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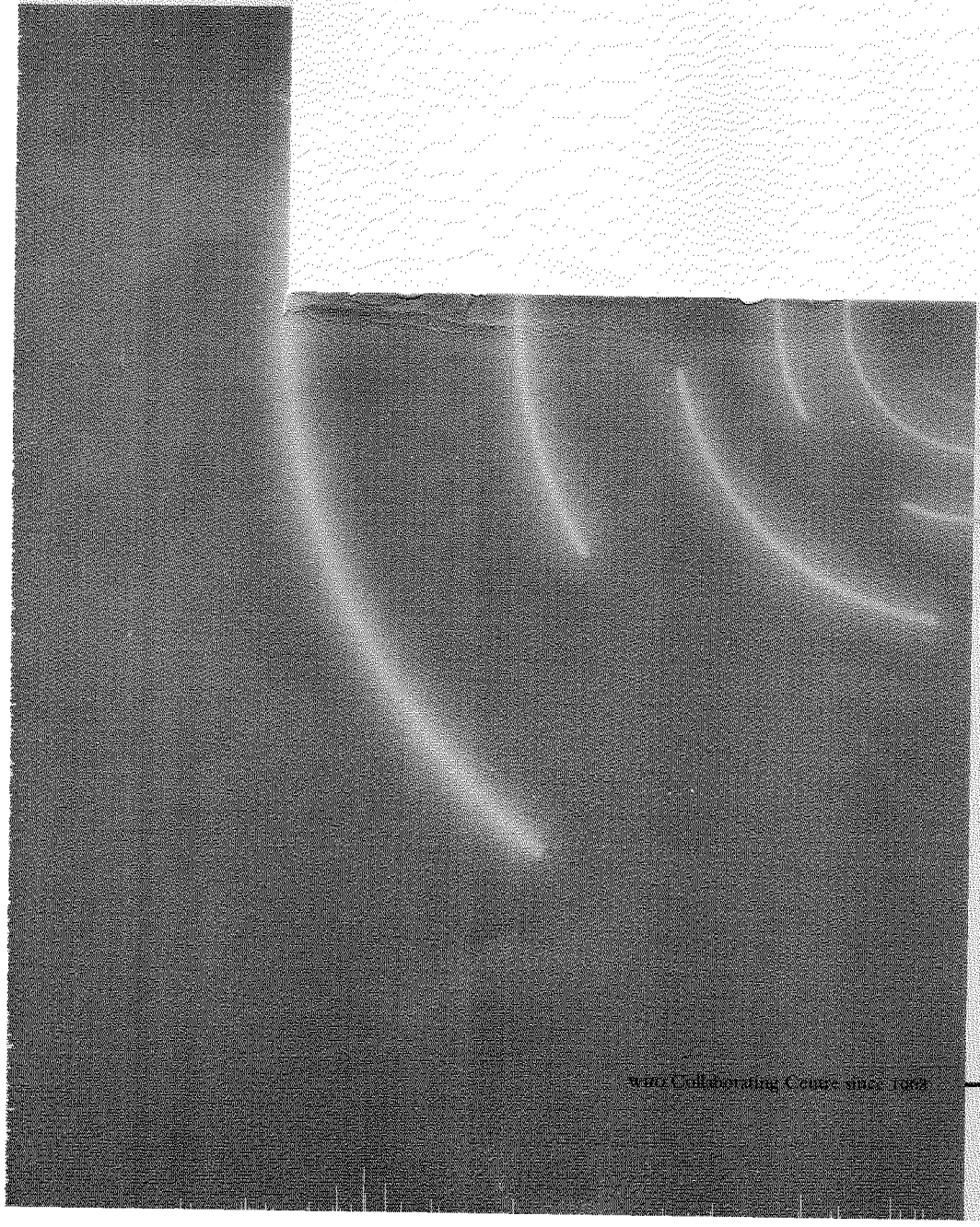

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Community Management: The Way Forward

Report of the workshop

19-27 November 2001, Rockanje, the Netherlands

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As a gateway to quality information, the IRC maintains a Documentation Unit and a web site with a weekly news service, and produces publications in English, French, Spanish and Portuguese both in print and electronically. It also offers training and experience-based learning activities, advisory and evaluation services, applied research and learning projects in Asia, Africa and Latin America; and conducts advocacy activities for the sector as a whole. Topics include community management, gender and equity, institutional development, integrated water resources management, school sanitation, and hygiene promotion.

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Preface

This report presents the proceedings of the Workshop "Community Management; the Way Forward", held in Rockanje, the Netherlands, from November 19th till 27th, 2001. This workshop was facilitated by the IRC International Water and Sanitation Centre and is part of IRC's ongoing work in supporting community management.

Hosting a variety of 12 "managers" from 8 different countries (Bangladesh, Ethiopia, Ghana, Kosovo, Madagascar, the Netherlands, Sri Lanka and Uganda), from different backgrounds and different levels, the workshop aimed to find answers and solutions to various matters and problems of sustainability in community water supply management (see Annex A for list of participants).

