DEVELOPING SUSTAINABLE SMALL-SCALE FARMER IRRIGATION IN POOR RURAL COMMUNITIES: GUIDELINES AND CHECKLISTS FOR TRAINERS AND DEVELOPMENT FACILITATORS

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Developing Sustainable Small-Scale Farmer Irrigation in Poor Rural Communities:

Guidelines and Checklists for Trainers and Development Facilitators

by

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Report to the Water Research Commission on the project:
"The Development of Guidelines for Appropriate Training Levels and Content in support of Sustainable Small-scale Irrigation Development"

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1. INTRODUCTION TO THE GUIDELINES

The marginalised rural poor (that is, people living consistently below the bread-line) will be a major focus of government's irrigation interventions in South Africa in the foreseeable future. The process of "development through need-based training" that these guidelines are based on, is also aimed at this target group. This is already being implemented in the Northern Province pilot projects for the revitalisation of smallholder irrigation schemes. The rural poor participate in irrigation mainly through farming, operation and maintenance functions or service provision to the many micro-scale vegetable gardens, independent small-scale farmers, rehabilitated smallholder schemes and new schemes in poor communities. The development of SMMEs (Small, Micro and Medium Enterprises) in the rural areas is an increasingly important part of the development strategy.

1.1 Intended users of the guidelines: trainers and development facilitators

These guidelines were written for development facilitators and trainers and are meant to assist in developing appropriate training and briefing for all role-players in the development of smallholder irrigation where farming is not (or sometimes not yet) the main source of income.

These guidelines are not an academic dissertation explaining the theories of development and training, but a practical guide for practitioners.

1.2 Target of the training and briefing: the role-players

The role-players in such an inclusive programme are not only the primary development target group (that is, the small-scale irrigation farmers), but also the communities they live in and the "outsiders" who play a role in the development, such as the planners and engineers, the service providers and policy makers, neighbouring farmers and local authorities.

The training described in the community development process (Guidelines Chapter 4) focuses on the small-scale farmers and other community-based interest groups, while the training requirements of "outsider" role players are discussed in the planning, construction, and policy and decision-making processes described in the Guidelines Chapters 5 to 7.

1.3 The development context: the marginalised rural poor

The primary focus is on training as the core of a development process of the marginalised rural poor. That is, people living consistently below the breadline and deprived of access to knowledge and economic opportunities to escape the poverty trap.

In South Africa's rural areas, up to 60% of the people are landless, that is, with no access to resources for agricultural production. In this context, it is clear that the success of irrigation projects depends on participatory goal setting and prioritisation of development goals by the poor community as a whole. In the process described in these guidelines, this is achieved through a pre-development needs survey, which leads to broad agreement on an inclusive community development programme. This improves the sustainability of projects within the programme, such as the irrigation project.

Although this document focuses on training for irrigation development, the principles apply equally to the development of training for the landless and the youth, or other groups as identified through the pre-development needs survey.

1.4 The checklists

The checklists are the heart of these guidelines and are meant to guide the development facilitator/trainer in ensuring that all the role-players (farmers, communities and outsiders) develop adequate skills, as well as an awareness of the circumstances under which the development will have to remain sustainable and relevant in the long run.

In an irrigation development, policy-makers and experienced development professionals may need only targeted briefing, while new farmers and operators would almost certainly need full programmed training and follow-up. The checklists provide in more detail insight into:

- the skills and knowledge new irrigation farmers have to master to become productive and profitable; and
- the skills and awareness that outsider role-players have to master.

The checklists are supported by the following:

- an explanation of the process and approach of "development through needs-based training" and some development principles;
- discussion of each of the role-players who are likely to be involved in such an inclusive development programme and their training needs; and
- an indication of the approaches which could be appropriate to create awareness or train the various role-players (farmers, other community groups, outsiders).

The checklists, together with the discussion of role-players, can also be used by the various role-players to assess their own contribution to the development project, or to serve as a basis for debate to clarify responsibilities in the context of a specific development. The checklists can also be used to assess the knowledge of more advanced irrigators and to develop refresher training programmes accordingly.

The checklists could never be complete, rather it is hoped that this will be become a living document which will be amended and improved with experience.

1.5 Overview of the guidelines

The Guidelines introductory **Chapter 1** discusses the intended users of the guidelines as well as the target group for the type of training discussed in the Guidelines. The process of 'rural development through needs-based training' is explained, as well as some relevant development principles.

The Guidelines **Chapter 2** analyses the development context of the marginalised rural poor communities in South Africa. This provides the reader with an understanding of the mindset within which development needs to be initiated.

The Guidelines **Chapter 3** gives a brief overview of four parallel processes that form part of the overall development, namely the community development process, the planning and networking process, the construction process and the policy and decision-making process. Each of these processes are discussed in detail in the Guidelines Chapters 4 through 7.

Eight distinct steps in the community development process are discussed in detail in the Guidelines **Chapter 4**. Step 1 aims to develop an understanding of the target group, and to facilitate vision-building within the community. A methodology to achieve this is provided in **Appendix A**. Step 2 describes how to develop appropriate training content for farmer courses, based on the results of Step 1, and explain how this content can be presented through parables and stories to enable illiterate trainees to identify with and remember technical

detail. This is supported by examples in **Appendices B and C**. Step 3 focuses on getting the relevant role players involved, establishing access to services and inputs and preparing the trainers for their role in the development process. Step 4 describes the importance of community organisation and provides a methodology to use groups and committee structures to broaden the outreach. Step 5 explains how to arrange training based on trainees' circumstances and Step 6 provides hints on presentation and facilitation of the training. Step 7 and 8 provide guidelines for follow-up and evaluation respectively, and finally, mention is made of how the training and briefing of other role players may fit into the process.

The Guidelines **Chapters 5 to 7** discusses the other role players in addition to the irrigators, namely the trainers, support service providers, equipment and input suppliers and marketing organisations, planners and designers of physical infrastructure, role players involved in construction and policy and decision-makers. Each category's role is discussed in the context of an integrated approach to irrigation development. The subjects and type of information required by each of these categories at various stages of the development process, is discussed where relevant.

Chapter 8 discusses a wide range of subjects relevant to smallholder irrigation development, points out which of the role players may need to be involved in information exchange on each subject and makes some suggestions as to appropriate and efficient ways to create opportunities for the information exchange to take place. Questions and checklists are provided to assist in the assessment of relevant content of information exchange between role players, briefings or training programmes in the course of the development process, covering subjects as diverse as development principles, agronomy, irrigation water supply and construction.

Appendix D summarises the application of labour-intensive construction and turnkey project management as the most appropriate approach to the creation of rural infrastructure, because of the opportunity it provides for community capacity building through involvement in construction and programmed preparation for community management of infrastructure.

2. OBJECTIVES

The study which resulted in these guidelines was undertaken as a result of the frustration repeatedly expressed to the authors by developers, extension officers, operators and farmers involved in smallholder irrigation in South Africa, with their own lack of knowledge and practical understanding and how this hampers their performance in their respective roles (De Lange, 1994). The consequences for small-scale farmer irrigation development are found in inappropriate designs and poor irrigation practices, operation and maintenance. This leads to poor water use efficiency, under-utilisation of infrastructure and hardship.

Formal training is often inaccessible and academic or theoretical in nature, seldom satisfying the need for farmers' and extension officers' practical understanding in the local context. The value of on-the-job training has not been sufficiently recognised in South Africa, resulting in a lack (or loss) of opportunities and support. In contrast, "learning-by-doing" is increasingly recognised as the most powerful (and often the most cost-effective) adult learning method (Mokotong, 1999). The guidelines wish to highlight the value and achievability of on-the-job training and information exchange in addition to formal training and structured presentations. It is acknowledged that this has to be approached in a planned manner and properly budgeted for, so that where applicable, on-the-job-training becomes an extension of the theoretical curricula and an integral part of the development process.

The objective of the study, as expressed in the original terms of reference, was to:

- identify the categories of people (role-players) involved in the development of irrigation projects – from the project manager responsible for planning and construction, the construction personnel, through to the operational staff and the farmers themselves; and
- to identify and define the principles for "need to know" content of training for each of these categories; and
- where possible and appropriate, to establish the best way of transferring this knowledge in the practical operational context.

With the assistance of the Water Research Commission's Steering Committee and others, the authors soon realised that:

- the role-players or "categories of people" had to include, not only those listed in the objectives, but also the broader community and community leaders, service providers, policy makers and administrators;
- there was no merit in documenting the normal technical training requirements of, for example, engineers, but that it was instead necessary to identify the additional skills and knowledge required to work in small-scale irrigation development; and
- the best way of transferring the required knowledge or skills may vary from full training to targeted briefing, and that a lot of informal training and sensitisation takes place through information exchange between role-players during the development process. This implies that the development facilitator should create enough opportunity for role-players to interact directly.

3. HOW WERE THE GUIDELINES DEVELOPED?

These guidelines are in many ways a synthesis of practical South African experience, drawn from written material (mostly unpublished), videos, interviews, analysis and debate of earlier and recent experience, especially in the Northern Province. Valuable comments were received and incorporated from practitioners in other areas of the country, from academics and from the members of the Water Research Commission's Steering Committee for this project.

A literature search for comparative experiences with the concept of "development through needs-based training" (see section 4 below) yielded very little. Closest are the development initiatives that flow from the use of participatory methodologies in rural communities, although they afford much less emphasis to training as the golden thread that lends purpose, direction and continual motivation to the development initiative.

In a separate study, Meyer (1995) explored the history of development theory in order to understand the characteristics of the "development through needs-based training" process employed for the first time at Phokoane, as described below.

4. RURAL DEVELOPMENT THROUGH NEEDS-BASED TRAINING

The approach of "development through needs-based training" described in these guidelines was developed by Johann Adendorff and was first applied successfully in the training of approximately 7 000 poverty-stricken dryland maize farmers in the Phokoane area of Northern Province over a period of five years (Adendorff, 1992). Through appropriate training, organisation and improved self-confidence, farmers considerably improved their

yields from an average of 3,5 bags per typical 1,2 hectare holding, to a new average of 40 bags. This intervention improved the general standard of living in the Phokoane area from a typical household situation of one meal in three days, to surplus production of 11 000 tonnes from the area. Following the satisfaction of basic needs, a spontaneous demand developed for training in literacy, numeracy and other life skills. This signifies the effect of improved production, living standards and self-esteem on human development and corroborates the needs-based theory of Maslow (1974). The "development through needs-based training" approach has since been used in several other dryland areas and is currently being used in poor rural communities with access to irrigation schemes. In particular, the Northern Province programme of revitalisation of smallholder irrigation schemes is yielding valuable experience (see Appendix A for recent examples).

Isn't there a contradiction in the marginalised poor having access to irrigation? Not necessarily, considering the following factors:

- Many of the smallholder irrigation schemes in South Africa are situated in the poorest areas of the country. Many of these areas were traditionally range-land with, at most, some dryland crop production experience in the local communities, with the effect that new irrigation farmers did not have the benefit of tradition, parental guidance and a history of personal experience to develop irrigation farming judgement and know-how. While formal education at specialised institutions has become an important factor in commercial agriculture in the past few decades, smallholder farmers have had little if any access to new technology, which is anyway often not suited to their circumstances.
- It is important to note that irrigation is not a panacea to solve the problems of the rural poor. Irrigation frequently involves high cost systems, which, if not used to their best advantage, can result in high levels of debt and hence increased poverty.
- Bearing these factors in mind, a broader spectrum of opportunities to address poverty through irrigation will be exploited in future, with a much greater focus expected on micro-scale vegetable gardening and appropriate utilisation of existing under-utilised smallholder schemes (*Green Paper on Agricultural Policy, 1999*).

The lack of attention to training of role-players in a typical irrigation development can best be understood by comparing the irrigation development to the commissioning of an industrial plant. In industry, commissioning has to be comprehensive to avoid disaster in the form of major financial losses or even serious injury of labourers. Commissioning includes thorough testing of infrastructure, but also of control systems and lines of command. Managers and operators are drilled, virtually military style, to the point where they know almost intuitively what to do when any situation arises. Only once the infrastructure, the systems and the people involved are ready, the plant is started up in a very specific and planned sequence, and still, more often than not, some crisis management is required to counter the unforeseen. In stark contrast, in irrigation development "commissioning" usually refers only to some testing of portions of the physical infrastructure. "Commissioning" in irrigation development should involve a much more thorough process of capacity building than has been the norm to date.

These guidelines are based on the argument that community members and outsider role-players involved in irrigation development need to be much better informed of their own and other players' roles in the development to increase the chances of success.

However, just as in industry, each development is unique and it would not be possible to develop a comprehensive training manual to cover all situations. Rather, the approach with these guidelines is to supply checklists and lists of typical questions that role-players need

answered. These can be used by trainers in the development of appropriate training courses and by development facilitators in the design of development processes.

4.1 Training for new smallholder irrigation development

Participation in the development and implementation of an irrigation scheme is a very intensive learning experience for most people involved. The new farmers, in particular, are rapidly exposed to a wide range of new concepts, including water rights, possible land tenure changes, project cycle and construction. In the first year of production, a whole new range of skills and basic knowledge needs to be acquired, which goes much further than crop husbandry and irrigation. In a very short space of time the new farmer also has to come to grips with institutional arrangements (who's who and what are their rights and obligations), purchasing and marketing, finance and sometimes even labour management.

Appropriate guidance for new farmers under these circumstances is essential to empower them for meaningful participation in the decision-making regarding their scheme during development and to prepare them for production when the infrastructure is ready.

Training becomes meaningful when it is clearly linked with the development events. In practice, however, development funding seldom includes adequate provision for training and capacity building. As a result, the sustainability of the development is seriously jeopardised. The small-scale irrigation schemes in South Africa bear testimony to the fact that expenditure has tended to focus on infrastructure and has often proved to be fruitless because the human capital was not developed to effectively utilise and maintain the created infrastructure (Shaker, 1999).

4.2 Training during irrigation scheme upgrading or redevelopment

Farmer guidance during major upgrading or redevelopment of irrigation infrastructure is as important as with the development of new schemes. One major difference is the level of experience of the farmers. Since schemes in need of rehabilitation are often at a low level of productivity, one tends to assume that the farmers "don't know anything" and "just need proper training". This assumption is an over-simplification of the situation and does not recognise existing knowledge and experience within a farmer group.

A thorough participative process should therefore be integral to the redevelopment of the scheme, to establish the underlying reasons for low productivity. Infrastructure adaptation is but one of the elements of revitalisation of a scheme. Institutional, social, political and financial aspects also have to be analysed. Just as with new farmers, the gaps in knowledge or understanding should be identified and the training focused on these.

Enthusiasm should be recognised and tapped as a valuable resource. This is particularly important in the case of redevelopments, since disillusionment and politicisation are often evident results of the history of a failed or sub-utilised development.

5. DEVELOPMENT PRINCIPLES

Some principles particularly appropriate to irrigation development are reflected here:

- Don't be tempted to use sophisticated technology to compensate for a lack of skills – it is not sustainable, because it will break down and the day will come that there will be nobody who knows how to have it fixed.
- Get the balance right between top down and bottom-up. A thorough bottom-up process should be non-negotiable to decide the nature and detail of the development. The 'top-

down' process should create an enabling environment and support for this approach to development.

- "Development with an exit plan", ensuring that sufficient capacity is created within the community to ensure sustainability. This can best be achieved by creating the opportunity for "beneficiaries" to do things for themselves under guidance of the facilitator, instead of developers doing things on their behalf and trying to transfer the skills and know-how later.
- Integrate development, don't create "islands of privilege"; facilitate the community to establish their own priorities. If they cannot agree on achievable first steps, it is probably best not to go ahead at all.
- Recognise the farmers as an interest group within the broader community; as users of the infrastructure and services, they should be facilitated to decide on the nature of it, instead of expecting general community leaders to have the insight to decide on their behalf on technical and operational matters.
- Complementarity of infrastructure: maximise benefits to as many users as possible, e.g., irrigation AND community water supply. Position roads in consultation with all users, not only irrigators; ditto electricity supply.
- Incremental development (gradual vs. "big bang"): build on what there is, especially human resources and skills; find innovative ways to start small and progress steadily. Innovation is almost always required – the challenge is to find alternatives to the conventional preference for "starting with a clean slate".

Two of the most pertinent principles are discussed in more detail below.

5.1 Integrating irrigation development for sustainability

Integration through spreading the benefits

Irrigation development typically favours a limited number of households from a community and very often those that already have access to some productive resources, for instance small-scale dryland farmers. In South Africa, as many as 60% of households in a poor rural community may be landless (also called resource poor) and thus without any means to escape the poverty trap. This component of the society poses a direct and immediate threat to any development initiative, unless it also stands to benefit in a tangible way. Many an irrigation scheme in South Africa has failed through theft of produce or equipment, or even sabotage, when this fact has been ignored (De Lange, 1994).

Needs-based training offers a fair (and entirely achievable) vehicle to develop communities on an integrated basis, structuring the intervention to reach as many households as wish to participate. This usually requires a training programme on a subject of their choice for the landless, and one for the youth, to run in parallel with the agricultural training programme.

Each training programme is designed to equip the trainees, organised in groups, to acquire a skill which enables them to improve their standard of living, but which can be used on a daily basis with inputs that are within their means. Hand sewing is very popular as a starter course, because it enables people to mend their clothes and make new garments of a high quality. This skill can be employed to increase income, but more importantly, builds individuals' self-esteem and capacity to take on new challenges. In Ndonga, participants in the hand sewing programme were more successful in implementing the agricultural training and achieved

higher yields than their counterparts who did not experience the personal growth through the sewing classes (*Ndonga Community Development Strategy, 1998*).

Integration into the social, economic and infrastructural environment

The sustainability of an irrigation development is influenced directly by its requirement for and the availability of agricultural inputs, support and repair services, technical and financial advice and markets. Each development should be undertaken with a full understanding of the prevailing and expected conditions. Other developments in the vicinity, which may influence or be influenced by the proposed irrigation project, should be taken into account. The interrelation between aspects like food, health, hygiene, water supply and sanitation should be understood.

5.2 Development with an "exit plan"

Training and development interventions should be structured to foster independence. Typically, intensive efforts are necessary from a number of outside role-players in the early stages of a development, but in order to achieve sustainability, many of these inputs have to decrease gradually over time, eventually leaving the community with the skills and organisation necessary to continue operations and maintenance independently. This process may be likened to the process of raising one's own children and is popularly referred to as "development with an exit plan". In a planned and programmed manner, trainees are guided to master the technical skills, but also the ability and the knowledge to source inputs, support and markets, and to manage their finances.

It is important to note that preparation for exit is not a spontaneous process, but one that requires thorough planning and programmed implementation. Development facilitators often experience that they need to apply personal discipline to withdraw and allow people the space to make their own mistakes, stepping in briefly only to avoid fatal disaster, like the child catapulting down the mountain.

6. THE DEVELOPMENT CONTEXT: THE MARGINALISED RURAL POOR

6.1 The importance of defining the development target group and its needs

Appropriate training courses cannot be designed without first-hand knowledge and understanding of the circumstances within which the training will be applied. This implies a thorough understanding of the agricultural resources, irrigation and other infrastructure; the nature, availability and reliability of agricultural inputs and support systems; and, most importantly, the farmers' desires, aspirations and constraints.

The focus of these guidelines is the development of the marginalised rural poor. The trainer and developer must become aware of the fears that emerged among the rural poor due to a lack of contact with and knowledge of the outside world. It is of fundamental importance to understand something of the difficulties involved in escaping from the trap of poverty and the 'resistance to change' inherent in survival strategies.

6.2 Fears and perceptions

The following discussion on the fears and perceptions of South Africa's rural poor is based on people's own analyses of their circumstances and should therefore not be read as a paternalistic viewpoint of "outsiders". These results were obtained from fieldwork in

Phokoane (Adendorff, 1992; Adendorff, 1998; *Ndonga Community Development Strategy, 1998*) and also observed during subsequent work in the Northern Province and Eastern Cape. It is thus assumed that developers and trainers are likely to encounter similar situations elsewhere in South Africa.

Fear of making decisions

As many as 90% of a farmer group may be elderly and illiterate (see Definition Of Terms) and 80% or more may be female, especially on community gardens. It is most important that the trainer understand the significance of this situation. Although women are traditionally responsible for the farming, custom may sometimes not allow them to make decisions without first consulting their husbands. If a trainer is aware of this, he will understand why trainees may be reluctant to make decisions or follow his advice.

Fear of hunger

The majority of rural people are unable to satisfy their most basic needs and therefore feel that they have failed in life and have developed an extremely poor self-esteem as a result (Adendorff, 1992; Magadlela, 1998; *Presidential Report on Poverty and Inequality*, 1998). This, together with the fear of hunger, the fear of the unknown and the fear of losing the little they still have, often leads to a negative frame of mind and extreme resistance to change. On the Arabie-Olifants irrigation scheme, farmers have resisted changing from their irrigated maize production to more lucrative crops, because their families suffered hunger in a period when they were expected to plant cash crops for which the markets unfortunately failed (De Lange, 1994).

Fear of training

Most people in rural communities lack formal education. Illiteracy and poor self-esteem make people sensitive, suspicious and unsure of themselves. They may therefore be afraid of training, especially in the initial stages. They are afraid of being ridiculed and laughed at by the younger people and are embarrassed by their inability to read. They associate training with school, which in turn is associated with reading and writing. The trainer should assure his trainees that the training would not require them to read or write, but rather to listen.

Respect for ancestral spirits

The rural poor are almost always very aware of their ancestral spirits and have strong cultural traditions. Regardless of how much or how little of these matters are understood, their beliefs should be respected. It is wise to regard each group as being unique. Never generalise or compare groups.

Fear of a family break up

In traditional cultures, the extended family is a given, and in South Africa, migration of able men towards job opportunities in the cities have tended to weaken the family structure. Poor rural people live with an ever-present fear that their family may have to break up. People who are unable to feed their families often have no option but to send their children to relatives with access to sufficient food, who may have to look after the children for indefinite periods. Husbands' leaving their families in search of work, often results in a break with culture and tradition and dislodges discipline within the family unit. The result is that parents have little or no status within the family unit and within the community. This could have a

devastating effect on the lives of these people, as they may be looked down upon, even rejected, by their families and society. This shatters the self-esteem of the individual even further as he feels he has failed in life because he is unable to provide his family's most basic need, food.

Fear of the trainer

The trainer should guide the farmers to understand and trust his intentions, namely to help them to help themselves. The farmers' lack of self-confidence can result in fear of training and of the trainer, who they often believe may exploit them and rob them of their land. Fears of losing land relate to South Africa's history of forced removals as well as land acquisition in the former homelands for agricultural projects.

6.3 Overcoming fear and resistance

Attempts to stimulate development will be fruitless unless people's fears are addressed first. The training process can be used to overcome resistance to change and stimulate participation in bottom-up development. The trainer should establish the following principles for himself and the training group in the introduction and reinforce them as often as necessary.

Voluntary participation

Farmers should be allowed to participate voluntarily in the proposed training programme. The trainer's role is only to show the way. The trainer could explain that he is like a road sign which indicates how to get to different destinations, but which cannot compel anybody to take the indicated route. He shows the way to hunger and poverty, a destination they know well, but he also wants to show his trainees the alternative way to improved livelihoods and well-being. He should emphasise that he does not intend to travel on the road to hunger and poverty, but that he would love to explore with them the road to improved well-being .

Voluntary participation in training implies that participants have decided to continue with agriculture and want to improve their current practices. Alternative forms of economic activity is often limited, but not excluded by the decision to farm.

The law of the road

Before any travelling can take place, the trainees have to decide which route they want to follow. Only after they have made their decision, the trainer can make his. The trainees should be warned that the road to well-being, just like all other major roads, has rules and regulations as well as its own traffic officers who enforce the law of the road. To reach their destination safely, they will have to adhere to the law of this road, which the trainer is willing to teach them if they so desire. The trainer should emphasise that he cannot force anybody to attend any training and that every trainee must decide for herself.

Reassurance

Due to a lack of trust and understanding of the development initiatives and how they stand to benefit, rural people are often suspicious of "outsiders". The trainer should constantly assure his trainees that he is aware of their needs, problems, fears and aspirations (NPFA); that he is genuinely concerned about their welfare; that he is interested in helping them; and that he has no desire to take their crops or lands. The trainer can be convincing only if his words, deeds and actions instil trust, hope, sincerity, honesty and kindness. He should show continuous respect and friendliness, especially towards the elderly, and should give the assurance that

everything possible will be done to accommodate their inability to read or write. Where possible, trainees should be assured that their other (non-agricultural) training needs will also be attended to.

The trainer should be very clear and honest about his own and government's limitations and should, at all costs, avoid making any promises that cannot be fulfilled. Not only does this undermine his credibility, but it also jeopardises people's enthusiasm for the development programme.

Open discussions

Open and honest group discussions can be used to create opportunities for people to share their pain and suffering as a result of regular crop failures. These discussions should be handled with empathy, without embarrassing trainees or making them feel inferior. These discussions are extremely valuable to build trust and empathy between the trainer and the trainees and as reinforcement of the need for change.

Addressing agricultural failures and accepting responsibility for change

The poor standard of agriculture has to be addressed. The trainer could mention some of the reasons for agricultural failure, but should never blame the trainees for the situation. He should be sympathetic and make it clear that he does not think they are entirely at fault for the position they find themselves in, but should be careful not to get involved in political matters. He could highlight the lack of knowledge, support and development opportunities, but then emphasise that they themselves will shape their future. The training will create new opportunities for trainees to improve themselves and their standard of living. It is in their hands to take action to improve the situation.

Resistance to change

The trainer should let his trainees know that he is aware of their resistance to change and their suspicion of him. He should make it clear that he understands that they may feel uncomfortable, even afraid, because they are unsure of what would be expected of them. He should insist that they will be solving this problem together, as he also does not know what they expect of him and also has certain fears. The trainer should understand that people's tendency to stick to their well-known ways is important for the stability of any society.

Long-term involvement

Through his conduct, the trainer should convince his trainees of his understanding of their hopes and aspirations of the development programme, despite their fears and suspicions, and that he will not disappoint them. He should be in a position to assure trainees of his continued support after the course, including follow-up visits according to an agreed scheduled programme for as long as they wish.

6.4 The value of training to the marginalised rural poor

The contribution of training to human development goes far beyond the transfer of subject knowledge. Various objectives and milestones may be reached through an appropriate training process. It may provide an opportunity for the following:

- self-discovery and restoration of the self-esteem and confidence of farmers/trainees;
- creation of a first direct link between the majority of the farmers and the development initiative;

- the community's identification, prioritisation and satisfaction of their needs, problems, fears and aspirations (NPFA);
- a chance for the farmers to evaluate the trainer and a chance for the trainer to convince the farmers of his sincerity and his intentions to help them to help themselves;
- establishment of effective communication between the trainees and the trainer and building of trust and human relations to overcome resistance to change. This forms the basis for the transfer of technology;
- enhancement of the ability of the individual to be involved, accept responsibility, apply self-discipline and make decisions which can bring about change;
- improved utilisation of existing irrigation and other infrastructure; and
- increased production through human development.

7. DEVELOPMENT THROUGH NEEDS-BASED TRAINING: AN OVERVIEW OF THE PROCESSES

Four parallel processes can be distinguished according to their focus and the primary role-players involved in each process, namely:

- The community development process;
- The planning process;
- The construction process; and
- The policy and decision-making process.

A brief overview follows below and each process and its primary role-players are discussed in more detail in the Guidelines Chapters 4 through 7.

7.1 The community development process

The primary focus of these guidelines, as highlighted before, is the process that enables the marginalised rural poor to progress from hunger to confidence through needs-based training. Affluent people, especially Westerners, would tend to be uncomfortable with the emotion contained in this statement. However, experience has shown that one of the most important aspects in assisting people to escape from the poverty trap, is restoration of their self-esteem by enabling them to supply in their most basic needs independently (Meyer, 1995; Adendorff, 1998).

