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Experimenting with the community

Identifying sustainable solutions



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November 1998

**Community Managers
for Tomorrow**

Document no.

5

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Identifying sustainable solutions

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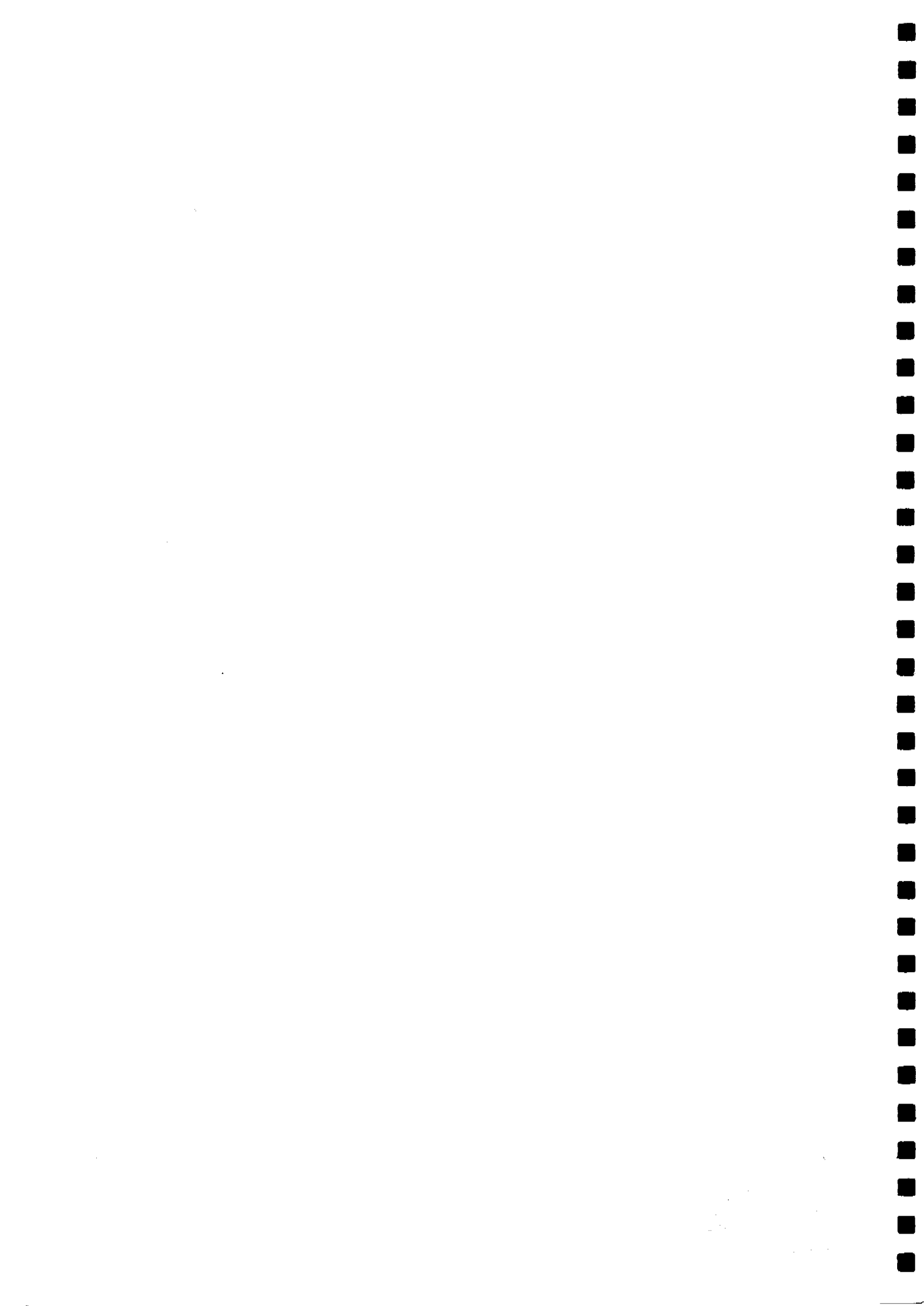


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Preface

This series of five documents, together entitled *Community Water Managers for Tomorrow: Partnerships for water management in rural communities*, has been developed by IRC in collaboration with teams from partner organizations in six countries. At the heart of these documents are the experiences of the local research teams at the community level, who have made enormous contributions to the adoption of this approach to community water supply.

Each of the five documents in this series has a different focus, but are all based on the same experience – a four-year participatory action research project to improve the management performance of rural communities of water supply systems in developing countries, called the PAR-Manage project.

The first two documents explain what happened during this four-year research project. Document 1, *Putting Community Management in Place: Four years of experience in improving water management*, describes the research process and presents the results and conclusions of the PAR-Manage project from the perspective of the support agencies and IRC. It explains how the participatory research was done, the tools that were used, what happened in the process, and what it demanded from the agencies and communities involved. More importantly, it documents the experiences of researchers in the communities themselves – their progress and setbacks, negotiations and discussions in community meetings, exchange visits and experiments.

Document 2, *Learning in the Field: How 22 communities improved their water management*, presents case studies of each of the 22 communities that have been involved in the project. These case studies permit a better understanding of the project from the perspective and focus of the men, women and children in these 22 communities. The case studies illustrate the main problems faced by rural communities, their efforts to improve the situation, and their achievements in terms of their improved ability to manage their water.

The next three documents contain what project team now call the Participatory Action Development approach to community water management – in short, the **PAD approach**. Document 3, *The Participatory Action Development Approach: Supporting Community Water Management*, is based on the process of action research that was developed and tested throughout the project, to arrive at an approach for supporting communities in managing their water supply systems. Around this approach, the teams developed methods and tools that are now available for wider use. Most of the material in this document is intended to help readers understand community management and the ideas behind the approach. Practitioners can adapt the approach to suit local circumstances, developing a critical awareness when putting the approach into practice.

Document 4, *Facilitating community discovery: Getting to know about water management*, gives a brief introduction to the PAD methodology, which consists of three phases – Diagnosing, Experimenting and Sustaining. The manual explores the Diagnosing phase of the PAD process in detail and describes the methods and tools that can be used during implementation. The document explores what factors need to be taken into account, the pitfalls to avoid, and the tools or set of tools that can be used in each step in the process.

Finally, document 5, *Experimenting with the Community: Identifying sustainable solutions*, again gives a brief introduction to the methodology, and then explores the Experimenting and Sustaining phases of the PAD process, together with the methods and tools that can be used.

These last three documents have been produced separately because they will be easier to use in the field than one large bulky volume. However, each part belongs together with the other parts. Documents 4 and 5 have been written mainly for practitioners, explaining how to put theory into practice. The main aim is to provide a set of tools that can be used by support workers to help communities to shape their own lives. These two documents therefore try to combine both reflection and action.

All of the methods and tools described here have been used effectively in the communities in Africa, Asia and Latin America over the past four years. However, they should not be seen as a blueprint for community management. The project team concluded halfway through the research project: 'Each situation, each culture, each place, each experience, and each community requires its own approach, although general principles can be applied'. Sensitivity to the needs of communities, and quick judgements on what would be most helpful at a particular time or during a particular process can only be developed through constant practice, complete openness to feedback from the villagers, critical reflective analysis, and years of experience.

In the near future these documents will be complemented with: (i) videos (one general video and six country-specific videos) on the experiences with the community management support approach; (ii) a manual, *Training for Trainers*, for the staff of support organizations who wish to use the approach in their field of action; and (iii) an Internet website to support all the initiatives to bring to life the PAD approach. In the project countries themselves, 'Information Focal Points' will also be established to provide background material to enhance the activities, and to enable exchanges of information at the national and regional levels.

Acknowledgements

These guides, manuals and videos have all grown out of the project. At this point, we would like to acknowledge our great gratitude to all those who have been involved in the experience. First and foremost, we have to thank the members of the communities that were so kind to let us work with them, make mistakes, have fun, learn together and sometimes support them in their tasks to improve their water management skills.

Next, we wish to thank the teams from the partner institutes that have worked for four years in this research. Not all of them were able to fulfil the four-year period – some members joined late; others to leave early; and one became seriously ill during the research and sadly passed away. We would specifically like to acknowledge the late Mr Anthony Nchari for his dedication, and to everyone else for their active, committed and productive work: Mr Amouye Nguettakan, Ms Pauline Poubom and Mr Andrew Tayong (Cameroon); Ms Cecilia Gómez, Mr Alfonso Rojas, Ms Ana Ariztizabál, Mr Mario Pérez and Mr Jairo Benavides (Colombia); Mr Fabián Gonón Ortiz and Mr Carlos Simón Perén, Mr Oscar Nimatuj, Ms Milagro Escobar and Mr Jaime Pacajoj Cifuentes (Guatemala); Mr Isaack Oenga, Ms Pauline Ikumi, Mr Stephen Ngingi (Kenya); Ms Hari Subba, Mr Rajan Thappa, Ms Renuka Rai, Ms Laxmi Paudyal, and Mr Raju Khadka (Nepal); and Ms Dilferoz, Mr Altaf Hussain, Mr Muhammad Saleem; Ms Nahida Aziz and Ms Sarah Halvorson (Pakistan).