The workshop brought together knowledge and experience in community water supply management from all over the world. It concluded with some challenging tasks for the future. IRC would like to thank the participants in the workshop for their dedicated and high quality inputs and their support in defining the way forward.

Delft, January 2002,

Patrick Moriarty
Catarina Fonseca
Esther de Vreede
Stef Smits
Ton Schouten

Executive summary

Background
Community management is increasingly accepted as the most appropriate model for providing sustainable water supply and sanitation services to rural communities in the developing world. However, much of the success of community management to date has been at the level of the individual community or group of communities. In addition, despite the efforts put into developing community management during the *implementation* phase of projects the evidence is that without external support systems continue to fail before the end of their design lives.

If community management is to successfully meet the needs of unserved rural communities it needs to be scaled up dramatically. The goal of the workshop was to develop a common vision among the participants of the conditions necessary for the scaling up in space (coverage) and time (sustainability) of community managed water supply systems, and to help them to see how such a vision could be applied in their countries of origins. As such the workshop concentrated on the 'enabling environment' that surrounds (or should surround) and supports communities rather than on the communities themselves. What are the institutions, policies, actors, and capacities necessary to support communities?

Methodology
Community management is complex, with all kinds of factors interacting on many different levels: technology, water (resource) availability, service level, community capacity, institutional environment, rules and regulations, ability to pay etc. All of these factors need to be addressed in scaling up community management. However, the number, and complexity of the interactions between, factors risks leading to confusion in identifying and setting priorities and strategies for moving forward.

In order to deal with the complexity, and to avoid becoming lost in detail the workshop used an innovative tool develop a model of the conditions necessary for successful scaling up: Bayesian Networks, a computer based graphical decision support system. This tool was used to develop two models, informed by the experience and insights of the participants, of the factors influencing

i) successful *implementation* and
ii) long term **sustainability** of community water supply schemes

The models were then used to explore the relative importance of the various factors in influencing the desired outcome of successful scaling up.

Results
Key factors for success at implementation

- the (baseline) level of community capacity,
- existence of demand at community level,
- government and donor support: both financial and in the form of a supportive policy framework
- sufficient water resources
- capacity of implementation agencies

At this phase the existence of sufficient funding is the main constraint and one in which community contribution seldom plays a major role.

Key factors for success during the sustainability phase of the project

- effective intermediate level support agency(ies): important both to maintain community management capacity and to undertake technical support,
- appropriateness of the technology in terms of maintenance requirement
- availability of spare parts
- availability of funds (to finance support agencies) from *either* external sources or cost recovery
- continuing availability of sufficient water resources

A vacuum at the meso-level

The crucial factors relate to the overall effectiveness of meso (intermediate) level organisations that backstop communities with refresher trainings, complicated maintenance tasks, auditing, legal support, etc. They function as an intermediary between national policies and legislation and day-to-day problems of the communities. The meso level contains a number of different actors including local government, the private sector, NGOs and CBOs. Which actors play what role in supporting communities is determined by national specificities? In all the countries represented at the workshop it was support at this level that was found to be most limiting: a 'vacuum' exists at the meso-level. In turn, this lack of support is caused by a mix of lack of human resources, enabling legislation or funds at that level.

However, encouraging signs were reported by participants, particularly those from Ghana, Uganda, and Bangladesh, of efforts to address this problem: each one using different approaches best suited to the countries involved.

- In Ghana the CWSA has been set up as a support agency that provides backstopping and support to local governments who in turn help communities
- In Uganda a system of decentralised government is building on the strengths of grass-roots NGOs to provide long term support to communities
- In Bangladesh the arsenic crisis is being tackled by equipping communities to monitor the quality of their own water, with back-up from District level where problems are identified

General conclusions

- Implementation takes most money but least time. Action undertaken at this stage will influence sustainability: implementation sets the foundations upon which sustainability is built. The problem of increasing coverage continues to be mainly one of sufficient financing, which in general will need to be financed from sources external to the community. Attention must be paid during this phase to the overall quality of both hardware and software aspects, while recognising that building management capacity takes more time than 'planting a pump' or 'pouring concrete'.
- To ensure sustainability it is crucial to concentrate on what happens after implementation when the water supply system must be sustained over a period many times longer than the few years of the implementation phase. In this phase continuous support of the community by meso (intermediate) level agencies is needed. This takes many forms ranging from occasional technical support, through recurrent training, to auditing and regulation.
- At present the availability of financial and human resources at this level form *the* major constraint to ensuring the sustainability of community managed schemes. To fill this vacuum at meso level a more programmatic approach is required, in place of the project cycle currently favoured by many donors and other external support agencies.

- Communities are able to manage their systems on their own. However, they need support in different forms; legal, technical, financial. Providing this support is a leap towards the following step forward.