This was evident in the case of the late Mr Samuel Masha, who was elected to the Phokoane Co-operative's board of directors at the age of 85 despite being illiterate. His restored self-esteem and social image brought to the fore leadership qualities that he proudly displayed until he passed away. Restored self-esteem usually becomes apparent immediately after the first successful crop. Mr Masha pointed out that he could go to bed at night without the fear of waking up hungry, for the first time at the age of 85 (Adendorff, 1988; Meyer, 1995).

Within the rural community, the process of "development through needs-based training" consists of eight steps as discussed in Chapter 4 (see Figure 4.1 below), starting with a pre-development survey, during which the community identify and prioritise their needs, fears, problems and aspirations (NPFA), and trust is established between the community and some key outsiders, like the development facilitator and trainers. Based on the NPFA, training courses are developed and the trainers (who are preferably from the community) are trained.

The trainers then establish community interest groups and training committees and make training arrangements according to these groups' circumstances and preferences. The training is presented and followed up with field visits, support and liaison. The entire process is continually evaluated and adapted, including the evaluation of the trainers and the courses, trainees and their production results, and the development programme itself.

7.2 The planning and networking process

The planning and networking process involves two major components, namely:

- planning of the agricultural production and marketing and networking to procure the required services and support; and
- planning of the physical infrastructure to be erected or adapted.

The planning process should be structured to ensure that both the agricultural and the infrastructural plans are products of interaction and agreement between the long-term users, that is the farmers and their communities, and their advisers.

This is essentially a process of networking and establishing linkages between service providers (inputs, marketing, engineering, operators and managers) and clients (farmers and government). An important part of the challenge is to ensure that farmers and their communities develop into well-informed clients who know what they can reasonably expect from their service providers and what recourse is open to them when the service is unsatisfactory. At the same time, service providers often need to adapt their services to be in harmony with the requirements of the marginalised poor.

7.3 The construction process

The construction process is increasingly being used as an opportunity for marginalised communities to develop skills and earn some (often short term) income. More important though, is the benefit that local communities develop the know-how and organisation to operate and maintain their infrastructure independently, which improves its sustainability in the long run.

Labour-based and especially turnkey type projects have not been the norm in South Africa. These approaches increase the number of role-players involved in the construction process and requires some adaptation from all involved, including the contractors, engineers and project managers, government and the irrigators as the clients, and community labour teams and small contractors.

7.4 The policy and decision-making process

The policy and decision-making process refer to influences on the development initiative that fall outside of the community's decision-making sphere. The community is the primary decision-maker with regard to their development strategy and the shape and content of their projects, including technical choices, selection of participants and organisation and management structures.

Policies of funders and financial institutions, and national, provincial and local government may influence the type of support available for these community initiatives. Traditional leaders usually have an influence on access to resources and social support for development initiatives and act as arbiter in case of disputes. Organised agriculture may provide an important forum to lobby support from various sources, but particularly from their members.

8. EXTENT TO WHICH THE OBJECTIVES HAVE BEEN ACHIEVED

These guidelines have identified a wide range of role players in smallholder irrigation development and many of those information needs that are typically overlooked in the implementation of a development initiative. The checklists can be broadened and further refined through feedback on field experience with the practical application of the guidelines.

The document intentionally does not attempt to be comprehensive on the technical competencies required of role players (except to some extent for farmers and trainers/extension officers), since this has not been identified as a specific deficiency in the South African context.

9. RECOMMENDATIONS FOR ACTION AND FURTHER RESEARCH

In the South African rural areas, were people have been largely deprived of opportunities, appropriate and relevant training can provide a spark for the initiation and continuation of a comprehensive community development programme.

The authors and the Water Research Commission's Steering Committee for this project would like to recommend the following:

- The guidelines should be brought to the attention of training institutions, including Agricultural Colleges, and advocated for use by development facilitators, extension officers and agricultural trainers.
- A workshop should be organised for extension officers, training colleges, technicons, relevant institutes of the Agricultural Research Council and others to disseminate and discuss the guidelines.
- The guidelines could be used as one of the reference documents in a workshop to compare experience with the rehabilitation of irrigation schemes in the provinces.

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DEFINITION OF TERMS

Development – the development of individuals, the organisation of people and, where applicable, the creation of infrastructure to enable productive activity.

Development facilitator – the person who takes overall responsibility in the planning and early implementation phases of the development project or programme: especially for facilitating a common development goal and adequate liaison between all role-players. In the Adendorff model, the development facilitator also acts as the principal trainer (Adendorff, 1998). Compare "*Development through need-based training*" below.

Development through need-based training – an approach innovated by Johann Adendorff through which the planning, design, organisation and presentation of training, initiates and drives a process of personal development of individuals and community organisation. (Meyer, 1995)

Illiterate – this term is used here only in its literal sense, that is, people who are unable to read or write. It is not meant in a derogatory sense in any way. Illiteracy is not a measure of intelligence or human worth.

Integrated development – means planning and executing development in a way that takes cognisance of the integrated needs and potential of the area in which the development is taking place, to make optimal use of finances employed, and to create developments that are in harmony with the physical, social and political environment.

Landless – people with no access to land for even the most limited agricultural production. Compare "*resource poor*".

Participative approach – means creating the opportunity for as many *role-players* as possible, but especially the interest group and community, to participate in the planning and execution of their own development projects and programmes.

Resource poor – people with severely limited access to resources to make a living, particularly in terms of access to land for production, but also to other resources, such as finances, training, information and infrastructure. Compare "*Landless*".

Role-players – those persons and organisations directly or indirectly involved in a development project or programme, including participants, service providers and neighbouring concerns.

Sub-subsistence farmer – someone who is using land to produce agricultural products, but who is still living below the breadline. According to Bramley (19), such a person operates in "survival" mode, the progression being through "security", and then "surplus", to "speculation" mode.

Training – while training is conventionally seen as classroom-type tuition, the training referred to here means an approach of learning together and sharing information between trainer and trainee, mostly in the field situation or on the job, where the new knowledge has to be applied. Also see "*Development through need-based training*" above.

CHAPTER 1. INTRODUCTION

1.1 The guidelines

Intended users of the guidelines: trainers and development facilitators

These guidelines were written for development facilitators and trainers and are meant to assist in developing appropriate training and briefing for all role-players in the development of smallholder irrigation where farming is not (yet) the main source of income.

These guidelines are not an academic dissertation explaining the theories of development and training, but a practical guide for practitioners.

Target of the training and briefing: the role-players

The *role-players* in such an inclusive programme are not only the primary *development target group* (that is, the *small-scale irrigation farmers*), but also the *communities* they live in and the "*outsiders*" who play a role in the development, such as the planners and engineers, the service providers and policy makers, neighbouring farmers and local authorities.

The training described in the community development process (Chapter 4) focuses on the small-scale farmers and other community-based interest groups, while the training requirements of "outsider" role players are discussed in the planning, construction, and policy and decision-making processes described in Chapters 5 to 7.

The development context: the marginalised rural poor

The primary focus is on training as the core of a development process of the marginalised rural poor. That is, people living consistently below the breadline and deprived of access to knowledge and economic opportunities to escape the poverty trap.

In South Africa's rural areas, up to 60% of the people are landless, that is, with no access to resources for agricultural production[1]. In this context, it is clear that the success of irrigation projects depends on participatory goal setting and prioritisation of development goals by the poor community as a whole. In the process described in these guidelines, this is achieved through a pre-development needs survey, which leads to broad agreement on an inclusive community development programme. This improves the sustainability of projects within the programme, such as the irrigation project.

Although this document focuses on training for irrigation development, the principles apply equally to the development of training for the landless and the youth, or other groups as identified through the pre-development needs survey.

The checklists

The *checklists* are the heart of these guidelines and are meant to guide the development facilitator/trainer in ensuring that all the role-players (farmers, communities and outsiders) develop adequate skills, as well as an awareness of the circumstances under which the development will have to remain sustainable and relevant in the long run.

[1] Please refer to the *Presidential Report on Poverty and Inequality, 1998* for more detail on the realities of life in rural South Africa.

In an irrigation development, policy-makers and experienced development professionals may need only targeted briefing, while new farmers and operators would almost certainly need full programmed training and follow-up. The checklists provide in more detail insight into:

- the skills and knowledge new irrigation farmers have to master to become productive and profitable; and
- the skills and awareness that outsider role-players have to master.

The checklists are supported by the following:

- an explanation of the process and approach of *"development through needs-based training"* and some development principles;
- *discussion* of each of the *role-players* who are likely to be involved in such an inclusive development programme and their training needs; and
- an indication of the *approaches* which could be appropriate to create awareness or train the various role-players (farmers, other community groups, outsiders).

The checklists, together with the discussion of role-players, can also be used by the various role-players to assess their own contribution to the development project, or to serve as a basis for debate to clarify responsibilities in the context of a specific development. The checklists can also be used to assess the knowledge of more advanced irrigators and to develop refresher training programmes accordingly.

The checklists could never be complete, rather it is hoped that this will be become a living document which will be amended and improved with experience.

1.2 Background

The study which resulted in these guidelines was undertaken as a result of the frustration repeatedly expressed to the authors by developers, extension officers, operators and farmers involved in smallholder irrigation in South Africa, with their own lack of knowledge and practical understanding and how this hampers their performance in their respective roles (De Lange, 1994). The consequences for small-scale farmer irrigation development are found in inappropriate designs and poor irrigation practices, operation and maintenance. This leads to poor water use efficiency, under-utilisation of infrastructure and hardship.

Formal training is often inaccessible and academic or theoretical in nature, seldom satisfying the need for farmers' and extension officers' practical understanding in the local context. The value of on-the-job training has not been sufficiently recognised in South Africa, resulting in a lack (or loss) of opportunities and support. In contrast, "learning-by-doing" is increasingly recognised as the most powerful (and often the most cost-effective) adult learning method (Mokotong, 1999). The guidelines wish to highlight the value and achievability of on-the-job training and information exchange in addition to formal training and structured presentations. It is acknowledged that this has to be approached in a planned manner and properly budgeted for, so that where applicable, on-the-job-training becomes an extension of the theoretical curricula and an integral part of the development process.

The objective of the study, as expressed in the original terms of reference, was to:

- identify the categories of people **(role-players)** involved in the development of irrigation projects – from the project manager responsible for planning and construction, the construction personnel, through to the operational staff and the farmers themselves; and
- to identify and define the principles for **"need to know"** content of training for each of these categories; and
- where possible and appropriate, to establish the best **way of transferring** this knowledge in the practical operational context.

With the assistance of the Water Research Commission's Steering Committee and others, the authors soon realised that:

- the role-players or "categories of people" had to include, not only those listed in the objectives, but also the broader community and community leaders, service providers, policy makers and administrators;
- there was no merit in documenting the normal technical training requirements of, for example, engineers, but that it was instead necessary to identify the additional skills and knowledge required to work in small-scale irrigation development; and
- the best way of transferring the required knowledge or skills may vary from full training to targeted briefing, and that a lot of informal training and sensitisation takes place through information exchange between role-players during the development process. This implies that the development facilitator should create enough opportunity for role-players to interact directly.

1.3 How were the guidelines developed?

These guidelines are in many ways a synthesis of practical South African experience, drawn from written material (mostly unpublished), videos, interviews, analysis and debate of earlier and recent experience, especially in the Northern Province. Valuable comments were received and incorporated from practitioners in other areas of the country, from academics and from the members of the Water Research Commission's Steering Committee for this project.

A literature search for comparative experiences with the concept of "development through needs-based training" (see 1.4 below) yielded very little. Closest are the development initiatives that flow from the use of participatory methodologies in rural communities, although they afford much less emphasis to training as the golden thread that lends purpose, direction and continual motivation to the development initiative.

In a separate study, Meyer (1995) explored the history of development theory in order to understand the characteristics of the "development through needs-based training" process employed for the first time at Phokoane, as described below.

1.4 Rural development through needs-based training

The approach of "development through needs-based training" described in these guidelines was developed by Johann Adendorff and was first applied successfully in the training of approximately 7 000 poverty-stricken dryland maize farmers in the Phokoane area of Northern Province over a period of five years (Adendorff, 1992). Through appropriate training, organisation and improved self-confidence, farmers considerably improved their yields from an average of 3,5 bags per typical 1,2 hectare holding, to a new average of 40 bags. This intervention improved the general standard of living in the Phokoane area from a typical household situation of one meal in three days, to surplus production of 11 000 tonnes from the area. Following the satisfaction of basic needs, a spontaneous demand developed for training in literacy, numeracy and other life skills. This signifies the effect of improved production, living standards and self-esteem on human development and corroborates the needs-based theory of Maslow (1974). The "development through needs-based training" approach has since been used in several other dryland areas and is currently being used in poor rural communities with access to irrigation schemes. In particular, the Northern Province programme of revitalisation of smallholder irrigation schemes is yielding valuable experience (see Appendix A for recent examples).

Isn't there a contradiction in the marginalised poor having access to irrigation? Not necessarily, considering the following factors:

- Many of the smallholder irrigation schemes in South Africa are situated in the poorest areas of the country. Many of these areas were traditionally range-land with, at most, some dryland crop production experience in the local communities, with the effect that new irrigation farmers did not have the benefit of tradition, parental guidance and a history of personal experience to develop irrigation farming judgement and know-how. While formal education at specialised institutions has become an important factor in commercial agriculture in the past few decades.

smallholder farmers have had little if any access to new technology, which is anyway often not suited to their circumstances.

- It is important to note that irrigation is not a panacea to solve the problems of the rural poor. Irrigation frequently involves high cost systems, which, if not used to their best advantage, can result in high levels of debt and hence increased poverty.
- Bearing these factors in mind, a broader spectrum of opportunities to address poverty through irrigation will be exploited in future, with a much greater focus expected on micro-scale vegetable gardening and appropriate utilisation of existing under-utilised smallholder schemes (*Green Paper on Agricultural Policy*, 1999).

The lack of attention to training of role-players in a typical irrigation development can best be understood by comparing the irrigation development to the commissioning of an industrial plant. In industry, commissioning has to be comprehensive to avoid disaster in the form of major financial losses or even serious injury of labourers. Commissioning includes thorough testing of infrastructure, but also of control systems and lines of command. Managers and operators are drilled, virtually military style, to the point where they know almost intuitively what to do when any situation arises. Only once the infrastructure, the systems and the people involved are ready, the plant is started up in a very specific and planned sequence, and still, more often than not, some crisis management is required to counter the unforeseen. In stark contrast, in irrigation development "commissioning" usually refers only to some testing of portions of the physical infrastructure. "Commissioning" in irrigation development should involve a much more thorough process of capacity building than has been the norm to date.

These guidelines are based on the argument that community members and outsider role-players involved in irrigation development need to be much better informed of their own and other players' roles in the development to increase the chances of success.

However, just as in industry, each development is unique and it would not be possible to develop a comprehensive training manual to cover all situations. Rather, the approach with these guidelines is to supply checklists and lists of typical questions that role-players need answered. These can be used by trainers in the development of appropriate training courses and by development facilitators in the design of development processes.

1.4.1 Training for new smallholder irrigation development

Participation in the development and implementation of an irrigation scheme is a very intensive learning experience for most people involved. The new farmers, in particular, are rapidly exposed to a wide range of new concepts, including water rights, possible land tenure changes, project cycle and construction. In the first year of production, a whole new range of skills and basic knowledge needs to be acquired, which goes much further than crop husbandry and irrigation. In a very short space of time the new farmer also has to come to grips with institutional arrangements (who's who and what are their rights and obligations), purchasing and marketing, finance and sometimes even labour management.

Appropriate guidance for new farmers under these circumstances is essential to empower them for meaningful participation in the decision-making regarding their scheme during development and to prepare them for production when the infrastructure is ready.

Training becomes meaningful when it is clearly linked with the development events. In practice, however, development funding seldom includes adequate provision for training and capacity building. As a result, the sustainability of the development is seriously jeopardised. The small-scale irrigation schemes in South Africa bear testimony to the fact that expenditure has tended to focus on infrastructure and has often proved to be fruitless because the human capital was not developed to effectively utilise and maintain the created infrastructure (Shaker, 1999).

1.4.2 TRAINING DURING IRRIGATION SCHEME UPGRADING OR REDEVELOPMENT

Farmer guidance during major upgrading or redevelopment of irrigation infrastructure is as important as with the development of new schemes. One major difference is the level of experience of the farmers. Since schemes in need of rehabilitation are often at a low level of productivity, one tends to assume that the farmers "don't know anything" and "just need proper training". This assumption is an over-simplification of the situation and does not recognise existing knowledge and experience within a farmer group.

A thorough participative process should therefore be integral to the redevelopment of the scheme, to establish the underlying reasons for low productivity. Infrastructure adaptation is but one of the elements of revitalisation of a scheme. Institutional, social, political and financial aspects also have to be analysed. Just as with new farmers, the gaps in knowledge or understanding should be identified and the training focused on these.

Enthusiasm should be recognised and tapped as a valuable resource. This is particularly important in the case of redevelopments, since disillusionment and politicisation are often evident results of the history of a failed or sub-utilised development.

1.5 Development principles

Some principles particularly appropriate to irrigation development are reflected here:

- Don't be tempted to use sophisticated technology to compensate for a lack of skills – it is not sustainable, because it will break down and the day will come that there will be nobody who knows how to have it fixed.
- Get the balance right between top down and bottom-up. A thorough bottom-up process should be non-negotiable to decide the nature and detail of the development. The 'top-down' process should create an enabling environment and support for this approach to development.
- "Development with an exit plan", ensuring that sufficient capacity is created within the community to ensure sustainability. This can best be achieved by creating the opportunity for "beneficiaries" to do things for themselves under guidance of the facilitator, instead of developers doing things on their behalf and trying to transfer the skills and know-how later.
- Integrate development, don't create "islands of privilege"; facilitate the community to establish their own priorities. If they cannot agree on achievable first steps, it is probably best not to go ahead at all.
- Recognise the farmers as an interest group within the broader community; as users of the infrastructure and services, they should be facilitated to decide on the nature of it, instead of expecting general community leaders to have the insight to decide on their behalf on technical and operational matters.
- Complementarity of infrastructure: maximise benefits to as many users as possible, e.g., irrigation AND community water supply. Position roads in consultation with all users, not only irrigators; ditto electricity supply.
- Incremental development (gradual vs. "big bang"): build on what there is, especially human resources and skills; find innovative ways to start small and progress steadily. Innovation is almost always required – the challenge is to find alternatives to the conventional preference for "starting with a clean slate".

Two of the most pertinent principles are discussed in more detail below.

1.5.1 INTEGRATING IRRIGATION DEVELOPMENT FOR SUSTAINABILITY

Integration through spreading the benefits

Irrigation development typically favours a limited number of households from a community and very often those that already have access to some productive resources, for instance small-scale dryland farmers. In South Africa, as many as 60% of households in a poor rural community may be landless (also called resource poor) and thus without any

means to escape the poverty trap. This component of the society poses a direct and immediate threat to any development initiative, unless it also stands to benefit in a tangible way. Many an irrigation scheme in South Africa has failed through theft of produce or equipment, or even sabotage, when this fact has been ignored (De Lange, 1994).

Needs-based training offers a fair (and entirely achievable) vehicle to develop communities on an integrated basis, structuring the intervention to reach as many households as wish to participate. This usually requires a training programme on a subject of their choice for the *landless*, and one for the *youth*, to run in parallel with the *agricultural* training programme.

Each training programme is designed to equip the trainees, organised in groups, to acquire a skill which enables them to improve their standard of living, but which can be used on a daily basis with inputs that are within their means. Hand sewing is very popular as a starter course, because it enables people to mend their clothes and make new garments of a high quality. This skill can be employed to increase income, but more importantly, builds individuals' self-esteem and capacity to take on new challenges. In Ndonga, participants in the hand sewing programme were more successful in implementing the agricultural training and achieved higher yields than their counterparts who did not experience the personal growth through the sewing classes (*Ndonga Community Development Strategy*, 1998).

Integration into the social, economic and infrastructural environment

The sustainability of an irrigation development is influenced directly by its requirement for and the availability of agricultural inputs, support and repair services, technical and financial advice and markets. Each development should be undertaken with a full understanding of the prevailing and expected conditions. Other developments in the vicinity, which may influence or be influenced by the proposed irrigation project, should be taken into account. The interrelation between aspects like food, health, hygiene, water supply and sanitation should be understood.

1.5.2 DEVELOPMENT WITH AN "EXIT PLAN"

Training and development interventions should be structured to foster independence. Typically, intensive efforts are necessary from a number of outside role-players in the early stages of a development, but in order to achieve sustainability, many of these inputs have to decrease gradually over time, eventually leaving the community with the skills and organisation necessary to continue operations and maintenance independently. This process may be likened to the process of raising one's own children and is popularly referred to as "development with an exit plan". In a planned and programmed manner, trainees are guided to master the technical skills, but also the ability and the knowledge to source inputs, support and markets, and to manage their finances.

It is important to note that preparation for exit is not a spontaneous process, but one that requires thorough planning and programmed implementation. Development facilitators often experience that they need to apply personal discipline to withdraw and allow people the space to make their own mistakes, stepping in briefly only to avoid fatal disaster, like the child catapulting down the mountain.

CHAPTER 2. THE DEVELOPMENT CONTEXT: THE MARGINALISED RURAL POOR

2.1 The importance of defining the development target group and its needs

Appropriate training courses cannot be designed without first-hand knowledge and understanding of the circumstances within which the training will be applied. This implies a thorough understanding of the agricultural resources, irrigation and other infrastructure; the nature, availability and reliability of agricultural inputs and support systems; and, most importantly, the farmers' desires, aspirations and constraints.

The focus of these guidelines is the development of the marginalised rural poor. The trainer and developer must become aware of the fears that emerged among the rural poor due to a lack of contact with and knowledge of the outside world. It is of fundamental importance to understand something of the difficulties involved in escaping from the trap of poverty and the 'resistance to change' inherent in survival strategies.

2.2 Fears and perceptions

The following discussion on the fears and perceptions of South Africa's rural poor is based on people's own analyses of their circumstances and should therefore not be read as a paternalistic viewpoint of "outsiders". These results were obtained from fieldwork in Phokoane (Adendorff, 1992, Adendorff, 1998, *Ndonga Community Development Strategy*, 1998) and also observed during subsequent work in the Northern Province and Eastern Cape. It is thus assumed that developers and trainers are likely to encounter similar situations elsewhere in South Africa.

Fear of making decisions

As many as 90% of a farmer group may be elderly and *illiterate* (see Definition Of Terms) and 80% or more may be female, especially on community gardens. It is most important that the trainer understand the significance of this situation. Although women are traditionally responsible for the farming, custom may sometimes not allow them to make decisions without first consulting their husbands. If a trainer is aware of this, he will understand why trainees may be reluctant to make decisions or follow his advice.

Fear of hunger

The majority of rural people are unable to satisfy their most basic needs and therefore feel that they have failed in life and have developed an extremely poor self-esteem as a result (Adendorff, 1998; Magadlela, 1998; *Presidential Report on Poverty and Inequality*, 1998). This, together with the fear of hunger, the fear of the unknown and the fear of losing the little they still have, often leads to a negative frame of mind and extreme resistance to change. On the Arabie-Olifants irrigation scheme, farmers have resisted changing from their irrigated maize production to more lucrative crops, because their families suffered hunger in a period when they were expected to plant cash crops for which the markets unfortunately failed (De Lange, 1994).

Fear of training

Most people in rural communities lack formal education. Illiteracy and poor self-esteem make people sensitive, suspicious and unsure of themselves. They may therefore be afraid of training, especially in the initial stages. They are afraid of being ridiculed and laughed at by the younger people and are embarrassed by their inability to read. They associate training with school, which in turn is associated with reading and writing. The trainer should assure his trainees that the training would not require them to read or write, but rather to listen.

Respect for ancestral spirits

The rural poor are almost always very aware of their ancestral spirits and have strong cultural traditions. Regardless of how much or how little of these matters are understood, their beliefs should be respected. It is wise to regard each group as being unique. Never generalise or compare groups.

Fear of a family break up

In traditional cultures, the extended family is a given, and in South Africa, migration of able men towards job opportunities in the cities have tended to weaken the family structure. Poor rural people live with an ever-present fear that their family may have to break up. People who are unable to feed their families often have no option but to send their children to relatives with access to sufficient food, who may have to look after the children for indefinite periods. Husbands' leaving their families in search of work, often results in a break with culture and tradition and dislodges discipline within the family unit. The result is that parents have little or no status within the family unit and within the community. This could have a devastating effect on the lives of these people, as they may be looked down upon, even rejected, by their families and society. This shatters the self-esteem of the individual even further as he feels he has failed in life because he is unable to provide his family's most basic need, food.

Fear of the trainer

The trainer should guide the farmers to understand and trust his intentions, namely to help them to help themselves. The farmers' lack of self-confidence can result in fear of training and of the trainer, who they often believe may exploit them and rob them of their land. Fears of losing land relate to South Africa's history of forced removals as well as land acquisition in the former homelands for agricultural projects.

2.3 Overcoming fear and resistance

Attempts to stimulate development will be fruitless unless people's fears are addressed first. The training process can be used to overcome resistance to change and stimulate participation in bottom-up development. The trainer should establish the following principles for himself and the training group in the introduction and reinforce them as often as necessary.

Voluntary participation

Farmers should be allowed to participate voluntarily in the proposed training programme. The trainer's role is only to show the way. The trainer could explain that he is like a road sign which indicates how to get to different destinations, but which cannot compel anybody to take the indicated route. He shows the way to hunger and poverty, a destination they know well, but he also wants to show his trainees the alternative way to improved livelihoods and well-being. He should emphasise that he does not intend to travel on the road to hunger and poverty, but that he would love to explore with them the road to improved well-being[2].

Voluntary participation in training implies that participants have decided to continue with agriculture and want to improve their current practices. Alternative forms of economic activity is often limited, but not excluded by the decision to farm.

The law of the road

Before any travelling can take place, the trainees have to decide which route they want to follow. Only after they have made their decision, the trainer can make his. The trainees should be warned that the road to well-being, just like all

[2] This implies that the trainer is confident that he knows the correct route. The agricultural advice contained in the training should be checked with specialists or successful farmers from the area beforehand.

other major roads, has rules and regulations as well as its own traffic officers who enforce the law of the road. To reach their destination safely, they will have to adhere to the law of this road, which the trainer is willing to teach them if they so desire. The trainer should emphasise that he cannot force anybody to attend any training and that every trainee must decide for herself.

Reassurance

Due to a lack of trust and understanding of the development initiatives and how they stand to benefit, rural people are often suspicious of "outsiders". The trainer should constantly assure his trainees that he is aware of their needs, problems, fears and aspirations (NPFA); that he is genuinely concerned about their welfare; that he is interested in helping them; and that he has no desire to take their crops or lands. The trainer can be convincing only if his words, deeds and actions instil trust, hope, sincerity, honesty and kindness. He should show continuous respect and friendliness, especially towards the elderly, and should give the assurance that everything possible will be done to accommodate their inability to read or write. Where possible, trainees should be assured that their other (non-agricultural) training needs will also be attended to.

The trainer should be very clear and honest about his own and government's limitations and should, at all costs, avoid making any promises that cannot be fulfilled. Not only does this undermine his credibility, but it also jeopardises people's enthusiasm for the development programme.

Open discussions

Open and honest group discussions can be used to create opportunities for people to share their pain and suffering as a result of regular crop failures. These discussions should be handled with empathy, without embarrassing trainees or making them feel inferior. These discussions are extremely valuable to build trust and empathy between the trainer and the trainees and as reinforcement of the need for change.

Addressing agricultural failures and accepting responsibility for change

The poor standard of agriculture has to be addressed. The trainer could mention some of the reasons for agricultural failure, but should never blame the trainees for the situation. He should be sympathetic and make it clear that he does not think they are entirely at fault for the position they find themselves in, but should be careful not to get involved in political matters. He could highlight the lack of knowledge, support and development opportunities, but then emphasise that they themselves will shape their future. The training will create new opportunities for trainees to improve themselves and their standard of living. It is in their hands to take action to improve the situation.

