder a lasting contribution to development. Those indicated by the study are:

- a) women's farm land is often situated in unfavourable areas;
- b) lack of money and poor access to credits;

- c) competition with men for agricultural machinery;
- d) insufficient access to knowledge and innovations and
- e) various time-consuming obligations a part from agriculture.

As the female farmers seem to be highly motivated for cooperation their contribution to development could be increased. The benefit of their activities would most likely be used in favour of their respective family. The still existing forms of self-help are persistent among female farmers¹⁾ and their high motivation for improving the agricultural production can be regarded as favourable for further development and they are sustaining the ongoing activities of the Farm Family Section of the SHIRA Project.

The various forms of self-help and cooperation practiced by women facilitate the introduction of innovations since the flow of information amongst female farmers is more intensive than within the male community. Therefore new agricultural practices are spread more rapidly if they are designed for the women's small-scale production. The analysis of the findings also show that female farmers have not yet been included in measures for increasing agricultural production (besides training given by the SHIRA Project) despite their high motivation for improving production.

Presently female farmers suffer from lack of means and poor access to other agricultural inputs even though their contribution to the family is considerable. By reducing these constraints (besides others as mentioned in the Preliminary Report) the SHIRA Project could improve the situation of the female farmers. By improving the female farmers' access to credits the negative effects of these constraints could be reduced considerably.

Female farmers usually get credits from traders or their husbands. The conditions of repayment and the interest rates are less favourable and more expensive²⁾ than the formal rates of banks (approx. 18 % in August 1989).

As shown in the analysis of the findings women use their income for their family or for farm inputs and there is no evidence that additional income would be used for other purposes. Considering the current situation and the present conditions of female farmers credits would help to improve both. Activities in this field could be introduced in two forms:

Cash credits are appreciated by women. Presently they are basically used for buying food and agricultural inputs even though some women

- 1) Female Farmers are basically using the same forms of selfhelp like men.
- 2) The amount to be repaid, usually in kind, is a matter of negotiation. These commonly take place at times when money is needed desperately (e.g. periods of land preparation, weeding times). It is common practice that the debtor has to repay in the low-price period after harvest. Therefore the "interest rate" for the creditor rise considerably, since he can store the products and sell them in periods of high demand (e.g. dayr, jilaal) or in markets with higher prices (e.g. Mogadishu).

use them for trading purposes. In most cases they were used to improve the situation of the respective family or to pay farm inputs (e.g. tractor service, rent of land).

A credit programme for credits has to consider that loans can provoke problems within the village community since every woman wants to have access to money. Therefore it is possible that men may interfere in favour of their wives. In this context the tribal hierarchy and the social position play an important role in the distribution of credits in favouring the leading groups if controls are not stringent. Cash credits should therefore be linked to defined conditions approved by the local formal and informal authorities. It is recommended to include the village akhyaar in the control of distribution. The community of female farmers should be contacted directly and encouraged to form credit groups with women of similar social background. This is important, since women also take part in the economic and social hierarchy within the village community and have strong tribal affiliation. It should be assured that all groups can participate in such activities.

As female farmers have poor access to inputs in general, input credits could be adequate to improve agricultural production. The poor access to inputs is basically due to lack of money, small farm plots, and competition with men for services. The already existing cooperation among women would facilitate their organization for this purpose and could secure repayment. For several purposes women are already organized in groups according to common interests or obligations. It is most likely that these groups consist of women from related tribal groups as they have an internal informal organization comparable to men.

For input credits, like improved seeds, all women should be assured equal access by informing them directly and encouraging the formation of groups to manage the distribution and repayment. These groups could be included in activities for agricultural training, since deficits exist in the knowledge about the application of innovations.

Although female farmers use technical services in their agricultural production, they cannot take advantage of them like men. This is basically due to lack of money and their small farm plots scattered over the agricultural area. Therefore women reported that their individual access to technical services is poor, since the owners of tractors and lorries prefer to provide their equipment for more economic use on larger farm plots.

