

# IRRIGATION PROSPECTS IN LESOTHO: AN APPRAISAL OF THE SEAKA IRRIGATION PROJECT

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## ABSTRACT

*Irrigation farming has been practised in Lesotho for over thirty years and yet, to date, there is very little noticeable success. The objective of the paper is to investigate the perceptions of farmers with regard to the causes of failure of the Seaka Irrigation Project. The findings of the study indicate that, the planning, design and implementation of the project were imposed by the decision-makers on the community of the Lower Senqu Valley. The community is generally uneducated and, as a result, struggled to understand the share-out mechanisms related to block farming. In addition, the financial implications of running irrigation farming were not properly understood. Despite past failures, the majority of the farmers within the study indicated readiness to participate in irrigation projects provided that factors which led to the collapse of the Seaka Irrigation Project are fully addressed. There was a strong feeling that a fully participatory project with community initiative could make a positive contribution to the valley's economy.*

## INTRODUCTION

Lesotho is a small country, entirely surrounded by the Republic of South Africa. Due to its mountainous terrain, accelerated soil erosion and unchecked population growth, there is limited arable land (Chakela, 1999). In terms of its economy, the country has been largely dependent on remittances from migrant labourers in the South African mine industry and the Southern African Customs Union revenue for many years (Sechaba Consultants, 2000). Since the early 1990s, there has been a steady retrenchment of mine workers in South Africa due to the fall in gold prices at international markets. To-date, more than 75 000 Basotho

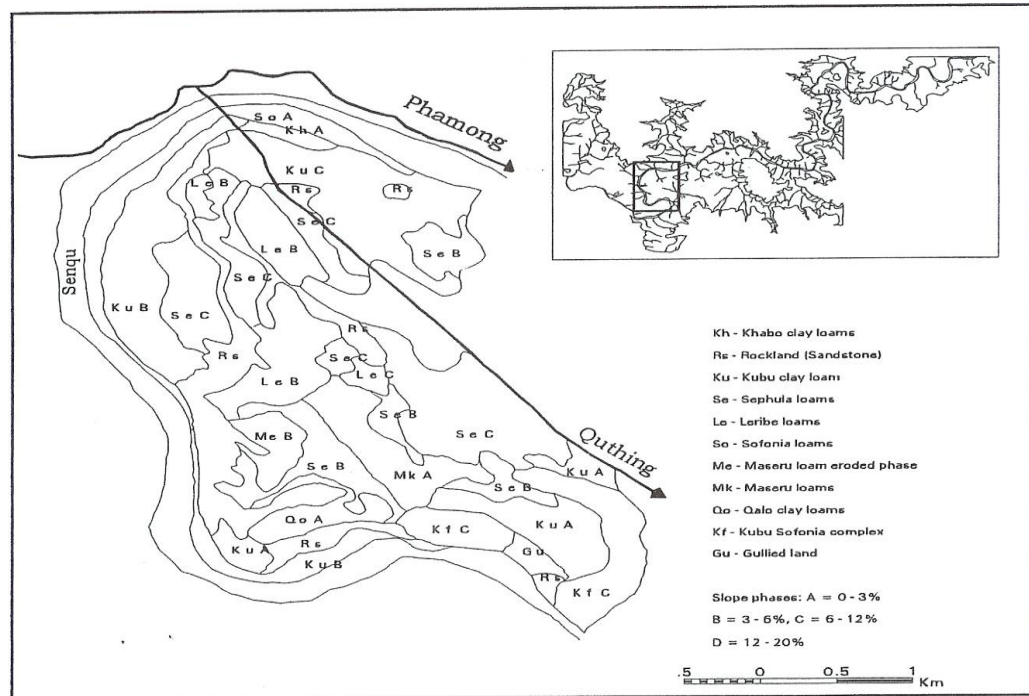
have been retrenched since 1987 and the situation is likely to worsen. The majority of the retrenched miners have no other skills for survival and this has contributed significantly to the problem of unemployment which is estimated at 51% (Basotho, Feb. 2000; Sechaba Consultants, 2000).