Resistance to change

The trainer should let his trainees know that he is aware of their resistance to change and their suspicion of him. He should make it clear that he understands that they may feel uncomfortable, even afraid, because they are unsure of what would be expected of them. He should insist that they will be solving this problem together, as he also does not know what they expect of him and also has certain fears. The trainer should understand that people's tendency to stick to their well-known ways is important for the stability of any society.

Long-term involvement

Through his conduct, the trainer should convince his trainees of his understanding of their hopes and aspirations of the development programme, despite their fears and suspicions, and that he will not disappoint them. He should be in a position to assure trainees of his continued support after the course, including follow-up visits according to an agreed scheduled programme for as long as they wish.

2.4 *The value of training to the marginalised rural poor*

The contribution of training to human development goes far beyond the transfer of subject knowledge. Various objectives and milestones may be reached through an appropriate training process. It may provide an opportunity for the following:

- self-discovery and restoration of the self-esteem and confidence of farmers/trainees;
- creation of a first direct link between the majority of the farmers and the development initiative;
- the community's identification, prioritisation and satisfaction of their needs, problems, fears and aspirations (NPFA);
- a chance for the farmers to evaluate the trainer and a chance for the trainer to convince the farmers of his sincerity and his intentions to help them to help themselves;
- establishment of effective communication between the trainees and the trainer and building of trust and human relations to overcome resistance to change. This forms the basis for the transfer of technology;
- enhancement of the ability of the individual to be involved, accept responsibility, apply self-discipline and make decisions which can bring about change;
- improved utilisation of existing irrigation and other infrastructure; and
- increased production through human development.

CHAPTER 3. DEVELOPMENT THROUGH NEEDS-BASED TRAINING: AN OVERVIEW OF THE PROCESSES

Four parallel processes can be distinguished according to their focus and the primary role-players involved in each process, namely:

- The community development process;
- The planning process;
- The construction process; and
- The policy and decision-making process.

A brief overview follows below and each process and its primary role-players are discussed in more detail in Chapters 4 through 7.

3.1 The community development process

The primary focus of these guidelines, as highlighted before, is the process that enables the marginalised rural poor to progress from hunger to confidence through needs-based training. Affluent people, especially Westerners, would tend to be uncomfortable with the emotion contained in this statement. However, experience has shown that one of the most important aspects in assisting people to escape from the poverty trap, is restoration of their self-esteem by enabling them to supply in their most basic needs independently (Adendorff, 1998; Meyer, 1995).

This was evident in the case of the late Mr Samuel Masha, who was elected to the Phokoane Co-operative's board of directors at the age of 85 despite being illiterate. His restored self-esteem and social image brought to the fore leadership qualities that he proudly displayed until he passed away. Restored self-esteem usually becomes apparent immediately after the first successful crop. Mr Masha pointed out that he could go to bed at night without the fear of waking up hungry, for the first time at the age of 85 (Adendorff, 1988; Meyer, 1995).

Within the rural community, the process of "development through needs-based training" consists of eight steps as discussed in Chapter 4 (see Figure 4.1 below), starting with a pre-development survey, during which the community identify and prioritise their needs, fears, problems and aspirations (NPFA), and trust is established between the community and some key outsiders, like the development facilitator and trainers. Based on the NPFA, training courses are developed and the trainers (who are preferably from the community) are trained. The trainers then establish community interest groups and training committees and make training arrangements according to these groups' circumstances and preferences. The training is presented and followed up with field visits, support and liaison. The entire process is continually evaluated and adapted, including the evaluation of the trainers and the courses, trainees and their production results, and the development programme itself.

3.2 The planning and networking process

The planning and networking process involves two major components, namely:

- planning of the agricultural production and marketing and networking to procure the required services and support; and
- planning of the physical infrastructure to be erected or adapted.

The planning process should be structured to ensure that both the agricultural and the infrastructural plans are products of interaction and agreement between the long-term users, that is the farmers and their communities, and their advisers.

This is essentially a process of networking and establishing linkages between service providers (inputs, marketing, engineering, operators and managers) and clients (farmers and government). An important part of the challenge is to ensure that farmers and their communities develop into well-informed clients who know what they can reasonably expect from their service providers and what recourse is open to them when the service is unsatisfactory. At the same time, service providers often need to adapt their services to be in harmony with the requirements of the marginalised poor.

3.3 The construction process

The construction process is increasingly being used as an opportunity for marginalised communities to develop skills and earn some (often short term) income. More important though, is the benefit that local communities develop the know-how and organisation to operate and maintain their infrastructure independently, which improves its sustainability in the long run.

Labour-based and especially turnkey type projects have not been the norm in South Africa. These approaches increase the number of role-players involved in the construction process and requires some adaptation from all involved, including the contractors, engineers and project managers, government and the irrigators as the clients, and community labour teams and small contractors.

3.4 The policy and decision-making process

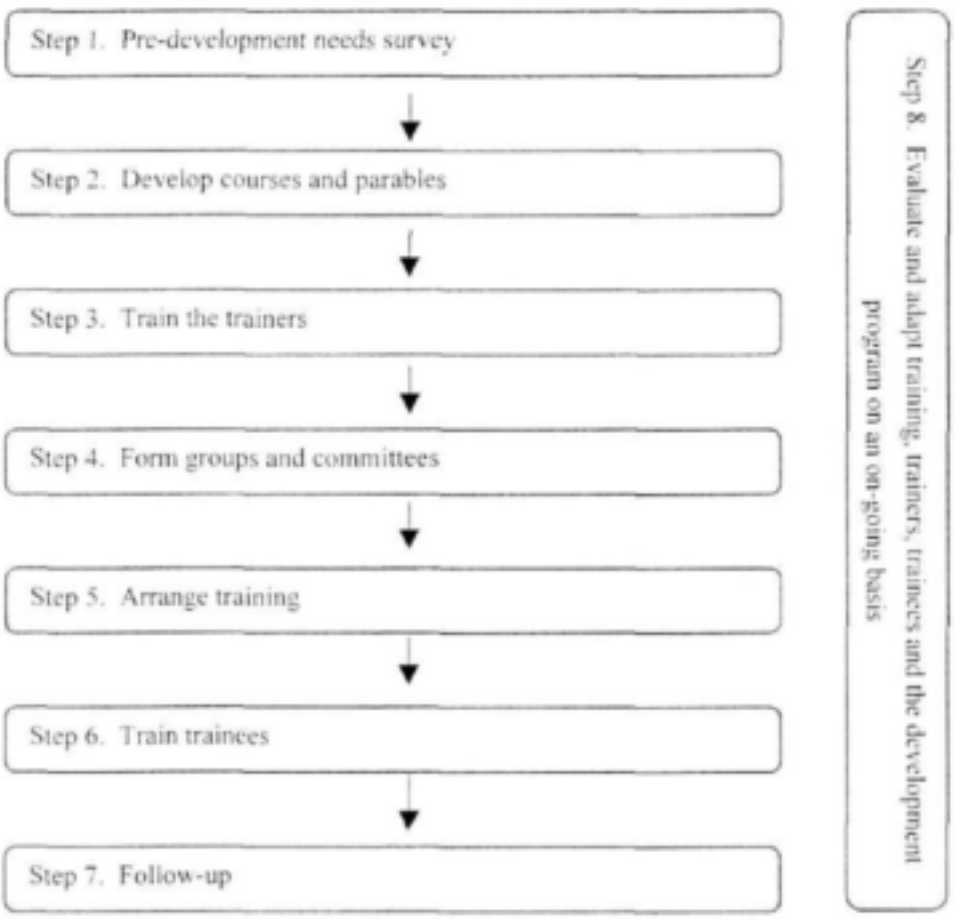
The policy and decision-making process refer to influences on the development initiative that fall outside of the community's decision-making sphere. The community is the primary decision-maker with regard to their development strategy and the shape and content of their projects, including technical choices, selection of participants and organisation and management structures.

Policies of funders and financial institutions, and national, provincial and local government may influence the type of support available for these community initiatives. Traditional leaders usually have an influence on access to resources and social support for development initiatives and act as arbiter in case of disputes. Organised agriculture may provide an important forum to lobby support from various sources, but particularly from their members.

Details of these four parallel processes are discussed below in Chapters 4 to 7.

CHAPTER 4. THE COMMUNITY DEVELOPMENT PROCESS: FROM HUNGER TO CONFIDENCE THROUGH NEEDS-BASED TRAINING

Figure 4.1: Steps in the community development process



4.1 Step 1: Pre-development survey: developing an understanding of the trainees and their training needs, and building a shared vision

Building trust and shaping a development strategy

The first step in the development of an appropriate training programme is community vision-building through a pre-development survey (see Appendix A). The products of this investigation are firstly the *trust* which develops between the community and the outsiders participating in the pre-development survey, and secondly the *development strategy* that reflects the following:

- the community's views of their needs, problems, fears and aspirations (NPFA) as applicable to the irrigation, dryland and landless (or resource poor) households;
- a profile of the households showing their living standards;
- an analysis of current agricultural and irrigation practice, showing mistakes and deviations hampering production; and
- a development strategy detailing the community's vision and priorities and involving all the role-players needed for a successful, needs-based and people-oriented development programme.

Examples of these documents are included in Appendix A.

The order in which the community's needs are addressed depend both on the community's priorities and what is achievable in terms of internal and external resources. Information about external resources should be shared with the community, so that they may debate and take an informed decision on their priorities.

Community ownership of the development strategy

The results of the pre-development survey form the basis for a transparent development programme after the community has publicly adopted it. This milestone is reached when the community mandates a representative and witnesses to sign the Development Strategy on their behalf, usually at the conclusion of a full community report-back meeting. The report-back meeting(s), with the community taking ownership of the Development Strategy, marks the conclusion of the pre-development survey.

Application of the development strategy

The Development Strategy serves as the basis for the development of training *content* and *approach*:

- subjects in the training programme(s) are derived from the deviations or opportunities (4.2 below, Step 2), while
- training presentation and arrangements are based on an understanding of trainees' literacy/numeracy and domestic and social responsibilities (4.5 and 4.6, Steps 5 and 6).

The nature of the development initiatives, based on the priorities according to the community's Development Strategy, determine the need for involvement of other role-players. The Development Strategy is used to inform and sensitise role-players of the development context and specific requirements as discussed in Chapter 8.2 and 8.4.

Steps in the development of the Development Strategy

The steps in the development of the development strategy are discussed in detail, with examples, in Appendix A. In summary, the steps are the following (see Appendix A Figure A1):

- compilation of an appropriate pre-development survey form and interview schedule;
- meeting with community leadership to obtain permission to interact with the community and enter the villages ("open the door");
- meeting with the community in mass meetings, groups and individual interviews, ensuring that land holders and landless people's views are captured, the dominant as well as the dominated;
- participative analysis of poverty levels and expectations;
- assessment and analysis of current agricultural and irrigation practices;
- compilation of the NPFA, community and agricultural profiles and a development strategy;
- meet with leadership, arrange report-back meeting with community ("closing the door after the visit");
- report-back meetings with the community and other role-players a few weeks later; and
- community adoption of the results of the survey (NPFA, profiles and Development Strategy) as a true reflection of the current situation and a basis for development intervention.

Basis for development initiatives and training

The pre-development survey is an essential step and should not be ignored, nor neglected. Not only is every community unique, justifying its own analysis, but also, the pre-development survey *process* is used to create trust, awareness, participation and support for the development and training initiatives. Interaction with the community and confirmation of NPFA at this early stage sets the scene for the first phase of development and serves as the basis upon which further development needs can be addressed later.

Changes with time

The Development Strategy is not cast in concrete. In fact, changes in the needs of a community signify development progress. Depending on the tempo of development, the NPFA has to be reassessed at least annually to ensure dynamic adaptation of the development strategy.

4.2 Step 2: Developing needs-based courses, in the form of parables and stories

Start with the familiar

The trainer will capture and retain his trainees' interest by starting with what they know. This principle can be applied in several ways.

Firstly, the training content is based on the deviations or mistakes in production practice identified through the pre-development survey (see 4.1 above, Step 1). Each deviation becomes a subject (and a story theme, discussed below) in the Phase I training programme. By addressing their mistakes, which are the reasons for their hunger and poverty, the trainees immediately become involved. They attach value to the discussion as something that satisfies a need and an immediate concern. Examples of such deviations (and therefore subjects) typically include the following:

- Incorrect setting of ploughs
- Farmers not using fertiliser
- Farmers not using certified seed
- Ploughing twice at an average depth of only 100 mm, instead of only once at 250 mm
- Incorrect plant populations
- Poor weed control
- Broad casting of mixed seed
- Unfamiliar with the use of agricultural lime
- Over-irrigation, often through slavish following of an inappropriate irrigation programme
- Poor uniformity of irrigation applications
- Poor in-field irrigation system maintenance
- Leaking water supply lines (pipes and canals)
- Poor water distribution through incorrect usage of the water supply infrastructure

Secondly, avoid the introduction of new technology that could make the trainees feel insecure. The better approach is to correct the mistakes (or deviations) in their farming practices as identified in the pre-development survey. New technology can be introduced later when farmers' confidence has grown.

Thirdly, presentation of training content should be based on well-known aspects of trainees' daily lives. This can be achieved through *parables and stories* and carefully chosen *visual aids*, as discussed below.

Base the training on what is physically available for production

The training content should be developed in accordance with the prevailing or likely circumstances, such as the availability of support services and inputs. Trainers often fall into the trap of presenting training based on ideal circumstances rather than reality.

Develop the training content

As discussed before, each subject is derived from the deviations identified during the pre-development survey.

The agricultural advice contained in the training content should be confirmed with agricultural specialists and/or successful farmers from the area. Local experience with growing particular crops is particularly valuable, since researchers' knowledge often still needs adaptation for local application.

Each development (and redevelopment) process is unique. Since crops, climate, soils and especially people differ, no blueprint for training can be developed. In small-scale farming in particular, appropriate farming approaches often require a unique marriage between modern and traditional methods and technology. An approach of "learning together", much rather than a traditional one-way teacher/pupil approach is usually more appropriate. It is essential that the trainer develop an understanding of the local situation before his knowledge can be adapted to be meaningful.

Using parables and stories

Each subject is presented as a parable or story, preferably related to well-known aspects of trainees' daily lives. The story should explain the identified mistake or deviation and should also offer a remedy for the mistake. An example is presented below of a parable to explain incorrect setting of ploughs. Further examples can be found in Appendix B: "Examples of parables and stories for agricultural training".

Example of a parable to address incorrect ploughing methods and settings

When creating a story of this nature, think how the people would see and understand the actions of the plough. A plough is a tool used for cutting the soil. Without telling the farmers how you visualise a plough, start your story by asking them what they think a plough is. Focus their attention on the theme of your story.

Start by explaining that a plough is nothing but a knife used to cut open the soil in which crops are to be planted. If a pocket-knife is not held and used correctly, the user of that knife will get hurt. The same applies to the plough. If one wants to plough or cut the soil properly, one should see to it that the plough is linked to the tractor properly and set correctly. In other words, the tractor must hold the plough in the correct position for it to cut the soil properly. Explain that people get hurt when they are not using the plough correctly, because their crops are unable to grow.

Use of appropriate visual training aids

This is a very important aspect of the training effort, as it should help elderly and illiterate farmers to understand and to remember the key messages passed on during a lecture. Examples of simple, cheap training aids that can be used most effectively are-

- the maize plant as a *mosadi* (that is, a woman);
- tins to explain the water balance; and
- the human body to explain the functioning of an organisation.

The example of the use of visual aids that is presented below explains the water balance as a basis for irrigation. Further examples can be found in Appendix C: *Examples to illustrate the use of appropriate visual aids in agricultural training*.

Example of appropriate visual aids: The water balance

This is a valuable demonstration to cover the most important aspects of the farmer's cropping programme, namely water usage, ploughing efficiency and root formation. Two tins are used for this demonstration. Big instant coffee tins are ideal. The first tin should be cut so that it is only 100 mm high and the other 250 mm high. The tins are used to illustrate the difference between the traditional ploughing depth (shallow tin) and the correct ploughing depth (deep tin). In both cases the size of the tins should compare realistically with the actual and required ploughing depths. Both tins should be filled with coarse sand.

Paint both tins, then clearly paint or draw a root system leading up to the stem of the plant on each tin. The deep tin should show a large root system with deep roots and the shallow tin, a small root system. Turn the pictures of the roots away from the farmers for the first demonstration; i.e., water penetration into the ploughed lands.

Have two maize plants available. One should be a big, healthy plant with a big cob and the second a small sickly plant with a small cob or no cob at all. Cut off the stems of both plants approximately 100 mm above the roots and keep them readily available.

Get a measuring jar, preferably a transparent one. Calculate how much water is needed to fill the correctly ploughed land (deep tin). Mark the level of the water by drawing clouds or a sprinkler on the jar. Put the two tins next to one another and pour the water from the jar into the well-ploughed land (deep tin) first. Now show the farmers that all the water, be it by way of irrigation or rain, has penetrated the land. Nothing is wasted, nor is there any erosion, because the land is properly ploughed.

Then refill the jar to the mark and get one of the farmers to witness that the water in the jar is at the same level as it was before pouring it into the deep tin. Now pour water into the land which has not been ploughed properly (shallow tin) until the tin just starts to overflow. Show how much water is still available in the jar (cloud or irrigation cycle). Point out that the land is saturated and cannot absorb any more water, which means that all the remaining water will be wasted. Then continue to pour the remaining water from the jar into the land slightly faster, allowing the tin to overflow strongly and wash out the sand in the tin, suggesting that the soil is eroding. Now emphasise how they are wasting precious water and eroding their soil because they are not ploughing properly. One should also point out that by the time the shallow tin would be totally dry, the deep tin would still have more than enough moisture to feed its plants.

Turn the tins around to show them the roots. Put the big plant into the big tin and the small plant into the small tin. Explain that this is exactly what is happening in their lands at present. Emphasise this again by trying to fit the big plant's roots into the small tin and vice versa. Allow them to tell you if it matches or not, and if not, why.

Choose a good introduction to the course

The introductory presentation should achieve the following goals:

- Establish a basis for trust between the trainer and trainees and address fears and resistance. It is usually customary to start meetings with prayer. The trainer could also request that people sing together before he starts, as this helps to break the ice.[3]
- Establish and confirm training arrangements (venue, programme, voluntary participation, and register of attendance) and acknowledge the role of the committee.
- Introduce the course with a good story, thus setting the mood for the rest of the course.

The story themes along which the subjects will be transferred are developed from the introductory presentation. In other words, the parables should be chosen carefully to be comprehensive and fully integrated with the content.

The introductory story is particularly important in an irrigation training course, since farmers are committed to significant responsibilities once they decide to participate in the scheme. These obligations may be likened to the payment of a deposit before water and electricity supplies are connected. Farmers should have clarity on these commitments from the outset. By addressing these issues during the introduction, the trainer creates an opportunity for discussion that could prevent confusion and unpleasantness later.

[3] In addition to singing, there are many other ice breakers. Choose an ice breaker which would appeal to the group.

Example of an introductory story for an irrigation course: "The marriage"

The first step that leads to a marriage is a man's love for a girl. There is no force involved in this relationship. It is built on the couple's affection for one another and the need to be together. As the relationship develops, the man realises that something more has to be done if he is serious about the relationship: they will have to get married. Otherwise, the relationship will be nothing but a dangerous flirtation. He soon discovers that the marriage ceremony is the least of his responsibilities. He must spend money to build and furnish a home for his bride. He has to have a regular income to provide food. Besides, he is still responsible for paying *lobolaf*[4] to his father-in-law, as custom dictates. Only then can he get married and bring his wife to their home where they will care for one another and raise a family, the fruit of marriage.

This is no different to what is required of the farmer who intends to acquire an irrigation plot. He is not forced to do so[5]. It is his love for the type of farming that eventually moves him to take the step. It is also very dangerous to only flirt with the responsibilities of an irrigation farm, as you may get hurt financially. To become an irrigation farmer, means to get married to your farm, to pay the required levy for water or electricity, as well as other joining fees. This is the *lobola* for your land. As with your bride, you cannot escape this step.

Everything should be in place first, i.e., your lands, your water supply, tractor services, the inputs and the knowledge to use them properly. Only then may one get married to the soil. Only then can one expect to enjoy the fruits of this relationship by farming or growing crops. Growing a crop is like raising a family, which will one day care for you.

The story may be continued by spelling out how the husband should care for the wife and how the wife in turn should care for the husband by using the utensils (implements) he had furnished the house with. The story ends with everybody living happily ever after.

4.3 Step 3: Training the trainers

The facilitating role of trainers

The development outreach is broadened and internalised by training new trainer-facilitators, preferably individuals from the community, but at least individuals who are acceptable to the community and who will remain accessible to the community throughout the process. In Ndonga, local agricultural Extension Officers were trained in this way and experienced dramatically increased efficiency and job satisfaction and improved status in the communities they were serving.

In the process of needs-based training, the trainer-of-trainers, assisted and followed by the new trainers, acts as development facilitator of the community development process described in Steps 1 to 8.

Participation in the pre-development survey is a powerful experience, which confronts the prospective trainers with the full context and implications of poverty they have to deal with. It is essential to create an opportunity for trainers to discuss and reflect on their personal experience of this process, because at this point each prospective trainer will have to decide whether he or she can commit to the process.

The training of the trainers should cover at least the following aspects (see Chapter 8 for checklists related to each of these aspects):

- Development principles and approaches; sensitisation and creating awareness of the development context
- Training in theoretical content of farming operations (same content as the farmer courses)

[4] "*Lobola*" is the customary payment a groom makes to the father of his bride for the privilege of marrying her.
[5] In the new policy environment, participation is voluntary. This is in contrast to the top-down development of previous schemes.

- Training in practical aspects and field evaluation (farmer courses, with special emphasis on interpretation of field observations)
- How to work with groups (training in group dynamics)
- Presentation and facilitation techniques

Training of new locally based trainers initially focuses on building their capacity and experience to train and support trainees and their committees on production-related aspects. However, to maintain sustainability, it is essential to create local ability to access outside specialists, businesses and political or administrative support as and when required (see 4.7 below, Step 7).

In later phases, the trainer may find it useful to make use of outside specialists to present training on specific subjects. However, experience has shown that the trainer may have to handle all the training in the first phase personally to establish a secure relationship with the group and build trainees' confidence. At the end of a successful production season, the trainees' improved self-esteem and confidence increase their ability to deal with input from uninitiated outsiders.

Selection of trainers

Provided the training is integrated into and supported by the local department of agriculture, local extension officers are often ideally placed to be trained as trainers, since they have a mandate to transfer technology to the farmers and are likely to have a continued presence in the area. Due to the low level of credibility extension officers sometimes have with their farming communities, it is, however, essential to establish the acceptability of specific individuals as trainers before training commences. Lending visibility and glamour to the training of the trainers may, in itself, alleviate the community's objections. However if the objections are more deeply rooted, different sources of trainers may have to be found.

Personal characteristics of successful trainers

Training others does not come naturally to many and facilitation is even more difficult than conventional "telling"-style training or presentation. In addition, special commitment and stamina are required to sustain involvement in an intensive development process under the disheartening circumstances typical of poverty situations.

The following characteristics seem to be typical of successful trainer-facilitators:

- enthusiasm
- sincerity
- empathy
- positive attitude
- knowledge
- humility
- truthfulness
- commitment

Some character traits virtually disqualify, or at the least, significantly complicate a person's ability to become a successful trainer-facilitator (Lubbinge, 1998). It is important to understand that this is not a judgement of a person's worthiness as a human being, but only of his natural ability to become a successful trainer or facilitator. These traits centre mainly on the individual's ability to:

- place development objectives at the centre of his efforts, rather than personal gain or prestige;
- establish rapport with the group;
- avoid personal confrontation and resist the temptation to argue to prove a point;

- be truthful and humble about limitations e.g., of government assistance;
- create an environment for learning together, using the "telling"-style only when appropriate; and
- elicit participation from all group members, by gently encouraging the dominated and respecting but curbing the domineering (that is, managing the "tyranny of the eloquent").

A new trainer can initially not be expected to have the skills and knowledge to develop training content and approach, which requires the following knowledge and abilities:

- thorough practical knowledge of the requirements and content of the job (e.g., crop cultivation);
- communication skills on various levels – from developing ideas through interaction with subject specialists, through successful communication with illiterate community members; and
- working knowledge of participatory methods of analysis and training.

Support for trainers

The pressure and responsibility resting on trainers should not be underestimated. Their managers should lend appropriate support and especially understanding for the circumstances under which they have to work. Trainers of the poor have to impart massive amounts of energy and personal sacrifice to convince and support people to escape from the poverty trap. Trainees have to be encouraged to spend money they don't have on inputs, and time they desperately need for daily survival on attending training meetings – all of this in the face of a lifetime of believing they cannot do it.

The trainers themselves have to overcome their doubts about their own abilities and that of their trainees. In addition they often suffer through a lack of the basic means to perform their tasks, e.g., basic communication infrastructure (telephones, fax machines and photocopying facilities) (Bembridge, 1999). Normal transport to travel between home, office and training venues is often inadequate, let alone the restrictions this imposes on trainers' ability to work after hours – an essential requirement in community work. Under these circumstances even well meant criticism could discourage trainers. Managers and advisors should be particularly careful to respect the first-hand experience and insights of the trainers, gained from intimate personal involvement in the process from even before the pre-development survey.

4.4 Step 4: Establishing interest groups and training committees

Advantages of the group system

The group system broadens the development outreach, allowing for much larger numbers of people to participate in the programme.

Rural communities often function on a collective basis and the comfort created by the group system helps the members to overcome many of their fears. Group members draw on their collective memory to recall what they were taught, thus overcoming one of the difficulties of illiteracy, namely, not being able to take notes. The trainees are usually eager to share their newly gained knowledge and success.

Acceptable decision-making is much easier to achieve in a group, especially when traditional leaders are involved. In a group the farmers can also buy in bulk and overcome transport problems by sharing the costs of one vehicle. The members of the group soon realise that they have much in common and sense the empowerment they gain by being part of a team.

Group formation

The trainer's first contact is often with an individual or small group of representatives of a community requesting training. The trainer should explain to these representatives that it would be impossible to work with each farmer

individually and should encourage them to return to their village and meet with those who want to participate in the programme.

They should form a voluntary interest group, which should be represented by elected leaders. The trainer should make it very clear that he places no age or other restrictions on group membership and that old, illiterate people are particularly welcome. The only demands should be that participation will be on a voluntary basis and that the group must elect a committee. Insist that all further arrangements will be made together, after the group has been formed and the trainer has been introduced to their committee.

Due to the important function of a group, it is vital that it should be formed and structured correctly. A strict differentiation should be maintained between local politics and the development agenda.

The group should be formed only *after* the trainer has been requested and is able to help. This avoids frustration of expectations and organisational collapse within the community.

Group committee

Request the group to elect a committee comprising of five members. The gender of the selected members should be fairly representative of the distribution of men and women in the group. Generally a good approach is to have two men and two women forming the body of the committee and the fifth member, the chairperson, either male or female. The committee should be in a position to make immediate decisions by voting in cases where general consensus cannot be reached. It is important that the natural leadership in a group should be recognised, by allowing the group to elect their committee. However, they can be asked to take cognisance of the need to develop younger leadership too.

The purpose of a committee

The purpose and functions of a committee is best explained by referring to it as a hand, its five members represented by the fingers. This hand, like any other, gives and takes, it picks up and puts down, it fights and defends... The only difference is that this hand represents the people in everything it does. The committee members are the leaders of the group and represent the group in every possible way in the course of the development programme. It is essential that both the trainer and the group recognises and respects the committee and that they work through them.

Duties of a committee

The group committee must be involved in all arrangements and decisions regarding the training programme. All duties and responsibilities of the trainer and the committee should be clearly identified, thoroughly discussed, understood and accepted by both parties.