List of abbreviations

BN:	Bayesian Network
CBO:	Community Based
CM:	Community Management
CPT:	Conditional Probability Table
DSS:	Decision Support System
HRD:	Human Resource Development
INGO:	International Non-Governmental
IRC:	International Water and Sanitation Centre
IWRM:	Integrated Water Resources Management
NGO:	Non-Governmental
O&M:	Operation and Maintenance
PAR:	Participatory Action Research
UN:	United Nations
WES:	Water and Environmental Sanitation
WSS:	Water Supply and Sanitation

1. Background: the MANAGE Dissemination Project

The MANAGE Dissemination project (1998-2001) builds on the results of the Participatory Action Research (PAR) on community water supply management, carried out by IRC and seven partner organisations in Africa, Asia, and Latin America[1]. The PAR project took place from 1994 to 1998.

The MANAGE Dissemination project focuses on the development of training and advocacy materials and the development of publications to support community water supply management. The workshop at Olaertsduyn builds directly on the findings of the MANAGE project and plays an important role in both dissemination and further development of the key ideas surrounding community management (see background paper in Annex B and PowerPoint presentation in Annex C-2).

Four key lessons about community management emerged from the MANAGE experience.

- Rural communities have the capacity to manage their water supplies and make them reliable and sustainable, provided they get backup support as and when required.
- Participatory methodologies are effective tools for helping communities through the process of developing improved management of their water supplies.
- The process of building management capacities in rural communities is lengthy, demands patience and involves risks.
- Community management is context specific, meaning that each community needs to create its own specific management system, depending on social, financial, cultural and geographical parameters. No community is alike; as such no community management system is alike.

To date almost all experience of community management come from case studies or small 'pilot' projects. These have the time and resources to take a slow and flexible approach. However, while improving the water supply in these pilot communities, they do not have an impact on the high number of rural communities left unserved. To do this it is necessary to scale community management up 'in space' – that is to institutionalise it in such a way that it can be replicated at a regional or national scale.

Most experiences with community management have been implemented outside of, or in parallel to existing (often non-functioning) government structures for rural water supply. Community management is implemented as a project, often by international NGOs. In such projects there has been success in creating a 'sense of ownership', leading to increased community participation in management and operation and maintenance of the supplies as well as enhanced cost recovery. However, because of the limited time horizon of the project approach, there is little experience as to what happens once the project is 'finished' and the community is left on its own.

The sustainability and scale of community managed water projects will increase if they are embedded in an enabling framework. Such a framework should provide institutionalised support to communities managing their own water supply systems. This support should address both the operation and maintenance of the water supply system as well as the community management institutions and rules, including the functioning and operating rules of the committee, regulations for cost recovery, rules for

[1] NETWAS in Kenya, PAID-WA and WSMC in Cameroon, the Mvula Trust in South Africa, NEWAH in Nepal, WASEP in Pakistan, SER in Guatemala and CINARA in Colombia.

water use and distribution, capacities of operators and committee members, communication and transparency.

At the end of the MANAGE project it is clear that the issues of how to scale up community management in time (sustainability) and in space (coverage) and how to create effective support structures for community managed systems are the major challenges facing the sector as a whole

2. Methodology

2.1 The workshop objectives and outline

Experience shows that in the majority of small rural, less affluent and peripheral communities the community management option is the most realistic way forward. However, much of the success of community management to date has been at the level of the individual community or group of communities. In addition, despite the efforts put into developing community management during the implementation phase of projects the evidence is that without external support systems continue to fail before the end of their design lives. If community management is to successfully meet the needs of unserved rural communities it needs to be scaled up dramatically. The objective of the workshop was to develop a common vision among the participants of the conditions necessary for the scaling up in space (coverage) and time (sustainability) of community managed water supply systems. And to help them to see how such a vision could be applied in their countries of origins.

Specific goals of the workshop are:

- Assessing and formulating strategies to scale up community management;
- Raising awareness of the need for capacity building at all levels to promote community management;
- Raising awareness of the need for promoting sustainability in RWSS;
- Exchanging experiences on the promotion of sustainable management models.

In order to reach the workshop objectives, it was structured around a number of sessions – some of which ran in parallel over several days (see detailed programme in Annex H). Roughly, it was divided into an introduction session, two excursions, poster presentations, the development of a common vision using Bayesian Networks, discussion of specific aspects of community management and a final presentation and panel discussion.

2.2 Introduction session

2.2.1 Welcome and personal introduction

At the official opening of the workshop the main facilitator welcomed all the participants, and introduced the other staff members involved in the event. He explained that this workshop had been organised as part of IRC's ongoing work of advocating and supporting community management of rural water supply and sanitation services.

After five minutes of one-on-one interviews, workshop participants introduced to the group the fellow participants they had been interviewing.

To create an atmosphere of friendship and interest in one another, the facilitating team introduced the 'Shadow Friend'. Every participant, including the facilitators, had to pick the name of another participant out of a box. The person he or she picked was to be his or her shadow friend for the remaining of the workshop. The participants were asked to write little messages to their friend, anonymously, and drop them in the so-called 'shadow friend box'. At the last day of the workshop, all shadow friends were revealed.