We would also like to acknowledge with thanks the directors of the institutes in the six countries who allowed us to develop this all-encompassing approach together with their research teams. The directors are: Mr Gerardo Galvis (director, CINARA, Colombia); Mr Anthony Hagan (deputy secretary general until 1995); the late Mr Boadi and Mr Gbedo (former and current directors, PAID-WA, Cameroon); Hector Coyoy (director, ADP, Guatemala); Mr Fabian Gonon (director, SER, Guatemala); Mr Matthew Kariuki (director, NETWAS); Mr John Collett (project director, WSHHS) and Mr Karim Alibhoy (current director, WASEP, Pakistan); Mr Umesh Pandey (director, NEWAH, Nepal) and Mr Hans van Damme and Mr Jan Teun Visscher (former and current directors, IRC).

On earlier versions of these documents, we received valuable comments from the members of the International Advisory Group (IAG), which was established at the start of the research project. Before drafting the final document we expect to receive still more valuable, critical and supportive comments. The members of this IAG have shared with all of us their great experience on various occasions during the implementation of the research project. We are very grateful to their members: Mr Bunker Roy (Director of the Social Work and Research Centre, India); Mrs. Grazia Borrini Feyerabend (coordinator, Social Policy Service of the World Conservation Union, IUCN); Mr Orlando Fals Borda from Colombia; Mrs Teresa Kavita (women's programme coordinator, Catholic Diocese of Machakos, Kenya); and Mr John Thompson (Sustainable Agriculture Programme, International Institute for Environment and Development, IIED). The critical support by means of the mid-term evaluation conducted by Mr Bertus Haverkort of ETC Foundation should also be mentioned here.

The authors are also grateful to Sascha de Graaf for her sustained efforts to chase some of the contributors, to Lauren Houttuin for the design and layout, to Michel van der Leest for printing the documents, to Valerie Jones for the sustained editing activities, and to Esther de Lange, Dick de Jong and Ton Schouten for their help in preparing the manuscripts.

The staff of the International Water and Sanitation Centre are very grateful to the Netherlands Development Assistance (Neda; formerly DGIS) for their continued financial and critical support for the development of the Participatory Action Development Approach for Community Water Management. Within Neda, two individuals have been particularly supportive: Piet de Lange, senior expert research and development (DCO/OZ), and Willem Ankersmit, senior programme officer (SB).

These documents have also built on the experiences of a large number of researchers and trainers working in the water and rural development sector. Although they are not mentioned here by name, all of them have enabled us to develop this material.

This series of documents aims to help others to develop strategies to assist communities to improve the management of their own water supply systems. It is not intended to be used as a blueprint, but as an approach that will allow organizations and fieldworkers to make the necessary adjustments to provide effective support for community management. The contents of these documents can only be validated by practitioners creatively implementing the principles behind this approach at various levels, and by the policy makers involved in community management of rural water supplies.

Marc P. Lammerink
Eveline Bolt
Peter Bury

Acronyms and abbreviations

Bellringers	= LRT = LRG = CRT = PAR volunteers
CRT	Community Research Team = LRG = LRT = PAR volunteers
LRG	Local Research Group = LRT = PAR volunteers
LRT	Local Research Team = PAR volunteers = LRG
O&M	Operation and Maintenance
PAD	Participatory Action Development
PAD team	Participatory Action Development team: group of community members that facilitate diagnosing and experimentation towards improved community management of RWSS
PAR	Participatory Action Research
PAR volunteers	Participatory Action Research volunteers in the community = LRT = LRG
PSS	Problem Solving Strategies
VDC	Village Development Committee
WATSAN	Water and Sanitation Committee = WMC = WUC
WMC	Water Management Committee = WUC = WATSAN
WUC	Water User Committee = WMC = WATSAN

Introduction

This document is a guideline for organisations and their staff that aim to promote community management and monitoring of rural water supply systems. It is based on experiences build up during four years of participatory action research on community management.

The introduction briefly presents the Participatory Action Research, the resulting Participatory Action for Development (PAD) approach proposed here and; the content of this document.

From 1994 to 1998 research teams in 6 countries¹ together with selected communities carried out a Participatory Action Research on community management of rural water supplies. This research, which took place in four rural communities in each of the countries had as overall objective to improve and enhance water management by rural communities. Specific objectives were:

- To improve the current state of understanding on community management of rural water supply through the participatory assessment and analysis of the performance of selected community managed rural water supply systems in six developing countries;
- To analyse and identify the support requirements for successfully building capacity for community management of rural water supply systems;
- To develop and test approaches, methods and tools to enhance the capacity of rural communities to manage their own rural water supply systems in an efficient, sustainable, gender-conscious and cost-effective way;
- To enhance the research and support capacities of the partner organisations in six developing countries.

During a planning workshop the members of the research teams discussed the objectives, philosophy and characteristics of Participatory Action Research on community management of rural water supplies, and the major research steps. These steps were operationalized by discussing methods and tools and setting a time frame. All of the projects followed the general research pattern.

- Preparatory phase;
- Training and field preparation;
- Participatory field investigations;
- Joint development and field testing of problem-solving strategies, methods and tools;
- Evaluation, follow-up and sustaining the process.

Preparing for and carrying out Participatory Action Research provided experience with the PAD approach for community management of rural water supplies. Many tools and methods have been tested by communities as well as by various agencies.

These experiences are described in a series of five documents, of which this is the fifth:

- I Putting Community Management in Place: Four years of experience with improving water management in rural communities
- II Learning in the Field: How 22 communities improved their water management
- III The Participatory Action Development Approach: Supporting community water management
- IV Facilitating Community Discovery: Getting to know about community management
- V Experimenting with the Community: Identifying sustainable solutions

¹ Nepal, Pakistan, Kenya, Cameroon, Colombia, Guatemala

This document covers the *experimenting* phase of PAD. It provides theoretical background and describes a number of methods and tools that have been tested in the six participating countries. These are methods and tools for use by organisations supporting communities as well as methods and tools for use by communities to improve management. Accounts of the experiences of the country teams are presented in the boxes throughout this document.

As in the other documents in this series, the external agencies facilitating PAD in rural communities are referred to as support organizations. Field workers are referred to as support staff. This document is intended to assist staff in the process of supporting communities in their experiments with strategies to solve problems related to the management of their water supply system, to monitor these experiments and to decide on courses for future action.

1 *Experimenting strategies to solve problems as part of Participatory Action Development*

1.1 **What is Participatory Action Development?**

Participatory Action Development (PAD) is a methodology for improving community management of rural water supplies, in which all the actors involved contribute both to the creative thinking that goes into the undertaking, and to the action that is the subject of the development work (Lammerink, 1993). PAD aims to learn from the past and to find solutions to concrete problems and conflicts in the management of rural water supplies by communities. At the same time, PAD can help organizations to discover how they can best support communities in their efforts to improve the management of rural water supplies.

PAD enables communities, together with the staff of the support organization, to participate throughout the development process, starting from the initial design of an intervention, through data gathering and analysis, to the presentation of the final results and discussion of the implications of their actions. Communities are actively engaged in the quest for information as well as in experimentation to guide their future actions.

It is not always possible or necessary to work closely with an entire community. Often a small group of people is selected to become the direct partners of staff of the support organization, and mechanisms are developed to provide feedback to the wider community when required. Members of the selected group are involved both as subjects and as local development workers, so that dialogue between development professionals from the support organization and the people at the grassroots level is a key feature of the process. PAD is a learning process for members of the community as well as for the staff of the support organization, in that it enables them to learn from experiences of social action.

PAD offers an effective and powerful strategy for carrying out the type of interdisciplinary work that is needed to assist communities to take the lead in their own development. It is a real demand responsive approach, resulting in improved community management of rural water supplies. It also allows for a better understanding of the strengths and weaknesses of community management, because through the methods and tools used, it takes a holistic view of management practices and problems. PAD can be rapidly adjusted to local conditions in different countries. In particular, by applying a short feedback mechanism it can stay close to reality. For more detailed background information on the origins of PAD, see the third document in this series, *The Participatory Action Development Approach: Supporting community water management*.

The PAD methodology places strong emphasis on participatory and gender-sensitive appraisal and needs assessment methods. It uses both qualitative and quantitative methods of collecting data on system performance and service, such as distribution, breakdown rates, costing, demographics, local organization, and the socio-economic characteristics of served and unserved households. In doing so, PAD builds on earlier appraisal methodologies such as Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) and involves three major phases:

- *Diagnosing*: the staff prepare for the job, communities are selected, and problems and problem-solving strategies are identified;
- *Experimenting*: problem-solving strategies, methods and tools are tested and evaluated;

- *Sustaining the process*: the findings are shared and disseminated, and the work that needs to be done to sustain the development process is planned and coordinated.

These three phases are described in general terms in document 3 of this series, and are elaborated in document 4 and document 5. This fifth document focuses on the experimenting phase of PAD, and explains how the process can be sustained.

This document is preceded by the document on methods and tools for participatory diagnosing, which describes how to improve community and support teams skills to identify problems, to understand root causes/effects and to detect promising solutions, based on indigenous knowledge as well as knowledge from outside.

This guideline on experimentation and monitoring is based on the experiences and outcomes of the experimentation phase of Participatory Action Development, in which the communities developed and tested problem-solving action strategies, methods and tools and support organisations in principle focus on facilitating the development process and on capacity building. The document presents suggestions and guidelines on:

- **How to promote and support** improvements in community management of rural water supply systems;
- Improved ways and tools for **community management**;
- How to introduce **monitoring instruments** to assess and improve on community management practices;
- Ways and instruments for management oriented **community (self-)monitoring**.