- Order and discipline
  The committee should be held accountable for the discipline and order of the group, which is critical to the success of the training programme. It is therefore essential that they are involved and recognised in all other aspects of the decision-making process. The committee should be involved with the solving of problems, be it the farmers' or the trainer's.

- Maintaining production standards
  It is vital that the committee accepts the responsibility for maintaining the production standards set during the course.

Example: the committee's role in maintaining production standards

Farmers are taught to accept nothing less than 250 mm ploughing depth. However, when an old, widowed lady gets the contractor to plough her land, she finds that he ploughs only 100 mm deep. When she approaches him on the subject, she is told to keep quiet because "she does not know what she is talking about". She reports this to the committee, whose duty it is to resolve the matter.

- Control of shared equipment
  The committee is responsible for the management and control of shared equipment, e.g., shared pumps, hosepipes and sprinklers belonging to a community gardening group, or scissors and haberdashery shared by a handicraft group. The committee should organise the management of equipment to suit the requirements of the group, but they remain fully responsible and accountable for its control.

First committee meeting

The following aspects need to be addressed in the first meeting between the trainer and the committee:

- Confirm the needs, problems, fears and aspirations (NPFA)
  All the NPFAs of the people as identified in the pre-development survey, should be thoroughly discussed with the committee. The committee should be encouraged to participate in this discussion by confirming that the identified NPFAs are correct. The trainer should then request the committee to assist him in addressing these NPFA. It is also appropriate for the trainer to make his own NPFA known to the committee, such as his tight time schedule or concern about how they are experiencing the training.

- Agree on training programme
  The trainer should discuss a training programme with the committee at the first opportunity (see 4.5 below, Step 5). The training programme should then be compiled as agreed, showing dates, times and venues, and given to the committee at the first opportunity. Not only does this give status to the committee; it also ensures continued communication.

- Agree on purpose and duties of the committee
  The trainer and committee should discuss and agree on the purpose and duties of the committee as a basis for future co-operation.

Group and committee meetings

If possible, committee meetings and training sessions should be scheduled on a weekly cycle; that is, a group is visited on the same morning every week, at the same place and at the same time. This makes it easier for the people to remember and plan their week.

Committee meetings are best scheduled to take place just before or directly after the group meeting. This allows the group the opportunity to see their leaders communicating with the trainer and gives the assurance that they are being represented by leaders who are looking after their interests. In addition, this system plays a major role in overcoming possible fears of hidden agendas and enhances the transparency of the programme. If circumstances require even greater transparency, the group can be invited to sit in on committee meetings as silent observers.

4.5 Step 5: Establish training arrangements based on trainees' circumstances

Training arrangements should be discussed and agreed with the committee in accordance with the circumstances of the group. Prepare and distribute the programme to the committee members as soon as possible. All dates, times and venues as agreed should be clearly indicated.

Domestic, social and production responsibilities

It is very important that the trainer finds out the normal daily domestic and social responsibilities of the trainees[6] and designs the training programme to allow time for these duties. Get information on the distances the people may have to travel to attend the training and where applicable, establish the availability and affordability of regular, dependable transport[7]. Be careful to limit interference with time needed for production activities, such as cultivation, irrigation and marketing.

Training and meeting venues

The trainer should show his willingness to conduct the training at the traditional gathering place of the trainees, be it under a tree or at the headman's kraal. He should make it clear that buildings are not necessary for the training and that the training will be brought to the people and not the other way around. It is important to discuss this with the committee before a lack of classroom facilities becomes an unnecessary embarrassment. The group will probably feel more comfortable and relaxed in familiar surroundings.

Timing and duration of training meetings

Ask the committee to arrange training to take place in the morning while trainees are fresh and able to concentrate, since rural people's duties usually require that they rise very early. A group training meeting should not be longer than two hours. Weekly training allows the trainees more time to discuss the contents of a lecture amongst themselves, which makes it easier for them to understand and remember.

Training should be programmed to prepare farmers in time for the planting season.

Training and follow-up programme

The trainer should be in a position to assure the committee of a long-term commitment, during which training should be offered in phases over a number of production seasons. Ideally, trainees should be able to attend repeat courses until they have acquired the knowledge and skills.

The first training phase (in preparation for the first production season) usually comprises of weekly two-hour lectures over a six-week period, followed by fortnightly extension visits to each group during the planting and cultivation season (see 4.7 below, Step 7).

4.6 Step 6: Presentation and facilitation: some principles and techniques

Starting a training meeting

It is important that training sessions are started correctly, as these initial stages are fragile and can truly make or break a development programme. All eyes are on the trainer and he must set the right example from the beginning. His conduct should be aimed at building trust through sincerity. His dedication and the purity of his motive will determine his acceptability. He should be sensitive to the customs of the community and act accordingly.

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[6] Daily activity patterns can be established with participative techniques such as the "gender clock" (RRA Notes, 1994)
[7] "Social mobility maps" may be developed with the group for this purpose

Meetings should be opened and closed according to community practice. The unifying power of a common spirituality should be recognised and built upon. In rural South Africa, it is usually appropriate to start meetings by requesting a member of the group to open proceedings with a prayer. Singing one or two verses of a well-known hymn immediately relaxes the atmosphere and enhances group participation. It also creates an opportunity for the trainer to compliment them on their singing (only if they sang well!), which helps to build a friendly relationship.

Language

If the trainer does not have sufficient command of the local language, it is his responsibility to make provision for interpretation. He should ensure beforehand that the interpreter is able to communicate with the group and that they fully understand what he says. Most interpreters command only some of the official languages of the country and dialect may also play a role.

Successful presentation through an interpreter

The success of any presentation depends on the clarity and enthusiasm with which the message is put across. Where interpretation is required, the trainer has to ensure beforehand that the interpreter accepts and understands the message, and has the ability to convey it correctly. This could require some practice together before the training session.

Repetition

Since most trainees have to memorise the entire course, all lectures should start by recapping on the previous session. This is most effectively achieved through group discussion, with the trainer asking leading questions, guiding the trainees to discover the answers for themselves. The trainer should not miss an opportunity to compliment trainees when they remember correctly but, if a question is answered incorrectly, he should always explain why it is wrong.

Never continue with a new lecture if the group does not fully understand the previous lecture, even if it means repeating that lecture again. Trainees should be constantly reassured of their ability to do well in the course. Wherever possible, their progress should be highlighted by following the progress of their crops.

Adapting to the group

The trainer should remain sensitive to his trainees' frame of mind throughout a training session. He should continually judge the success of his presentation by observing the attitude, behaviour and body language of the trainees. Are they alert, showing interest in the proceedings, participating and asking questions, or is attention dwindling? Take care not to rush, especially in the initial stages of training, for this will be interpreted as rudeness.

Help the trainees to remember by repeating the key issues of the lecture in as many different ways as possible. Trainers should try to compile their own courses, since this makes it easier to adapt to the needs of the group and is much easier to present.

Duration of a training meeting

A group training meeting should not be longer than two hours. This includes the opening, followed by three lecture sessions of maximum 30 minutes each. A short break or informal group discussion of approximately 10 minutes should be allowed between each session. If the group becomes tired, restless or difficult to handle, stop immediately and introduce a relaxation exercise, like asking them to sing something of their choice. This will rejuvenate their senses and reunite the group. Compliment them if they sang well and all tension will dissolve.

Discipline and attitude

The trainer should set an example by always being punctual and disciplined. He must also ensure that all the training is purposeful and presented in a systematic and orderly fashion. Lectures should be presented in a happy, relaxed, enthusiastic and convincing way. Positive body language will also help to stimulate interest and eliminate fear.

Trainer unable to answer a question

The committee or the trainees should feel free at all times to share any new needs, fears or problems, even if these seem unrelated. If the trainer has no answer to a problem, he should admit it openly. If the trainer commits himself to finding an answer, he must return with an answer, even if it is negative, otherwise he will be undermining his credibility and trustworthiness.

Concluding a lecture

In concluding the lecture, the trainer should always thank the trainees for attending and listening to him and then allow as much time as possible for questions and discussion. The discussions should not be restricted to subject related matters only.

It is important to call the attendance register only after all the discussions have been completed, as this will save any embarrassment to people who came late. This is common courtesy to poor rural people who have many commitments related to basic survival, and no access to sophisticated transport.

Finally, a group member closes the proceedings with a prayer.

4.7 Step 7: Implementation and follow-up

Extension visits

Training meetings (the "theoretical training") should be programmed to prepare farmers in time for the planting season. Fortnightly extension visits should commence immediately afterwards to give farmers practical guidance on ploughing, planting, cultivation and irrigation, but especially on the identification and control of infestations and to monitor farmers' commitment to adequate weeding.

If the trainer senses any suspicion, it is wise to cease his extension visits directly after the last cultivation activities, leaving farmers to themselves in the final stage to harvesting. This would make it clear that the trainer is not making any claim to their crops, which is often a legitimate fear in the light of recent history. The trainer should be aware of customs and traditions in relation to harvest time in some communities. In most cases it is safest to visit farmers fields on invitation.

Continued meetings with the committee

It is important to appreciate the role of the committee in the sustainability of the development initiative. Most importantly, the committee should have *real functions* to fulfil on an ongoing basis and should continue to be recognised by all role-players as the elected mouthpiece and decision-maker on behalf of the farmers. In rural India, a new committee is elected annually or biennially, thus broadening the opportunity for leadership development among group members and preventing the entrenchment of long-term power bases (also see RRA Notes, 1994).

Regular and ongoing meetings with the committee are essential to continue building their capacity to take over the liaison functions of the trainer. Specific support requirements are likely to arise as the season progresses and it is important to guide the committee to recognise and utilise their mandate to approach other role-players on behalf of the group.

The programmed two-weekly meetings can for instance be used to introduce the committee to the structure and mechanisms of government, funders and service providers, to develop the committee's ability to establish support, inputs and markets for new products/initiatives. Key decision-makers can be invited to attend these committee meetings as observers and to personally explain the role their organisations can play in supporting the farmers' initiatives.

If newly trained trainers have not yet acquired the seniority, exposure or insight to facilitate interaction with appropriate high-level decision-makers, the trainer-of-trainers or development facilitator should continue to play that role until either the committee or the new trainer can act independently.

Continued support for new trainers

New trainers need a sounding board for sharing their experiences and to solve specific problems arising from the process. Continued access to the trainer-of-trainers remains important and is complicated if trainers do not have access to telephones.

The trainer-of-trainers should also have the opportunity to interact occasionally with the managers of trainers and extension officers, especially to put support requirements in perspective.

Continued liaison with decision-makers and other role-players

Farmers on irrigation schemes often arrange farmers' days to invite formal visits by decision-makers and other role-players. This is one of the ways to retain the interest and support of highly placed officials, keeping the doors open for future liaison. Suppliers may want to sponsor these events, capitalising on an opportunity to advertise their services and goods to farmers and decision-makers.

4.8 Step 8: Evaluation

The development of the rural poor is a highly complex process, which directly influences the lives of people – positively or negatively. It is vital to measure and evaluate all aspects of the development regularly, including the trainer, the trainees, the training, the crops, yields and inputs, and the development programme. In this way, mistakes can be identified early and corrective action implemented before serious damage is caused.

Proper evaluation is an essential requirement for a sustainable development programme and helps to determine appropriate future development policies and strategies. Meaningful evaluation requires complete honesty from the trainer and understanding and support from his management, especially when mistakes are identified.

The trainer

The trainer should firstly evaluate himself by asking probing questions, such as the following:

- What motivates me to be involved? Is my primary aim still to uplift the communities I am working with? Am I still enthusiastic and willing to make personal sacrifices?
- Am I experiencing an inner personal growth with better understanding and knowledge of the people and their needs?
- Do I have job satisfaction and is this really what I want to do?
- Have I become tired, irritated and impatient with the farmers/trainees?
- Am I still displaying the characteristics of a successful trainer? (see 4.3 above, Step 3)
- What have I achieved?

It is not by chance that most of these questions relate to the trainer's frame of mind. Tangible results are important, but only achievable if the trainer is enthusiastic and determined. A trainer can inadvertently do irreparable damage to the

development programme if he is dissatisfied, over-stretched or self-centred. Immediate assistance is needed. In an organisation, probing of his personal attitude and motivation should form part of the trainer's regular monitoring discussions with his manager. This is essential to enable the manager to put support measures in place timeously.

The trainees: evaluation through observation

The trainees are evaluated formally on completion of theoretical courses, usually through oral examinations, as discussed below. However, regular and ongoing evaluation of their progress and attitude is essential to adapt the training timeously. The trainer can learn much by observing the trainees and considering the following questions:

- What changes are apparent in them as people?
- Do they still have a negative frame of mind?
- Are their conversations constructive or negative?
- Are they still fearful and suspicious?
- What is their attitude towards the trainer?
- Is there a change in their standard of living?
- Is there is change in their personal appearance?
- Is their main need still food or are other needs becoming more urgent?

The objective is to assess *change*, which helps the trainer to put the current situation into perspective. If any tension is detected, it is crucial to understand the reasons and act accordingly. Tension resulting from lack of interest or dissatisfaction with the trainer is serious, while other problems may in themselves be signs of progress, for instance impatience to move on to address further needs once the food problem has been overcome.

In all instances these tensions need to be addressed, in collaboration with the committee, to ensure the sustainability of the development process. Transparency can be achieved through participative evaluation and problem solving with the group as a whole.

The trainees: oral examinations

Well-designed oral examination allows for individual evaluation of trainees' knowledge despite illiteracy and innumeracy. Certification adds value and status to the training programme and is invaluable in building the trainee's self-esteem.

Consider the following principles when designing an oral examination:

- Determine a realistic standard, using as an indicator what the trainees need to know in order to improve their living conditions, but keeping in mind that most of the trainees are elderly and have to memorise the entire course.
- The training (and the questions) should be structured to assist trainees to remember and recite technical detail, e.g., trainees should be encouraged to indicate standards and measurements like 250 mm deep, 1 metre apart, 100 mm wide by hand or in any other practical way.
- Develop between 30 and 50 questions that the trainer regards as vital. The full set of questions is put to each trainee in an individual interview.
- All questions should originate from the course material.

All candidates who complete the course should be rewarded with a certificate. Trainees should be free to attend repeat courses until they qualify for attendance certification. It is important to make a big occasion of the handing over of certificates. Invite distinguished guests to do the presentations. This does much to restore the trainee's self-esteem, and it may be the first form of recognition many of them have ever received.

The training

The training can be assessed in various ways:

- Feedback can be obtained directly from trainees, by asking them how they are experiencing the training.
- The attendance register is an excellent indirect measure, since it shows whether attendance is increasing or declining.
- Assessment of the extent to which technology has been transferred at a level that the trainees really understand and accept: An analysis of trainees' success rate with each of the questions in the oral examination helps the trainer to pinpoint problem areas in his presentations.
- Is the transferred technology being applied, in other words is it visible in trainees' lands?
- Are all the farmers from an area or project participating?
- Are they interested in further training?

The crops, yields and inputs

Careful monitoring of trainees' crops from the ploughing to the harvesting stages, enables the trainer to identify (new) mistakes and deviations, which, as before, serves as the basis for the second training phase the following year.

Further, the final yield is compared with annual consumption on a typical household basis, to assess the extent to which trainees were able to satisfy their basic needs. The economic impact of the programme on the area can be assessed through analysis of surplus sales and suppliers' records of inputs purchased from the area.

The development programme

Valuable information is obtained by evaluating the original development programme and seeing how it has been influenced by these results. An analysis of negative and positive changes will clearly show whether the programme calls for modifications, amendments, changes or possible correction to the development approach, training programme, policy or budget. It will also indicate what the new needs of all participants are, thus giving definite direction to the development programme.

CHAPTER 5. THE PLANNING PROCESS: ESTABLISHING LINKAGES FOR AGRICULTURAL PRODUCTION AND SCHEME PLANNING

5.1 Networking with role-players and establishing adequate provision of essential services

Networking

Development facilitation requires the ability to visualise the development process as a whole and the skill and insight to identify and mobilise those role-players who are able and willing to commit themselves to "making it happen". Often, it takes only one person with a vision and the ability to mobilise others to bring about major change. Without the ability to initiate action, even perfect understanding of a community's circumstances doesn't lead to much.

Sustainable development is more likely where the community in assisted to develop their own vision and empowered with the capacity to network and obtain input from outsiders as and when they need it. Intervention processes, such as an irrigation development, should be utilised to build this capacity within a community. Intensive guidance through one project may enable a community to initiate and carry through subsequent projects (*Kheis Community PRA Report*, 1994), by creating:

- sufficient understanding of a typical project cycle;
- useful linkages with outsiders; and
- specific skills, such as management of labour and finances.

Marginalised communities facing a first real opportunity for development, will need assistance to network with and mobilise relevant role-players. This is an important role of the development facilitator.

In an irrigation development, networking is required at several stages of the development process to bring in new role-players as and when their inputs are needed. These role-players need to be briefed according to the input they will be making. Their inputs, in return, has to be transferred to all others who need to know about them, either through reports, briefing, training or, where practical, by having all concerned with that particular aspect present at a discussion(s).

Through networking, government, tribal authorities, funders, advisors, input suppliers and established local small-scale and commercial farmers are drawn in to strengthen the initiative as and when needed. New role-players' input regularly produce new leads and may even change the thinking about the possible approaches to a particular aspect.

Assessing and facilitating access to inputs, services and other support

As mentioned earlier, the training message should be based on what is physically available for production, rather than idealised circumstances. The resource potential as well as access to credit, mechanisation services, seed, fertiliser and remedies, water supply and markets must determine the recommendations for crop production. The facilitator plays an important role in optimising access to the essential services, but where problems prove insurmountable the proposed cropping practices has to be adjusted accordingly.

In irrigated agriculture, there is always the temptation to go for maximum yields and to apply inputs accordingly. However, it is imperative that realistic targets be set in balance with factors that could limit production, e.g., unreliable water supply or non-availability of other essential inputs or services.

It is usually necessary that the development facilitator initially negotiates on behalf of the farmers or production area for the delivery of all the services necessary to enable production. The best approach from a development viewpoint is to make use of local suppliers and service providers as far as possible, thus strengthening the local economy and small

business. The ability to deliver has to be ensured. If this means investing in building the capacity of local businesses, this should be viewed as an important spin-off of the development, but care should be taken not to create power imbalances within the community that could further marginalise the poorest people. Outside suppliers and expertise should also be used where appropriate.

5.2 Training and briefing support service providers

5.2.1 Water supply operators: Pump operators, water bailiffs and maintenance staff

Operational staff involved in the day-to-day supply of essential services to the farmers, such as water supply, need to understand how their actions influence the farmers' ability to be successful and thus the sustainability of the scheme and their own jobs. Operational personnel should therefore complete the *farmer training courses* relevant to their role in the scheme. This should be budgeted for during project planning and the responsibility assigned to organise it.

In addition, field surveys on irrigation schemes in South Africa have shown that operational staff usually receive minimal if any training on the *technical requirements of their job*. Typically, they have been instructed on how to perform specific scheduled actions and how to identify emergency situations and stop operations. Hardly ever have they been empowered to understand the water supply and irrigation system, its requirements and consequences of actions, nor are they able to carry out even simple preventative maintenance (De Lange, 1994).

Quite apart from the effects on scheme performance and regular conflict between operators and farmers, this situation results in very low job satisfaction and a waste of human resources.

5.2.2 Irrigation scheme managers

On small schemes the farmer committee may be solely responsible for scheme management functions, e.g., planning, organisation and control of shared equipment, water supply schedules and operational personnel, and joint buying-and-selling activities.

On larger schemes, the management structure is closely related to the philosophy and policies along which the scheme was developed. The nature of the infrastructure and the emphasis on development of local human resources influence the extent to which farmers are active participants in scheme management. In principle the current trend world-wide is to transfer the responsibility for management to farmer representative bodies as far as possible (Vermillion, 1999) and this is also becoming the policy in South Africa (*Green Paper on Agricultural Policy*, 1999). Farmer bodies, rather than government or outside development agents, then employ a scheme manager and staff, contracting and advisory services or expertise as needed (Hoola, 1995).

Scheme management is in essence a *service provider* to farmers and the *client* of other providers, including input suppliers, marketing agents, consultants and contractors.

As *service providers*, scheme managers must understand development principles and must be sensitive to how farmers' circumstances influence their support requirements. They also need a thorough understanding of the institutional relationships and decision-making mechanisms that determine the day-to-day operation of the scheme and farming activities. They need to develop their skills in conflict management and marketing.

As *clients*, scheme managers must have the ability to source and interact meaningfully with outside service providers, and must be confident in their knowledge of what they can legitimately expect of such providers. This requires a working knowledge of acceptable standards and procedures.

In addition, scheme managers must have the knowledge and ability to manage their own staff and resources.

5.2.3 EXTENSION OFFICERS AND OTHER TECHNICAL ADVISORS

In South Africa, practical training and field exposure of technical advisors have not been a priority. The training and career paths of young professionals should be better geared to equipping them with both theoretical and practical skills[8].

Extension officers and technical advisors working in poor rural communities should at least successfully complete the basic farmer training courses in crop cultivation and irrigation practice, and should be practised in interpretation of field observations related to their field of expertise. They should understand development principles and be sensitised to the circumstances of the farmers and communities they are working in.

5.2.4 MECHANISATION CONTRACTORS

In order to ensure that farmers have access to ploughing services timeously, and depending on the availability of alternatives, it may be necessary to develop the capacity of mechanisation contractors in time for the ploughing season. This capacity building may include some or all of the following aspects:

- the contractor's understanding of the requirements for adequate ploughing. It should be clear to the contractor that the farmers have been trained to understand and demand adequate ploughing standards;
- enabling contractors to prepare their machinery and equipment in time for the season;
- developing the capacity to maintain equipment and deal with break-downs in mid-season;
- realistic development of mechanisation rates (this can seldom be left to market forces, because of skewed power relations in poor rural communities); and
- organising of ploughing schedules through the farmer committees, enabling increased efficiency of ploughing small land parcels (typically 1 – 2 hectares).

Mechanisation contractors are not necessarily farmers themselves. Rather, they have an interest in things mechanical and probably a propensity, if not aptitude, for business.

Ploughing deep and only once, instead of twice at shallow depths, means greater strain on their equipment, an increase in running cost and a 50% decrease in business opportunity. These contractors have to go through the farmer training for a thorough grounding in the principles of crop cultivation, particularly moisture management and the effects of compaction. They need to understand the relationship between the committee's duty to maintain production standards and the nature of farmers' agreements with financial institutions that enables them to pay for contractors' services. Especially in rural areas, it is acceptable to emphasise moral values and bank on people's sense of responsibility for each other's well-being (*ubuntu*).

In addition, mechanisation contractors have expressed their need for basic business training and training in tractor maintenance and implements.

5.3 Equipment and input suppliers and marketing organisations

The increased focus on small-scale farming in South Africa in the past few years has already had significant influence on equipment and input suppliers' understanding of the requirements of this sector. However, there is scepticism about

[8] In some other countries, programmed on-farm work and follow-up training courses are part of the first few years of employment (REFERENCE. Zim). In South Africa, extension officers often don't get to try their hand at farming practices. To emphasise their lack of practical exposure, extension officers at Ndonga recently pointed out that they had never even touched a plough (Ndonga, 19).

the potential of the small-scale irrigation sector to become a significant client, in the national context, in the immediate future. Viewed on a localised scale, though, significant production increases in existing under-utilised irrigation areas will certainly provide a market for inputs not to be ignored by suppliers[9].

Sensitisation of suppliers to the constraints and opportunities typical of production in this sector is important as background for negotiations between suppliers and farmers or their representative bodies, on mechanisms for supply and payment. Sensitisation can best be achieved through site visits, with presentation and discussion of the preceding processes, particularly the background to the Development Strategy. Remembering that the purpose is to nurture independence, farmers and/or their leaders (committee) should be present during these site visits to build relationships with suppliers and develop an understanding of the process. As soon as possible, the committee itself should become responsible for these arrangements.

Suppliers could be asked to interpret the requirements and make proposals on how their equipment or products could meet these needs. This could be in the form of presentations to the farmer groups, followed by debate and analysis by the farmers and their advisors. This process, strengthened by farmer visits to existing field applications in neighbouring production areas, can be used to facilitate informed farmers' choice of an appropriate irrigation system.

Exposure and involvement remain key to lasting and meaningful relationships based on mutual understanding. Another useful way to increase the involvement of suppliers is to invite them to attend training meetings as observers and to sponsor and attend farmer certification ceremonies and farmer days.

5.4 Physical infrastructure planners and designers

Technical knowledge and the principles of project management remain basic to infrastructure development, yet there are added dimensions to the process if there is proper understanding of the requirements of successful smallholder irrigation development.

The level of participation and decision-making by the new farmers is fundamental to the acceptability and sustainability of the project. This often requires a much longer period of negotiation and refinement of development options than with normal engineering projects.

The developer needs to acquire a thorough understanding of the *current* requirements and *probable future* development pattern and then strive to choose technology that is least likely to jeopardise the long-term sustainability of the development.

[9] At Phokoane, the production of an annual surplus of 11 000 tonnes of maize from a previously destitute area (Adendorff, 1992), is indicative of the economic activity which was generated in a dryland production area. The business potential in irrigated areas should be obvious.

CHAPTER 6. THE CONSTRUCTION PROCESS: PEOPLE DEVELOPMENT THROUGH INFRASTRUCTURE CREATION

6.1 Construction and sustainability

Is there any relationship between construction and the sustainability of a project? While farmer and community participation in construction may not be a prerequisite for sustainability, there are several ways in which the sustainability of irrigation projects can be enhanced through appropriate construction approaches (Shaker, 1994):

- Farmer participation in construction provides them with an opportunity to get to know and understand the infrastructure intimately. This improves their ability to understand, operate and maintain the infrastructure in the years ahead.
- Farmers become familiar with the engineers, equipment suppliers, contractors and maintenance people, making it easier to access their support in the future.
- Labour-intensive approaches that create job opportunities for community members other than farmers, spread the benefits of the development, increasing its acceptability within the broader community.
- Depending on the chosen project management scenario (see Appendix D: Table D1), community members can gain construction, procurement and managerial skills through the process, with which some of them may be able to obtain subsequent employment elsewhere or develop local services, including operational or maintenance services to the scheme.
- The development of local contractors creates skills, long-term employment (for contractors and their labourers) and economic activity in the area.
- Institutional capacity of communities and farmer groups are improved.

6.2 Labour-intensive construction and turnkey project management

Labour-intensive construction is not the use of large numbers of people on relatively unplanned emergency or relief projects to construct something of limited quality and value. Rather, it is the effective substitution of labour for equipment and results in the creation of a significant increase in employment opportunities, skills and institutional capacity per unit of expenditure on infrastructure.

A turnkey project approach means that the responsibility for management of an infrastructure development project remains with the same project manager throughout all the processes from the initiation of the project through to construction and hand-over for use by the client, who just needs to "turn the key". Project management on a turnkey basis tends to be more cost-effective than conventional approaches in the creation of rural infrastructure (M Shaker, 1998) and further increase the role that communities (or "beneficiaries") can play, effectively preparing them to operate and maintain the infrastructure independently. (See Appendix D for a discussion of the turnkey approach and the alternative project management scenarios for varying levels of community involvement in construction and management.)

The turnkey approach to rural engineering projects is closely linked to labour-intensive construction, for which standard agreements are still under development in South Africa (Shaker, 1994). Special care needs to be taken to clearly define responsibilities and liabilities between the major actors in the project team.

The technical training requirements of construction labourers, contractors and project managers are not covered in detail in this document, since training is standard and well established[16]. However, the value and achievability of on-the-job training in rural engineering projects should be recognised. The development facilitator should strive to achieve a

[16] Training is available through organisations such as the South African Institute for Civil Engineers (SAICE) and the National Community Water and Sanitation Training Institute (NCWSTI)

balance between formal classroom-type training and on-the-job training, according to the requirements of the job category and the project itself.