2.2.2 Introduction to IRC

A brief introduction to IRC, its mission and the way it seeks to achieve its objectives has been given (see Annex C-1). To illustrate the work of IRC on community water supply management and give a further introduction to the background of the workshop, *"the seventh video"* on community water supply management was shown. This video has been compiled out of 6 country videos (Nepal, Kenya, Colombia, Pakistan, Guatemala, and Cameroon) as one of the outputs of the IRC MANAGE project. *The seventh video* highlights the problems in rural water supply, the innovative methods and capacities of rural communities to manage their water supplies, and the problems rural people face to create effective water supply management in their communities. Next to that, it is an appeal to governments to support rural communities in their efforts to mange their water supplies.

2.2.3 Expectations and Fears

The expectations and fears of the participants were identified. Most people expressed a desire to share experiences and knowledge. The themes that participants would like to dedicate some more time to were cost recovery and financial planning and water resources planning for communities.

Some of the participants were worried about going into too much detail while others feared not going into enough. Yet others were worried about logistical issues like cold, isolation of the location and work overload. Finally, there were some worries that there would be not enough time to cover all there is to say about community management.

2.3.4 Excursions

During the workshop two excursions were made, one to a Water Board and another afternoon was spent at Neeltje Jans.

The Water Board that was visited is called Waterschap de Brielse Dijkring. An explanation was given about the general set-up of water management in the Netherlands and the specific tasks and activities of this Water Board. The main challenge of their work is to let in sufficient fresh water to prevent salt sea water intrusion.

The group also paid a visit to Neeltje Jans, the working island from which the flood protection works of the Eastern Schelde estuary is controlled, the most impressive one of the Delta Works, protecting the parts of the Netherlands that are under sea-level.

2.2.5 Poster presentations

Learning from each other was an important objective of the workshop. To this end, each participant was asked to prepare a poster presentation of his or her working experiences, especially in the field of community water supply management. The summaries of the poster presentations can be found in Annex D. There was ample opportunity to discuss the experiences with each participant presenting their poster orally and then answering questions, a process that took 30-40 minutes per presentation.

2.3 Developing a common vision using Bayesian Networks

One of the objectives of the workshop was to develop a common vision on the key factors that enable successful community management. To this end, a Decision Support System (DSS) was used to help structure the experiences of the participants (see also Annex C-3).

2.3.1 Introduction to Bayesian Networks

Trying to deal with problems, such as community management, that are affected by many factors with complex relationships between them is difficult. So is identifying the likely effect on some desired outcome of changes in one or more causal factors, particularly when there is much uncertainty involved in the relationships. Yet these are the sorts of decision that managers make every day – often on the basis of nothing more concrete than 'feelings'. While making judgements on the basis of judgement, experience, or feelings is perfectly acceptable in many situations, it can often be difficult to explain or justify such subjective reasoning to others.

Bayesian Networks are one tool that can help. They do this by allowing complex chains of cause and effect to be mapped out easily and intuitively. They also do it by allowing relationships between factors to be 'weighted' probabilistically in a way that makes subjectivity transparent and clearly visible to others.

During the workshop the participants used the tool to structure their understanding of the main factors affecting community management and to thereby come to a common vision, on community management and the way forward.

Bayesian Networks

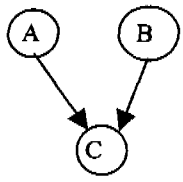
Bayesian Networks (BNs) are a powerful graphical computer based modelling tool that are based on the underlying premises of Bayes' rule a central axiom of probability theory. In essence Bayes rule allows us to reason backwards from observed effects to probable causes, using knowledge about the probabilistic relationship between cause and effect. Bayes rule states that

$$P(B \mid A) = \frac{P(A \mid B)P(B)}{P(A)}$$

where P(B|A) may be read as "the probability of B given A". In other words given a causal relationship between A and B, it is possible to determine the likely state of the causal agent A given observations about the current state of the affected agent B.

Bayesian Networks allow a large number of causal relationships between variables (called "nodes") to be linked together in a "directed acyclic graph", into which observations (or findings) may be entered and the effects of these observations on other elements of the graph modelled. Each node has a number of distinct "states", with a probability associated with each one. Because of their basis in probability theory BNs are ideal for dealing explicitly with uncertainty.

Each node in a BN is underlain by a "conditional probability table" which gives the probabilities for each possible state of the child node for all combinations of states of the parent nodes. The diagram shows a causal diagram and conditional probability table for a node (C) with two parents (A, B).



A	B	C true	C false
true	false	0.8	0.2
false	true	0.2	0.8
true	true	0.5	0.5
false	false	0.5	0.5

In this example each of the nodes may have one of two states – true or false, and the table gives the probability for C to be in each of those states for all permutations and combinations of the states in its parent nodes.

2.3.2 The creation of a BN on community management

The participants, working in two groups developed networks representing the factors affecting successful implementation and sustaining of community water supplies. In a number of iterations the networks were then reviewed and improved. The two final BNs developed are shown in annex E. After discussing the final set-up of the BNs, the groups filled in the Conditional Probability Tables (CPTs), which reflect a consensus of the groups' beliefs about the relative importance all the factors represented in each network to the final outcome.