Experimentation and monitoring of community management of rural water supplies needs thorough preparation of support organisation staff and the community itself both in terms of skills required, situation analysis and problem diagnosis. We therefore strongly recommend to read and use this document in combination with the other documents that have been prepared.

The document is meant for support organisation managers, planners and field staff that will actually work together with communities who wish to take up and improve the management of their rural water supply systems. It therefore provides methods and tools for use by support organisations as well for communities. A bibliography is added for further reading.

Users are invited to experiment with the methods and tools proposed, but should keep in mind that these may often have to be adapted to local realities and conditions under which both the support organisation and the communities live and work.

1.2 What does community experimenting entail?

Why community based?

The purpose of community based experimentation is to develop management solutions that are reliable and affordable and which can be monitored, readjusted and evaluated by community members themselves. The aim is to strengthen local capacities - like skills, self-confidence and organisation - in order to be able to plan and design experiments on their own initiative. The basic idea is to improve, reinforce, enhance and add to existing experimental practice. It is about increasing the actual capacity to implement and monitor experiments, which includes skills

development, group building, strengthening exchange and supportive linkages with other communities and support organisations.

Monitoring and evaluating the experiments should not be left to the end of the experimentation, but be built-in as management tool right from the start. In group meetings during implementation community members can exchange views on various aspects of experiments and make up their mind on the strong and weak points. It is important to bring all observations together and systematically analyse them. If a certain experiment is also implemented in other communities the analysis may be made by both groups together through exchange visits. The analysis should include recognizing unintended consequences and the degree to which the experiment contributes to solve identified problems in a sustainable way. The main role of the support staff is to facilitate this process.

Development and testing of problem-solving action strategies, methods and tools

This phase involves both experimenting with improved management as well as monitoring and evaluating the experimenting process and its outcomes. With a complex matter such as community managed rural water supply, the process will most often be a dynamic one. It will involve iterative steps, meaning that based on constant monitoring of the experimentation process and its outcomes, additional diagnosing, re-adjustments of ongoing experimentation and initiating new additional experiments may be required.

Setting up experiments requires a whole range of *activities*, including but not limited to:

- review of existing experimental practices through for example: i) exchange visits with other experimenting communities; ii) attending 'innovator' workshops; iii) analysis of recent innovations;
- plan and design chosen experiments including: i) identifying who participates; ii) doing analysis of before and after situation; iii) formulating selection criteria; iv) identifying resources required and; v) training/skills required;
- define criteria or indicators for monitoring and evaluation of the successes and weaknesses of the experiment;
- develop adequate monitoring and evaluation methods (what, when, how, who);
- arrange basic training of community members in relevant skills like functional literacy, book keeping, recording, observation, conducting meetings;
- establish and manage the experiments;

Outcomes from community experimentation

Outcomes pertain to increased capacity of communities to manage their water supplies, better functioning and used water supply systems, better quality services by support organisations. However, outcomes also include increased skills to design experiments and to monitor, and intensified cooperation and sharing among community members themselves and with support organisations.

Community diagnosing, experimenting with solutions and monitoring the outcomes takes place in a back and forth going process and not always in a very structured way. For example, once an experiment gets started additional information and hence further diagnosis activities may be required. The whole process is often quite complex and all actors, both within the community and

within the supporting organisation will have to review continuously in a learning-by-doing process their roles and activities.

As indicated earlier the document describes methods and tools for the support organisation as well as for communities and focuses on experimentation as well as on monitoring and on sustaining the process. For the sake of clarity these three be discussed in separate sections. In reality however monitoring should be integrated in experimentation right from the start during the whole process.

2 How to support experimentation?

2.1 The support organisation getting ready

The experimentation and monitoring by the community may consist of a whole range of activities based on the outcomes and priorities for experimentation set during the preceding diagnosis (see: *Facilitating Community Discovery: Getting to know about community management*). How many experiments and in which order will be carried out by the community will depend on the complexity of the problems to address and the capacities and resources available in the community. As indicated in the previous chapter, experimentation follows diagnosing and while experimenting new unexpected problems may arise, requiring renewed diagnosing to identify causes, reviewing priorities and readjusting experimentation action plans.

Just as during diagnosing, the experimentation phase will require facilitation and support by skilled and experienced support staff. As capacities within the community increase, this support can gradually be reduced and eventually limited to assistance on demand only.

In each country and even within a country different types of support staff may be involved in promoting community management. This staff should get the required back-up and resources and be sufficiently trained and motivated to promote a community based approach. Typical support staff that could provide facilitation and support include: environmental health assistants, members of district water and sanitation committees, village animators, community development staff, staff of specialised NGO's and water engineers. More than technical skills, the key person promoting community management should have social and facilitation skills. More specialised technical outside support can always be sought by the community and the support staff during the experimentation process.

The support organisation and its staff will have to prepare themselves to provide support and facilitation to the community's experimentation and monitoring activities. The documents *The Participatory Action Development Approach: Supporting community water management*, and *Facilitating Community Discovery: Getting to know about community management* offer many ideas and recommendations on how one can prepare for promoting community management. These also apply for the support to experimentation and monitoring. Here we will mention issues which are specific to supporting experiments and monitoring. Preferably the same support staff or team as during diagnosing will work with the community during experimentation, but this may not always be the case. In such a situation it is of great importance that a new team be fully briefed and introduced to the community by its predecessors and prepares itself in the same thorough manner in order not to lose the trust and credibility built up earlier.

The facilitation and support role of the support staff includes:

- supporting the adult learning process, including analysis - action - reflection;
- encourage communities to reflect on actions and identify learning points;
- help community members to become researchers;
- encourage iterative processes aiming at constant improving planning and implementation;
- promote flexible planning using rolling plans allowing regular adaptations.

Communities tend to see experiments as activities. Support staff can help demystify 'experimentation' by giving examples from daily life, showing that finding adequate solutions to problems involves experimentation, monitoring, learning and adapting or trying out new solutions to problems. It is important to make communities conscious about this process as this may help to increase the learning curve and time required to find adequate solutions.

Explaining the concept of experimentation

Carrying out experiments is consciously linking identified problems with possible solutions to these problems and monitor to see whether the proposed solution really solves the problem or not. In case it does not solve the problem, the community may either decide to drop the solution altogether or modify the solution or add complementary solutions to achieve the desired objective. The community may not be aware that it is actually experimenting! In that case it is up to the support staff to describe the activities undertaken by the community as experiment and facilitate the monitoring or reflection on the outcomes of the activity (experiment) by the community, so that they become conscious of the 'Action-Research' process and realise that through trial and error (=experimentation) and monitoring they can actually increase their management capacity, self confidence and developing solutions for their problems themselves.

In Kenya the concept of experimentation took time to be assimilated by the local research team especially in formulating hypothesis together with community members. The deliberate monitoring of a solution from a set of other possible solutions was not easy to articulate initially.

Support to experimentation and monitoring requires additional knowledge and skills to those during diagnosing, especially when it comes to building specific management capacities (like leadership skills, organisational skills, accounting, documentation) or advising on possible technical alternatives related to technical design of constructions and quality of materials like pipes. Ideally the support staff will limit itself to building self-confidence and capacity among community members to identify and contact outside support that can provide required specific assistance. In some situations this may however not be a realistic approach. In that case the support staff will have to find a balance between: i) only facilitating the process; ii) expanding the support team to include required additional, often technical skills; or iv) identifying and introducing required outside expertise to the community.

In Nepal the support team learned that each situation, each culture, each place and each experience requires its own approach. The team also learned that sufficient space, openness, interaction, reflection and training builds a sense of ownership among community members.

In addition to the previous issue, certain experiments by the community may have implications or require approval from other outside support organisations like local government, financial

institutions and government departments. The support staff will have to decide what intermediary role they should or should not play in this case.

Right from the start the support organisation and its staff should keep in mind the added objective of sustaining and promoting the community management process. This is to be done at various levels beyond the actual experimentation and by stimulating the development of a community based management system (see chapter 6 on sustaining the process). Systematization and documentation help to do so. Throughout the experimentation phase adequate documentation and recording is needed to assess both the process gone through and the outcome of an experiment in order to learn and improve on it.

Communities have a tendency to focus on technical solutions without addressing sufficiently managerial and social issues that will influence the viability and sustainability of the technical solution envisaged. The support staff should raise pertinent issues, create awareness and provide training in this respect. At the same time communities often focus on ad hoc rapid solutions to problems without looking at its implications in terms of resources required (e.g. human, institutional, financial, natural) or the long term sustainability of the solution chosen. Support staff will have to find a balance between only facilitating the process in which the community learns by 'trial and error' and providing adequate advice, access to information and training to avoid costly mistakes.

2.2 The experimentation cycle

The diagnosing phase will result in a list of prioritized problems and promising solutions. Once the community is clear about which solutions will be tried to address priority problems, the experimentation process can start. The objective of experimentation is to learn that management is a deliberate process of planning, implementing, learning from experiences, applying lessons learned and learning again from new experiences made. Typically experimentation is of a cyclic, nature and consists of a number of steps:

1. Preparation and orientation;
2. Action planning;
3. Implementation and monitoring;
4. Reflection and learning;
5. Replanning.