6.3 *Role-players in labour-intensive and turnkey construction*

6.3.1 ESTABLISHED CONTRACTORS AND THEIR SUPERVISORY PERSONNEL

Established contractors may find they need to adapt their approaches to accommodate new small contractors and community labour teams. They have to master the challenges of labour-intensive construction and turnkey project management, and be careful to develop clear agreement on responsibilities, liabilities and controls; and on dealing with emergencies, particularly problems with procurement and time overruns. They should be sensitised and must be familiar with the community's declared development strategy.

6.3.2 EQUIPMENT SUPPLIERS

Equipment suppliers should understand that, in the rural development context, timely supplies become even more important than usual, since so many other factors already lengthen the development process. Delays in the construction process can be very costly.

6.3.3 SMALL CONTRACTORS

New contractors need to master a wide range of skills to enter the construction field successfully. Under the guidance, of for instance, the site engineer or main contractor, small contractors may learn how to tender, procure supplies and equipment and maintain the required standards. They also need to develop skills in labour and financial management.

6.3.4 COMMUNITY LABOUR TEAMS

Labour teams procured, managed and paid by local community labour contractors can be very effective and may decrease the demands on the time, energy and labour management skills of the main contractor or project manager. The community benefits through income earned and the development of construction and management skills within the community. Properly planned, programmed and organised, this enhances the ability of the community to operate and maintain the infrastructure independently.

6.3.5 THE IRRIGATORS AND THEIR COMMITTEES

Opportunities should be exploited to involve the farmers directly in the installation of equipment that they will own and operate in future, and in negotiations with suppliers and other support service providers. There should be clear understanding of responsibilities and planning for future expenditure on infrastructure running and maintenance costs, including payment of operators, scheme managers and service providers and the procedures and mechanisms to achieve this in practice.

Smallholder farmers, under the guidance of the site engineer, have been involved effectively to take responsibility for inspection of works, thus taking ownership of and authority over the infrastructure at an early stage (Woodburne, 1998; Van Rensburg, 1999).

6.3.6 THE CLIENT (GOVERNMENT) AND ITS OFFICIALS

The client should have clear policies based on a thorough understanding of development principles, the realities of the field situation and the constraints of their own budget and administrative procedures.

Officials should be oriented to view other role-players in the development as valuable partners with a joint objective. The strict conventional boundaries between "this is my job and that is yours" should be reduced towards a mutually supportive environment of sharing skills, experience and knowledge to the maximum benefit of the development programme, while retaining clarity on responsibilities.

6.3.7 PROJECT MANAGERS AND ENGINEERS

Project managers and design engineers need to be up-to-date on the policies of their client and the reasoning behind those policies. They often need to play a bridging role between the client (government and/or funding agency) and the demands of their "actual client", the community. Labour-intensive construction and turnkey project management may still be relatively new fields for many consultants. In addition, there is a much greater expectation of them to understand development and the context within which infrastructure needs to operate sustainable and to advise (both) their clients accordingly.

CHAPTER 7. THE POLICY AND DECISION-MAKING PROCESS

7.1 Introduction

Through networking, various levels of government, funders and advisors are drawn in to strengthen the development initiative. The extent to which the support of these organisations can be mobilised depends largely on the development facilitator's knowledge and understanding of the available support measures and procedures to access such support. It also depends on the degree to which the interest of specific individuals in key decision-making positions can be captured. These individuals often have large constituencies or wide areas of responsibility and their time is limited, requiring initiative in securing appointments and skill in transferring information concisely and meaningfully. As it is not always possible to convince decision-makers to pay field visits, photographs, maps and diagrams can be used (instead of cumbersome reports) to transfer information efficiently (Crosby et al, 1999; Meyer, 1995). Community representatives should be involved in or take the lead in these negotiations as early as possible.

The applicants should make it as easy as possible for the decision-maker to grasp the situation, to understand exactly what is required and how her organisation can supply in those needs.

Decision-makers, of course, have an obligation to understand the needs and circumstances of their clients and have to adapt their policies and procedures to accommodate these. Where applicable, the facilitator has to recognise the presence of negative relations between the community and government and work to improve these.

7.2 Identify levels of decision-making and what they need to know

Meetings with decision-makers should be well planned. Preparation should include careful consideration of what this individual or organisation would need to know in order to provide quick and meaningful answers. Applicants should try and assess the decision-maker's understanding of development, as well as the administrative and procedural constraints that would have to be overcome to support the development initiative.

Innovation is often required to create opportunities to sensitise and involve key decision-makers.

7.2.1 Traditional authorities and local government

Both the traditional authorities and local government usually play a decisive role in the rural areas and therefore have to be acknowledged and consulted in the development process. The development facilitator should avoid at all costs to become involved in local politics. However, it remains a challenge to steer through the power struggles within a community towards development to the benefit of the marginalised, and this should be the development facilitator's stated position on political aspects. If, despite all efforts, opposing factions cannot agree to work together towards development, it may be necessary to postpone or abandon the initiative until they have sorted themselves out.

Community leaders may not have had exposure to development principles and don't always know of the support measures offered by government and other role-players. The degree to which they understand the plight of their people vary greatly and interaction during the pre-development survey often help them to see their community's situation and opportunities in a different light.

Local government may play an increasing role in irrigation development in future, which could enable them to ensure integrated development and complementary functions for infrastructure, for instance domestic *and* irrigation water supply and electricity, and positioning of roads to the benefit of multiple users. It would also enable them to weigh and

prioritise requests for a variety of development needs, e.g., a crèche vs. a vegetable project, or see the interrelation between different project proposals, e.g., a clinic vs. provision for safe sanitation.

7.2.2 PROVINCIAL GOVERNMENT

The departmental services offered by provincial government is often the only vehicle through which communities can access support. In addition to agriculture, other departments such as health and welfare should be involved in accordance with the priority needs expressed through the pre-development survey. Co-ordination of effort between departments, in a spirit of co-operative governance, can be very effective in supporting an integrated approach to rural development.

The aspects that a government official may need briefing or training in, and *vice versa*, those that he can supply information on, has to be assessed in the light of the project.

7.2.3 NATIONAL GOVERNMENT

The National Department of Agriculture is responsible for the establishment of norms and standards, and may facilitate access to funding for agricultural projects. The Department of Land Affairs and Water Affairs and Forestry are responsible for resource allocation, namely land and water. The National Water Act (Act 36 of 1998) enables the establishment of Water User Associations, which can be established to give legal status and related executive powers to the farmer groups and committees that are formed during the training and development process.

7.2.4 FUNDERS AND FINANCIAL INSTITUTIONS

To be successful, proposals to funding and financial institutions have to reflect an understanding of their policies and procedures. These policies should in turn be influenced by the realities faced by their intended target groups.

7.2.5 ORGANISED AGRICULTURE

Smallholder farmers and rural communities are increasingly networking with the National African Farmers' Union (NAFU) and the Agri-SA (formerly the South African Agricultural Union) and their local bodies to facilitate support for development initiatives. This includes interaction with successful farmers on "best practice" in the local context, collaboration on procurement of services and inputs, and joint input into policy development.

7.3 Networking with the major training and research institutions

Organisations like the Agricultural Research Council (ARC), the National Community Water and Sanitation Training Institute (NCWSTI), Training Trusts, universities, technikons and colleges can be approached to assist with specific aspects of the development programme.

7.4 The possible role of SAQA and the NQF

The South African Qualifications Authority (SAQA) has a mandate to develop and administer a National Qualifications Framework (NQF). The intention with the NQF is to provide a framework within which skills gained through on-the-job training can be recognised alongside conventional formal academic qualifications. Such a NQF-recognised qualification could enable an individual to seek employment in a related field, or to enter the academic training path at an appropriate level, without having to formally complete lower steps.

The accreditation and registration of skills related to irrigation farming, operation and management as recognised qualifications on the NQF could broaden the employment opportunities for individuals currently involved in irrigation farming on commercial farms, irrigation schemes and other water supply infrastructure. Many of the competencies are closely related to functions in standard civil engineering infrastructure in municipalities and industry.

Agricultural colleges are possibly best situated to play a leading role in the development and support of NQF-recognised skills related to the farming industry.

CHAPTER 8. CHECKLISTS FOR CONTENT OF TRAINING MODULES

8.1 Introduction

This chapter provides questions and checklists on training modules for role-players in irrigation development in poor rural communities. The questions and checklists are not comprehensive on well-established technical aspects, but rather aim to highlight those aspects that become important in a rural development context.

Therefore, the questions and checklists are organised according to *subject* and each section is introduced with an indication of which *role-players* may typically need training or briefing in that subject *(Who needs training or briefing on this aspect?)* and how could be dealt with efficiently *(How can these skills or knowledge be transferred?)*.

8.2 Sensitisation and creating awareness of the development context

Who needs training or briefing on this aspect? All outside role-players.

How can these skills or knowledge be transferred? Preferably through personal exposure to the grassroots situation, coupled to a debate of development principles; at the least a discussion of the community's needs, preferences, fears and aspirations (NPFA) and development strategy.

All role-players involved in rural development should be sensitised to the circumstances influencing their clients' (the communities') abilities and reactions and should understand the basic principles of development. So many of the fundamental mistakes of the past were based on seemingly good thinking and the best intentions. The danger in those ideas is that they seem so logical that well-meaning outsiders[11] are still reinventing them today, again and again.

The most effective way to sensitise people, is direct, personal exposure to the circumstances of rural people. However, "rural development tourism" or mere "windscreen surveys" are inadequate, since outsiders' interpretation of their observations are based on their own frame of reference. Outsiders should be accompanied by a knowledgeable person(s) who should explain the situation and how it came to be like that. In addition, there should be opportunity for outsiders to walk (not only drive) around, talk to a spectrum of inhabitants (from the poorest to the affluent) and, if possible, enter houses[12]. Trying one's hand at some of the activities of rural life, such as pounding grain, ploughing a furrow, or weaving a basket, causes much amusement and develops appreciation for the survival skills of rural people.

The most powerful sensitisation is achieved through personal involvement in the pre-development survey, but of course, not all role-players can afford the time. Adequate exposure is, however, achievable in a single day, provided it is well planned.

The development facilitator should be conscious of the level of sensitisation of individuals as they become involved in the process and should create timely opportunities for sensitisation through:

- personal exposure to community circumstances and initiatives;
- a debate on development principles; and
- discussion of the results of the pre-development survey, namely the community's NPFA and Development Strategy.

8.3 Basic principles and techniques

The basic principles and techniques always apply and are not specific to a particular development initiative or area.

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[11] "Outsiders" or "outside role-players" are all those people who have not grown up in the community and are not presently living there full-time.

[12] Men should be sensitive not to enter a woman's house unaccompanied, as this can be embarrassing to her and the community.

8.3.1 DEVELOPMENT PRINCIPLES AND APPROACHES

Who needs training or briefing on this aspect? All outside role-players.

How can these skills or knowledge be transferred? Can be covered in varying depth depending on prior exposure, the role to be played and available time; through informal discussion or through formal presentation and debate (training course) and should be dealt with in conjunction with field exposure.

Some development principles are discussed in Chapter 1 (please see #1.5).

8.3.2 DO'S AND DON'TS OF RURAL CONDUCT

Who needs training or briefing on this aspect? All outside role-players.

How can these skills or knowledge be transferred? Informal discussion or formal presentation and debate.

Outsiders are often uncomfortable or unknowingly rude in their interactions with rural people. The do's and don'ts of rural conduct are based on the need to show respect to all people and being sensitive to people's reactions. Inadvertent transgressions of local customs are easily forgiven when an outsider's general conduct is respectful and sensitive. Outsiders should remember that there is no correlation between illiteracy and intelligence.

There are many do's and don'ts, and specific rules vary from culture to culture, but the following general rules apply (also see Mascarenhas, 1991):

Do:

- Be clear about the purpose of the visit
- Consult with authorities or community leaders before interacting with the community ("open the door")
- Be respectful, especially of the elderly and women
- Ask if people mind that you make notes, then do it discreetly: don't use large official-looking clipboards, for instance.
- Ask open-ended questions
- Listen, listen, listen; show interest and enthusiasm in learning from people
- Probe, try to really understand, ask in more than one way
- Notice the unexpected and investigate it
- Note body language
- Have empathy, try to think yourself into their position
- Be aware that you are only a visitor and can see no more than a small window of rural life during your visit
- If at all possible, spend nights in villages
- Try your hand at some of rural people's daily activities
- Pay sincere compliments
- Be sensitive to people's time constraints
- Be patient
- Try to get the views of a cross-section of the population, not only the well-spoken and powerful
- Use understandable language
- Be aware of your own behaviour and effect on people around you
- Report back to the authorities who gave you permission to enter the community and discuss your findings with them ("close the door")

Don't:

- Don't interrupt, that means you are not listening and it is rude; do give people time to think
- Don't ask several questions all at once; think before you speak
- DON'T LECTURE. You are visiting to learn and to find what is wrong with some of your pre-conceived ideas, not to enforce them
- Don't be too formal
- Don't take everything you hear for granted
- Don't use technical terms
- Don't overwhelm people with large, loud groups of outsiders!

8.3.3 TRAINING AND EVALUATION TECHNIQUES

Who needs training or briefing on this aspect? Mainly trainers

How can these skills or knowledge be transferred? Formal course, including presentations, debate, supervised practice (field application) and evaluation of trainees.

8.3.3.1 Interpretation of field observations related to agriculture

What is the potential yield of this land?
Why is this farmer not achieving the potential yield?
How can you tell whether this farmer is applying the correct crop production techniques?
How can you tell if this crop is receiving sufficient water at the critical times?
What yield can this farmer expect to get?
What could/should he do to improve it this season? And next season?

8.3.3.2 How to work with groups

What is the role of groups? And the committee?
How does one establish trust and a good working relationship with trainees and committees?
How often should training groups and committees be visited at the various stages of the development?
What should the committee be consulted on or informed of? And the training group?
Which type of decisions can I expect the committee to make on the spot? Which do they need to consult the group on?
What can/can't I expect of group members/trainees? And committee members?

8.3.3.3 Presentation and facilitation techniques

(Also see 4.6 – Step 6: Presentation and facilitation: some principles and techniques)

What is the accepted way to start meetings/training sessions?
Has adequate arrangements for translation/interpretation been made?
Is appropriate language being used?
Has the trainer provided enough opportunity for recapping or is more repetition of previous course content necessary?
What is the mood and level of attention of the training group at the moment? Isn't it time for a break?
Is the trainer still setting an example by being punctual, disciplined and enthusiastic?
Has the trainer given feedback or fulfilled earlier promises to provide answers or information?
Has the attendance register been completed at the end of the training session?
Has the meeting been properly closed with prayer?

Presentation

Dale Carnegie's (Carnegie, 1996) guidelines for effective presentation were clearly developed for application in the corporate world. Since most of his guidelines apply generally, they are copied here with some footnotes to augment it for use in the rural development context. Carnegie's guidelines involve a four-step process: Plan, Prepare, Practice and Present.

Plan:

- Describe your audience (knowledge, experience, needs, and goals).
- Define the purpose of your talk based on the outcome you seek with your audience: inform; persuade; motivate to action; sell; teach; or train.

Prepare:

- Establish a positive mind-set: value your message; visualise yourself succeeding; visualise your audience responding; give yourself pep talks.
- Prepare an attention-getting opening: use a question related to audience need; pay a sincere compliment; relate a relevant incident.
- Illustrate and support key points with evidence and visuals: statistics; analogies; demonstrations; testimonials; incidents; exhibits.
- Prepare a memorable close: dramatise your ideas; throw down a challenge; use a motivating statement; restate the key benefit; deliver a convincing summary.

Practice:

- Dale Carnegie Training® has found that the three E's are fundamental to successful presentations. Build your confidence and effectiveness by establishing for yourself:
  - Why you have earned the right to deliver this talk.
  - Why you are excited about the subject.
  - Why you are eager to share with your audience.
- Practice your presentation and review your visuals for clarity, relevancy, eye-appeal, visibility, quality, and memorability.
- Practice your presentation before an audience, coach, or on video camera. Receive feedback and coaching on strong opening, clear key points, logical flow, and credible evidence[13].
- Receive feedback and coaching on memorable close, clarity of message, identifying distracting mannerisms, results achieved.

Present:

- Assume the attitude of a PRO in delivering presentations: Privilege, Responsibility, Opportunity
- Rely on the fundamentals: own your subject, feel positive about your talk, and project to your audience the value of your message.
- Make a positive first impression: establish eye-contact; display poised, confident body language[14]; be relaxed; be well groomed[15].
- Build rapport with the audience: be sincere; be yourself; say "we" not "you", talk in terms of your audience's interest, involve your audience.

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[13] Also check the pace and enjoyability of the presentation.
[14] Don't forget to be humble.
[15] Appropriate dress is important to blend in and help break down the barriers between rural people and outsiders. If possible, check the local custom, e.g., in some areas it is considered rude not to wear long sleeves, because bare arms signify that one is ready to fight.

- Hold the attention of the audience: be enthusiastic; use vivid words[16]; express yourself clearly and concisely; tell a story; have an upbeat voice; have proper body animation.
- Strive for continuous improvement: measure the success of your talk, identify the strengths as well as areas to improve; decide how you will improve the next talk.

Facilitation

According to Dale Carnegie, facilitation skills are utilised when presentations become interactive meetings. The facilitator sets the agenda, coaches participants and guides the pacing. Goals, problems and opportunities are identified and solutions and action plans generated participatively. Finally, the facilitator ensures understanding, summarises the agreed next steps and gets commitment from participants.

Facilitation, whether of a meeting or a development programme, requires all the skills necessary for successful presentation. It also places additional demands on the facilitator's ability to visualise possible outcomes, to adapt to a dynamic flow of input and to elicit participation.

Facilitation, while more difficult to achieve, is more effective than presentation or "telling" in establishing ownership of a process or outcomes.

Facilitation skills are best developed through guided practice. In Participatory Rural Appraisal methodology, each field application (community exercise or analysis) is evaluated by asking the following three questions:

- ***Process***: What happened during this exercise? How well did the community participate in generating this information? Did we manage to stand back and let them do it? How can we approach the facilitation differently in future to achieve better participation?
- ***Content***: What does this information mean? Do we really understand the reasons behind the answers? Do we know enough to take action or is further clarification required? Is there anything unexpected or unexplained arising from this information which needs further probing?
- ***Learning***: What did we learn through this interaction: about the community, about ourselves, about facilitation and about the way forward?

8.3.3.4 Evaluation techniques

(Also see 4.8 – Step 8: Evaluation)

Various techniques can be used for evaluation. With experience, the trainer will develop a sense of the appropriateness of each of these techniques according to the subject of evaluation, circumstances and personal preference.

- Observation
- Participative assessment and analysis
- Physical measurements and comparison
- Examination (especially of trainees, usually orally)
- Self-analysis, soul searching, monitor discussions
- Questioning, discussion

[16] Use appropriate, understandable language.

8.4 Background specific to the area

8.4.1 THE LOCATION, PHYSICAL CHARACTERISTICS AND INFRASTRUCTURE IN THE AREA

Who needs training or briefing on this aspect? All role-players, as appropriate.
Community, farmers, trainers, scheme managers, planners and designers, contractors, suppliers, service providers, policy and decision-makers.

How can these skills or knowledge be transferred? Informal briefing or formal presentation, as appropriate.
Road, rail, telephone, electricity, community and irrigation water supply. Clinics, schools and crèches. Explore and understand joint or multiple uses of infrastructure.

8.4.2 THE SOCIAL CHARACTERISTICS AND THE COMMUNITY'S DEVELOPMENT STRATEGY

Who needs training or briefing on this aspect? All role-players.
Community, farmers, trainers, scheme managers, planners and designers, contractors, suppliers, service providers, policy and decision-makers.

How can these skills or knowledge be transferred? Informal briefing or formal presentation on the process and results of the pre-development survey, covering at least the community's NPFA and the Development Strategy

All role-players in a development process should be fully aware of and understand the community's development strategy, so as to ensure that their actions will contribute to the community's goals and will be in harmony with the priorities and capacity of the community.

What are the community's needs, problems, fears and aspirations currently?
How were these established?
Have they been generated and confirmed by the community themselves (e.g., formally signed NPFA-form or Development Strategy)?
What is the community's agreed development strategy (including actions on priority needs; priority target groups; rights, roles and responsibilities of identified role-players)?

8.4.3 INSTITUTIONAL AND ORGANISATIONAL ARRANGEMENTS

Who needs training or briefing on this aspect? All role-players, as appropriate to their interactions with others. Broader community as necessary for harmony, co-operation or co-ordination of joint actions with farmers.

How can these skills or knowledge be transferred? Where appropriate, establish agreement on arrangements through facilitation, followed by full training for farmers, briefing as appropriate for most others.

8.4.3.1 Irrigators' rights and responsibilities

Some of these questions may be repeated under more specific headings.

- Which land can I use and what are my rights?
- What will I have to pay for[17]?
  - joining connection fee: what is this for? Do I pay this only once or annually?
  - land tax: what is this for? How often do I have to pay? To whom ?

[17] Policies with regard to payment for services and resources vary from country to country, but in South Africa there is currently a move toward at least full payment for recurrable costs (*Green Paper on Agricultural Policy, 1999; National Water Act, 1998*).

- water tariff: what does this cover – cost of water, water supply infrastructure, fund for future repairs, operation and maintenance, salaries.
- electricity charge: how is this determined.
- my own on-farm irrigation equipment: first time? repairs and replacements?
- loan repayments (short, medium, long-term)?
  - → This sounds like an awful lot of money, how will I ever be able to afford it.
  - → What happens if I stop paying? What are the immediate consequences for me and the longer term consequences for my fellow farmers and the scheme?
- Can anybody prescribe to me what or how to plant?
- Can anybody take my crops?
- Do I have to use the same marketing channels, ploughing and transport services, credit supplier as everybody else?
- How does contract farming work? (if relevant)
- What are my water use rights? What about times of drought? Who may cut off my water? What do I do if the water stops running?

8.4.3.2 The role of groups

Why do we need to form groups?
Who should be elected to group committees?
How can we ensure the empowerment and security of members, especially elderly and illiterate people?
How can we share duties and responsibilities?
How can we assist in compiling programmes based on our real needs?
How can we apply newly acquired knowledge together?
How can we promote better human relations and enhance people's self-esteem?

8.4.3.3 Role of the irrigation authority or scheme management

Who is in charge?
What is their function?
Who are they accountable to?
What do they do for me?
What do they expect of me?
Can they take my crop?
Can they take my land?
How can we be sure that they have no intention of exploiting us?

8.4.3.4 Who else is involved?

Who are all the other people involved in the scheme?
Why are they here and what do they do?
Are they allowed to give instructions to farmers?
Are they allowed on the lands?

8.4.3.5 Support services: inputs, mechanisation, marketing

Where will we be able to get the agricultural inputs detailed in the training?
When and how can these inputs be collected or purchased? How will we pay?
How can we get access to mechanisation services and how will it be provided?
How will we know if prices are fair?
How will crops be harvested and marketed?

8.4.3.6 Financial matters: credit, interest, cash

What is credit (short, medium, long-term)?
Do we really need it?
Where, how and when can credit be arranged?
Who can help us?
What is interest?
How and when must loans be repaid?
What happens if loans cannot be repaid as agreed?
Few understand the writing on the loan application and most are afraid to sign, who can help?

8.4.3.7 Land tenure arrangements

Will I have the same land as before?
What are my land rights?
Do I need to ask permission from anybody? Who? How?
Do I need to pay anything to anybody for using the land?
Can I rent out my irrigation plot while I cannot use it?
Will I lose it if I don't use it myself?
Will I lose it if it lies fallow?

8.4.3.8 Customary rules and traditional authorities

What customs do I need to be aware of in this area?
What is the role and responsibility of the tribal authority?
What is the role and responsibility of local government?

8.5 Farming operations

8.5.1 AGRONOMY

Who needs training or briefing on this aspect? Farmers, trainers, scheme managers, scheme operators, mechanisation contractors, advisors, input suppliers, designers, etc.

How can these skills or knowledge be transferred? As appropriate. Full course for farmers, trainers, scheme managers, operators and mechanisation contractors. Briefing for others should be on the specific recommendations to farmers in that area, and can be covered through video recordings of farmer training sessions, reading material, informal discussion or brief presentations.

The basic principles of crop production must be explained simply, using practical example, parables and story telling.

These include:

- what varieties to grow (annual and perennial crops, crop rotation, as applicable)
- soil preparation (by hand, animal draft and/or by tractor, as appropriate)
- the planting density, i.e., spacing in the row and between rows; the depth of planting; whether to plant seedlings or seeds; and planting date
- the need to keep weeds clear; when and if herbicides are necessary
- appropriate control of insects
- fertilisers, with practical indications of the rate of fertilising in simple terms – a cup over a certain distance or similar simple explanation
- the basic rules of crop rotation – how many successive seasons a crop may be produced on the same portion of land

In terms of irrigation, the following needs to be covered:

- the water requirements of the crop at planting and the various stages of development – a simple irrigation programme and "watching the plant"
- an explanation of what happens to the water in the soil profile and when it must be replenished
- the importance of evenly distributing water over the surface to ensure uniform plant growth

8.5.2 IRRIGATION FARMING

Who needs training or briefing on this aspect? Primarily farmers, designers and equipment suppliers. Also scheme operators in as far as it enables them to understand the consequences of their actions, thus better equipping them to provide quality service.

How can these skills or knowledge be transferred? These questions can be dealt with interactively between the equipment suppliers, designers and farmers, aimed at facilitating informed choice of equipment by the farmers, followed by appropriate design and supply of irrigation and water supply infrastructure.

8.5.2.1 Before development: What irrigation system should be used?

How will my everyday activities be influenced by the system I choose?
What will it cost – in the beginning, and in the long run?
What if it breaks?
Where will we get the water from, how will it get to my land?
What are the costs involved in participating in the scheme?
What equipment should I buy and where can I get the equipment?
How do I install the equipment?

8.5.2.2 First production season: What needs to be known to get started?

What can I plant within the constraints of market, irrigation system, etc.?
How do I prepare the soil?
How do I plant the crop?
How do I care for the crop?
How should I irrigate?
When should I irrigate?
What do I do if the water stops running?

8.5.2.3 Experienced irrigators: How can I improve my irrigation management?

How do I know if I have given enough or too little water?
How do I care for my system?

8.5.3 IRRIGATION SYSTEMS: OPERATION AND MAINTENANCE

Who needs training or briefing on this aspect? As for 8.5.2 above.

How can these skills or knowledge be transferred? As for 8.5.2 above. Farmers need to understand their irrigation systems: how they are best used to evenly distribute water, while conserving water and energy; and how to maintain them, whether they are:

- conventional furrow irrigation;
- short furrow systems, often found on well established flood schemes,
- sprinkler irrigation;
- dragline systems; or

- micro and drip irrigation systems.

Conventional long furrows

Cover at least the following:

- a basic understanding of contact time and advance and recession fronts and the effect of different soil types, is important to enable the farmer to achieve even water distribution
- practical flow rates for irrigation, and therefore a basic understanding of diversion structures to control the size of the stream taken into a farm
- the methods used to apply water to the land: using long furrows has a major influence on how evenly water can be distributed and on the amount of water applied
- how to make the beds, the spacing of the furrows, and where in the furrow to plant the crop (bottom, side or top; one or both sides?)

Short furrows

The following in addition to conventional long furrows:

- the practical methods of turning water into short furrows in the different types of layout and differing flow rates

Sprinkler irrigation

- how to monitor wear on sprinkler nozzles and how to specify the correct replacement parts
- how to correctly position laterals for the desired overlap between sprinklers
- the effect of leakage and additional sprinklers on system performance
- how to avoid leakage – the different types of pipe joints
- rotation route

Dragline

The following in addition to sprinkler:

- positioning of sprinklers for even distribution
- rotation route

Micro and drip

- filtration to prevent clogging
- spinners – importance to check and maintain for even distribution
- long spaghettis – the effect on energy use, opportunities for phased development

Pumps, engines and pumping lines

- basic concept of pumping efficiency (flow vs height of pumping)
- correct pump and motor/engine installation, including:
  - suction pipes and sumps
  - pump-engine/motor alignment
- priming – when, why, how
- pumping line maintenance – the effect of leakage and blockages
- elementary troubleshooting

8.6 Scheme operation: water supply

8.6.1 WATER DISTRIBUTION ARRANGEMENTS

Who needs training or briefing on this aspect? Farmers, farmers' committees, scheme managers and operators, planners and designers, appropriate equipment suppliers, appropriate advisors, funders.