An analysis was made of the most influential factors in community management, and the ways that different combinations of states in these factors affected the likelihood of successful community management. This was done for both phases (implementation and sustainability). Finally, the networks were used to investigate the likelihood of success and failure given the conditions found in each participants' home country, and to identify the changes most necessary to lead to an improved situation in the future.

2.3.3 Discussing key issues

After identifying the key-factors, it was necessary to further discuss some of them and to unpack the complex issues contained in them. Not all key factors could be discussed so those that were most unclear were selected.
These were:

- meso level support institutions
- water resource management
- community capacity
- cost recovery

2.3.4 Presentation of the results and panel discussion

The key findings of the workshop were used as input to a panel discussion with experts from the Dutch water and development sectors. The participants prepared a presentation on the outputs of the workshop and their view on the way forward for community management to be discussed with and were questioned the expert panel who consisted of:

- Willem Ankersmit – DGIS Policy Advisor Water & Sanitation
- Jeannette Hamersma - CORDAID
- Henk van Schaik – International Secretariat of Dialogue on Water and Climate
- Kathleen Shordt – IRC International Water and Sanitation Centre
- Jan Teun Visscher as chairman – IRC International Water and Sanitation Centre

The presentation slides are included in annex C-4.

2.4 Wrap up

Following from the MANAGE project, IRC is currently working on a book on the state of the art of Community management. Furthermore in December 2001 a conference is being organised "From System to Service".

2.4.1 Expectations and fears reviewed

At the end of the workshop, the participants could give their opinion (☺😐☹) if the expectations were met (or not) and if the fears were dispelled (or not).

Expectations	☺😐☹	*Fears*	☺😐☹
Lots of fun	☺	Overwork	☺
Openness	☺	Cold corrupts programme	☺
Share experiences	☺	Too much discussion on CM	☺
Learn – community management	☺	Too much detail	☺😐
Learn – finances	😐[2]	Not specific enough	😐
Learn – water resources	😐	Not enough time	☺
Learn – practical tools CM	☹[3]	Isolation (Location)	☹

2.4.2 Evaluation of the workshop

Besides a generic discussion of the good and bad points of the workshop, and a review of the fears and expectations of the beginning of the week, participants were also asked to individually fill in an evaluation form on the workshop, its content, and the logistical support and facilitation. The findings of the evaluation are shown in Annex G.

Judging from the average scores of the participants, the workshop was received very positive. The lowest average score, on a scale from 1 to 10, was a 7.1 for the food, although a number of participants recommended adjusting the menu a bit more to what they are used to. The highest average score was an 8.7 for the quality of facilitation, followed by an 8.6 for the country presentations. In the end all the participants were very positive about the workshop, both on the contents and on the logistics.

[2] This was wished for by some of the participants, but was not really relevant for this workshop which is not meant for addressing financial issues. For more information on finances, see IRC training on cost recovery at http://www.irc.nl/products/training/overview.html.

[3] This was wished for by some of the participants, but was not really relevant for this workshop which is not meant for addressing tools to be used for community management, rather focusing on tools for supporting decision making.

3. Results

As was explained in the methodology, the problem of scaling up was addressed by addressing the development of water supply systems in two distinct phases: *implementation* and *sustaining*. The assumption is that the implementation phase includes all aspects relating to hardware and software development starting with the first visit by a support agency to a community, and ending with the 'handing over' of the scheme.

The sustainability phase is seen as starting with the handing over, and continuing until the end of the system design life: at which point a new implementation phase is entered. The key factors from the implementation and sustainability phases, as long with the Bayesian Networks models from which they are derived are presented below.

3.1 Development of Bayesian Network & identification of key factors

3.1.1 Key factors in the *implementation* phase

The main conclusion from the analysis of the Bayesian Network model of the implementation phase (see Annex E) is that no single factor dominates in absolute sense. Those that are most important are:

- the (baseline) level of community capacity,
- existence of demand at community level,
- government and donor support: both financial and in the form of a supportive policy framework
- sufficient water resources
- capacity of implementation agencies.
- system implementation (quality of the works)
- water resources

Funding is not surprisingly crucial. However, as the diagram shows this can come either from the community itself or from an external source. The experiences of the participants suggested that in the implementation phase community cash contribution are seldom of major importance, as they usually cover only a small percentage of the total funds needed. Community contribution and cost recovery is a much more important factor in the sustainability phase where it can represent a large proportion of the total required.

A question that was much discussed in the workshop was the reason for the emphasis on cash contributions to implementation (which ranged from 5% in Africa to as much as 20% in some Asian countries).