Access to technical services for female farmers could again be improved by encouraging the formation of groups of women with neighbouring farm plots or land in close vicinity. The interest in facilitating their work is common among all female farmers and the formation of groups could be independent of tribal or social groups (including male neighbours).

When promoting input credits for technical services it has to be taken into consideration that men also mentioned the lack of technical services to be one of their major problems and therefore they should be included. But as women traditionally are not engaged in handling machinery they would need more attention and support. Even though men

use machinery more frequently, there is no evidence that women would be discriminated when hiring machinery. A precondition is that the women have sufficient means and that they cooperate in order to achieve reasonable conditions for the tractor owner and for themselves.

According to the findings the organization of ONAT would presently not be an alternative to private tractors, because ONAT is not considered to be reliable (e.g. time, quality of work) and moreover its number of functioning machines is by no means enough to meet the demand.

To enhance female farmers' contribution to the development within both SHIRA project areas the ZELF Team recommends:

1. Within the target group of smallholders female farmers should be a special target sub-group for agricultural training. There is a considerable flow of information amongst women as their presently practised forms of cooperation favour the spreading of innovations whereas the exclusive training of men reach the female farmer only insufficiently, if at all.
2. The training of the female farmers should include information about diversifying their agricultural production. At present they have little knowledge in cultivating vegetable and fruit trees
3. The project should encourage women's activities in income generating activities. This could be done by encouraging and supporting women's cooperation in animal husbandry, processing of agricultural products and marketing.
4. In all villages the access to input credits or loans should be improved as women most likely use them to secure the basic needs of their family .
5. The Project should support the construction of a local-made multi-purpose house in the villages in order to provide women and men with a central meeting place where further development activities etc. can be planned or promoted.

K. Impact of Forms of Self-help and the Water User Associations on Development

The farmers' attitude to cooperation is guided by the expectation of benefit. Because of their risk-avoiding strategy concerning agricultural production the farmers most likely rely on themselves and are very cautious towards innovations. This has a considerable impact on including the existing forms of cooperation into development activities.

The traditional forms of self-help are practised among relatives or friends and are not expected to regain importance with increasing monetarization of agricultural production.

Taking this ongoing process into consideration the role of the SHIRA Project could only be to initiate and to sustain local forms of organization, which meet the interest of the farming population. This

task could be achieved by identifying the target group within the villages and by analyzing their possible contribution (e.g. money and/or labour) to development activities. These groups could be organized with the support of the informal authorities (village akhyaar), since their traditional function includes the control of all local matters, mediation between the population and the formal administration and political competence for the village development . The project's objectives are to be discussed with the interested villagers as directly as possible and their comments should be included in the planning process. Furthermore, it is important to clarify the project's conditions for activities, since the farmers regard agencies as a source of means, although traditionally they are used to contributing - according to their individual resources - to measures initiated for their benefit.

Farmers with a common interest in development are more likely to cooperate. Their economic status and the social position within the community has an important impact on forming groups for cooperation. Large-scale farmers usually cooperate to improve the local conditions of agricultural production. Small-scale farmers cooperate to have better access to inputs. Their groups frequently consist of members from the same tribe. It is therefore recommended to include members of the respective akhyaar since they can support the smallholders in forming groups and assist them in performing development activities by acting as mediators to the authorities.

The influence of the project on the formation of groups is limited, as there are also social aspects involved, such as the tribal bias, likelihood of cooperation (amongst the farmers and with the project) and the social hierarchy. These aspects appear to be as important to the farmers as the expected economic benefit.

For all measures planned by the project the formal village authorities need to be informed, and for the discussion of activities the informal authorities should be included and consulted. Such broad information can reveal autochthonous aspects important for approval by the leaders and facilitate control of the performance of activities by the various local interest groups and/or tribal groups. The findings of the study showed that there is a considerable competition among these groups for access to resources⁴⁾. Moreover, the individual farmers consider the lack of inputs as their major problem and hardly believe in overall development activities with a long term perspective. But since the informal leaders come into function also because of their ability to grasp more complex matters, they could act as mediators to the target group and as controllers of the activities.