How can these skills or knowledge be transferred? Full courses for farmers, farmers' committees, scheme managers and operators. Full technical training courses for planners and designers as needed. Briefing or checklists for others, full discussion in project development meetings.

8.6.1.1 Planning and design

Design for management: no water supply infrastructure should be planned or designed without a thorough understanding of the practical day-to-day water distribution arrangements. Storage, canal and pipeline capacities, number of users per outlet: there is inadequate understanding in South Africa of how the arrangement of these components affect the manageability of water supply and the farmers' ability to use water efficiently and productively on-farm, especially on smallholder schemes.

8.6.1.2 Operational aspects

Where does the water come from?
How is the storage capacity (dam) supposed to be used?
What route does the water travel from the dam, all the way to my land?
Who else receives water from the same outlet as my land?
How often will I receive water on my land and for how long? Do I need to order the water, how often and from whom?
How can we make different arrangements if circumstances require (e.g., if I have to go to a funeral when it is my turn)?
What do I do if the water stops running?
Where and how do I pay for the water? What am I paying for? How do I know that I am being charged correctly?
What happens if there is a drought?
Who has the right to stop the water and under what circumstances?
What is the effect of leaking canals and pipelines? How does it affect others and me when water is wasted?
What should I do if I see water being wasted? In which various ways can water be wasted?

8.6.2 WATER SUPPLY OPERATION AND MAINTENANCE

Who needs training or briefing on this aspect? Pump operators and water bailiffs – to understand the job requirements, farmers and farmer committees – to understand the capacity and constraints of the infrastructure and the role of the operators; designers; scheme managers.

How can these skills or knowledge be transferred?

Facilitation of agreement on institutional arrangements, full training or briefing on technical aspects, as appropriate.

8.6.2.2 Pumps and pumping stations

Components, their functions and arrangement in this pumping station
Operation
Troubleshooting
Preventative maintenance
Procedures for fault reporting and repairs
Identifying emergencies and what to do

Pump operator

What are the effects of my actions on the equipment?
What are the effects of my actions on the water supply system?
What are the effects of my actions on the irrigation systems?

What are the effects of my actions on the farmers?
Who can I ask if I don't understand something or if something seems wrong?
Who has the right to tell me what to do?
What do I do if I am being harassed or threatened?

8.6.2.3 Pipelines

Types of pipe and couplings used on this scheme
The effects of leakage
Detecting leaks, monitoring, preventative maintenance
Procedures for fault reporting
How to arrange downtime for repairs
How to install/repair

8.6.2.4 Canals and diversion structures

Types of canals, diversion structures and furrows on this scheme, and how they are supposed to work
The layout of the scheme and how it can be operated
The effects of leakage: detecting and repairing leaks
Correct settings of diversion structures during normal operation
Alternative settings of diversion structures during periods of water shortage or partial use

Water bailiff

What are the effects of my actions on the equipment?
What are the effects of my actions on the water supply system?
What are the effects of my actions on the irrigation systems?
What are the effects of my actions on the farmers?
Who can I ask if I don't understand something or if something seems wrong?
Who has the right to tell me what to do?
What do I do if I am being harassed or threatened?

8.6.2.5 Water measurement

Why do we need to measure? What happens if we don't measure?
How and where can the flow be measured? How does the equipment work and how reliable is it?
Who should report equipment faults and to whom? Who can fix it? What can I do if they take too long?
What do I do if I know or suspect that someone is sabotaging the equipment?
Who should measure?
To whom should the measurements be reported? What happens then (calculation of water tariff, etc)?
Where can everybody see the results of the measurements?

8.6.2.6 Other monitoring and preventative maintenance tasks

As appropriate

8.7 Management aspects

8.7.1 MANAGEMENT IN GENERAL

Who needs training or briefing on this aspect? Farmers, committees, scheme managers, small contractors, construction labour managers, as appropriate

How can these skills or knowledge be transferred? Full accredited training course adapted for application by the relevant role player; where appropriate use parables and stories to transfer concepts

8.7.1.1 Financial management

Concepts (e.g., interest, debt, inflation, etc.)
Planning and budgeting
Record keeping and accounting
Banking
Interpreting financial results
Appropriate financial management systems (especially for the illiterate)

8.7.1.2 Labour and staff management

Training and skills transfer
Motivation
Time/record keeping and control
Payment
Administrative/clerical

8.7.1.3 Formal and informal marketing

The National Agricultural Marketing Council's *Report on the investigation into market access*' identifies the following constraints to market access. These constraints have to be addressed in planning for formal and informal marketing during an irrigation development or revitalisation.

- Transport- inward and outward
- Storage
- Market infrastructure
- Extension services – marketing and the quality of products
- Roads – absence or poor condition
- Discrimination
- Distance from processing facilities
- Telecommunication, including possibility of access to market information via internet or phone-in services
- Training and education
- Access to electricity
- Finance – access to borrowing/deposit facilities
- A lack of capacity in the representative organisations

In addition, training in the following may be required:

- How to conduct a local market assessment
- Marketing contracts: how do they work and what are the roles and responsibilities?

8.7.2 BEING AN INFORMED CLIENT

Who needs training or briefing on this aspect? By definition, every role-player in the development process is simultaneously a client of and a service provider to other role-players. (A Shaker, 1998)

How can these skills or knowledge be transferred? Facilitation of agreements, learning-by-doing, briefing, full training courses.

Understanding the project cycle: planning, implementation, operation and maintenance phases
Agreed roles and responsibilities; relevant policy
Acceptable standards and quantification
Standard procedures
Procurement

8.8 Ensuring adequate service provision

8.8.1 MECHANISATION AND CONTRACTING

Who needs training or briefing on this aspect? Mechanisation contractors, farmers/committees on mutual responsibilities and arrangements.

How can these skills or knowledge be transferred? Facilitate agreements between farmers and contractors, facilitate contractors' planning and preparation, formal training on business principles and skills, training in tractor maintenance and implements.

How should I plough? Why? How does the quality of my service affect the profitability of the farmers and the scheme, and thus the sustainability of my business?
Which farmers will I be ploughing for, when?
Who will I be accountable to? What is the role of the committee? What are the farmer's rights? And mine?
How and when will I get paid?
What tractor power, implements, equipment will I need?
How can I prepare for the season?
What emergencies and breakdowns can I expect? Where/how can I have emergency repairs done?
How do I deal with competition from other contractors?
How do I run my business? How much work can I take on? How much must I do not to make a loss?
What else can I do besides ploughing? How do I know if I am making money?

8.8.2 SUPPLYING INPUTS, EQUIPMENT AND SERVICES TO A SMALLHOLDER SCHEME

Who needs training or briefing on this aspect? Input and equipment suppliers, service providers, marketing agents, credit suppliers, farmers and committees.

How can these skills or knowledge be transferred? Briefing, documentation, maps. Interaction with farmers and their representatives

The size and scope of the enterprises?
The people and the management structures?
Distribution and transport infrastructure?
The importance of timeous delivery?

8.9 Scheme Development

8.9.1 INFRASTRUCTURE PLANNING AND DESIGN

Who needs training or briefing on this aspect? Planners and designers, client (government or funder), farmers and their committees

How can these skills or knowledge be transferred? Mainly briefing and discussion on project meetings. Formal training /case studies on technical aspects for engineers who are unfamiliar with smallholder irrigation and development principles.

It is important that the organisations responsible for undertaking the feasibility study, the development of project and design reports, and subsequently the design, specifications, construction and implementation of the project, be well informed on the circumstances within which the scheme will operate and the policies of the client. Only too often poor communication at the early stages of a development can mushroom into serious problems later. The implementing organisations need to know where they stand relative to the client, but also exactly what is expected of them.

It is not possible to work to a standardised format because each project is unique. There are, however, certain basic elements that should be considered right from the development of the initial brief. Smallholder irrigation developments are in many respects unique and it must not be assumed that consultants, planners and designers are aware of how they differ from conventional civil and municipal developments.

There is specific information the consultant needs to know:

- What is the "client structure" and what lies behind the specific arrangements that have been made?
- On what basis is the scheme being financed and by whom?
- What is the role of such bodies as technical and steering committees and what will be the lines of communication?
- What content is required in reports, when must they be submitted and in what format?
- The consultant/client administrative and financial arrangements?
- To what extent can the content of the brief be modified by negotiation in the light of changing circumstances or the uncovering of information of which the client was unaware?

The consultant must ensure that there is clarity on the matters discussed below. If neither the client nor the consultant can provide the answers, further work is necessary before final decisions are made.

8.9.1.1 Administrative, financial and operational management

Is there clarity on who will be responsible for the operation and maintenance of the scheme in the future?
Have there been negotiations with the community on a possible "hand-over" and, if not, what procedure is proposed?
What financial arrangements are envisaged for the development loan repayment?
Who will be responsible for scheme management, what organisational structures are anticipated and how will these relate to the developers, local authorities, the community and the farmers?
How will operating costs be recovered? Has this been established or is this a matter that the consultant will need to investigate?
Is there a policy in respect of the relationship between the initial (capital) cost of infrastructure and operating costs?

8.9.1.2 The community and its situation

It is assumed that the essential pre-feasibility, feasibility and participatory planning studies have been undertaken and that all indications are that this is a sustainable project.

Have satisfactory committees and forums been established to ensure sound management and interaction with all role-players and support services?
What are the initial and long-term objectives of the project: food security, production of specific commodities or general farming in line with the development of the region?
Are the farmers experienced in irrigation farming and, if so, how was this attained and how can it be augmented?
What is the land tenure/occupation situation and who determines present and future policy?
What skills does the community have at its disposal that will be of value in operating and maintaining equipment, and how should this influence equipment selection and design?

8.9.1.3 Water allocations and legal matters

Is there clarity on the water allocations and surety of supply?
If not, what measures have been taken or need to be taken in order to resolve the position?
Is the water quality satisfactory both in respect of chemical and physical factors and does this impose restrictions on development or design?
How can a Water User Association be established?
What links need to be established with existing Water User Associations (WUAs), Catchment Management Agencies (CMAs) or other water management organisations?

8.9.1.4 Construction methods and policies

How, and by whom, is it envisaged that construction will be undertaken?
Will this be a turnkey project? If so, which of the five construction management scenarios will be appropriate? (See Appendix D: Turnkey project management for labour-intensive construction in rural communities)
In which ways will planners and designers be directly involved in training during the construction and commissioning phases?
What are the anticipated levels of management, supervision and quality control during the operational phase and to what extent should these be taken into account in selecting and designing infrastructure?

8.9.1.5 Factors influencing on-farm design

It is assumed that adequate and reliable information is available on climate, soils and crops and that practical production techniques have been discussed with extension personnel and commercial farmers. Where, and in what formats, is this available?
What plot sizes are envisaged and if future consolidation and/or subdivision are permissible, how will this influence the versatility required of on-farm systems?
What is the farmers' current thinking on irrigation methods and how will additional opportunities be created for farmers to assess methods? (e.g., exposure visits to other irrigation farms/schemes)
Are there precedents to support the farmers' initial choices and evidence to indicate that they are wise choices?
To what extent is sharing of irrigation equipment or infrastructure by farmers unavoidable?
Will the consultant be required to assist with training or training programmes, and if so in what ways?
Should crop water requirements and uniformity of distribution norms differ from conventional standards? Why and how? Do the farmers understand the implications of these deviations and do they agree to them?
Which constraints facing the farmers could influence equipment selection and operation, weekly irrigating hours and week-to-week consistency in water supply?
How should the age or gender of farmers and labour legislation be taken into account in system choice and design?
Is accidental damage to equipment, theft or vandalism a reality?
What is the availability of spares and technical support at critical production periods and how should this be reflected in irrigation method and equipment selection?

8.9.1.6 Factors influencing water supply and reticulation design

How can the development of water supply for irrigation be used to improve domestic water supply for the broader community?
If it is assumed that the selected water supply policy and method can be managed by the proposed organisational structures, are there circumstances that could make this negotiable?
Who will manage the system and what influence can this have on design?
What is the level of water supply surety proposed, and how was it arrived at?
What are the operating scenarios that should be taken into consideration when developing canal, rising main and pump station designs?

What community and project specific factors lead to the development of these scenarios?
Will water quality constraints significantly influence planning and design, and if so, what actions will be required?
What is the condition of existing infrastructure and should it be upgraded in its present form or does the community have a case for only partial retention or total renewal?
In the event that drainage needs to be considered, what systems would be in line with labour-intensive construction methods and community requirements?

8.9.1.7 Deviations from conventional norms and standards

Are there special circumstances that justify significant deviations from normally accepted practice? If so, explain and motivate.
Will these specific circumstances make it advisable to establish non-standard operating procedures and will these necessitate special training requirements?

8.9.2 CONSTRUCTION IN RURAL COMMUNITIES

Who needs training or briefing on this aspect? All role-players involved in planning, execution or management of construction activities, including farmers and the community development committee (please see Appendix D)

How can these skills or knowledge be transferred? Consideration of these questions at construction planning meetings, with all relevant role-players present; mainly on-the-job training in construction; appropriate "classroom"-type training on financial and labour management; on-the-job counselling and free information exchange and sharing of experience between role-players at all levels

8.9.2.1 Construction and project management approach

Is the community development committee (or equivalent) in place, with a mandate from the community and the ability to fulfil their role?
Are we maximising the opportunities for community empowerment?
Which choice of construction method and project management scenario, *which is suitable to the project circumstances*, will enable maximum community empowerment, through:

- improved community organisation
- contribution to household income (Temporary jobs? Permanent jobs?)
- construction skills development?
- procurement skills?
- management skills?

Which choice of infrastructure will enable the community to manage, operate and maintain it themselves?
How will the farmers be involved in management, operation and maintenance? And the broader community?

8.9.2.2 Community role in construction and management

Which skills are currently available within the community?
How can these skills be enhanced to enable:

- community participation in construction?
- sustained community management and operation of the infrastructure?

What new skills are necessary?
What organisational structure is available or need to be created within the community for:

- community participation in construction?
- sustained community management and operation of the infrastructure?

8.9.2.3 Farmers' role in construction and management

How can farmers assist with construction to get hands-on familiarity with the infrastructure and equipment?
How can farmers be involved in regular inspection of construction progress?
Have we ensured that the farmers are getting to know the engineers, suppliers and maintenance support people on a personal basis?

8.9.2.4 Small contractors

Are there existing mechanisation contractors, tractor owners or (potential) business people in the community who are interested in acting as small contractors?
What appropriate skills do they currently have and which additional skills do they need to develop to become successful small contractors?
Have they got access to and can they manage their own labour?
What support would they need to enable them to submit a tender?

CHAPTER 9. CONCLUSIONS AND RECOMMENDATIONS

In the South African rural areas, were people have been largely deprived of opportunities, appropriate and relevant training can provide a spark for the initiation and continuation of a comprehensive community development programme.

The authors and the Water Research Commission's Steering Committee for this project would like to recommend the following:

- The guidelines should be brought to the attention of training institutions, including Agricultural Colleges, and advocated for use by development facilitators, extension officers and agricultural trainers.
- A workshop should be organised for extension officers, training colleges, technikons, relevant institutes of the Agricultural Research Council and others to disseminate and discuss the guidelines.
- The guidelines could be used as one of the reference documents in a workshop to compare experience with the rehabilitation of irrigation schemes in the provinces.

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APPENDIX A. Developing and undertaking a pre-development survey

A1. Role of the pre-development survey

The pre-development survey forms the basis for the development programme: the survey *process* is designed to create community ownership of the development initiative, and the survey *results* show the community's priorities and agreed actions to follow.

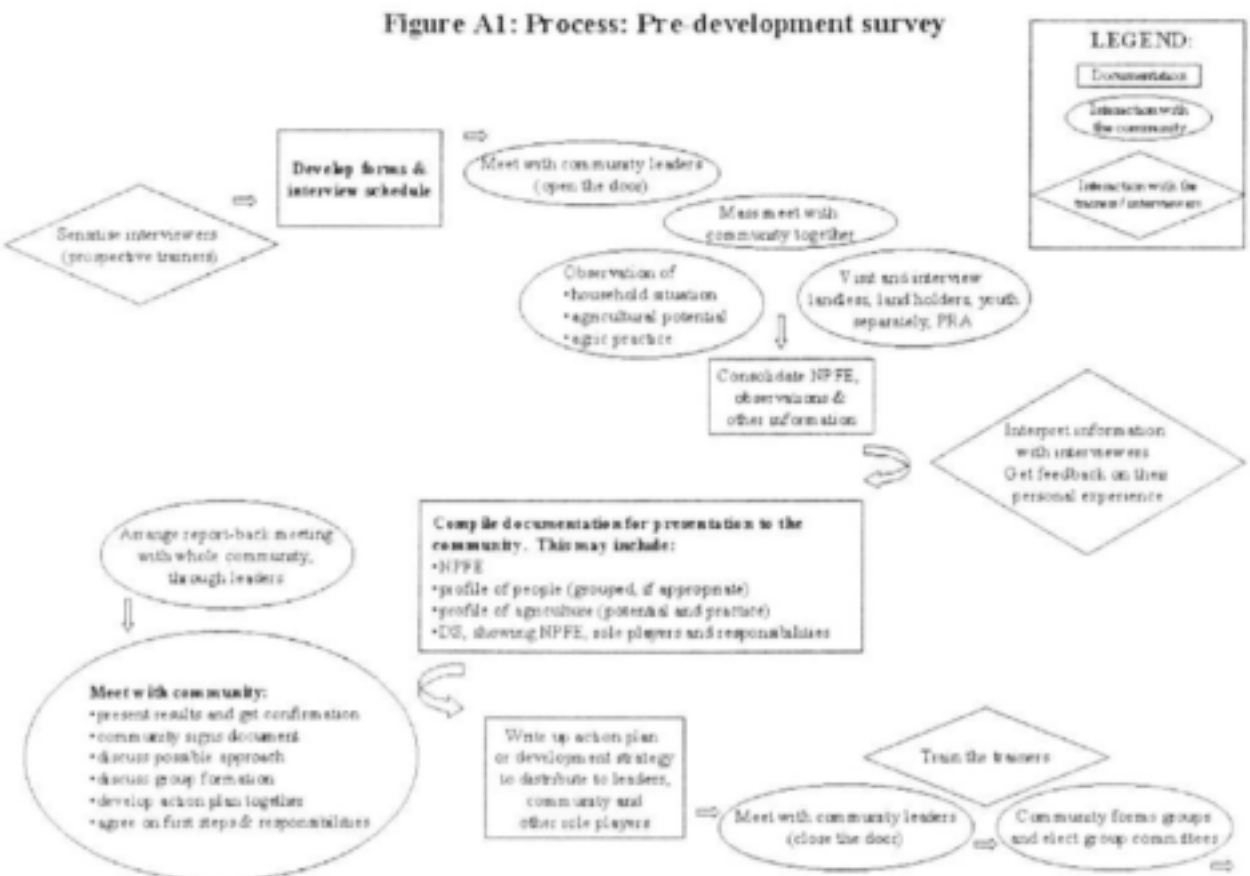
Very often the results are largely predictable, but it remains important to go through the process to create the basis for co-operation and ownership, and thus, a basis for sustainability.

A2. Steps in the development of the Development Survey

Figure A1 shows a flow diagram of the steps in the process of the pre-development survey, which cover the following:

- ◊ the facilitator's interactions with the interviewers, who are often the prospective trainers [depicted by rhombi on the flow diagram, Figure A1];
- ○ steps of interaction with the community [ovals on the flow diagram]; and
- ❑ the typical documentation (results) which flow from the survey [rectangles on the flow diagram].

Figure A1: Process: Pre-development survey



Interaction with interviewers/ prospective trainers

The prospective trainers are used as interviewers to do the pre-development survey. This brings them in close contact with the community they will be working in.

- ◊ The facilitator sensitises interviewers prior to fieldwork and trains them on how to conduct the interviews with empathy and understanding, how to compile and use the survey forms and interview checklist, and on observation techniques.
- ◊ The interviewers share their thoughts and experiences after each session of interviews, with an emphasis on personal experiences and understanding of the social and technical aspects of the situation. Where necessary, the facilitator helps them interpret their observations. At the end of each day they summarise all the interviewers' information for the day together on one survey summary form (Figure A4).
- ◊ The survey team compile the NPFA, scheme management diagram, situation assessment and a development strategy;
- ◊ After the community has formally agreed on their development strategy, the interviewers/ prospective trainers are trained on how to assist the community to form training groups, followed by training-for-trainers on the agricultural or other courses to be presented to these community training groups.

Steps of interaction with the community

- ○ Firstly, the facilitator and interviewers meet with community leadership to obtain permission to interact with the community and to enter the villages ("open the door" to the community);
- ○ The facilitator and interviewers then meet with the community in mass meetings, groups and individual interviews, ensuring that land holders and landless people's views are captured, the dominant as well as the dominated;
- ○ In addition to interviews, participative techniques can be used to analyse poverty levels and expectations of the irrigators and broader community, agricultural production and practices, etc.;
- ○ Observation and measurements are used to assess and analyse current agricultural practice;
- ○ Report-back meetings with the community and other role-players are arranged through the community leaders.

During the report-back meeting with the community:

- ○ the survey results are presented for confirmation by the community;
- ○ the community adopts the results of the survey (NPFA, profiles and Development Strategy) as a true reflection of the current situation and a basis for development intervention, by nominating representatives to sign the document on their behalf;
- ○ following this, a possible approach is discussed, including the need for the formation of training groups;
- ○ finally, an action plan is developed and first steps and responsibilities agreed. The presence of other outside role-players is particularly beneficial at this point, if they can commit themselves or their organisations to specific responsibilities in relation to the community's development strategy;

- ○ The survey team again meet with the community leadership to conclude the survey (courteously "closing the door after them" at the end of this extended visit to the community).

This marks the end of the pre-development survey. Interaction with the community immediately following the survey, include:

- ○ The community forms training groups and elect group committees;
- ○ A training programme, venues and other arrangements are agreed with the group committees; and
- ○ The training programme and regular committee meetings commence and
- ○ Arrangements with other service providers commence.

Survey documentation ☐

The following documentation is generated during the pre-development survey:

- ❑ Survey forms (field sheets) and an interview checklist are developed, then used by interviewers to capture information during the survey;
- ❑ NPFA, observations and other information from all interviewers is summarised and prioritised on a survey summary form;
- ❑ A *profile is drawn of the community food shortfalls, showing agricultural production vs consumption;*
- ❑ A scheme management diagram is drawn, showing the current institutional arrangements (groups, committees, extension, etc.)
- ❑ A situation assessment diagram is drawn, showing some detail on the condition of the scheme, the position of the farmers and some information on key potential service providers, like local businesses.
- ❑ A development strategy is developed, showing target groups, prioritised actions, training needs and linking these to role-players and responsibilities.
- ❑ A project structure diagram is drawn, to show basic relationships between the farmers, the scheme governing body , and scheme management and staff.

A3. Compilation and use of a survey form and interview checklist ☐

The interviewers use the *interview schedule* (see Figure A2) as a reminder of aspects to discuss during their interviews with community members – it is not used like a questionnaire requiring mechanistic completion. Interviews are informal and aimed at creating trust and improving the interviewer's real understanding of what he sees and hears. Questions are open-ended, the interviewer is careful not to create expectations and should be very clear on the purpose of his visit (see 8.3.2: Do's and don'ts of rural conduct for more hints on interviewing).

The following broad aspects are typical of what may be covered in an interview, and are reflected on the interview checklist:

- ❑ The people
- ❑ The agriculture
- ❑ Needs, problems, fears and aspirations
- ❑ Observation

The people

It is usually a good starting point to let people talk about themselves first: whether they have lands, the size of their lands, the types of crops they grow and their average yield per hectare over the past three seasons. Yields can be measured according to the number of bags harvested. Determine their monthly and annual consumption of maize meal and compare it to their yields to see whether they are satisfying their basic food needs. In the event of a shortfall, establish the cost of the maize meal that they have to buy and use the opportunity to establish the size of the family. Don't ask how many children they have, but rather how many people share the same evening meal. It is better not to ask their names, as this may create fear and suspicion. Instead, number the survey form and write down the name of the village where they live – names are not important at this stage.

Figure A6 contains information acquired in the manner explained above. It gives a clear portrait of the people. It is obvious that the target group is living way below the breadline. This clearly means that one of their most urgent needs is food. People who live in conditions of extreme poverty have a negative frame of mind, as well as a poor self-image. Their sole objective in life is survival. This could lead to unpredictable behavioural patterns, including crime and aggression. This in turn spells out the development approach to be adopted, as these people have to be handled completely differently to the other target groups within the development spectrum. They cannot be compared with those who have sufficient food to eat, such as subsistence farmers. Unfortunately, this scenario as illustrated above, is a very realistic picture of large communities residing in rural areas.

The agriculture

One should proceed with the second part of the interview only once production levels and current shortfalls in food production have been satisfactorily determined. This second part of the interview provides an opportunity to test the interviewee's knowledge of agriculture and to find out as much as possible about her agricultural practices and traditions, as well as the deviations or mistakes responsible for regular crop failures. Ask direct questions such as: When do you plough? How deep do you plough? Who ploughs for you and what does it cost? When do you plant? What seed and how much do you use? Do you use fertiliser, if so, how much? What about lime?

See Figure A7, which reflects deviations identified through such interviews. These deviations determine the content of the phase 1 training programme, which initially concentrates on correcting the wrong practices. In this way, one starts with what is familiar and build on what the people know, ensuring a needs-based training programme with which they can identify. Since the training will greatly influence the lives of people involved, the trainer should avoid taking chances and make sure that decisions are based on facts.

Needs, problems, fears and aspirations (NPFA)

Every participant should be encouraged to tell what his or her problems and fears are, regardless of whether they are subject related or not. Each problem or fear should be noted on the survey form. Earlier work concentrated on needs, problems and fears only, but experience soon showed the importance of including the aspirations also.

Observation

Observation is a valuable tool: observe the dress, behaviour, cleanliness and conversations of the people, the distances they have to walk to fetch water, the availability of vegetable gardens and the condition of their domestic animals. The same applies to their agriculture: notice how they do things, and why they do it. Observation is not a passive action; interact with the community to obtain information and interpret its meaning in the right context. The more the interviewer understands about the people and their practices, the easier it will become to identify possible deviations. Observations should be captured on the survey form, since groups are unique, and significant domestic, ethnic and even climatic differences may exist between various groups within the same region. The more information one gathers about each specific group, the easier it becomes to understand and involve the people.

A4. Meetings with the community, the land holders and the resource poor

Before executing the pre-development survey, everybody involved should be fully informed of all the arrangements and the approach that will be followed.

Meeting with the headman or community leaders

The leadership of the village where the analysis is to be conducted should normally be approached first. Clearly explain who you are, who you represent, what you intend doing and why you intend doing it. In most cases, the leader will already be familiar with the case, as he would have been involved with the initial request for development. Once the leader acknowledges that he understands the issues and that is satisfied with your plans, he should be requested to arrange for a meeting with yourself and his people in his presence. It would be good to confirm the arrangements by fixing a date and venue for the intended meeting before departing. Take care to consult the leadership recognised by the community. In South Africa, this often means consulting both the traditional and new local government structures.

The community mass meeting

Start by arranging a general meeting with the community. Repeat what you told the leader(s) about who you are and what you intentions are. Get the leader to confirm this. Make it clear that your main goal is agriculture, or irrigation, as

the case may be, but that you are aware of other possible needs, problems, fears and aspirations which may have to be attended to first. Make sure that all the issues are minuted. If the list is too long, get them to prioritise according to their needs. Thank them for sharing their problems with you, but do not make any promises. Say that you took notice of everything they said and that you will return to discuss this with them in the near future.