3.1.2 Key factors in the sustainability phase

During the sustainability phase of water supply systems (see Annex E for BN), the critical factors include:

- effective intermediate level support agency(ies): important both to maintain community management capacity and to undertake technical support,
- appropriateness of the technology in terms of maintenance requirement
- availability of spare parts

- availability of funds (to finance support agencies) from *either* external sources or cost recovery
- continuing availability of sufficient water resources

The networks were used to assess, given the participants beliefs regarding the states of key factors in their own countries, the probability of successful implementation and sustainability of community managed water supplies. In addition, the networks were then used to identify the main factors for requiring attention in each country. The given by the participants was captured in a matrix which can be found in annex F. Below a summary of the main outputs is given in table 1.

In general it can be seen that the chances of successful sustaining are considerably less than implementation, a finding that while not surprising is worrying given that improved sustainability is one of the main reasons for adopting community management in the first place.

Table1: Country matrix

Country	Probability of successful implementation	Most limiting factor during implementation period	Probability of sustainable and equitable operation	Most limiting factor during sustaining phase
Bangladesh	51%	Water quality (the arsenic problem)	70%	Availability of funds
Ethiopia	57%	Human resources development at community level and at implementing agencies.	61%	Initial community management capacity and technology choice
Ghana	74%	Human resources development at implementing agencies.	61%	Technology choice
Kosovo	69%	Human resources development at supporting agencies.	37%	Initial community management capacity, availability of funds, lack of legislation
Madagascar	62%	Human resources development at both implementing and supporting agencies.	34%	Capacity at meso-level and an ineffective agency at this level
Malawi	33%	Human resource development at community level and awareness raising to create demand.	31%	Initial community management capacity
Sri Lanka	55%	Improving water resources management.	60%	Technology choice
Uganda	57%	Human resources development at community level	47%	Initial community management capacity and legislation

3.2 Discussion of key issues

3.2.1 Meso level support institutions

This discussion analysed the 'meso' level in general. What was meant by the term, and who were the main actors, their roles, and the resources that they require to function efficiently. Meso level was a term coined to describe the various actors found in the level between the community and national levels. They can be seen as the actors who work directly with the community, or the actors who support them in doing so. They differed slightly between implementation and sustaining phases, as did the terms used to describe the levels (see networks).

Implementation phase
At this stage there are many actors involved, some of whom will leave right after implementation. In the network the actors were divided between implementing and support agencies. The actors identified included:

- government institutions: district government, district committees, regional water boards (as support agencies)
- international NGOs (can be both support and/or implementing)
- UN agencies (can be both support and/or implementing)
- Bilateral agencies (can be both support and/or implementing)
- Religious institutions (supporting agency)
- Private sector (in implementation)

The role of implementation agencies is largely self-evident and revolves around the construction of hardware and development of software skills in the community. The roles of the supporting agencies (either directly to the community) or more often to the implementing agency include:

- facilitation
- needs assessment
- financial support
- technical support/backstopping
- supervision and monitoring
- set up structures
- capacity building to implementing agency

The supporting agencies themselves often need external technical support, particularly for quality assurance. The need for capacity building within implementing agencies and their staff is seen as critical for scaling up in terms of increased coverage.

Sustainability phase
In this stage the identified actors involved in long term support at meso-level were divided between district and regional 'support agencies'. District level agencies were seen as giving direct support to the communities themselves, while regional agencies were seen as acting as intermediaries between district and national levels.

The most important attribute of these agencies was seen as being that they were long term, rather than project based and therefore likely to move on after a few years. Potential organisations with the capacity to be support agencies include:

- (Sub)District government agencies (can also be water board authorities) who on their turn might be backstopped by other independent agencies like CWSA in Ghana.
- Private sector enterprises
- Local NGOs

More specific tasks for the support agencies include:

- Coordinating technical support to deal with larger O&M problems, where a maintenance support unit (privatised or not) gives technical support to the communities.
- Ensuring continuous training and re-training. The problem of trained community level personnel who over time move away, die, or loose interest was identified as a key problem.
- Monitoring, evaluation, backstopping and financial auditing of community institutions.
  Activities under these headings include:
  - Continuous monitoring and remedial action. Where this is provided by the private sector, local NGOs or local councils (like in Uganda) these organisations will in turn need to be monitored and evaluated on their performance;
  - Ensuring that quality standards are met by for NGOs, contractors etc;
  - Human resources development for communities: follow-up and refresher trainings (needs identified from monitoring reports);
  - Backup support in cost recovery, based on national guidelines.

- In addition to the practical tasks listed above, meso level actors also have an important role to play in creating a supportive policy environment. Activities under this heading include:
  - Implementing national policy framework;
  - Coordinating all activities from all actors at district level;
  - Monitoring reporting for national/regional WATSAN officers to feed back into policy making;
  - Fundraising and advocating for WATSAN priorities when dividing national/district budgets;
  - Managing available funds and other resources (e.g. spare parts distribution);
  - Advising parliament on WATSAN issues and priorities in the region.
  - Monitoring crosscutting issues such as equity (both gender and poverty) to ensure that national targets are being met

A constraint identified by the participants is the rotation of many local government officials every four years or so. This even more indicates the need to define clear roles and responsibilities, and rules and regulations.