Depending on the development philosophy, approach and resources of the support organisation, the role and type of its staff and the support given to the community will vary in intensity. During a first experiment, support staff may suggest a number of methods and tools which the community can use for planning, implementation, monitoring, reflection and replanning. Traditional knowledge and existing local management skills should be taken into account and where needed capacity building measures taken. As the community learns to experiment over time outside support can gradually be reduced and limited to facilitation of the process and support on specific issues on demand of the community itself. For each of the five steps mentioned above typical roles and activities of the support staff are presented here:

Preparation and capacity building

It is not practical for the support organisation to work with the whole community on experiments. As during diagnosing, it is usually more practical to work with a smaller representative group in the community. During diagnosing the community creates a local Participatory Action Development team (PAD team) to analyse the situation and identify key problems. It is up to the community in consultation with the support organisation to decide whether that same PAD team should be made responsible for experimentation or whether other people should be involved to carry out the experiments. The role and responsibilities of a PAD team during diagnosing are quite different from those of the group of people that will carry out the experiments and who will have more management than diagnosing tasks. The skills required for management (such as planning, implementing, keeping financial records and supervising workers) differ from research (like facilitation, participatory situation analysis, documentation and reporting). The community may decide to elect other people for these new tasks.

Composition of experimentation teams

In some countries the PAD teams established during the diagnosis phase continued to carry out the experimentation. In other countries the experimentation was carried out by a mix of PAD team members and members of an already existing or revived water committee. In some countries a new group was elected. In others guidance to the experimentation was given by the PAD team, whereas implementation was done by a water committee or by both a village development committee and a sub-committee for water.

The status of the PAD teams may differ a lot from community to community. In some cases it works as intermediary or acts as extension staff for the organisations working with the community. Its main role is to facilitate and monitor the experimentation process carried out by other members in the community. In other cases however, the PAD team actually carries out the experiments with management options themselves.

It is useful to start the experimentation with a preparation and orientation workshop for the PAD team. The main objectives of such a training workshop include raising awareness and building capacity to guide the experimentation.

In Nepal a training of PAR volunteers (5 days) consisted of discussion and exercises on group management, leadership, finances, planning, proposal writing, gender aspects. Methods used include exposure visits, practicing preparation of work plans and indicators, conducting community workshops, giving feedback to communities. Also systematisation of activities and their documentation is tough. Manuals were prepared for PAR volunteers to use. Training tools used include group discussion, games, discussion case studies, giving pictorial handouts rather than a written text, conducting field visits to collect information to write proposals in groups.

Awareness raising

The PAD team needs to understand the purpose and advantages of improving community management through experimentation and monitoring. Both concepts need to be well understood. At the start of the experimentation phase support staff i) explain the advantage of planning and carrying out experiments rather than simply carrying out ad-hoc remedial activities to address prioritised problems and ii) explain the advantage of monitoring the experimenting process and its

outcomes to be able to learn from successes and mistakes and being able to improve on future new experiments.

Support staff should reiterate a number of important issues which the PAD team should address when starting with experimentation in the community:

- Introduce the habit to consciously and regularly review problems;
- Raise the sense of ownership over the water supply systems within the community;
- Stimulate community members to envisage alternative options / possibilities for solving identified problems and assist them to take informed decisions. Communities have the tendency to focus on short term ad hoc solutions, so called or 'living by the day';
- Ensure that communities differentiate between management and technical solutions and see the need to tackle management issues as well. Usually emphasizing improved management solutions will bring about a higher commitment and participation of other community members and will ensure affordable and therefore more sustainable technical solutions;
- Help communities realise the need to organise themselves in such a way that the management tasks can be taken up, for example by forming some type of water management committee. Existing forms of organisation (such as traditional village organisations, council of elders, village development committee, already existing water user committee or women group) can be build upon or revived. Sometimes a new organisation form may have to be created, but its linkages to other existing community institutions should be clarified in terms of mandates, decision making and sharing information.

Capacity building

Seeing the advantages of experimentation and monitoring is not enough. The PAD team and members of the community that have been assigned specific tasks in managing their water supply systems may need training in how to plan, set up and monitor experiments. Based on expressed needs, training on practical tools and skills required to carry out experimentation includes: i) the formulating of Problem Solving Strategies; ii) developing and formulating an action plan; iii) developing monitoring indicators; iv) formulating terms of reference and assigning roles to groups and individuals; v) organisational aspects; vi) various record keeping techniques; vii) securing participation and commitment of community members; viii) giving feedback on progress to the community and outsiders.

As indicated above there may be a need to train, on the one hand, a PAD team in how to facilitate an experimentation phase and, on the other hand, train elected community members in specific management skills related to roles and tasks of a committee chairman, secretary, treasurer, water care taker, village mechanic. This will allow them to perform specific tasks in a water management committee. Training may be required on a whole range of topics including: preparation of action plans, mapping, formulating rules and regulations, how to organise communities and committees, role of committee, caretaking, bookkeeping.

Experiences with capacity building and training during PAR project

In Kenya the committee chairmen were trained in communication and information provision, secretaries in record keeping, treasures in resources management, caretakers in physical improvements and operation and maintenance. Synthesis workshops for all community members to explain why and what capacity building was done for key community and committee members

In Nepal it was experienced that training in maintenance should be given in advance and not only at the moment when maintenance is needed. It was also felt that learning is done best through learning from each other, therefore exchange visits were so useful. Local research teams were trained in the use of the seasonal calendar to take into account busy periods/bottlenecks when planning for experimentation. Training themes also included: group development/formation, leadership skills, communication skills, holding of meetings, operation and maintenance, action planning (what, when, how, who, what support), proposal writing and account keeping.

Caretakers in Belen, Guatemala, were trained in registration of users, mapping to identify illegal connections, creating awareness on rules, communication skills and production of promotion leaflets, making suggestions for adjustments to the system and in assisting the committee in writing project proposals for outside assistance. Women were elected in the financial committee because they were trusted more and felt to contribute to more transparency. In Aguacatan coordination among sub-committees led to: i) the use of the same source for cost efficiency, ii) joint solutions, iii) increased capacity of general coordinating committee, and iv) two year agreements on soil conservation and reforestation measures.

While training has been mentioned as a first step in experimentation, it does not mean that all training should be provided at the beginning of this phase. A pragmatic approach based on addressing specific training needs as they occur throughout the process could be followed, taking into account resources available to the support organisation. Training can be given in a variety of ways, including formal training sessions, on-the-job training or learning-by-doing, exchange visits.

Action planning

Once trained, the PAD team will carry out planning workshops in the community to set up experiments. In a first round the PAD team may need to receive substantial outside support in preparing, facilitating and evaluating workshops and meetings. Support staff will act as much as possible as coach, rather than conduct the activities itself. The planning workshop will build on the Problem Solving Strategies and lead to a concrete plans of action on how to carry out the selected experiments.

In Guatemala the PAR team supported the committee of APAGUA in Aguacatan to prepare an action plan to improve the system. Some priorities were technical, others administrative, such as the regulation of the uses of water. Others related to capacity building, such as meetings for plumbers from different communities to exchange experiences, and to get to know about basics of rural hydraulics, such as interpreting plans, understanding material specifications, inventories of materials, etc. The committee of APAGUA also negotiated a contract with a regional development corporation to start a programme of reforestation both for water conservation and to reduce soil erosion. The coordination of activities between the different water systems in the area has been one of the biggest successes.

A typical action plan could look as follows:

Action Plan

Title of the experiment:.....

Objective of the experiment:.....

<i>Activities (what?) In logical order</i>	<i>When?</i>	<i>How?</i>	<i>By whom? (responsible person)</i>
1			
2			
3			
4			
Etc.			

A provision should be made to be able to monitor the process and outcomes of each experiment. For each of the objectives and activities indicators should be formulated (see chapter 4 and 5).

Experimentation agenda of La Sirena, Colombia				
<i>Problems</i>	<i>Solution alternatives</i>	<i>Indicators</i>	<i>Time span</i>	<i>Responsible</i>
A) Supervising construction of treatment plant pre-filters	Committees: - Community supervising - Board supervising - Operator supervising - Board prosecutor	Number of visits made Number of observations stated Number of observations solved by the constructor	3 months	EIC ² JAA ³ Operative Monitor
B) There is no study on rates	Applying consumption rates vs. Rates with no measurement.	Consumption (m ³) Average payment per user	6 months	JAA
C) There is no record of water users	An inventory made by the community.	Number of EIC participants and community in general Number of water users vs. total population	2 months	EIC JAA Group of youngsters
D) Irrational use of water	Community education through: paging, wall journal, bulletins. Installation of water meters, and floaters	Number of leaking faucets vs. total number of faucets. Actual consumption vs. average consumption (m ³)	6 months	JAA EIC
E) There are no by-laws or rules for users	Item by item assembly approval. Distribution of rules per sector. Delegates per sector Through the existing organisations	Democratisation: number of participants in the entire process. Efficiency: time required to approve by-laws.	3 months	JAA

2 EIC: Equipo de Investigacion Comunitaria, the CRT.

3 JAA: Junta de Agua y Alcantarillado, a water committee

F) Organisation of administration, independent of the aqueduct	Study alternatives of administration To be preserved in the community board through the water committee. Independent management with community board representation. Completely independent.	Outcome indicator: Number of persons per alternative Process indicator: Number of meetings held	3 months	JAA EIC
G) Delinquency	Education; establishing several payment points; cutting the service; fines; using receipts in different colours; publishing a list of delinquent users	% delinquency Delinquency period	3 months	JAA

Issues related to selection and ranking of experiments

Experimenting with solutions to address problems is a continuous process following the principle of the experiential learning cycle. This means that depending on the felt needs, communities may carry out a more or less ongoing diagnosis and reflection on problems identified and solutions tried. It also means that prioritised lists of problems may change over time more or less rapidly, depending on changing circumstances. Therefore, a certain amount of flexibility should be build into planning and decision making.