Get the leader to confirm that you will be interviewing several people in the village over the next few days. Immediately arrange for a date and confirm the venue for the report-back meeting. Now request all the community members who intend participating in the agricultural training programme to stay behind for a separate meeting.

Individual interviews and visits to the villages

Be careful not to limit your exposure to the community to formal meetings only. Your understanding of the realities and peculiarities of life in a community is strengthened by visiting and talking with individuals at their homes, at shops and other informal communal gathering places. This part of the survey gleans most information for your poverty analysis.

Meeting with the landholders

In this meeting the farmers can be asked to provide information according to the interview checklist and survey forms compiled earlier, or PRA techniques can be used to facilitate analyses by the farmers. Rural communities are often reluctant to divide into groups for discussion, but this is a valuable way to increase participation and achieve triangulation (that is, confirmation or contradiction between the findings of the various groups). Ask one question at a time and let the groups discuss it amongst themselves. This could be backed up with individual interviews, which are more time consuming and may require a team of interviewers, but it is highly recommended. Firstly, it gives recognition to the individual and, secondly, it allows the individual to give her opinion with out the fear of being influenced by others, which may yield very reliable information. Individual interviews during the group discussions are also valuable, especially with leaders who may otherwise dominate the group discussions.

Groups then report back to each other and debate their findings. Before the meeting is closed, the facilitator and participants agree on next steps, and undertake to have a special separate report-back meeting directly after the community report-back meeting at the end of the survey.

Meeting with the landless and the youth

Never underestimate the importance of meetings with other community groupings, such as the landless and the youth. Listen to their problems, needs and fears and arrange for a report-back meeting on the same day as the other two meetings, but do not create any expectations. In many communities more than 50% of the population have no access to land. This poses a direct threat to the intended development project, which can be reduced by enabling them to also benefit from the development initiatives, for instance through basic community development projects.

A5. Report-back meetings

Follow the same meeting procedures as the first time. Meet with the community as a whole first and then with the community groupings separately, e.g., the landless, the youth and the farmers. Confirm the identified NPFA and discuss possible solutions. Be completely open and honest. If there is a possibility to help them, inform them about it and clearly spell out what would be required of them. If nothing can be done for them, they should be told this too. When representatives are elected, they should be closely assisted with all further arrangements and procedures, but it must not be done on their behalf and they must make the decisions themselves.

Report-back meeting with farmers

Again, confirm that all the information you have about the farmers and their farming is correct. Discuss the possible solutions to the identified problems. Let them know that you understand exactly what this "hunger" sickness is, as well as what treatment is required to overcome it. Discuss the identified mistakes that are responsible for the crop failures. Offer training to correct all the mistakes. Insist on voluntary interest groups. Assure them that you will help them all the way, but only if they request you to do so. Thereafter, one can sit down with them and decide on an action plan together. Both parties should be in possession of the action plan, which will serve as a programme.

A6. Situation Assessment Diagram

This diagram aims to provide an at-a-glance assessment of the potential by showing some detail on the scheme condition and farmers' constraint, the scheme management and support services, and some detail on key external roe-players (e.g., local business, commercial farmers, local mines)

A7. The development strategy

The development strategy is a very important document and originates from all the identified NPFA. The Development Strategy essentially prioritises *problems* on the left-hand side and *needs* on the right, according to the outcome of the group and individual interviews. In the middle column, the local and external role-players are listed and linked to the particular problem or need that they have committed to address.

This diagram is helpful in creating an overall impression of what has to be done. External role-players can identify their potential role and be clear about what they are willing to commit to. . In addition to acceptance by the community, it should be submitted to the steering committee meeting, where all role-players are represented, for confirmation and acceptance, so that it becomes the official development programme. This will be completely transparent and needs-based, clearly depicting the duties and responsibilities of each party involved.

Note: This development plan does not reflect the nature of the appropriate solution, nor the steps required to achieve the solution.

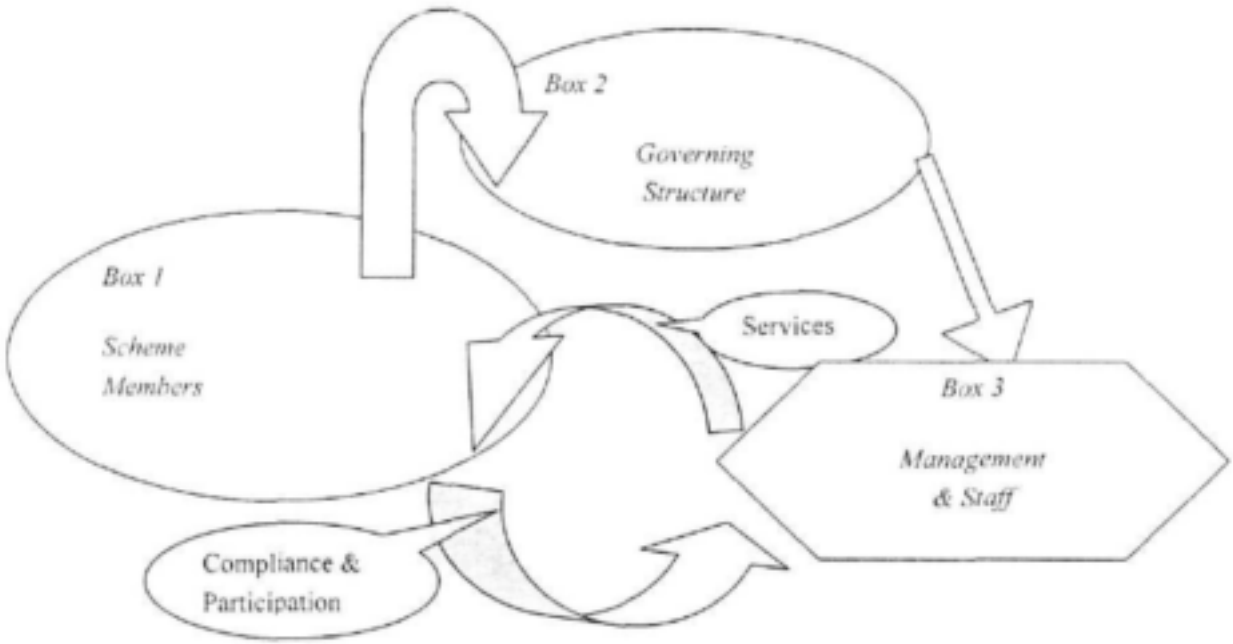
A8. The project structure

Figure A9 shows an example of the project structure for the implementation of an irrigation development. Figure A9: Box 1, 2 and 3 form the three components of an idealised user organisation, as illustrated graphically in the 'Model of an Idealised User Organisation' below. These three components are the scheme members (Figure A9: Box 1); their governing structure or "board of directors" (Figure A9: Box 2); and the managers and staff (Figure A9: Box 3) who are responsible for day to day operations like pumping, controlling sluice gates, etc.

'Good Governance and Management' essentially means the following three at once:

a) the governing structure/mechanism is driven in its decision making by an aggregate of member priorities in a substantive—and not formal or nominal--way;
b) the managers and staff are accountable—in a substantive way--directly to the governing structure, and indirectly, to members; and
c) members are compliant with the rules and norms of the organisation, again, in a substantive way. If these three conditions prevail, the hypothesis is that, the scheme organisation attains its potential for performance and impact.

Model of an Idealised User Organisation



A9. Pre-development survey – List of Figures

The following actual examples are attached as a reference. Keep in mind that all documentation needs to be reconsidered to ensure its suitability for each unique situation.

Figure A1: Process: Pre-development survey
Figure A2: Boschkloof Irrigation Scheme: Interview schedule
Figure A3: Boschkloof Irrigation Scheme: Survey summary form
Figure A4: Boschkloof Irrigation Scheme: Survey summary form with consolidated and prioritised information.
Figure A5: Boschkloof Irrigation Scheme: NPFA with community signatures to confirm this as a basis for development
Figure A6: Zebediela: Community profile: basic food shortfalls (production vs consumption)
Figure A7: Zebediela: Farming profile: main deviations from commercial agricultural practice
Figure A8: Boschkloof Irrigation Scheme: Development strategy, showing prioritised needs and problems, role-players and responsibilities
Figure A9: Boschkloof Irrigation Scheme: Project structure

Table A1: Summary of pre-development survey activities and applicable forms

ACTIVITY	TIMING AND DURATION	APPLICABLE FORM OR DIAGRAM	PURPOSE OF FORM
Train fieldworkers for pre-development survey	Two days, not more than a week before the fieldwork	–	-
Fieldwork (interviews and observation in the community and agricultural lands)	Two days per community	• **Interview schedule (Figure A2)** • **Survey summary form (Figure A3)**	Both these forms are used to capture information from interviews
Consolidate fieldwork information	At the end of each day of fieldwork	• **Survey summary form (same form used as above) (Figure A4)**	Summarise and prioritise information from all the interviews in a community
Develop material for report-back to community	To be presented to the community within one month after the fieldwork	• **NPFA (Figure A5)** • **Profile of community (Figure A6 and A7)** • **Diagram of current scheme management** • **Situation Assessment of irrigation scheme, related infrastructure and institutions** • **Proposed development strategy (Figure A8)**	For presentation at community mass meeting, where community representatives sign the NPFA form to confirm the findings of the fieldwork; and discuss the proposed development strategy to agree on the way forward
Refine the development strategy as discussed at the community meeting; develop project structure	After community input during mass meeting	• **Development strategy** • **Project structure (Figure A9)**	For wide distribution to community leaders, government departments and other potential role-players
The activities to follow the above are: Develop training programme, Train the trainers, Establish voluntary training groups (for agriculture and other community interest groups), Train the training groups; the committees; and the scheme management and staff (water bailiffs, pump operators, maintenance workers and administrative personnel)			

Figure A2: Interview Schedule

Northern Province Irrigation Schemes

BOSCHKLOOF IRRIGATION SCHEME

Community Pre-development interview schedule

What is the size of your land? _____2 ha _____

Are you male or female? _____Male_____

What is the size of your family? _____7_____

How many people can read or write in your family? _____7_____

Is this a male or female-headed household? _____Male_____

What would you say are your major problems? Indicate whether the problem affects men, women, old people or youth.

_____See form_____

How can these problems be overcome? _____

What would you say are your major Needs? _____See form_____

How can this community best improve its standard of living? _____

Do you have or own cattle and how many are they? _____No_____

What do you use to plough your land? _____Tractor_____

Who is responsible for the farming activities? _____Wife_____

Where do you acquire your inputs? _____OTK, Bayer, Shell Chemicals_____

What support services are available to you? (e.g., training, extension, markets, sources of inputs, tractor services)

_____Markets a problem, lack of inputs__

Are you satisfied with your extension services? ____Yes, his services are adequate_____

What type of training do you think extension officers need? _____None_____

Do you need training? ____No for currently grown vegetables, yes for new crops_____

Can surrounding established commercial farmers be of assistance in the development of the irrigation scheme?

_____

What crops are you currently growing? Tomatoes, onions, cabbage, spinach, carrots, beetroot.

_____

How many meals do you have per day? ____3_____

How much maize meal do you consume as a family per month/year? ____6 x 50 kg/year_____

Do you produce enough maize to last you a year? _____Yes_____

If you do not produce enough to last a year, how much do you spend on purchase of maize meal? ____N/A____

_____

Would you say that people farming in the irrigation scheme have a better standard of living than those not farming in the scheme? ____- No difference _____

What are your other sources of income apart from farming? _____

How important are pensions? _____ Gets disability grant _____

Do you have adequate knowledge of Irrigation? _____ Yes _____

Do you wish to farm commercially? _____ Yes, higher yields _____

Are you prepared to grow other crops such as high value sub-tropical fruit trees? _____ No _____

_____

Who do the canals and pipes belong to? _____

If government hands over the scheme to the people, do you think farmers can collectively own and manage the scheme?

_____ See notes _____

Do you have PTO for all the lands you use? _____

How important are title deeds to you? _____ Need them, but will not be given _____

Do you want to farm your plot or keep it for security? _____ Farm _____

Would you be willing to rent out your land? _____ No _____

Are you prepared to take a loan from a bank to finance a commercial plot? _____ Yes, need loans _____

Do you sell part of your produce and where? _____ Yes, locally _____

Is there a problem of theft in the irrigation scheme and who do you think is responsible? __Not a problem at the moment, but worries about the future _____

What are your major fears and aspirations? _____ See form _____

What social problems do you experience? _____ No major problems of concern _____

Is ill health common in the village and what are the illnesses? _____

What is the situation with water for drinking, cooking and washing? _____

How does the water for the irrigation reach the fields? _____

What do you do if there is a problem with the water? Who fixes it? _____

How do you irrigate? How often, how much, how? _____

How far is your house from your fields? _____

Do people use tractors and inputs from government only or can they also get it somewhere else? _____

_____

Where do the children go while mom works in the field or goes somewhere to sell her products?

_____

Figure A3: Survey summary form used to capture an interview

BOSCHKLOOF COMMUNITY PRE-DEVELOPMENT SURVEY SUMMARY FORM

VILLAGE ..... Mambune DATE ... *26/08/98*

PROBLEMS	NEEDS	FEARS	ASPIRATIONS
Fencing	Credit facilities/services	Theft although its not	*Higher yields*
Water shortages	Fence the scheme	much at the moment	
Labour for cleaning the canal	more/better	Hail	
Canal capacity inadequate	Own plots and not lease	Drought	
Lack of credit facilities			
Market is too far			
Transport to market			
inadequate			
Lack of inputs e.g. seed at OTK			

REMARKS: Farmer doesn't require more training in vegetable production (beetroot, carrots, cabbage, spinach, tomatoes, and onions)

Figure A4: Survey summary form used to consolidate and prioritise information from a day's interviews

Day 3 26/08/98 Summary

BOSCHKLOOF COMMUNITY PRE-DEVELOPMENT SURVEY SUMMARY FORM

VILLAGE ..... Mambune DATE ...26-08-98

PROBLEMS	NEEDS	FEARS	ASPIRATIONS
Theft - cabbage	Better farming methods *	Drought ***	Higher production *
Lack of credit **	Tractor services ***	Hail *	Markets *
Lack of tractor service ***	Water for irrigation **	Animals (domestic) *	Construction of new
Pests and diseases *	Control of pests & diseases *	Pests & diseases *	fence
Fencing **	Dam for water storage	Theft **	Control of soil erosion
Soil Erosion **	Credit ***	Floods *	Better methods of crop
Irrigation water **	Training Centre		production
Market not there **	Farmer training **		Credit *
More land needed	Crop inputs **		
Transport to market *	Fencing materials **		
Crop inputs	More land as the ones they have are inadequate		
Lack of farmer co-operation	Market		
Construction of contours on the lands			
Upgrade main canal & sub-canals (distribution			
canals)			

REMARKS: Farmers need support from Extension Services. Training required for farmers. Markets to be established. Separate irrigation water from drinking water. Control of rain water flowing into the scheme causing soil erosion

Figure A5: Summarised Needs, Problems, Fears and Aspirations, signed by the community

PROBLEMS, NEEDS, FEARS AND ASPIRATIONS OF FARMERS AT BOSCHKLOOF IRRIGATION SCHEME

PROBLEMS	NEEDS	FEARS	ASPIRATIONS
INFRASTRUCTURE ISSUES			
High conveyance losses and poor water distribution in the scheme due to earth sub-canals	Construct cement lined sub-canals	Drought	Upgrade and rehabilitate irrigation scheme
Inadequate irrigation water due to insufficient canal capacity	Construct dam to store water and upgrade main canal		
Repeated blockage of weir outlet	Upgrade weir		
Damaged main canal and sub-canals	Repair main canal and sub-canals		
Inadequate access to water for drinking and domestic use	Purchase water pump and upgrade domestic water reticulation system	Disease outbreaks	Access to sufficient drinking water
Poor water flow when irrigating	Land levelling required	Loss of valuable soil	
High levels of soil erosion	Construct contours in the lands and reclaim gullies		
LAND ISSUES			
Lack of title deeds	Land tenure security		Land tenure security
Unavailability of plots for allocation to non-plot holders	Land reallocation	No land to farm by those with potential	
SERVICE ISSUES			
Poor and inadequate tractor services	Provision of adequate mechanisation services		Improved productivity to ensure food security and self sufficiency
Unsatisfactory extension services	Transport and further training for extension staff		
Poor communication facilities on the scheme	Install communication services		
Difficulty in accessing inputs and marketing produce	Easier access to inputs and efficient marketing systems		
Ibopeng Bapedi Co-operative offers poor service	Improve management systems		
Lack of credit facilities to purchase inputs and equipment	Access to credit		
GENERAL ISSUES			
Poor co-operation amongst farmers			
Theft of crop produce	Security to prevent theft	Crop produce losses	
Livestock destroy and feed on crops in the lands	Construct standard fence with mesh wire at the bottom		
Air pollution by mines in the vicinity		Ill health in the community (especially Tuberculosis)	
Low yields and poor quality of produce	Farmer training in production skills		
OTHER FEARS			
		Prospects of hail and floods	

Figure A6: Community profile

Zebediela Community Profile

Basic Food Shortfalls (Production vs Consumption)

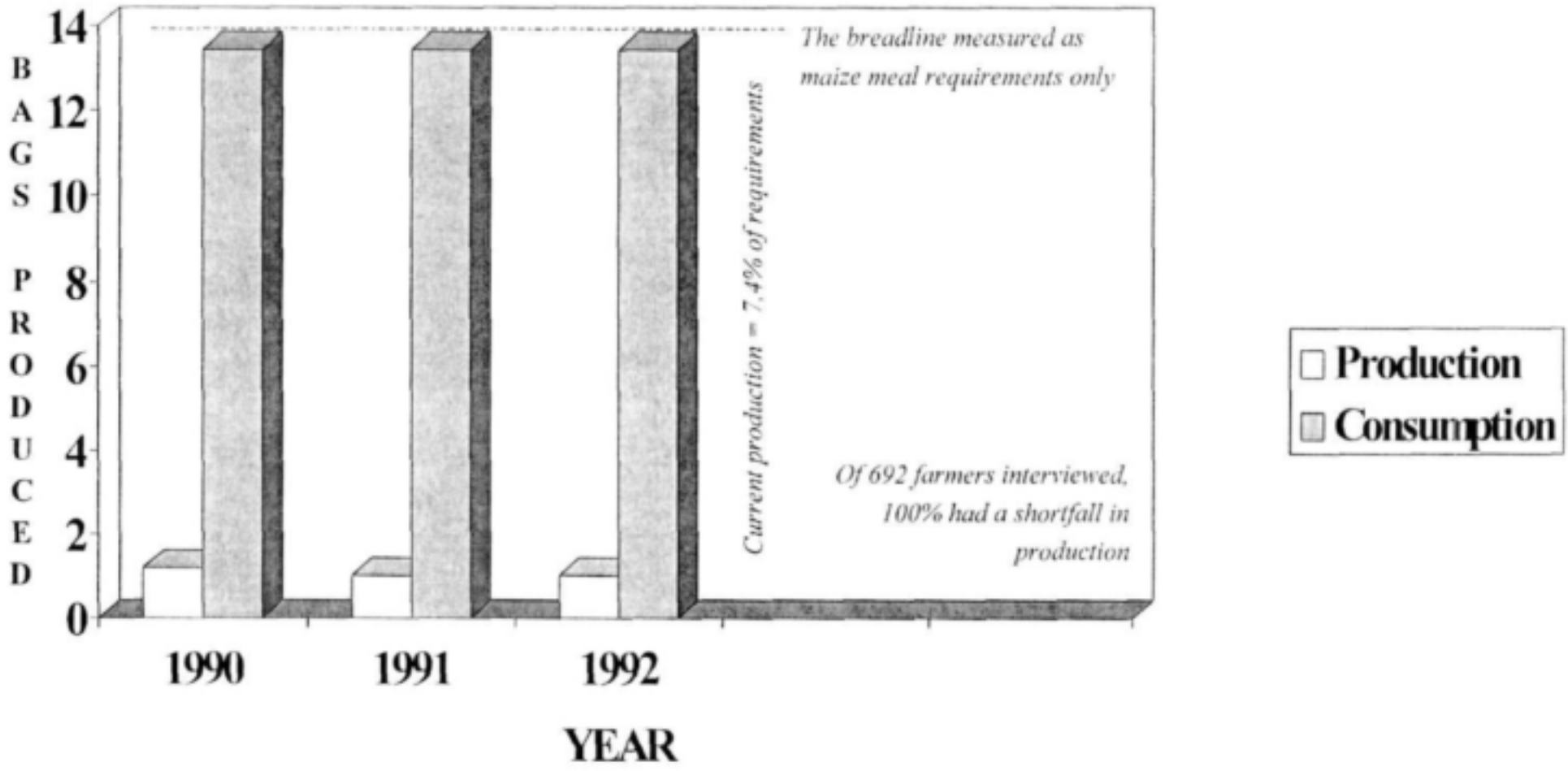


Figure A7: Farming Profile

Zebediela Farming Profile

Main Deviations From Commercial Agricultural Practice

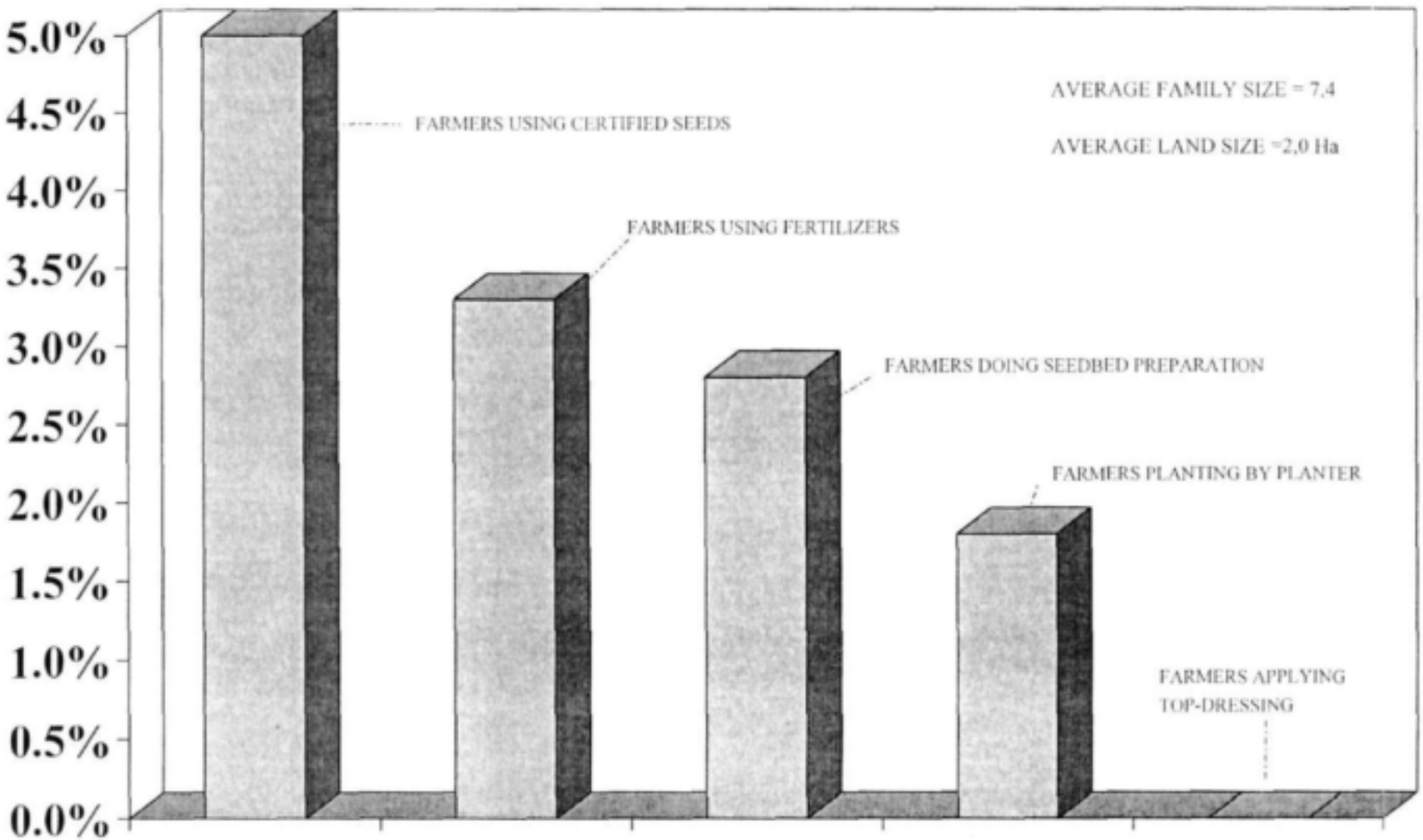
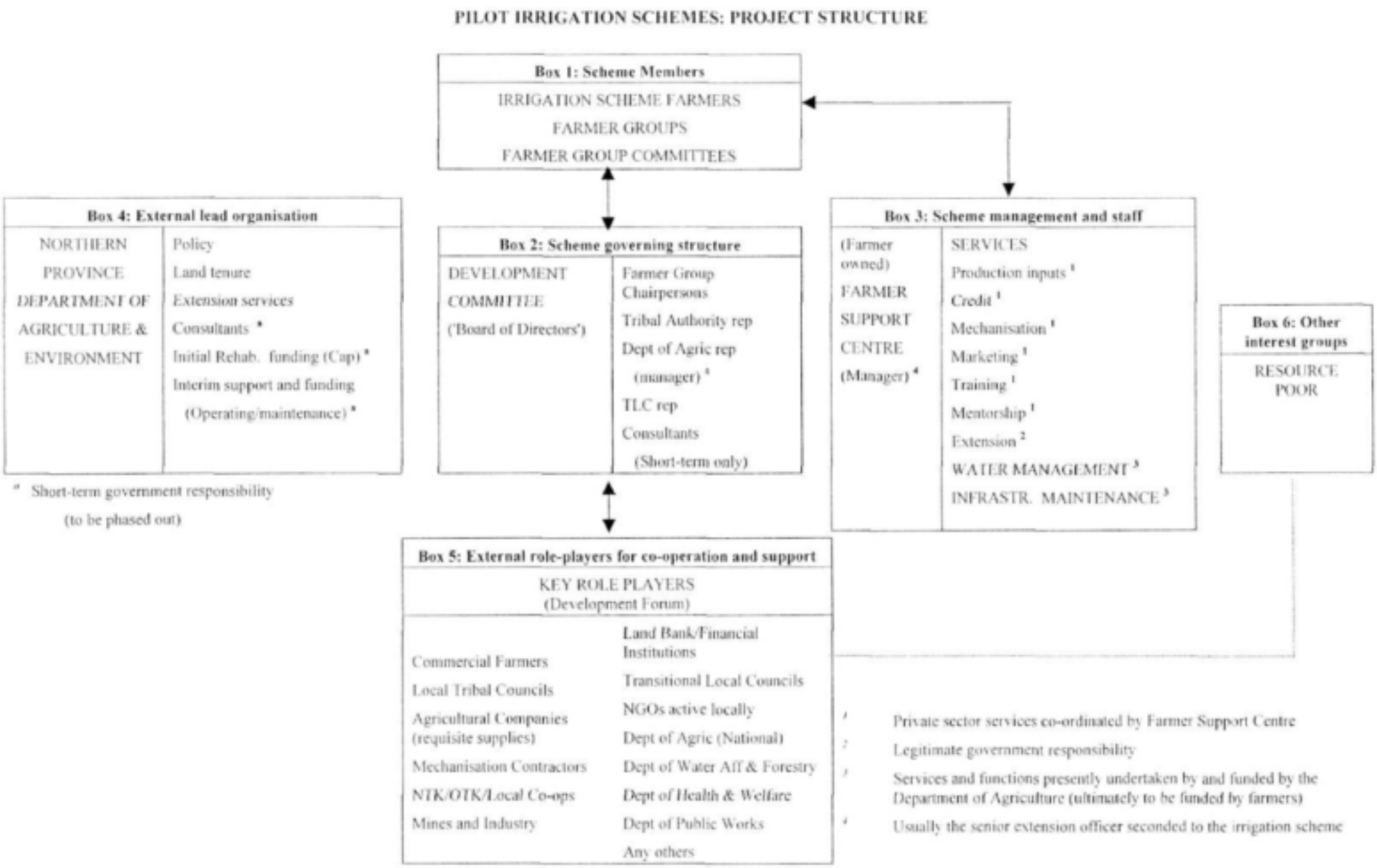


Figure A8: Development Strategy

Identified responsibilities of role players in addressing the problems and needs of Thabina farmers

Figure A9: Project structure



Box 1: Scheme members are organised into groups with elected group committees. The voluntary farmer training groups is a subset of this. The chairpersons of the farmer group committees are members of the **governing structure** (Box 2), together with a representative of the external lead organisation (Box 4), which is often the provincial Department of Agriculture.