The workshop identified a 'vacuum' at this meso-level: of an almost total lack of long term support to communities. This is related to either the lack of suitable organisations or, where the organisations do exist, of the necessary capacities within them (in quality or quantity). Key resource needed include:

- human: multidisciplinary teams (technicians / sociologists / facilitators) with the necessary skills to support communities.
- technical: vehicles, computers, spare parts, system monitoring
- financial: for capacity building of support staff, staff salaries and other operational costs

The last is particularly important as it determines the availability of the other resources. In the participants conceptualisation the financing of the meso-level comes from 'external' (national or donor) sources – reflecting the reality of under-resourced local authorities in much of the developing world. Very often there are no funds available for capacity building and functioning at district level (both for training and paying regular salaries, etc), while the number of staff and/or their capacities are not in line what is needed at this level.

Conclusion
The implementation phase is very intensive, time-constrained and needs continuous attendance of agencies working with and supporting the communities. Achieving scaling up at this phase (i.e. extending coverage) is largely controlled by access to funds and the capacity of implementation agencies. In the short term it is unrealistic to expect communities to fund or undertake activities in this phase on their own.

The sustainability phase is different. Systems exist and are (at least initially) operational, and if the implementation phase has been carried out successfully management capacity has also been created. Success at this stage is therefore a matter of occasional backstopping and trouble shooting of communities and calls for considerably less in terms of financial or human resources.

3.2.2 Water resources management

In this discussion, the participants gave an overview of water resources management issues in their countries and on basis of that came up with a synthesis on several issues.

Ghana
Quantity: Surface water is available in large quantities and easily treated by chlorine. This is used in the cities. Small rivers are drying out due to problems in catchment development. In addition, some are becoming polluted as they pass through urban areas. Groundwater is a problem in the savannah areas, mainly with respect to quality. This includes fluoride, salinity and iron. Rainfall harvesting is not often applied as in the regions where resources are abundant rainfall is also abundant.

Quality: The government support agency takes random samples while communities stay alert to changes in the easily recognizable components of the quality like taste. Awareness raising is important to make people aware of quality issues. There is a national database of wells and their quality. This is to be transferred to regional level.

Water resource management: Water resources allocation is controlled by a system of permits – issued by a water resources committee. This does not apply for communities that use little water. At the moment the Community Water Supply Agency (CWSA) is looking whether the extraction rate matches the recharge. However, groundwater is not used for irrigation so the probability of over extraction is not large.

Bangladesh:
Quality: Groundwater is found mainly in shallow and deep aquifers. In the former aquifers there is are quality problems with arsenic, iron and salinity in the coastal areas. Urban areas use the deeper aquifers and the rural areas use shallow aquifers. Surface water is abundant but has a large bacteriological

contamination, while in the coastal areas salinity is a problem as well. Some cities use treated surface water. Although rainfall is erratic, rainwater harvesting is common in the saline and hilly zones. Many people find it has a flat taste.

Water resource management: Data are collected at district, but the database is at national level. Villagers do field tests every six months. Districts do random sampling. Bacteriological testing is responsive to community complaints on diseases.

Official groundwater allocation is needed for the big cities. In rural areas there is competition between irrigation wells and drinking water wells. This crisis is not yet caught by a legislative framework but public debate is ongoing.

Sri Lanka:
Quantity: Surface water is not available throughout the year. Towns rely mostly on surface water. Farming activities compete with drinking water. The farming activities contribute as well to the quality problem. Drinking water is also taken from irrigation tanks, but there are quality problems. In terms of groundwater shallow wells are appropriate and most often used in rural areas, but there is frequent failure in the dry period. Rainwater harvesting is a promising alternative, although tank sizes have to be large to ensure a year round supply, and some people feel that rainwater makes them sick.

Quality: Shallow wells have fewer quality problems than deep, where fluoride and iron content and hardness can be high. Water quality management is the task of the Water Supply and Drainage Board at district level but staff is not serious about it. Sometimes it is done by a third party, like the Health Authority. Communities are not involved in testing.

Water resource management: Groundwater extraction will probably become regulated by the newly established Water Resources Authority. Allocation problems are mainly with respect to surface water. At river basin there is competition between irrigation and drinking water in the dry season. Government is starting to coordinate this in the District Water Authority. Farmers and NGO's participate in this.

On the basis of the country specific situation, the following common issues were discussed.

Allocation, quantity and quality
Meso-level organisations have an important role to play in information dissemination, negotiation, co-ordination and allocation. At national level, legislation is made and backstopping services (like laboratories) can be provided. At micro level, communities have a role in monitoring and in organising to represent themselves in allocation decision making. Equally, at micro-level allocation may need to be managed between different uses and user groups.

Capacities
At national level good integration of IWRM policies is needed and transboundary water management. A high level of technical skills is needed. Capacities needed at meso-level are information management, planning, technical capacities, quality assurance, negotiation, advocacy, facilitation and conflict management skills. At community level the required capacities include supervisory skills, hydrological understanding, catchment development, advocacy and representation and negotiation skills.