More than 80% of the population in Lesotho is rural. However, because of poverty caused, amongst others, by unreliable agricultural production, there is increasing migration of rural inhabitants into urban areas in search of job opportunities. Because there is insufficient employment in the urban areas, the influx of people from the rural areas has serious implications for the country (Moeti, 1996). The question, therefore, arises, whether intensification of rural development might not contribute to a lowering of the rural-urban migration rate and the unemployment rate in general. For example, there is need for reorientation towards improved livestock farming, cottage industry and irrigation. In this regard, it is fortunate that Lesotho has a high potential for water resources development (Moeti, 1999). An efficient planning of this resource and optimisation of the utilisation of the limited arable land should be a starting point in addressing unemployment, hence the problem of poverty in Lesotho. With the continuing climatic anomalies, characterised by long drought spells, irrigation remains a viable option for improved agricultural output/assurance.

The central thrust of this paper is to investigate the perceptions of farmers of the Seaka Irrigation Project (SIP) in relation to the objective of self-sufficiency and poverty reduction. Seaka Irrigation Project is located along a major river contributing to the southern Africa water resources, the Senqu (Orange) River in Quthing. The project encountered some problems that led to its termination. The results presented here emanated from a broader investigation by the author, on the potential of the Lesotho Highlands Water Project for irrigation in the Senqu Valley (Moeti, 1996). The problems experienced by the SIP were typical of other irrigation schemes in Lesotho, which also led to their collapse. If such problems are to be avoided in future, what was going on at the Project

warranted some examination. Figure 1 is a soils map of the Seaka area indicating the strategic position of the Senqu River, which has hitherto been unexploited for agricultural purposes in Lesotho.

**Figure 1: Seaka soils map (modified from: Department of Soil Conservation (Undated))**



Source: Moeti (1996)

## HISTORICAL BACKGROUND OF IRRIGATION IN LESOTHO

Lesotho has for many years relied heavily on imported food from South Africa (Strom, 1986). In an attempt to improve the country's agricultural production, irrigation experimentation was started around the 1960s. According to Borris and Holland (1986) and FAO (1999), almost all the

irrigation schemes that were attempted since that time were characterised by problems which led to their failure. The culmination of irrigation problems in Lesotho are the devastating effects of the failure of a multi-million Maloti irrigation project known as the "Bauer Project". Local communities were expected to participate in the project, and the officials of the Ministry of Agricultural were informed of the government's decision to implement the project without accommodating their views on the matter. The project was implemented in 1987 and covered a series of irrigable areas in the Lesotho Lowlands and in the Senqu Valley. The Seaka Irrigation Project formed a major component the "Bauer Project" (Pers. comm., Mr T. Sakoane, former manager of Seaka Irrigation Project, 1995).

The Seaka Irrigation Project is situated along the Senqu River at the Lower Senqu Valley. As early as 1976, patches of irrigable land within the valley were earmarked for irrigation under the auspices of the Senqu River Agricultural Extension Project. One of these areas, Tele is a few kilometres from Seaka. The Senqu River Agricultural Extension Project was terminated during its initial phase due to problems and thus, farmers who were part of it were left dejected. Among the reasons that led to the failure of the project, the following can be cited:

- i. Project was implemented without proper feasibility studies;
- ii. farmers were not part of the planning and decision-making process in designing the project;
- iii. the farming arrangement - block farming (grouping different farmers' fields together resulting in a block production). Farmers did not like this idea and further more, they failed to understand the profit share out systems (Borris and Holland, 1986).

As indicated, earlier above, the Seaka Irrigation Project was mounted/launched as part of the "Bauer Project" in 1987. The project was implemented within the same communities that had experienced the effects of the Senqu River Agricultural Extension Project in 1976. The

contractor, Rudolf Bauer, an Austrian company was responsible for all aspects of the project, from the planning and construction of the necessary structures to the installation of the sprinkler irrigation system. The Seaka Irrigation Project covered a total area of about 600 ha of which two-thirds were irrigable. The area belongs to about 400 families from the surrounding villages of Ha Mosuoe, Seaka, Ha Casuele and Waterfall. The Ministry of Agriculture was responsible for the administration of the project (Moro, 1990).

#### **MATERIALS AND METHODS**

Investigations into the failure of the SIP were undertaken as part of a broader irrigation study covering the whole of the Lower Senqu Valley in 1994 by the author. Fieldwork was carried out in January and February during the same year and involved conducting interviews with the local farming community. The timing coincided with the hoeing period and it facilitated interaction with most farmers in the fields. To obtain insight into the problem under investigation, answers to the following questions were sought from the inhabitants of the four villages mentioned above:

- a) Were they keen to have their fields irrigated?
- b) Did they participate in irrigated farming before? (i.e. did they have any experience?).
- c) What were the general problems they perceived to be related to irrigation?