The fact that problems and solutions are interdependent will have to be addressed. Whether one solution will actually solve a problem may be dependent on addressing a related problem with another solution at the same time. During the problem analysis and formulation of solutions some problems and required solutions may have been overlooked. There may be a need to redo the cause-effect analysis (*see Building a problem tree; toolno. 25 in Facilitating Community Discovery: Getting to know about community management*). Support staff may have to assist communities in checking if success is not dependent on carrying out additional experiments to address some of the underlying or related problems as well.

The interlinkages between problems and solutions

In Nkoundja, Cameroon, it was decided that all adult men and women should pay a monthly contribution in cash to an operation and maintenance fund and an experiment was carried out to collect 100 FCFA per adult per month. This experiment was however not possible to carry out without a good register of adults in the village. Since the village is quite big an other experiment had to be set up in producing a list of adults in the village involving village quarter sub-committees and designing a 'census' list to collect the required information. Initially the percentage of people contributing remained low and again additional experiments for awareness raising and information campaigns had to be set up to convince people to pay their contribution. It turned out that conflicts arose on whether some-one had contributed or not and people refused to contribute any longer. Therefore, this experiment had to be complemented with an additional experiment consisting of issuing duly signed and dated receipts to those who contributed. This quickly raised confidence and

increased willingness to pay. Still many people were reluctant to pay because it was not clear to them how contributions were used. An experiment was set up to improve the feedback on revenues and expenses of the water management committee. Initially this was done by organising general assembly meetings that were poorly attended which was then changed into information meetings on Fridays after the prayers at all mosques in the village. Still in some quarters people were reluctant to contribute to the operation and maintenance fund. A new experiment consisted in dropping the monthly contributions and to collect on an ad-hoc basis contributions to cover expenses to repair a specific breakdown. If the breakdown occurs on the main system all adults in the village contribute, if the breakdown occurs on one of the quarter branches only users in that quarter contribute. This experiment was complemented with a penalty system: if a quarter does not collect sufficient funds for the needed repairs, the water management committee will instruct the care taker to cut of that branch until contributions for repairs have been paid.

Helping to put up experiments

Though communities may have (traditional) experiences with setting up and carrying out experiments, support staff may have to give advice in designing experimentation procedures and suggest tools for carrying out experiments.

Experimentation needs time

*Experience shows that communities experiment at their own pace. Community based activities need consensus on the importance and priority of a problem to be addressed, but also consensus on the solutions to be tried. In **Pakistan** experimentation is initiated and guided by the LRT. Ideas are collected through exchange visits, observation walks, community chats, collecting and presenting information. LRTs lead communities in the experimentation.*

*In **Colombia** two experimentation strategies have been proposed to the communities. One consists of testing alternative solutions one after the other in each community, which requires a lot of time (a minimum of 3 months per solution). A more time efficient approach consists in experimenting with different solutions in different groups of the community and sharing the outcomes afterwards. This reduces the time for finding workable solutions considerably.*

Implementation and monitoring

Implementing experiments is the responsibility of the PAD team and the community at large. Experimenting is only useful if successes and failures during the process and of the outcomes are clear to the PAD team, the community at large and the support organisation. The PAD team may not be very experienced with documenting and providing feedback on the experiment carried out. The support staff can do a number of things, such as encourage and assist the community in documenting / monitoring the experiment to make learning possible; encourage the PAD team to provide sufficient feedback to the community at large to ensure commitment to and ownership of the experiment; provide encouragement especially during the first few experiments; provide advice and support on demand whenever the community encounters a problem it cannot solve by itself.

Reflection and learning

The purpose of experimentation is to try out identified problem solving solutions and assess whether the method followed and the outcomes achieved are successful and worthwhile to be kept

and included into regular management practices. Reflection and learning should be done by all actors: the PAD team, the community at large and the support organisation and its staff. Information to allow for reflection and learning will be provided through monitoring and be analysed during reflection sessions.

Replanning

Based on monitoring, reflection and renewed diagnosis the PAD team, together with the community at large, may regularly update planning and implementation of activities including: adopting successful experiments as regular management practice and selecting new priority experiments to address other problems; modifying experiments in order to try to make them more successful; adding new experiments to existing ones to strengthen their effectiveness; rejecting experiments of which it is understood why they do not contribute to solving problems; deciding to use successful experiments to address similar problems in other sectors than water supply.

The role of the support organisation is to make the PAD team and the community at large aware of these options while replanning and in initial stages assist in the replanning exercise.

Pitfalls to be avoided

From earlier experience with the methodology a number of issues emerged that require special attention when promoting community experimentation with management of rural water supplies.

Dominance of influential and prominent persons

In traditional approaches not aiming for participation and involvement of all interest groups it is common that influential and more powerful persons (like support staff, affluent members of the community living in our outside the community) dominate the decision making process.

During diagnosing (analysing problems and potentialities) and experimenting (testing solutions) the interests of all users should be taken into account as much as possible. This is especially true for women, being the prime users of domestic water, but also for the poorer households, often living in the periphery of a community. In male dominated societies separate men and women committees and meetings may allow a more active participation of women, provided mechanisms are build in to match women's and men's ideas and priorities.

In Pakistan separate sittings were organised for men and women.

In Kenya leaders sometimes had very rigid perceptions both on their own roles and on acceptable solutions. This had to be dealt with carefully, without offending the leaders and at the same time doing justice to other people's opinions.

In the Muslim community of Nkoundja in Cameroon men realised after a year of experimenting that women as main users and contributors to funding operation and maintenance and system expansion activities needed to be more involved in planning and management to create confidence and full support from them. A separate women group was formed to allow women to articulate clearly their problems and solutions. Institutional arrangements were made to match women ideas with those of the men dominated water management committee.

Creating yet another committee in the community

There is a tendency among support organisations not to recognise and subsequently acknowledge existing decision-making and management institutions in a community. They often blindly promote the creation of yet another community-based committee. Existing institutions may be traditional (such as council of elders or chiefs) or foreign implants from other sector support organisations (such as village development committees, women's groups, village health committees or agriculture extension groups). An inventory of existing institutional arrangements within the community, including indigenous organisational structures and their roles and tasks should have been made during the diagnosing. When promoting new community management structures for rural water supply systems it is important to take into account existing institutions and assist the community in identifying appropriate management options with clear definition of roles, tasks and linkages to existing structures.

Giving advice rather than facilitate

One of the difficult things for a support organisation is to find a balance between playing only a facilitation role and giving advice. The community develops solutions in a learning by doing process and the initiative is left with the community. However, at the same time the support staff is a sounding board, asking the right questions, stimulating the community in assessing beforehand possible implications of certain decisions and providing alternative options in order to avoid that the community makes too costly mistakes, which may discourage them to try to address certain problems. There are no clear recipes on how to deal with this dilemma. Examples in the box below may help finding such a balance.

In the village of Batcham in Cameroon the catholic church had provided a certain type of imported handpump some years ago, without checking whether spareparts could be obtained for such a pump. Soon these pumps, which happen to be of very poor quality, broke down and the community together with the church found out that no spareparts could be found. Due to lack of information on alternative handpumps the community had the idea to simply buy more of the same pumps and replace the broken ones. At this stage the support organisation encouraged the community to look and ask around for other type of pumps for which affordably priced spareparts can be found in country by asking them pertinent questions on the implication of buying again the same poor quality pump for which no spareparts could be found.

In Pakistan it was felt that support organisations should not limit themselves to facilitation. In many cases technical advise is crucial to avoid big mistakes at community level. A clear example is the procurement of expensive equipment and materials that require insight in quality and prices of pipes, hand-pumps and taps in order to make the best choice.

Too frequent or too few visits

Experience during the PAR has shown that especially at the initial stages of experimentation regular support and 'backstopping' should be given to the communities. If the organisation is supporting communities scattered over a very large area (as was the case during the PAR), support can become costly and difficult to organise. The more so if other forms of communication, such as mail, telephone, hand carried messages, in between the visits are difficult. Here too, a balance has to be found between too frequent visits leading to communities relying too much on inputs of the support organisation and too few visits. In the latter case, especially communities that are not so strong may loose interest and drop out. Organisations promoting community management will have to decide

whether they limit their activities to an area reasonably close to their base, or decide to train and involve intermediary organisations that can provide the necessary regular support to interested communities.

In Nepal it was suggested that project management teams should rather operate at ward than at lower village level. Communities use newly acquired experimentation skills to address other problems in the community as well. Mother groups were formed and collected contributions to address other pressing issues.

Community diagnosis is a continuous process and requires flexible planning in an iterative process. Technical problems that are not resolved can also create social problems! Women are not sufficiently involved in planning. Engineers do not give enough time for analysis and social problems.

In Colombia committees were found to have problems in dealing with major break-downs. They do not know how to handle them or who to best contact for assistance. They find it difficult to get necessary information and this creates distrust among the community and power conflicts.

3 Communities experiment with management of water supply systems

3.1 Who will initiate and guide the experimentation?

In the previous section we have discussed how support staff can promote and assist communities in planning and setting up experiments. Here we will review a number of typical management experiments that communities can develop themselves. As mentioned communities initially tend to identify only 'hardware' problems, such as leaking pipes, not enough water at the source, broken equipment and thus look for technical solutions. Managerial problems are not immediately identified and support staff may have to make communities aware about weaknesses in this respect. In some situations only improving management practices may not be enough to solve a water quality or quantity problem and technical solutions may have to be pursued as well. In most cases however improving management skills will not only contribute to improve existing water supply systems but also builds capacities to carry out expansion or construction of new systems.