The akhyaar, after discussing the new activities with their respective groups, should be asked to indicate contact farmers who could cooperate with the project for the respective activities. These

- 3) The members of the akhyaar are more likely to be active in the interests of the population than the formal leaders, who are appointed or approved by governmental institutions.
- 4) This competition also exists among the villages (e.g. Aw Dheegle and Mubaarak; Maanyo Faarax and the nearby refugee camp; Carmooy and Gorgaal; Doon Buraale and Caanoole; Afgooye Yare and Banaaney).

farmers should be included into further problem analysis, the ongoing decision-making process, as well as the further economic and organizational planning.

The project should define and explain its possible economic framework for supporting the members of the target group. It should supervise the organization of adequate structures to ensure equal access to means, because it is to be expected that the hierarchy within the community could favour considerably the large-scale or influential farmers. Moreover, access to formal credits should be organized in cooperation with banking institutions, in order to meet additional financial requirements.

The activities to be supported should not only be designed according to the requirements of the target group, but should be rather unattractive to other groups (e.g. large-scale farmers, traders etc). These local elites cannot be excluded from development activities, as otherwise they could use their influence to obstruct the project's measures. Therefore the support activities designed for the small-scale farmers should also be accessible for others, but they should be most beneficial for smallholders (e.g. measures of support designed for smaller farm plots such, as 1 to 2 ha.)

The project could promote the formal organization of these groups and encourage them to cooperate at a regional level to articulate and represent their common interests towards the authorities, banking institutions etc.

At the same time this process of institution building should be promoted within the responsible formal administration, which should make these groups part of their planning activities.

Since development activities, organized with emphasis on the low-income groups, would meet the interests of the influential local groups only to a minor extent, additional activities are needed to compensate for their expectations. Such measures should concentrate on activities that do not compete with the interests of the target group, in order to reduce the competition for scarce resources, for example: compensational activities in those fields where the target group is not engaged, or measures to improve the infrastructure for market-oriented production. Under the present administrative conditions in Somalia, local authorities should somehow be included in the project's activities in order to reduce conflicts with the administration and to ensure that the project activities reach the target group (e.g. help in maintaining mosques, support in the construction of a meeting place etc.).

To discuss the impact of the WUA on activities for development it is necessary to see them in their traditional and socioeconomic context. The WUAs were originally founded in a period of the Somali history when defined tribalism still existed concerning the distribution of land. Along with this division the canals for irrigation were organized within tribal groups operating independently and in competition the neighbouring with canal for the extension of the agricultural area. The members of the WUAs were as stratified as the tribal groups, with the same hierarchy and social differentiation. The

size of farm land increased with the rank in the tribal group, since at the same time it meant more means and better access to inputs and labour to extend production. The organizational form of the WUA was created according to the requirements of these tribal groups, who had to secure the survival of the whole group and to defend their interest against outsiders.

Today tribalism concerning canals has lost its former importance and the members of a WUA no longer belong to only one tribal group. Moreover it is appreciated, when new, small-scale farmers settle on a canal, because of their contribution to the work on the canal and their availability as labourers in the fields. This change did not effect the irrigated area in terms of equalizing the size of farm plots, but since most work is performed by hand it allowed those farmers with more means to increase their agricultural land with the help of those farmers in need of additional income, with dependent relationship to leaders of their tribal group or to other groups which rank higher in the local hierarchy.

Taking into account this background and the present socioeconomic conditions in the project area the major characteristics of the WUA can be summarized as follows:

- the WUA can be regarded as an informal institution designed for managing all matters concerning irrigation and the maintenance of the canal system;
- the internal administration follows traditional regulations created to secure the survival of the users;
- the leaders of the WUA are to organize the distribution of the water and are elected according to social criteria considering their respect in the community, their ability to handle problems arising from different interests and to mediate among the users (in cooperation with the akhyaar of the canal);
- the influence of the leaders of the WUAs is limited to those matters concerning the canal and they can neither interfere with the individual production nor with affairs of other WUAs;
- the social and economic hierarchy within the WUAs is stratified and reflects the socioeconomic environment of the community and can therefore not be regarded as a homogeneous group and
- in many villages the WUAs are influenced or dominated by the formal authorities, who are not necessarily members of the respective canal.