In essence, the study sought to establish the perceptions of irrigation farming in the valley and the prospects for the Seaka Irrigation Project.

Moro (1990) indicates that 400 families participated in the SIP when it commenced in 1987. The sample fraction was determined as proposed by Sheskin (1985) at a 13% confidence interval and a 95% confidence level, resulting in a figure of 50. As a result, 50 was taken as a minimum sample size at the given level of accuracy. On average, a household possessed about 1.5 ha of land in the project. This is very close

to the country's average farm holdings per household of about 1.4 ha (Government of Lesotho, 1992). In total, there were 54 respondents, 10 males and 44 females, all representing household heads.

The study strictly targeted farmers who had fields along the Senqu River and hence, would qualify for the run-of-the-river irrigation. A snowball sampling as explained by Sheskin (1985) was employed to interview farmers. The exercise was found much easier when the farmers were intercepted in their fields as opposed to seeking names of the target group from the headman in a village. There were instances where a team of farmers operated together in one field forming a *letsema* (co-operate or team work). Members of a *letsema* could be farmers having fields in the same vicinity or elsewhere, or they could even be people who do not have any fields at all. Usually, they are invited to work and in return they are given food and beer. In such a case, those who owned fields in the vicinity of the Senqu River were identified and interviewed. In addition to the interviews directed at the farmers, special interviews were conducted with the on-site staff of the project and the former manager of the project.

Questionnaire interview was found appropriate for the study as one of the survey research approaches through which one can obtain facts regarding a condition or conditions. Through this approach, information related to ideas, feelings, plans, beliefs etc., about people can be collected rapidly and with minimum costs (Sheskin, 1985). Questionnaires comprised both closed and open-ended questions thus, allowing for some degree of individual expression.

## **RESULTS AND DISCUSSION**

Table 1 indicates the demographic characteristics of the respondents in the four villages.

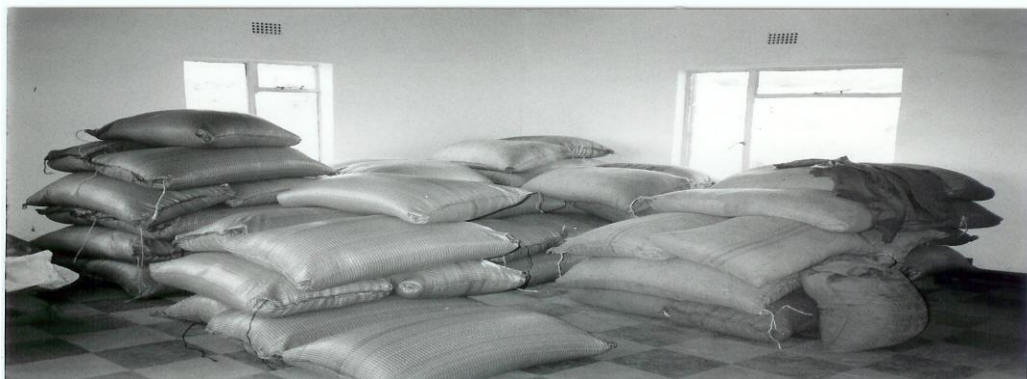
**Table 1. Demographic characteristics of respondents according gender**

Village Sex of respondents		Ha Mosuoe		Waterfall		Seaka		Ha Casuele		Total		Percent	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Number respondents	of	2	14	4	8	3	19	1	3	10	44	18.5	81.5
Age (Years)	21 - 30	0	0	0	1	0	3	0	0	0	4	0	7.4
	31 - 40	0	2	0	2	1	3	0	1	1	8	1.9	14.8
	41 - 50	1	2	0	0	0	4	0	0	1	6	1.9	11.1
	> 50	1	10	4	5	2	9	1	2	8	26	14.8	48.1
Marital status	Single	0	0	0	0	0	0	0	0	0	0	0	0
	Married	2	6	4	3	3	14	1	1	10	24	18.5	44.4
	Widowed/ widowered	0	7	0	5	0	5	0	2	0	19	0	35.2
	Divorced	0	1	0	0	0	0	0	0	0	1	0	1.9