Box 3: Scheme management & staff reflects the services required by the irrigation farmers. In this example, it is proposed that these services should be arranged through a farmer-owned "Farmer Support Centre". Other possibilities are Water User Association staff, a co-operative, private company or other. Currently the move is away from government or parastatal development corporations providing these services.

The **external lead organisation (Box 4)** often provides facilities or project development funding and makes policy about the preferred approach to development. This may include criteria such as viability, equitable access by disadvantaged participants, gender balance and even technological preferences in as far as these may influence viability and sustainability of projects.

Box 5: External role-players meet in a Role Players Forum and include any local, private or government organisations which may contribute to the development process in any way, or with whom co-operation is necessary. Many of these organisations may become sources of inputs, services or assistance to irrigation scheme or the country at large.

Box 6: Other community interest groups may typically be groupings such as the resource poor or landless, the youth or a women's group. The principle is to create other opportunities for training and enterprise development besides agriculture. This broadens the support within the community for the development initiative, by addressing NPFAs not related to agriculture. Box 6 needs to be expanded into a product structure of its own, with a core relationship (such as Box 1, 2 and 3), external lead organisation (such as Box 4) and external role-players of its own (this may already be addressed by the current Box 5).

APPENDIX B. Examples of parables and stories for agricultural training

Trainees should be able to relate to the parables and stories used for agricultural training. The following are a collection of stories developed to correct deviations identified through a pre-development survey (see 4.1 – *Step 1: Pre-development survey: developing an understanding of the trainees and their training needs* and *Appendix A: Developing and undertaking a pre-development survey).*

The deviations were the following:

1. Incorrect setting of ploughs
2. Farmers not using fertiliser
3. Farmers not using certified seed
4. Ploughing twice at an average depth of only 100 mm
5. Incorrect plant populations
6. Poor weed control
7. Broad casting of mixed seed
8. No regard for agricultural lime

B1. Incorrect ploughing methods and setting

When creating a story of this nature, think how the people would see and understand the actions of the plough. A plough is a tool used for cutting the soil. Without telling the farmers how you visualise a plough, start your story by asking them what they think a plough is. Focus their attention on the theme of your story.

Start by explaining that a plough is nothing but a knife used to cut open the soil in which crops are to be planted. If a pocket-knife is not held and used correctly, the user of that knife will get hurt. The same applies to the plough. If one wants to plough or cut the soil properly, one should see to it that the plough is linked to the tractor properly and set correctly. In other words, the tractor must hold the plough in the correct position for it to cut the soil properly. Explain that people get hurt when they are not using the plough correctly, because their crops are unable to grow.

B2. Farmers not using fertiliser

The pre-development survey revealed that only 3,3% of the farmers applied fertiliser of any kind and nobody at all applied top dressing. It was also very clear that the people were extremely confused as to why they were expected to apply fertiliser twice on the same land, during the same season.

While trying to understand the actions of fertiliser and convert it into a story, I remembered how one of the groups and I watched a newly born calf standing on its unstable legs, searching for its mother's udder so that it could drink. This was an ideal theme for a story.

Firstly, I could compare the newly germinated plants to the newly born calf, which was small, unstable and weak. It was also most interesting that the calf's first reaction was to get food, that would be colostrum, and after a week or so sweet milk. The reason why the calf immediately searched for food was not as much to grow as to get strength to survive.

I realised that if I compared my initial application of fertiliser to food (in this case, colostrum), it would clearly explain the need for applying fertiliser at planting, as the new plants also urgently require food to get strong to survive. At this stage it is more important for the plants to survive than to get bigger.

After seven to eight days, the calf was still small, but strong, while the colostrum made way for sweet milk. The reason for the change in diet was to make it possible for the calf to grow, as this was the next natural step in his life cycle. The

very same applied to the small plant, which after six or seven weeks had used the initial fertiliser to get strong and now needed its top dressing of sweet milk or nitrogen to grow.

The trainer now explains how the farmer ensures that he gives his plants the correct type of food and how much each plant should be given, etc. The success of this story could be measured by the escalation of fertiliser sales at the Phokoane Co-op.

B3. Farmers not using certified seed

Traditionally farmers planted seeds that they had harvested from their lands the previous season. The majority of the seeds originated from hybrid seed and was obviously not suitable for planting. To convince farmers that their seeds were unsuitable seemed almost impossible.

However, a story did come to me after a while. Firstly, I thought about what a hybrid was. A hybrid is the result of interbreeding selected characteristics of different plants into a single variety, which would best satisfy the needs of a specific area by producing maximum yields. We also know that the seed of this hybrid variety means disaster, as it does not produce cobs.

A mule is the product of interbreeding a horse with a donkey. It contains certain definite characteristics and qualities of both species. For example, a mule is bigger than a donkey but smaller than a horse. The mule is slower than a horse but faster than a donkey and the mule is weaker than the donkey but tougher than the horse. Just like the hybrid maize plant, this makes the mule the best-suited traction animal under certain specific conditions and circumstances.

Start telling this story by asking the farmers what happens when mules try to breed with mules. They will be quick to say mules cannot breed. This gives you the opportunity to compare mules with hybrid mealies and to explain that a hybrid cannot produce a mealie either. The seeds, which they are planting, are in fact all mules and that is one of the reasons why their maize plants do not produce cobs.

B4. Ploughing twice at an average depth of 100 mm, instead of once only at 250 mm

The above practice caused a lot of concern, as the farmers believed it was right. Apart from causing serious compaction of the soil, it was most expensive and something which they definitely could not afford. I made up a story by comparing a field to a house. The story assumes that, in order to build a house, one needs a plot of land, and before starting to build, one needs to dig foundations. It is also common knowledge that one needs to dig the foundation only once and not twice.

With these basic truths I could tell the following story. All the farmers could easily relate to it, as the vast majority did have some experience of building. I compared the soil where I plant my crop every year to the land on which I build. Ploughing was the foundation on which the entire crop stood, e.g., the inputs such as fertiliser, the seed, the planting action, the cultivation, the harvesting etc. (all the building material). After making sure that they understood this comparison, I asked them how deep the foundation (the ploughing action) of a big house should be and how many times I had to dig a foundation for this house. In every instance so far the answer was "a deep foundation which is dug once only". I could then jokingly ask them why they dug two foundations for the same house and why both their foundations were so shallow. This was enough proof to illustrate another reason why their crops failed.

B5. Incorrect plant populations

It was discovered that in a marginal area, dependant on rain for crop production, the majority of lands had extremely high plant populations. It often varied between 44 000 to 85 000 plants per hectare. The farmers reasoned that more plants would produce more cobs. Again, I had to look for a story to overcome this problem.

In this case, I could only think of the farmers who were experiencing hunger and poverty, and comparing them to their lands. The large number of plants was also suffering, even dying, because of insufficient food and water. This scenario compared well to that of most of them, while most of them also had many dependants. The end result in both cases proved to be hunger, suffering and poverty.

By therefore starting the story with hunger and poverty, one is assured of group association and participation. Even more so if the group is requested to explain the effects of hunger, or a lack of food and water to feed their families, an experience which they know only too well. This participation enables one to build a story on the experiences of the people. With their big families they are like their overpopulated lands, where the plants, just like the people, are in the process of becoming tired, weak, sickly, unable to work or produce until they eventually die, because of a shortage of food and water.

Make it clear that the farmer has the same responsibilities as the parent, which are feeding and caring for their children. The farmer too has a responsibility to feed and care for his crop. Explain that the only way to ensure that it does not become a problem is to apply birth control. By planting only enough plants, for which you can care and provide sufficient food and water, you are applying birth control. Fewer plants will get enough food and water to yield a strong and productive crop, providing sufficient food for the family.

The story can now continue to describe how overpopulation of plants reduces the fertility of the soil, which in turn creates new problems, as it retards growth and encourages diseases and parasites.

B6. Poor weed control

Poor weed control proved to be a major cause of crop failure. Traditionally, the farmers started hoeing in January, a once-only operation. Explain to the group that you have seen many lands which have been well cultivated with the correct fertiliser and seed applications, but which still failed because the farmer did not control the weeds. This means that the farmer has wasted his money and labour on a failed crop. If he had a loan at the co-op, it still had to be repaid. To crown it all, the farmer will have to buy food.

Show the group the different weeds. Point out the similarity between the roots of true weeds and those of the crop. Then compare the weeds to thieves who will eat and drink exactly the same food and water as crop. If the farmer allows weeds to grow in his land, he allows them to steal all the moisture and the expensive fertiliser intended for the crop.

Two types of herbicides are used to control weeds: One for grass and the other for broad-leafed weeds. The two types of weeds may be compared to sheep and goats, by likening the broad-leafed weeds to goats with their long ears, and the grasses with their fluffy seeds to sheep. The farmers know what happens when goats or sheep enter their homes. Not only do they eat and drink everything, they also create chaos. They too, are like thieves and should be kept in a kraal at night and herded by day to prevent them from getting into the fields and creating chaos.

Ask questions to retain their interest. For instance, ask them what the best time would be to get rid of the goats or sheep and how many times they would be prepared to chase them out of their land. The obvious answer will be to remove the animals before they even get to the land, or soon thereafter. It will be better if one has to do this only once, but these pests will almost certainly return from time to time.

Explain that weeds will also return to their lands two or three times per season and that the weeds will have to be eradicated immediately each time they are detected to avoid them from damaging the crop. Make it clear that the smaller the weeds are, the less damage they do and the easier it is to eradicate or control them. Repeat the fact that the weeds are going to damage their crop, waste their money and steal their food. It is therefore to their own advantage to control weeds in their lands properly.

It is also important that all the possible methods of controlling weeds are carefully explained. Discuss the method that you think is suited best to their conditions in detail. The reasons for singling out this method must also be explained.

B7. Broadcasting of mixed seeds

Once they understand the effect of the different types of weeds, one may be able to convince them to let go of the tradition of broadcasting mixed seeds (sugar cane, pumpkin, watermelon, groundnuts and maize) on the same land. Explain that the different plants (including marog, which they are reluctant to hoe because it is edible) which grow among their crops will have the same negative effect as allowing goats into their lands.

Point out the principle of 'birds of a feather flock together'. Just as people do not live with chickens or cattle, crops too need to grow separately. By planting different crops together they are breaking the rules of nature and they are in fact putting the goats directly in the lands, allowing them to destroy their crops.

The point may be illustrated by asking them what comes out of a ripe watermelon when it is squeezed very hard. They are aware that one is going to extract a large amount of water. Ask them where they think this water comes from. If they answer that it comes from the land they will understand that the watermelon was using water which the crop may have needed. Tell them that all this water from the watermelon was in fact meant to be used by their crop. Because they planted the watermelon there, they are partners in crime as the watermelon is stealing their crop's water and food.

Make it very clear that you are in no ways telling them not to grow pumpkins or watermelons. You are saying these crops need to be planted separately. Continue the story by spelling out the advantages of planting in rows, the ability to apply insecticide and how much easier it becomes to do proper weed control.

B8. The importance of agricultural lime

Generally speaking it was found that pH throughout an area was extremely low, varying between 3,3 and 5. This obviously meant that the soil was very sour and that lime had to be applied. The problem was to explain this to illiterate people who either believed that lime was a fertiliser, or a herbicide for witchweed. Once again I tried to tell a story that would also make sense to me. Many of us have experienced heartburn as a result of eating or drinking wrong types of food and beverages. It is impossible to enjoy any food or drink while one suffers from heartburn, because the condition causes discomfort. By constantly using the wrong types of fertiliser, or no fertiliser at all, one's land gets leached just like the food in our stomachs becomes sour and starts to burn. The condition is the same, but in people it is known as heartburn, and in the soil it is known as pH. However, a low pH is identical to heartburn as it burns the roots that feed the plant and makes it impossible for the plant to absorb any food.

Farmers often complain that they have fertilised correctly and, in addition to the fertiliser they have applied kraal manure, but they still have crop failures. This is exactly the point. Regardless of how well you fertilise your land, the plants will not use that fertiliser while the soil has heartburn. The answer is to establish how serious the heartburn is and to treat it. For humans the fastest relief is to drink antacid. In the case of crops, agricultural lime may be used. What antacid does for heartburn, lime does for the soil.

The story can now be continued by explaining what the pH should be, how it is determined, how much lime should be applied, when and how it should be applied, etc.

APPENDIX C. Examples to illustrate the use of appropriate visual aids in agricultural training

Visual aids for agricultural training should be chosen with care and should be within their frame of reference to be meaningful to the trainees. Visual aids can be used in conjunction with parables to illustrate concepts.

The following are good examples of appropriate visual aids:

- Plant physiology and cultivation practices: the *mosadi* and her household
- The water balance with the use of tins
- Institutional relationships, roles and responsibilities: the human body

C1. The maize plant is a *mosadi*

Comparing the plant to a human, preferably a lady, creates much amusement, but also has tremendous impact.

Start the demonstration by showing the trainees a big strong maize plant with a cob. Request any member of the audience who does not have a name to please stand up. Obviously nobody will stand up, because they all have names. This allows you to introduce this thing, or the maize plant, as the lady or "mosadi" by mentioning her Christian name, Mealie, and her surname, Porridge. The rest of the demonstration is aimed at convincing the farmers that the plant is in fact a lady.

Systematically compare a plant and all its different parts to a human being, e.g., the big thick roots that hold a plant upright are the legs. The finer, smaller roots, which are considerably longer than the others, could be referred to as the arms of the plant which are stretching to get food and water for feeding the plant.

Like a human lady needs groceries and water to feed her family, the mealie mosadi needs fertiliser and water to feed her family (her cobs). The tassel could be the kitchen where all the groceries and water are brought to by the roots. It is here where the mosadi prepares the meals for the family. The cobs in turn will feed the farmer and his family. Just as in the case with humans, the mealie plant requires the right amount of water and fertiliser. Too much causes problems, as will too little.

The leaves are referred to as the lungs of the lady, which allow her to breathe, just like us. Her land is her house. She doesn't live in the bush and, like all other women, she does not like living in a dirty house where diseases can breed. If the farmer's lands are to be kept clean like a well kept house, it needs to be hoed.

Once the entire plant has been discussed and everybody is happy that the plant is a *mosadi*, one can compare the healthy plant to a small, weak and sickly plant that comes from one of his or her lands. Compare the two plants by asking leading questions and let them basically repeat your lecture by answering questions.

C2. The water balance

This is a valuable demonstration to cover the most important aspects of the farmer's cropping programme, namely water usage, ploughing efficiency and root formation. Two tins are used for this demonstration. Big instant coffee tins are ideal. The first tin should be cut so that it is only 100 mm high and the other 250 mm. The tins are used to illustrate the difference between the traditional ploughing depth (shallow tin) and the correct ploughing depth (deep tin). In both cases the size of the tins should compare realistically with the actual and required ploughing depths. Both tins should be filled with coarse sand.

Paint both tins, then clearly paints or draw a root system leading up to the stem of the plant on each tin. The deep tin should show a big root system with deep roots and the shallow tin, a small root system. Turn the pictures of the roots away from the farmers for the first demonstration; i.e., water penetration into the ploughed lands.

Have two maize plants available. One should be a big, healthy plant with a big cob and the second a small sickly plant with a small cob or no cob at all. Cut off the stems of both plants approximately 100 mm above the roots and keep them readily available.

Get a measuring jar, preferably a transparent one. Calculate how much water is needed to fill the correctly ploughed land (deep tin). Mark the level of the water by drawing clouds or a sprinkler on the jar. Put the two tins next to one another and pour the water from the jar into the well-ploughed land (deep tin) first. Now show the farmers that all the water, be it by way of irrigation or rain, has penetrated the land. Nothing is wasted, nor is there any erosion, because the land is properly ploughed.

Then refill the jar to the mark and get one of the farmers to witness that the water in the jar is at the same level as it was before pouring it into the deep tin. Now pour water into the land which has not been ploughed properly (shallow tin) until the tin just starts to overflow. Show how much water is still available in the jar (cloud or irrigation cycle). Point out that the land is saturated and cannot absorb any more water, which means that all the remaining water will be wasted. Then continue to pour the remaining water from the jar into the land slightly faster, allowing the tin to overflow strongly and wash out the sand in the tin, suggesting that the soil is eroding. Now emphasise how they are wasting precious water and eroding their soil because they are not ploughing properly. One should also point out that when the shallow tin is totally dry, the deep tin still has more than enough moisture to feed its plants.

Turn the tins around to show them the roots. Put the big plant into the big tin and the small plant into the small tin. Explain that this is exactly what is happening in their lands at present. Emphasise this again by trying to fit the big plant's roots into the small tin and vice versa. Allow them to tell you if it matches or not, and if not, why.

C3. The human body

This is an ideal demonstration to use when doing institutional training. It explains the roles and duties of the various role-players.

First start by identifying the human body from the head down to the shoulders, the arms, the heart, the stomach and the feet. Now explain that a co-op, for example, is identical to the human body, but in explaining how it all fits together, start with the feet. Initially all the farmers or members represent the feet, but no body can survive without a head. Therefore the feet (the members), in which the whole body stands, elect the head, which does the thinking, pleading, fighting and speaking on their behalf.

The head is normally carried on the shoulders, one shoulder representing the principal management agent and the other the external role-players. Explain the role and duty of each shoulder, as well as how it interacts with the head (board of directors).

The co-op manager could be described as the stomach of the body, for he has to swallow the pleasant as well as the unpleasant things regarding the daily running of the co-op. For the manager (the stomach) to operate properly, he needs a strong and healthy heart, which constantly pumps and feeds the entire body with fresh blood.

In this case, the management committee, which is directly responsible to the head of the body (board of directors) acts as the heart as it represents all the role-players. In addition to this, there is the registrar of co-operatives, who can be regarded as the traffic officer of the story for it is his duty to see that everybody obeys the rules of the road.

APPENDIX D. Turnkey project management for labour-intensive construction in rural communities

[Extracts adapted from: "The evolution of labour-intensive construction policies for infrastructure provision to rural communities in the Transkei" by M Shaker, paper delivered to the SAIAE symposium, Pretoria, November 1994 and "Turnkey approach for RDP projects" by M Shaker]

D1. Introduction

Labour-intensive construction may be defined as the economically efficient employment of as great a proportion of labour as is technically and financially feasible to produce the standard of construction demanded by the specification. Labour-intensive construction is the effective substitution of labour for equipment and results in the creation of a significant increase in employment opportunities per unit of expenditure. It is not the use of large numbers of people on relatively unplanned emergency or relief projects to construct something of limited quality and value.

Labour-intensive methods have been progressively introduced over the years, typically for rural water supply, community garden irrigation, stock watering dams and dipping tanks, soil conservation and reclamation, and the construction of roads to provide access to the national network or market places, and to health and educational facilities.

The turnkey approach is based on the belief that it is our duty, not only to provide services, but also to empower people so that they can operate and maintain the service within their rural areas. To achieve this goal, it is essential to leave the expertise with the rural communities, so the educational element is very important. Administrative as well as technical expertise must be enhanced, but training cannot be done in a vacuum, or in the classroom only; it should be part and parcel of a project. Five different project management scenarios are used for turnkey projects, enabling varying degrees of community involvement and empowerment.

D2. Labour-intensive projects on a turnkey basis

Consulting engineers need to modify their functions from those required for conventional contracting to those appropriate to "rural engineering". In the conventional type of consulting work, the engineers usually undertake planning, design, contract documentation, contract adjudication and then supervision. A nominated contractor then carries out the physical work according to established procedures.

With the turnkey approach, the consultants handle the complete project, in close co-operation with the community, who could provide labour and some management functions. The consultants' project team consists of a project manager (engineer), technicians with rural engineering expertise, and a community worker – the exact composition of the team varying with the type and scope of the project.

The turnkey project process typically includes the following elements:

- The first step in a turnkey approach is to establish a *village development community* (or to strengthen an existing one) to ensure that there is a mechanism for the community's voice to be heard in planning, design, construction and maintenance. All these actions should take place in conjunction with the community; which should be an integral part of the team.
- Before any technical progress is made, the community worker[18] should interact with the community to help them to identify their *priorities*. Then alternative *designs* should be discussed in order to ensure sustainability, appropriateness and affordability. Technical considerations are important but community considerations must never be overlooked. If it is technically impossible to meet community requests, the project should probably be dropped.
- *Labourers* are employed in consultation with the community and an agreement is signed by the labourers and witnessed by the members of the development committee. The agreed upon task, payment per task and the

approximate duration of the project are highlighted. Normally, jobs should be allocated to the local village, because over and above other considerations, transporting people is expensive and undesirable.

- At the commencement of the contract, one or two development committee members are sent on an accredited *bookkeeping* course covering basic accounting, payment of the labour wages and purchases. They are issued with a recognised certificate and will handle financial control.
- The first phase of construction (e.g., two hundred meters of road construction) is dedicated to *technical training* under the supervision of the project manager or his representative. During construction, the committee members handle *disciplinary* matters. If someone is not pulling his weight, the matter is referred to the committee for disciplinary action. They may dismiss him and put a more needy person in his place.
- The community development committee indicates responsible people to be taught how to *maintain* the infrastructure in future. When the construction is finished, the infrastructure is officially handed over to the community and they are given a write-up and posters, as well as *tools* to help them maintain the infrastructure.
- The committees need to have official status to provide them with the authority to act on behalf of the community. Therefore eventual linkage to the local governments will be important to ensure the sustainability of the rural infrastructure.
- *One-on-one training* is possible throughout the system and this is by no means one-way. There should be close contact between the departmental engineer responsible for the programme and the consultants' Project Managers. *Free interchange of knowledge, experience and people* at managerial, technical and construction level, is very important.

D3. Advantages and disadvantages of the turnkey approach

The turnkey approach is believed to be the most appropriate management system for Rural Engineering projects and experts in this field highlight the following major advantages:

- Quicker and faster delivery system
- Better and more technical and managerial skills transfer to benefiting communities
- Higher rate of capital injection into the economy of the benefiting communities
- More sustainable services received by the communities because of the institutional basis which is set up within the benefiting communities
- Less administrative and managerial red tape
- Less management costs

The turnkey approach to rural engineering projects is closely linked to labour-intensive construction, for which standard agreements are still under development in South Africa. The greatest hurdle with turnkey projects is currently the need to clearly define responsibilities and liabilities between the major actors in the project team.

D4. Five scenarios for turnkey project management

The major role-players in a turnkey project are usually found in combination as follows:

- Client and financier
- Consultants and designer
- Contractor and supplier

The five project management scenarios are the following:

- Direct management of a limited number of projects
- Direct management of multiple simultaneous projects in a programme
- Labour subcontracted

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[18] The community workers are usually local people, either a technician or a specialist who has been dealing with the community for several years, and they all speak the language.

- Main contractor
- Community contracted

D5. Direct management: limited or multiple projects

In this option the client body appoints a consultant to be responsible for the design, contract documentation, project management, as well as the recruitment and supervision of labour. For a multitude of projects, each with its own consultant, an additional consultant could be appointed to co-ordinate the programme as well as taking on those functions which are similar on all projects and would therefore prevent duplication and would provide economy of scale. This option can best be described through scenarios 1 and 2 in Table D1.

D6. Labour subcontracted

This is similar to option 1 except that a labour subcontractor (local entrepreneur) does labour recruitment and supervision. Depending on the skills and capabilities of the subcontractor, the responsibilities and functions could be increased. Scenario 3 in Table D1 best explains this option.

D7. Main contractor

In this option a main contractor would take on the duties of the Project Manager and would be required to use local labour or use a local labour subcontractor. See Scenario 4 in Table D1 for detailed description of duties and interrelationships.

In all three of the above options the role of the community is briefed as follows.

- Ratify decisions regarding issues pertaining to the project.
- Assist with the liaison with the broader community
- Assist with the selection of labour and labour disputes
- Take charge of project after completion and take responsibility for upkeep

D8. Community contracted

In this option the role of the consultant is limited to project design, training and counselling, quality control and measurement. The remaining functions such as labour selection, supervision and payment is left entirely to the community's representative body. Scenario 5 in Table D1 best describes this option.

In this option the community; together with its representative bodies, are empowered in that they are responsible and in control of all the resources (money, manpower, materials, tools and equipment) required to implement the project and its continued maintenance in the tong term.

D9. Selection of the appropriate project management scenario

The appropriate option can be selected according to the circumstances of the benefiting community.

Table D1: Turnkey project management scenarios

SCENARIO 1: Direct Management – Limited number of projects	*SCENARIO 2:* Direct Management – Multitude of projects in a programme	*SCENARIO 3:* Labour subcontracted	*SCENARIO 4:* Main contractor	*SCENARIO 5:* Community contracted
CLIENT				
COMMUNITY Supply labour Participate in priority setting & decision-making through the Community Development Committee				
COMMUNITY DEVELOPMENT COMMITTEE (CDC) Sanction decisions on project issues Liaise with broader community Responsible for selection of labour Handle labour disputes/ discipline Receive works on behalf of community Responsible for operation & maintenance				
CONSULTING ENGINEER Feasibility Design Tender documentation	CONSULTING ENGINEER Feasibility Design Tender documentation	CONSULTING ENGINEER Feasibility Design Tender documentation	CONSULTING ENGINEER Feasibility Design Tender documentation Quality control Payment for work	CONSULTING ENGINEER Feasibility Design Tender documentation
Support Functions PROJECT MANAGER Materials procurement Tools and equipment Machine arrangements Stores PROJECT MANAGER Setting-out Quality control Measurement Clerical	*Support Functions* CO-ORDINATING ENGINEER Materials procurement Tools and equipment Machine arrangements Stores Preparation of wages PROJECT MANAGER Setting-out Quality control Measurement Clerical	*Support Functions* PROJECT MANAGER Materials procurement Tools and equipment Machine arrangements Stores PROJECT MANAGER Setting-out Quality control Measurement Clerical	*Support Functions* MAIN CONTRACTOR Materials procurement Tools and equipment Machine arrangements Stores MAIN CONTRACTOR Setting-out Quality control Measurement Clerical	*Support Functions* COMM REP BODY Materials procurement Tools and equipment Machine arrangements Stores COMMUNITY Setting-out Clerical CONSULTING ENGINEER Quality control Measurement
Labour Management PROJECT MANAGER Training & skills transfer Payment of labour Clerical Recruitment Supervision Time-keeping	*Labour Management* PROJECT MANAGER Training & skills transfer Payment of labour Clerical Recruitment Supervision Time-keeping	*Labour Management* PROJECT MANAGER Training & skills transfer Payment of labour Clerical LABOUR SUBCONTRACTOR Recruitment Supervision Time-keeping	*Labour Management* PROJECT MANAGER Training & skills transfer Payment of labour Clerical LABOUR SUBCONTRACTOR Recruitment Supervision Time-keeping	*Labour Management* CONSULTING ENGINEER Training and skills transfer Counselling COMM REP BODY Payment of labour Clerical COMMUNITY Recruitment Supervision Time-keeping

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