As is described in *Facilitating Community Discovery: Getting to know about community water management*, the support organisation will identify together with the community a group of active members who form a PAD team to initiate diagnosing and facilitate experimentation and monitoring of improved management solutions. Somewhere during this process improved management options may include reviving or creating some sort of more efficient water management committee. The aim of the support organisation is to develop the capacity within the community to manage its water supply systems in a effective and sustainable way, based on ongoing monitoring of changing circumstances and regular review and adaptation of the management. Eventually management based on ongoing monitoring, diagnosis of new problems and experimentation, will be taken over from the PAD team by a water management committee. It is important that the support organisation does not impose any management model (as is often done in more traditional top-down approaches). The community will have to clearly define mandates, roles, tasks and decision making procedures that are compatible with other existing village institutions, such as formal leaders, village development committees.

Given the possibility of a water management committee fulfilling management tasks, in the following sections of this guideline, “PAD team” can also refer to a water management committee.

3.2 Putting into practice what is learned

The support organisation will train the PAD team in basic concepts and steps of experimentation and monitoring. With outside support the PAD team will then initiate the planning and implementation of experiments in the community. This is a complex process, which is generally time consuming and difficult to implement. The PAD team, with outside support, will have to devise a strategy that ensures involvement of representatives of all members of the community, strive for a sufficient degree of awareness, consensus, commitment and participation in the planning and implementation of experiments. In each context different experiments may be set up. However, experience with the PAD-methodology suggests that in terms of procedures and type of experiments carried out key common elements can be presented. In the following paragraphs planning experimentation and carrying out typical experiments are outlined.

3.3 Planning experimentation

Planning experiments involves working out problem solving strategies based on the most promising solutions identified during diagnosing. Formulating the strategy involves selecting priority solutions to address taking into account available resources and capacities in the community. Tools like preference ranking and pair wise ranking (see toolno. 27 and 28 in *Facilitating Community Discovery: Getting to know about community water management*) can be used in this context. The problem solving strategy describes the strategy that is going to be followed do address a selected problem. It contains the purpose or objective and a brief description of the experiment(s).

Preferably the objective will be formulated as a hypothesis. A hypothesis indicates that the PAD team assumes that if a solution X is implemented and other circumstances do not change it will contribute to resolve a problem Y. By indicating how the assumed change by implementing solution X can be measured, the PAD team has an indicator to monitor and evaluate if the experiment is successful or not.

For each of the selected potential solutions an ‘agenda for change’ is established consisting of an action plan defining activities, responsibilities, timeschedule and resources needed. This planning may be done jointly by the PAD team and the support staff. For more complex experiments involving outside support the workplan can be prepared in partnership, specifying responsibilities of the community and the support staff. In order to monitor the implementation of the action plan, indicators can be formulated to measure if each scheduled activity has been carried out as planned.

Once a draft experimentation plan has been formulated the PAD team will have to ensure broad support and commitment within the community. This can be achieved through consultation meetings with and information provision to key community representatives and decision makers.

3.4 Carrying out experiments

Experience has shown that often communities will experiment with solutions without really setting them up as a fully fledged experiments! In many cases the PAD team realises in an early stage of experimentation that problems have been overlooked and readjustments are necessary. There is a risk that if outside support visits are not made frequently such adjustments are not done in a very structured way. If documentation by the PAD team is deficient, learning points and therefore the main purpose of experimentation may be lost. Support staff should be aware of this and seek to remedy this. Solutions may include putting more effort in building documentation skills in the PAD team, involving other support organisations that can provide more frequent 'backstopping' visits to the community or increasing the number of own visits at least in initial stages.

Various types of problems require various types of experimentation addressing social, managerial, technical and other issues. It is not possible to give a complete list of possible management experiments that communities may set up to improve the management of their rural water supply systems. Depending on the local circumstances the same type of experiment may be carried out in a completely different way from one community to the other. Nevertheless, there are a number of typical management issues that need to be addressed in most communities. Below a non-exhaustive number of typical management experiments illustrated with examples is presented.

3.5 Tested examples of experiments

Forming a committee and drafting a committee constitution

A most common experiment on managing a rural water supply system is to formalise the management of the water supply by forming a committee. The community will have to decide on how to compose the committee and formulate a set of rules and regulations. In countries with clear legislation on community organisations these rules and regulations need to meet certain requirements in terms of content and formulation. Rules are written up in a constitution and the committee is registered with the competent authorities. Drafting and getting consensus on a constitution among all community members usually takes up quite some time. Various ways can be followed to agree on a constitution.

In Guatemala clearer awareness and agreement on the role and representativeness of a water committee led to new elections and old members were voted out. Elections were done in full assemblies and a gender balance was striven at. In Aguacatan the committee studied the possibility of converting and registering itself into a community based enterprise / company with approval of the municipality, which would give them access to all kind of fiscal and financial facilities to which they do not have access to under their present form of organisation. In Barrel the committee's activities were not limited to water supply only. This committee was also dealing with issues related to electricity supply, provision of improved cooking stoves and primary education facilities. Thus committees can have a multi-purpose character and may set-up sub-committees or working groups to address the various tasks. (Sub-)committees can make rules on water use, tariffs, handling of funds, how to inform the community, responsibilities for operation and maintenance.

In Colombia rules for the committee were developed based on relevant existing public service legislation and approved by the community in general meetings. The procedure was quite bureaucratic and long. Rules and regulations were made on protection of water sources to prevent

deforestation. Associations of users were formed within micro-catchments and setting up of tree nurseries was promoted. In La Sirena cooperation between the community and the local authorities was strong. Formulating of committee constitution and legalising it was done in close cooperation with the local authority and with final approval in general community meetings. In Ceylan conflicts and poor coordination occurred frequently.. Weekly meetings between administrator, operator and assistants helped solve some of the problems and contributed to the improvement of the working atmosphere.

Defining the geographical area of responsibility of a committee

During the PAR often diagnosis of problems and experimenting with possible solutions lead to the conclusion that the geographical area covered by the committee needs to be adapted. Depending on the problems and alternative solutions identified, the area covered may be enlarged or reduced. A number of factors can lead to readjusting the size of area covered:

- Widening the management of a system to communities sharing the same source(s) or water supply system(s);
- Widening the people benefiting from the activities of the committee to people using the same water source but currently having no or poor access to the water supply system;
- Sub-dividing the area covered by a committee if the water supply system(s) can be managed more easily at lower levels. Such a subdivision may still be coordinated by a committee at a higher 'umbrella' level.

In Cameroon two communities made the decision to amalgamate two villages into a same water management area since they shared the same water sources.

Both in Aguacatan, Guatemala, and in Kenya people living upstream of a piped water supply system suffered from improved water management measures which led to capping and protecting the water sources and thereby denying them access to these sources. This led to conflicts whereby water adduction pipes were damaged by them and eventually forced the village development committee and the water management committee to involve these people in finding acceptable solutions to their problem.

Clarifying roles of the committee and key members

The roles and tasks of a water management committee will need to be clarified and made compatible to those of other institutions within the community. While outside support organisations, including development agencies and government departments have developed standard rules and regulations, it is up to the PAD team and the community at large to find out what rules and regulations fit the needs in their specific case.

Experimentation with roles and tasks of a water management committee includes building capacity to plan and hold meetings, record and document activities and outcomes, provide and collect information to community members and outside support organisations through appropriate communication channels, ensure participation, contributions and commitment of community members. Also the specific roles and tasks of the water management committee chairman, the secretary and the treasurer need to be defined.

While this may sound rather straightforward, experience shows that a lot of problems related to mandates, conflicting interests with decision makers and other village institutions may arise.

Reassessments of roles and tasks of all stakeholders, conflict mitigation may be needed throughout the process to come to acceptable solutions. Outside facilitation may be very helpful in avoiding major obstacles, but in the end it is up to the community to find the most appropriate solutions.

In Kenya three sub-communities have each elected a management committee, from which central management committee members are elected. The sub-communities have mandated their committees to draft a constitution that clearly defines the terms 'member', 'community' and 'user'. Emphasis is on the sub-communities, where ownership of the systems is vested. The whole process has been a major breakthrough in the understanding by the Nyakerato community of 'who's who' with respect to the water supply improvement within their community.

In Nepal Mr Rameswor Lamichane can now keep his financial records up to date. He commented that his book-keeping system 'is an achievement of the training'. In Lele, Mr Rajenura Silwal introduced a receipt and voucher system. In Lele and Gajedi the water user committees drafted their own constitutions, based on a sample provided during training, and initiated the process of legalising the committees. In Gajedi a decision was made to reform the committee, and Ram Bahadur Thapa was selected secretary at a mass meeting. For a long time Mr Shiv Paudel was both chairperson and secretary. During the training he realised the importance of leadership skills and the division of work. A woman was selected as treasurer, because 'women are more loyal and honest than men', according to Mr Paudel. In Rangapur a PAR volunteer now carries around pictorial handouts and shows them to colleagues during discussions.