## IMPLICATIONS OF DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

There are three important observations that are revealed by Table 1. First, about 81% of the respondents were women; second, the largest proportion (63%) of the respondents is more than 50 years old; and third, about 35% of the respondents were widowed and none were widowered. Many young Basotho males are migrant labourers in the mines of South Africa, their number had risen to about 127 000 in 1990 (Sechaba Consultants, 2000). For this reason, farming responsibilities are left with the women. However, because of scarcity of land and the adherence to the traditional usufruct land tenure system, much of the agricultural land is in the hands of older people and there is no more new land that can be allocated for farming purposes (Mosaase, 1986). An alternative that exists for individuals who have interest in farming is sharecropping. As shown in Figure 2, individuals with farming skills can make a considerable difference in agricultural output even though they may not have fields as was demonstrated by a resident of Seaka through share-cropping. Individuals who possess land but cannot afford to cultivate it, should, through legal means, sharecrop or lease the land to members of the community who can afford to put the land into productive use.

**Figure 2: Share-cropping potential demonstration - an alternative means of accessing land in the Senqu Valley.**





*An attempt to change the land tenure and encourage economic development in Lesotho through the introduction of the Administration of Lands Act of 1973 was unsuccessful since it conflicted with the traditional role of chiefs of land allocation. Subsequent modifications of the Act have been controversial and so have been the implementation of the Land Act 1979 that has been aimed at reforming the Lesotho land tenure system. Chiefs have continued their unilateral allocation of land, despite the establishment of Village Development Council, which is mandated to carry out the task (Mosaase, 1986; 1987). Mashinini (2000) observes that, even the recent Land Reform Commission Report has not adequately interrogated the challenges underlying the land tenure system in this country. According to him, the proposed concepts of leasehold and freehold encourage alienation of land from Basotho. Without an agreed framework for land tenure, the economic viability of agriculture in Lesotho remains doubtful.*

The problems surrounding the land tenure issues, lack of innovation and strong person-power as highlighted by the high proportion of old women involved with farming, and the unfavourable climate, have contributed significantly to the low agricultural output characteristic of the country (Moeti, 1996). From the 44 women interviewees, 26 (59%) were over 50 years old. Their involvement in farming is governed by their status as household heads either because they are widowed or their husbands are migrant workers. Life expectancy for men in Lesotho is lower than that of women. Given this scenario, the involvement of old women in farming is likely to continue. Unless there is significant development in the areas of concern, agriculture will remain unable to attract able-bodied Basotho males as a means of livelihood, thus encouraging further dependence on the currently fragile mine industry in South Africa (Riley and Krogman, 1993).

#### **THE SOCIO-ECONOMY OF HOUSEHOLDS**

Further, information pertaining to the overall socio-economic status of the families was also established. Table 2 summarises household size and the employment situation, hence implications on household income. The

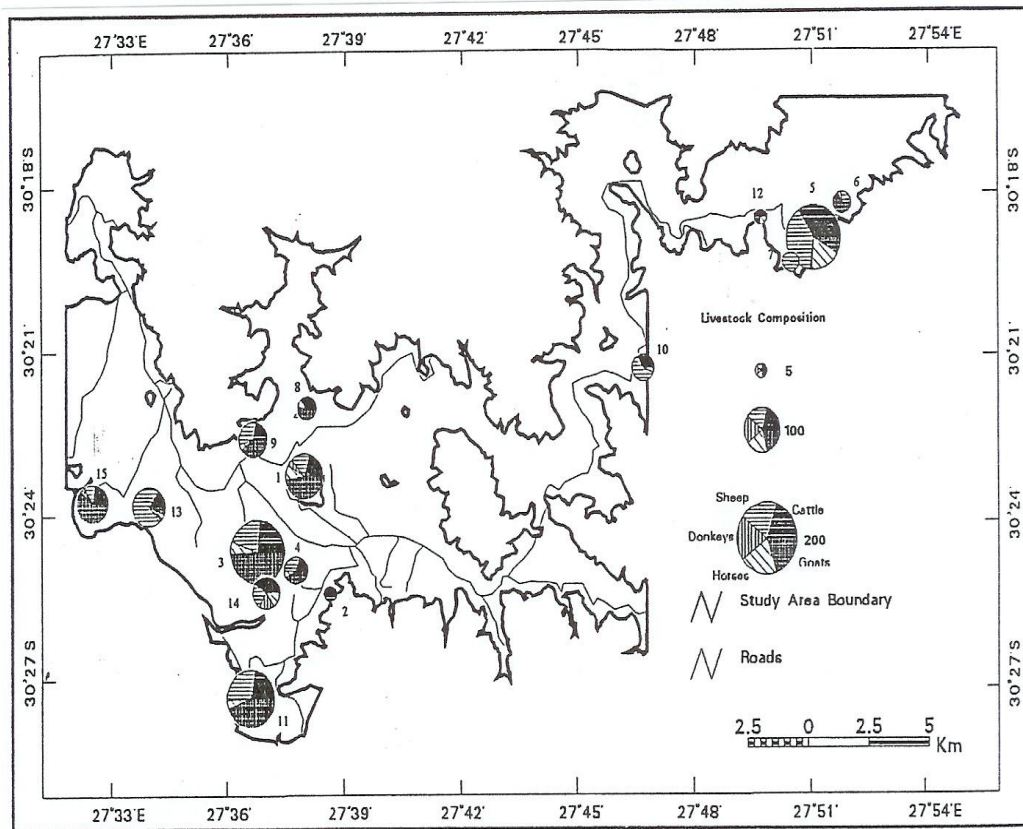
information presented in this table highlights the plight of the valley community where a possibility exists that, a family with up to 8 members could have no one working or some form of earning income. Usually, such families are left with one option for survival, subsistence farming.