These characteristics and the present socioeconomic environment have considerable impact on activities promoting lasting improvement for the target group of the poorer small-scale farmers within an institutional framework. The major conditions for achieving these objectives would be:

- that the target group participate in the process of self-determined planning and decision-making;
- that the target group is defined in order to design adequate measures and
- that the target group forms a real group of common interest

in order to increase their solidarity and to enable them to develop their own forms of organization, since social processes can hardly be directed from outside.

Considering the internal structure and the forms of organization within the informal institutions of the WUAs, it is doubtful whether they are the adequate institutions to promote activities of further development among small-scale farmers. Some constraints listed below might underline this view:

- Despite the ongoing process of commercialization and monetarization of agricultural production, the WUA have not been considered by the local farmers to be an adequate organizational framework for autochthonous activities to support the individual farmer.

- The social stratification of the WUAs and of the communities includes dependent relations between and within the different tribal groups along one canal. Therefore the leading farmers would dominate the design and the management of a new institution. Moreover the higher ranking groups can influence decisions by using their influence outside the WUA and forcing the users to decide in their favour (by social sanctions, discriminations etc.)

- The economic differentiation within a WUA is, among other things, reflected in the different size of the farm plots of the users and different access to means. Whereas the small-scale farmers practice a risk aversion strategy to secure subsistence, those farmers with more than 3 ha are increasingly market oriented and have a broader financial base to use additional inputs or to introduce innovations.

- At the tail end of the canals there are an increasing number of absentees or outsiders being members of the WUA of the canal leading to their land. They have considerable influence on the WUA once they cultivate their land and need water.

- Common problems within the WUA are disputes about the time for irrigation assigned to the users, fights because of "stealing" of water and unequal distribution because of external interferences in favour of few already privileged members of the community. These frequent problems do not contribute to the smooth relations required to form an institution for development that needs the solidarity of its members.

- The administrating leaders of the WUA are elected according to the above-mentioned specific criteria and they liberate other farmers from the time-consuming activities involved with supervising, controlling and managing the canal system. The present regulations do not include an advisory role concerning the production of the individual farmers since the influence of the leaders is limited to the management of the canal system.

- Water is regarded as an input freely accessible for everybody, without limitation (e.g. pumping directly from the river has no limitation for the user). But all other resources and inputs are limited and are in great demand. The preconditions for their availability and the access to them are means for their acquisition and/or labour to use them. Therefore the management of a freely accessible good and the management of scarce inputs would vary considerably under the present conditions. It can be expected that the more powerful members of the WUA will take their chance to influence the distribution or the access in their favour, in case the development activities include provision of inputs via the WUA.

Considering the above-mentioned conditions for achieving the objectives, these constraints have to be taken into account. They indicate that the WUAs in general cannot be considered to be the adequate form of institution to meet the requirements for further village based development activities. Moreover, their respective leaders are chosen according to social criteria and their ability to handle problems arising from different interests. There is not necessarily a correlation between these qualities and the ability of these leaders to organize further activities like credits and other activities for improving the agricultural output along their canal. According to the findings of the socioeconomic study the frequent problems and fights about water and its distribution does not encourage cooperation between farmers of one canal. The social and economic hierarchy within the WUAs could moreover lead to considerably different reception of benefits of activities and possibly to unequal access to inputs again. In those villages where the traditional structures are persistent and respected (e.g. Mubaarak, Jawhar, Carmooy, Caanoole, Malayley) the WUA could be included in pilot activities. But in the other villages of the project areas the external influence on the internal matters of the WUAs appear to be too strong. It can be assumed that here the target group of small-scale farmers could not participate in activities performed to introduce lasting improvements in the rural area.