Financial regulations

Community management means taking over responsibility of running water supply systems including covering costs involved in operation and maintenance and expansion. The degree of cost recovery by the community will depend on external and internal framework conditions. Improving management will in most cases involve experimentation with various options of cost recovery and may include i) negotiation with support organisations on sharing capital investment and running costs; ii) setting up mechanisms for community contribution to capital investment and cost recovery for operation and maintenance and; iii) building financial management capacities within the water management committee and the community at large. Specific experiments may be carried out on issues such as setting water tariffs, fund raising activities, keeping financial accounts, recording cash income and expenditure, keeping money safe, internal / external auditing, opening / keeping bank accounts, registration of users, financial reporting and financial transparency.

In Yanthooko, Kenya, a women's group started accounting for water sales at the end of each day, whereas in the past this was done once a month, and this has increased revenue collection. With respect to internal resource mobilisation, Nyakerato 'A' instituted a contribution of Ksh.300 per member to extend the distribution network. In Kiveetyo, the community approached Christian Children's Fund who assisted with materials to build a large storage tank. In Yanthooko, the women endorsed a member contribution of Ksh.20 per month, which enabled them to purchase a plot on which they intend to construct and install a posho mill, while at the same time they have plans to construct a second shallow well to increase the amount of available water. In Sigomere, the community realised that the submersible pump is operating in what they call 'injury time', a phrase they borrowed from soccer to express that the submersible pump has already exceeded its

useful working life. They have instituted a renewal fund from internal resources and are approaching external donors for assistance to replace the submersible pump.

Registration of water users

When experimentation includes either operation and maintenance activities or expansion or new construction of water supplies, contributions in kind or in cash will be required from the users of the facilities. Water management committees usually with the approval of a village policy making body, such as traditional council, chiefs, village development committee, general assemblies, and endorsement by local government bodies, like district council, municipality, set up regulations about how much members of the community have to contribute. In many countries civic registers are poorly kept or not existing. The experiment consists in carrying out and adequately recording a census of all users that will have to contribute. The experiment includes making decisions on who will carry out the census, the kind of information that will have to be collected and how often and how the register of users will have to be brought up to date.

Rules and regulations for caretakers

Improvement of the management of water supply includes organising the taking care of technical functioning of the system. Experimentation will center around deciding how caretaking will be organised. The community will have to experiment how many caretakers are required, what skills they require, what tasks and roles they will have, what kind of working and financial agreement will be concluded with them. The caretakers will require the necessary resources to carry out their duties, like clear mandates, maintenance and repair tools, spare-parts, (un)skilled labour support, possibly financial resources, access to storage facilities, stationary for recording and reporting purposes, and access to outside support when required. Caretakers will need to receive adequate training.

Especially in smaller systems, caretakers cannot expect a regular salary and are often volunteers. Volunteers are often motivated by the initial training and access to tools they receive, which is also useful for other income generating activities they can undertake. However it happens often that skilled caretakers find more lucrative income opportunities elsewhere and abandon their caretakers tasks.

In Guatemala caretakers (fontaneros) were trained in technical aspects, training of users, rules they should abide to. Caretakers were volunteers, by training other users in basic skills the role of caretaker could rotate among users thereby sharing the caretaker tasks over the years and avoiding putting to much strain on only a few shoulders.

In Nkoundja, Cameroon, the water management committee in view of the size of the system concluded that a second caretaker needed to be identified and trained. A local support organisation was contacted and training provided. The caretakers report directly to the chairman of the committee. They are given clear job descriptions (though not in writing) and instructions on how to submit workplans, cost estimates for required spare-parts, requests for unskilled labour support, recording books and instructions on how to log maintenance and repair activities (add illustration example of Nkoundja). Initially caretakers were given a monthly remuneration paid from the monthly operation and maintenance contributions. As these were discontinued the monthly remuneration stopped as well. Nowadays caretakers receive a small remuneration for each ad hoc

maintenance and repair activity they undertake. They are not very happy with the arrangement but are still very committed to carry out their (part)time job since they are currently employed in an externally funded water supply expansion project.

Technical solutions

Whether management capacities have been sustainably improved or not, the community may have good arguments to also experiment with technical solutions to resolve problems. As mentioned earlier communities and even support staff tend to seek solutions to water quantity and quality problems in technical rather than managerial solutions. Technical solutions include increasing water catchment capacity, extension of piped distribution systems, building of storage and distributions tanks, and increasing pumping capacity. While sometimes technical solutions may be needed, support staff should always encourage and assist communities in finding the 'problems behind the problems' in other words the real causes for lack of enough good quality water. If technical solutions are needed also the related management implications both in the implementation and in the operation and maintenance phase should be addressed.

Technical solutions sought can be broadly grouped in two categories. Technical solutions increasing the capacity of the supply system, typically expansion of existing or construction of new systems. Such experiments require capital investment and usually outside financial support. Experiments in this category involve formulation of project proposals, identifying outside financial and technical support and mobilising local contributions. Clearly this kind of experimentation involves also experimenting with more managerial issues. The other type of technical solutions are related to repair and rehabilitation of existing systems and involve buying spare-parts or replacement equipment like pumps. Communities tend to carry out this type of 'experiments' as one off activities rather than experimenting with the development of a sustainable spare-part supply management system. Support staff should encourage communities in developing such systems, which could include assessment of regular spare-part requirements, stock and store keeping, and setting tariffs that allow purchase of spares.

In order to solve the problem of insufficient daily debit of water in the system, the people of Nkoundja, Cameroon, decided to increase the catchment of water by tapping additional sources and linking them to the piped supply system. This decision was made before addressing the problem of reducing water losses in the system due to leaking or broken taps and leakage's in the main distribution pipes and valves.

In Pakistan the community of Pakora installed pipes between the water source and the storage reservoir, but failed to overcome the problem of freezing in the channel. They repaired the sedimentation tank and storage reservoir, and they are in the process of resolving the problem of freezing and leakage's in the pipe crossing the Pakora nallah (big stream). The community of Hasis identified the water freezing problem between the new reservoir and the water source (nallah), and drew up an agenda to resolve it. They moved the storage reservoir and installed an additional transmission line. The community of Ghaziabad connected their water supply scheme to a new source spring, located above the inhabited area. They developed plans to resolve the problems of the distribution network, and the implementation strategy was evaluated by the community in village meetings.

In Ceylan, Colombia, segmentation of the system in sectors with separate valves help to solve management problems like allocation of water and sufficient pressure among various quarters.

Formulating proposals and seeking support

Expansion and building of new systems will require capital investment. Planning and implementation of such experiments clearly require building self-confidence and managerial skills as well. Support staff should encourage communities to experiment with the formulation of proposals, identifying and lobbying for support, collecting relevant information, selecting technical options themselves. Support staff should refrain from writing proposals on behalf of the community and limit support to give advise and encouragement and provide information the community may find hard to come by.

In Pakistan the community research team sought financial support for the selected technical solutions. They failed however because very few organisations are prepared to fund rehabilitation of existing systems.

In Colombia special support groups regrouping key institutions (such as Junta Accion Comunal, Servipublicos, Comite de Cafeteros, Local Research Teams) were created for project proposal writing. Proposals were presented to leaders to get approval and support. The same group also carried out awareness and support raising training for key groups in the community like schools teachers, women and old people.

Contracting contractors

Technical solutions requiring outside support such as for major capital investment and construction will require experimenting with hiring outside contractors. Hiring contractors involves a whole range of managerial activities including learning from experiences from other communities; formulation of terms of reference; formulation of contracts; identifying and selecting contractors based on tenders; negotiation and signing of contracts; planning and coordinating work of contractors and community members and; monitoring. Support staff can assist by putting communities in contact with other communities having experience with contracting, providing sample contract formats and providing training in all aspects of contracting contractors.

4 How to support monitoring of experimentation

4.1 The importance of monitoring in an experimentation process

Monitoring is an essential element of experimentation, since it allows for learning, setting directions for future actions and making decisions about which strategy to adopt. Close monitoring facilitates adjustments of strategies, methods and tools according to local findings and requirements. In some cases monitoring results in additional research activities. Since it entails a regular review of progress monitoring can at the same time help bring about an increased confidence among community members in its own problem solving capacity and the necessary level of acceptance of solutions.

Monitoring: a definition

Monitoring can be described as the process of regular collection, analysis and dissemination of interest/gender groups specific information about developments in a project regarding both the process and the outcomes. The purpose of monitoring is to learn from experiences and to identify corrective actions if needed or replicate successful activities.

Monitoring can be done at various levels: at the level of the funding agency, the support organisation, the community, and the individual. Monitoring can also have various areas of focus: the process of experimentation, the outcome of experimentation, for day-to-day management, the performance of the water supply system, and water quantity and quality.

Monitoring at the level of the support organisation in Pakistan

The support team organised a role-play at the Aga Khan Health Service office in Gilgit on monitoring trying to get acquainted with possible perceptions of different members and groups in the community. The first role-play, targeted at 'the community is organised', provided the following specifications and indicators.

Specifications

Ability to develop common decisions.
Collective initiatives are taken.
Acceptable leadership (for all) is present.

Indicators

Conflicting opinions are discussed or, if silent, noted.
At least 80% of households is represented when decisions are taken.
Low turn-out of people.

For a second role-play, targeted at 'a new site for the water tank is selected', the specifications and indicators were as follows:

Specifications

The tank should be accessible.
Pollution should not be possible.
The tank should be big enough to cover the needs of all.
The tank should be built on undisputed land.

Indicators

Location less than 1 km away from the village.
Location above the settlement, so that less human activities interfere.
Location of tank on communal land.

Now we will focus on what monitoring the community can and should do during experimentation and in improved management of their water supply system and what kind of outside support is needed to build up and maintain this capacity.