**Table 2: Household size versus employment level**

Village	Ha Mosuoe	Waterfall	Seaka	Ha Casuele	Total
Number of respondents	16	12	22	4	54
Number of persons per household (Average)	5.4	8.0	7.0	7.3	27.7
<i>Employment status</i>					
<i>employed respondents</i>	0	1	2	1	4
<i>families with working member</i>	7	5	8	2	22

As shown in Table 2, on average, families that are supported by working members are about 43%, indicating that, for most families, subsistence farming is the main economic activity. This is supported by livestock ownership, which is depicted in Figure 3. The villages of Ha Mosuoe, Waterfall, Seaka and Ha Casuele have been numbered 1 to 4, respectively. Total livestock exceeding 200 per village is only at Seaka. The average household livestock ownership was, cattle (3.7), sheep (11.3), goats (8.2), horses (2.9) and donkeys (2.2).

**Figure 3: Livestock ownership as an economic activity.**



Source: Moeti (1996)

Livestock farming in these villages is clearly not adequate as primary economic activity for the production of, for example, beef, wool and mohair and, hence not an alternative form of livelihood. With the prevailing low level of economic activity and reliance on subsistence farming, supporting an average household size of 6.8 is obviously difficult. It is, therefore, imperative that crop production in these areas be improved beyond the level of subsistence since the potential exists.

**Table 3: Farmers' irrigation perceptions**

<b>Village</b>	<b>Ha Mosuoe</b>	<b>Waterfall</b>	<b>Seaka</b>	<b>Ha Casuele</b>	<b>Total</b>
Number of respondents	16	12	22	4	54
<b>Perceptions</b> Irrigation involvement	7	3	10	0	20
Irrigation support	14	5	17	0	36
Irrigation experience	13	11	20	4	48
Willingness to pay for irrigation water	2	0	1	0	3
Willingness to undergo training	6	4	9	0	19
Participation in decision making	5	5	10	0	20

Table 3 presents results of the respondents pertaining to their attitude towards irrigation, experience of irrigated farming from previous projects which operated in the same area or elsewhere, as well as problems associated with SIP. In particular, the information presented here seeks to portray whether the respondents felt they had benefited from the irrigation project, and whether they would like to continue irrigating their fields, or not. Of the total interviewees, only 37% were actively involved in irrigation farming. The majority of the respondents complained that there was little participation of their representatives in the decisions making concerning the operations of the project. They could not contribute to the choice of crops as the management had already decided that for them.

In order to irrigate, water was pumped from the Senqu River and collected in a reservoir constructed at an elevated area on one end of the project area. From the reservoir, the water moved under gravity and activated the sprinklers. Because of the size of the reservoir and its elevation with respect to the fields immediately around it, there was no sufficient pressure generated and the sprinklers could not operate.