The common interest of farmers along one canal is to obtain sufficient water for irrigation but their interests differ according to their cropping pattern, their access to inputs (money, labour, tractors), the size of their farm plot and their tribal affiliation. According to the findings the farmers' economic interests vary considerably as the size of the farms along one canal is different. A farmer may have farm plots on other canals, too.

In both project areas small-scale farmers want to reduce their risks by securing irrigation either by improving waterflow during periods with low water level in the river or by avoiding inundation of their field during high floods. They mostly are not ready to introduce innovations or to use new agricultural techniques as long as they

cannot estimate the risks involved. Moreover they believe that the new techniques (e.g. those promoted by AFMET) require more labour and money input per unit without ensuring reliable yields.

Farmers with larger plots (more than 3-4 ha) are more oriented to market production and are more willing to adopt innovations as they have a broader base to ensure their subsistence. In general they also have better access to inputs, as they have higher income and usually more knowledge about the use of new agricultural practices.

Taking into account these differences the WUAs are primarily designed to meet one common interest: Provision of water and maintaining the canal. The task of the leaders of the WUAs is to meet this interest and to ensure equal access to all members. Their influence is limited to those matters concerning water, but no farmers would accept interference in any of their decisions and there are no actual regulations which allow the leaders to do so.

The WUA must be included in all activities concerning their respective canal but the different interests within one WUA does not recommend establishing the WUA as an institution for other development activities besides irrigation and land registration (e.g. it could be taken into consideration if these institutions are helpful in organizing tractor services for small-scale farmers along their canal).

But despite fundamental reservations against investing the WUAs with responsibility for development activities, the possibility cannot be excluded that, in those villages still preserving traditional informal structures, a final decision on the use of the WUAs can only be made after adequate testing.

Conclusion: The existing institutions for self-help were created for a very specific purpose. It cannot necessarily be assumed that they can take over new tasks with other requirements in the same satisfactory way. Although the basic structure of the WUAs is similar in both project areas, there are local modifications concerning the possible influence of the members on the decisions within their canal system. Together with the persisting traditional social and tribal environment, necessary to secure subsistence, and the informal dependent relations within the communities, it is not generally recommended to use the WUA as an organizational unit for further activities. Furthermore, it should be taken into consideration that the WUA are also to include those still uncultivated bush areas, which are registered by absentees or outsiders who will require irrigation once they start agricultural production because of improved conditions.

But, however, it should be pointed out that, despite the above-mentioned fundamental reservations from various sides against investing the WUAs with responsibilities for development activities beyond actual canal management, the possibility cannot be excluded that, in certain cases, WUAs might be used to implement other measures. In such cases, consideration would be given to the WUAs in those villages still largely preserving traditional informal structures. However, a final decision on the possible use of these WUAs can only be made after adequate testing.

Furthermore, plans for canal rehabilitation should take into account that outsiders will most likely clear and work their land if abundant water for irrigation can reach their areas.

The rehabilitation of canals will most likely induce outsiders to clear and work their land if there is abundant water for irrigation (e.g. after improvements of the Half World Canal). Therefore the plans of the rehabilitation should note that the existing smallholders' farmplots will continue to have secure access to water (in view of the political circumstances in the rural areas of Somalia).

For the development of the areas one should also bear in mind that future generations will not have sufficient access to yet uncleared land to meet the agricultural needs of their families taking into account that the size of the existing farms is too small for further division amongst the children.

L. Further Studies

Besides the insufficient availability of water to irrigate the farm land, farmers frequently suffer from inundations, too. Traditionally they released the surplus water into depressions near the river, by opening the embankment of the Shabeelle River (Project Area B). In Project Area A these areas of depression (dhesheeq) were filled with water because of leakages in the embankment and used to cultivate crops or included in the range system of the livestock.

In both areas a study should analyze the feasibility of rehabilitating these dhesheeq areas for agricultural production and/or for controlled grazing of livestock owned in the settlements. Furthermore a study should analyze the feasibility of a drainage system to prevent inundations and to improve the irrigation techniques by using these natural depressions (Area B).