It is useful to distinguish the following three types of monitoring:

- *monitoring the process of experimentation:*
the PAD team and through feedback sessions the community at large are monitoring how the process of experimentation is going. They assess to what extent the experimentation is being carried out as planned. It answers questions like: is everybody playing his/her role; are any unexpected problems occurring along the way; etc.
- *monitoring the outcome of experimentation:*
The PAD team and through feedback sessions the community assess whether the experiment is leading to the expected result. In other words does the experiment solve the problem addressed;
- *monitoring as tool in day-to-day management of the water supply system:*
in case the experiment is successful and adopted as regular management practice the PAD team will identify what monitoring needs to be done to ensure that the adopted management practice is effective and can be sustained.

Support organisations should first of all create the *awareness* for the need of monitoring. People should understand what monitoring is all about and why it is useful. The easiest way to create this awareness is to explain that every person monitors things in daily life. We monitor the health and growth of our children; the size of the cattle herd; the stocks in our food store or; the amount of money available to buy essential goods. The purpose of monitoring has to be made clear, for example by indicating that by knowing about the health and growth of children, by knowing how much money is in our pocket we can find out whether action is required to improve a bad situation or to maintain an existing good situation.

The local PAD team and specific actors involved in the management of the water supply system should be *trained* in the development and use monitoring tools, whereby they are stimulated in identifying issues for monitoring and in developing indicators. The issues for monitoring should relate to the objectives of the experiments the community will carry out. Benchmarks can be found in the information gathered during the community diagnosis, since the diagnosis reflects the situation before the start of the experimentation phase.

4.2 Monitoring tools

Monitoring is best done in a systematic way and various tools can be used. A community map, produced during the community diagnosis and on which problems with the water supply system have been indicated, can be used as a monitoring tool once a plan for system improvement has been made. For monitoring payment of user contributions a user registration card can be used. The example below shows a tool for monitoring strengthening of community organisation.

Community organisation as a spider's web

The spider model is a tool to assess the capacities of community groups within the areas of organisation, management, linkages/networking, fund mobilisation and participation/representation. It aims at increasing the self awareness of communities through a high level of participation and is directed at action planning. The tool was first developed in Thailand. The five main strands of the spider's web symbolise the important characteristics of a self-reliant and sustainable community organisation. Using different indicators and criteria, participants score on each of the five key dimensions. If some pillars are lacking or are weak, the organisation may not function effectively. The pillars need to be strengthened to make the overall organisation stronger, more self-reliant and sustainable.

In Nepal PAR volunteers set up community monitoring committees and mass meetings to raise (renewed) interest in experimentation and ensure transparency in activities carried out. Monitoring techniques were introduced, such as the use of the Spider Model. This is a tool helping community members to identify (performance) indicators and criteria and make an assessment using these indicators. Community workshops were held to train community members in the use of the Spider Model.

In Pakistan a triangular monitoring procedure was followed throughout the experimentation phase. The support team monitored the process of experimentation and the role of the community, the CRT monitored the role of the PAR team and the community and the community monitored the role of the CRT and the implementation of developed management procedures. For this purpose regular meetings were held to give feedback among the three parties. A mid-term meeting was held between the support team and the CRT to evaluate progress and document lessons learned.

4.3 Stimulating feedback

Since planning, implementation and monitoring of activities does not involve all members of the community, it is important that the water management committee provides regular feedback to the community at large. Feedback to community members can ensure a number of things that will contribute to lasting improvements in the management of water supply systems. General community members remain aware of what is going on and who are involved. Transparency about activities, progress and financial matters is extremely important if trust and confidence in the water management committee are to be brought about. In case there is a need for delay of activities or for additional expenditure arriving at a broad consensus is made easier if people are well aware of what is going on.

In Colombia meetings are organised to let the community reflect on experimentation and come up with alternatives if needed.

4.4 Pitfalls to be avoided

The local PAD team acquiring a powerful position

The support staff will have to monitor closely how the experimenting group develops as a new institution in the community. As members of this group develop new skills and acquire new knowledge they also gain more power vis a vis the other members of the community. The support staff may need to make both community and group members aware about their new roles and tasks. The community will have to control the functioning of the PAD team which they have elected themselves. The team will have to regularly inform the community through feedback sessions and organise general assembly meetings whenever more important decisions have to be made.

Monitoring not being flexible

Monitoring follows new (intended) developments and indicators may therefore change. For example when a service level for water supply is upgraded from public standposts to yard connections, a performance indicator may change from 24-hours supply to 5 hours supply a day. Such developments will have to be dealt with in monitoring and ask for a regular review of indicators. If this is not being done, people may end up with information that is irrelevant.

5 Communities monitor their experiments

5.1 What is monitored, by whom and how

As indicated in the previous chapter the objectives of an experiment as well as the action plan developed to carry out the experiment are the basis for monitoring. However, communities should be encouraged not to limit the monitoring to the experimentation only. Monitoring is also required in regular day to day management. Therefore also in terms of improving the management of water supply systems monitoring should also be an ongoing activity helping to ensure that management is done in an efficient, affordable and therefore sustainable way and leading to improved and sustained functioning of the water supply system.

Taking a look at the starting situation as determined during the community diagnosis and at the objectives of prioritised experiments, the local PAD-team or water users committee in consultation with concerned people, can identify key-issues for monitoring. Once the issues are clear, indicators can be developed as well as ideas about: i) where to look for the monitoring information, ii) who will gather the information, iii) how the information will be documented and communicated, and iv) who will take remedial action if required. Simple tools can be developed to facilitate the monitoring process (also see chapter 4.2). Monitoring indicators will change with the selection of new experiments or when certain management practices have become so common that they do not require the level of monitoring as initially started with.

In Guatemala committees took up the task to monitor and evaluate rehabilitation of the water supply system. Apart from this one time monitoring task, continuous monitoring was set up to timely detect leakage's and air built up in the piped reticulation. In the case of leakage's, monitoring included finding the causes for the leakage's. In Aguacatan it was found that leakage's were due to pipes being broken up hill by community members that do not have access to piped water. The problem was not a technical problem (such as poor quality of work or materials), but a social and managerial problem. To avoid further braking of the pipes a solution giving access to the water to people living above the system needed to be found. Eventually a drinking / water supply place (bebedero) was constructed on the upper part of the system giving improved access to people living above the scheme.

In Colombia the water operators monitor the pH of the water and walk regularly through the village asking people about the water quality. In Kenya the village committee conducted an external audit of their funds, which was reported to the community, and is now repeated every year. In Pakistan the community thought that the PAR team did not behave sufficiently differently from other outside agents. They also commented that community meetings were held in the mosque or other religious places, making it difficult for some people to participate. The team now holds meetings in more accessible, neutral places.

5.2 Using monitoring outcomes

Monitoring outcomes are used to find out whether an experiment is carried out according to plan or whether adaptations in the plan are needed to make the experiment a useful one. Monitoring outcomes are also used to validate an experiment and to decide whether to continue using the problem solving strategy experimented with, or to start trying out others.

6 Sustaining the process

6.1 What do we mean?

Participatory Action Development aims at developing methods and tools that promote increased community involvement in management of rural water supplies and provide evidence and examples where communities have indeed developed at their own initiative (with outside facilitation) improved management skills and instruments for their water supply systems. The series of documents, of which this document is one, have been developed to assist support organisations to promote community management. Support organisations will have to develop strategies that contribute to sustain the process towards increased community management. Sustaining this process requires promotion and monitoring the process at various levels.

6.2 Maintaining improved management and replicating diagnosis and experimentation in the community

At *community level* the support organisation will have to experiment with the degree and intensity of encouragement and monitoring needed to maintain an acceptable level of community management over time that ensures sustainable functioning of the water supply system. Communities can also be encouraged and given support to improve management of other activities they carry out.

That communities are convinced of the usefulness to carry out participatory diagnosis and community based experimentation is evidenced by community initiatives to apply the acquired skills to address other problems in the village. A number of examples earlier experiences with the PAD-methodology are presented in the box below:

In Pakistan a community applied PAD to improve road access. The Community Research Team (CRT) of Ghaziabad applied brainstorming and ranking tools for planning a new road. The CRT of Hoto applied group discussion and brainstorming for improving the management of the village nursery and distributing and developing barren land. The CRT of Pakora and Hasis used ranking and other planning tools to prioritize activities of the village organization.

In Cameroon the Village Development Committee of Nkoundja applied diagnosis and experimentation methods to improve the management of the local primary school by reviving the parents teacher association. The community development officer, giving support to the women group in Nkoundja, encouraged neighbouring village that had similar water supply management problems to go and visit Nkoundja, which they eventually did. They are now considering asking support to improve the management of their water supply system.

6.3 Building capacity of support organisations

Various strategies should be developed to replicate the process towards increased community management to other communities which the organisation is mandated to support. Strategies can range from encouraging exchange visits to provide information, training and facilitation in new communities that have expressed interest in taking up more management responsibilities and involving other relevant organisations in the process.

This implies the need for increased capacity of support organisations to support community management. At *organisational level* staff can be given additional training and the opportunity to exchange experiences with colleagues. At *regional and national levels* support organisations can share experiences and together with the government improve on national policy, set priorities and create a conducive environment, for example through a national reference group. Support organisations can also organise exchange visits and resource persons to further develop and disseminate the promotion of community management. At *national and international levels* specialised resource and training centres can contribute to promote the approach through advocacy, awareness raising and providing information, advisory and capacity building services.