The reduced irrigated area impacted upon the production. The project had been over-ambitious in incorporating too many fields into the project area without assessing the potential for irrigation from the available water supply. The fact that the project area could not be exploited optimally, contributed to the problem of share-out system because although some fields were not producing to their optimum, by virtue of having been surrendered to the project, their owners were entitled to a share based on the overall project production. The farmers complained that the operational costs were too high with the result that they were not really benefiting from the project. They also suspected foul play by the management. The young interviewees expressed interest in participating in training that would enable them to take a greater control of irrigation farming to lessen their dependence on the staff of the Ministry of Agriculture.

There is high support for irrigation from Ha Mosuo and Seaka (>77%). Ha Mosuo and Seaka villages are closer to the project area and most of the fields under the project closer to the river bank belong to farmers from these villages. This is perhaps one of the reasons for their interest. At Ha Casuele, most farmers were hostile towards the idea of irrigation farming and did not co-operate during the study, and none of the interviewees expressed interest in irrigating their land again. The researcher later discovered that their chief, after having had a disagreement with the chiefs of the other three villages in matters relating to the operations of SIP, had discouraged his subjects from participating in the project (Pers. comm. T. Sakoane, 1995). The role of traditional leaders is significant in matters related to community development in Lesotho. However, their influence may be either constructive or destructive.

Table 4 shows the educational situation within the Senqu Valley. The aim is to show a broader picture of the situation in the valley typical to the four villages that are the focus of this discussion. The majority of the valley community (75%) had either no formal education at all, or had not reached standard 7 level of education. Education in

Lesotho is expensive, particularly for the rural communities; as a result, a good number drops out before completing the primary education. The introduction of free primary education by the government since 2000 is meant to address this problem.

**Table 4: Educational level in the Senqu Valley**

<b>Level of Education</b>	<b>Frequency</b>	<b>Percent</b>
None	265	26
Below Std 7	492	49
Std 7	135	13
Junior Certificate	81	8
Cambridge Overseas School Certificate	25	2.5
Post Cambridge Certificate	5	0.5

### **THE COLLAPSE OF THE PROJECT**

During the initial stages of the project, support was built through the benefits that the farmers obtained as well through the cheap sales of the products to the community. The participants were highly subsidised as those who chose to work for the project were paid from the project capital fund and also shared in the overall production. The operational costs were not deducted from the revenue obtained through production sales. The Ministry of Agriculture was responsible for the overall operation of the project. Technical support was rendered by the “Bauer” staff as well as staff from this Ministry (Pers. comm., T. Sakoane, former manager of Seaka Irrigation Project, 1995). From Table 3, it can be shown that 67% of the respondents from three of the villages that formed part of the Seaka Irrigation Project, supported the concept of irrigation, though not necessarily the project. This suggests that there were some positive aspects that they associated with irrigation.

According to the former manager of SIP, when project funds got depleted around 1990, serious problems occurred. Suddenly, the farmers were faced with the reality of running the farm based on income generated by the project. The wage incentive was stopped as the project was operating at a loss. Disputes between the project management (Ministry of Agriculture) and farmers followed in which the farmers argued that the management was misusing the project finances. Some were not happy with the share-out system (Pers. comm., 1995). The farmers attempted forming committees that would work together with the management in decision-making, sharing of production and use of the project finances. The chiefs of the participating villages were involved in these committees. Disagreements among the chiefs led to the division of the project area into three blocks, each headed by a chief and operating independently from the other blocks (Moro, 1990).

Moro (1990) notes that, because of the disputes between the farmers and the management, by 1990 some farmers indicated that they no longer wished to be part of the project. They preferred farming their fields on their own as they did previously,

and they claimed that, according to the project's share-out system, they were getting far below normal yields in dry land farming. A share-out system is an agreed formula for sharing production between farmers in a sharecropping venture after recovery of costs; usually, one party invests the land and the other capital. In irrigation projects where government is involved, the same principle is applied. The common approach is a 50:50, or equal share after recouping the costs. Quite often though, land or field owners insist on a 50:50 share before operational and input cost recovery, and this is illogical and unacceptable.

During the study of the Seaka Irrigation Project in January 1994, it was found that, of the 400 families that were originally involved in the project, only 127 (32%) had remained. The others had opted out in order to farm their own fields. The prospects of the project were not encouraging. Compared to the fields that had been reclaimed by owners from the project, maize fields within the project were overgrown with weeds. The management accepted that there was a problem with the weeding program. Wheat planted during the winter of 1993 had been ready for harvesting by December the same year, but had not be harvested because the combine harvesters at the project site were not operating. The management could not obtain assistance from the head office in Maseru in time, such that, at the time of the study, the fields were too wet, making it impossible for a combine harvester to be used even if it were available. Other farmers in the neighbourhood who were no longer under the project had harvested their wheat manually. Against this background, there was no reason for the farmers to continue operating under the project. As a sign of disapproval of the situation, farmers who were no longer happy with the project had removed the irrigation pipes from their fields and many were being vandalised (see Fig. 4). The project ceased operations in 1995 and the fields went back to their owners.

**Figure 4: Irrigation pipes removed from fields by angry farmers.**



<sup>1</sup> According to the Lesotho Customary Law, all land belongs to the nation and is under the custody of the King. Agricultural land is allocated individuals only for use for crop production. After every harvest the land becomes open for communal uses such as fuel-wood gathering and grazing (Mosaase, 1986; 1987).

#### CONCLUSIONS AND RECOMMENDATIONS

The general practice in the past 30 years with the introduction of government funded projects has been the top-down approach in which the recipient communities have had no say on anything related to the projects (Borris and Holland 1986; Ferguson, 1990). The results of these projects have been the same. The imposition of the SIP on the Senqu Valley community, therefore, had a predictable outcome. The problems that faced the Project can be categorised as institutional, social and technical. Lack of involvement of the farmers during the design and planning of the Project and lack of consultations concerning their views failed to promote a sense of ownership of the project by the community. This was further enhanced by lack of clear irrigation policy in the Ministry of Agriculture. The encouragement of chiefs as mediators in the project operations was unwise as it caused further divisions. In democratic societies, there is a general practice for communities to elect their own representatives to manage developmental programmes and such people need not necessarily be traditional



leaders. Past experience in irrigation schemes in Lesotho has shown that grouping farmers and fields for block farming invariably ends with misunderstandings, especially when it comes to working individual share-outs.

The majority of the farmers involved in the SIP were old and mainly women. Even if there were no other problems with the project, coupled with other responsibilities of Basotho women, production is likely to be negatively affected. In general, the larger proportion of population in rural areas have poor education, most having not studied beyond standard seven. The communities studied had this limitation and this undoubtedly contributed to the confusion encountered in handling the crop share out mechanisms disputes. However, despite the failures of the past, the results of the survey showed that, a majority of the farmers support the concept of irrigation farming. Continuing support can however, be only guaranteed, if there is thorough consultation with the farmers and their complete involvement in projects from the planning stage to the implementation. Indeed, communities must be encouraged to have initiatives towards solving the problem of food shortage and poverty and the government and donor agencies should support these initiatives. Furthermore, they should be empowered through training so that they are clear about the risks inherent in undertaking irrigation farming. Unless some of these underlying problems related to irrigation in Lesotho are addressed, history will keep repeating itself.

On the basis of the foregoing, the following recommendations are suggested as a possible solution to the problems that led to the collapse and termination of the Seaka Irrigation Project:

1. as opposed to large-scale irrigation, smallholder irrigation, where individuals can independently irrigate their land, should be explored as a future alternative;
2. an acceptable legal framework governing the proper use of land has to be put into place as a matter of urgency;
3. as a matter of policy, all land that is irrigable (in terms of both the physical and chemical properties, as well as water availability) should be earmarked for irrigation development;
  - 3.1. there should be easy accessibility to credit for the development of such land;
  - 3.2. if owners of such lands do not have the capacity to irrigate them, they should lease them to people who can develop them. In particular, graduates in agriculture with relevant specialisation should be given priority;
4. for the free primary school education recently introduced in response to the plight of the poor, and education as a basic right for all children, there is a need to focus on addressing the problem of unemployment through the incorporation of a strong component of vocational and entrepreneurial skills before Primary School Leaving Certificate. Pupils who complete primary education but cannot afford to study further should have basic skills to employ themselves;

5. the Ministry of Agriculture should promote training for irrigators at the Farmers' Training Centres throughout the country;
6. the government should complement the initiatives of the National Union of Mineworkers through the Mineworkers Development Agency, which is actively involved in skill development for the retrenched miners. A strong input in farming skills, especially irrigation could benefit the country.

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