Organisations
At different levels, different organisations can be involved in water resources management including:
- National: government, (inter)national NGO's, Universities, laboratories.
- Meso: regional authority, NGO's, elected members, regional resource centres, basin management committees.
- Micro: CBO's, local government, NGO's, schools, indigenous leaders.

3.3.3 Community capacity

This session focussed on identifying issues in capacity building in the implementation phase, the sustainability phase and the links between these.

Implementation phase
In this phase the community capacity needs to be developed by means of trainings on key issues like management, cost recovery and conflict resolution. This capacity building includes:
- mobilisation
- assessment of existing capacity (current level, baseline capacity)
- on the job training
- development of community structures
- development of vision (ability to work together towards a common goal and plans)
- outline constitutions and bylaws at community level (on leadership and water resource management)
- building financial management systems and skills
- provision of and training with tools (tool kit)
- quality control and contract enforcement

Again the time issue was raised: building capacity (software) takes much longer then construction (hardware).

The following forms of capacity building after implementation can be thought of to achieve sustainable community management:
- Refresher training by supporting agency and/or exchange visits to other communities for:
  - Auditing of constitution (with rotating leadership, and support community in implementing bylaws about leadership etc)
  - Continuous leadership training
  - Continued technical training (in case of replacement of people who leave or die), also sourcing for spare parts and tools
  - Planning sessions: reviewing plans, planning extension and upgrades (to be implemented in cooperation with district support agency)
  - Facilitation (trouble shooting and conflict resolution, institutional relationships for community with outside actors, internal relationships within community)
  - Financial auditing
- Ongoing human resources development for further development of the villages.

3.3.4 Cost recovery, demand, ability to pay, financing

This discussion started with an overview of the financing mechanisms in place in the countries of the participants and on basis of that came up with some general points.

Ethiopia
In the implementation phase communities pay in labour and local materials. In the O&M phase, for hand pump systems people pay a flat rate, as determined by the committee, while for motorized schemes it depends on the consumption.

Ghana
Daily O&M is paid by the community, it is also required that communities pay 5% of the initial investment costs. However, it can take a long time to get this money. Large investments are paid by the districts. The users are informed about different types of technology and the respective costs. They then have the final decision on the type of technology chosen.

Kosovo
There used to be a national tariff, depending on household consumption. This covered O&M but is not working anymore, as people refuse to pay. Public utilities are now privatized.

Madagascar
Villagers contribute with their work and materials to cover part of the investment costs and pay full O&M costs. The size of the contribution depends on the type of system the communities chose. The communities decide on their own tariffs, but the government can decide to intervene in special cases where the poor cannot pay.

Malawi
It is planned to a 5-10% cash contribution of the initial investment costs from the communities. However, it its questionable whether this contribution will contribute to sustainability. Although it is important to create a sense of ownership, communities should pay on the basis of their income. Payments in kind should also be accepted.

Netherlands
Full O&M and new investment costs are paid by the community. But poor people can get a subsidy or exemption from the fees.

Sri Lanka
In the implementation phase, communities pay 20% of 150 US$. This can be in cash or in kind. For a more high-maintenance technology (submersible pump for instance) they pay more. Poorest people can get a loan. If there are more than 2000 connections, then O&M tariffs are set by the national water board, but still paid by the community. Between 1000-2000 connections, the local authority maintains the system and determines the tariff. If there are less than 100 connections, the system is maintained and tariffs paid by the community.

Conclusion
There is a general feeling that large replacements should be covered by districts or local governments, while minor O&M is paid for by the community. Mechanisms can be thought of to exempt the poorest people from paying the tariffs. These include cross subsidies for the poorest or providing free water in case of emergency. So full cost recovery at all costs is not considered wise.

The ability to pay should serve as a basis for cost recovery. This determines the type of technology and service level people can afford. In this way, it should serve as basis for the degree of cost recovery. If there is a high ability to pay, high demand and high management capacity, then full cost recovery might take place. The ability to pay is important for the sense of ownership.

Governments can set a service level which should be followed, even if it would mean that it would be fully subsidized. Government guidelines on quantity and quality need to be in place. If the poor are not getting enough safe water, full cost recovery makes no sense. Sometimes, there is no coherence between district policies and national policies. So, general policies are important.

4. Conclusions and recommendations

Communities *can* manage their own water system, but they cannot do so completely unaided. There is a need for support for long term sustainability of their systems. Providing this support is the role primarily of meso or intermediate level actors.

Meso level is a vague term. Each country should identify clearly which actors are involved and what can be their contribution in the long term. Once identified, the capacity of the meso-level needs to be drastically increased, which in turn requires important allocations of financial and other resources. Skills need to be developed to support communities in technical and managerial trouble shooting, continuous training and skills development, auditing, and monitoring and evaluation. Capacity building requires time and should evolve over time. As things change refresher trainings are needed.

If people can bear it, they should contribute with financial resources, but payments should not lead to the poor being excluded. In the short and medium term cost recovery in the implementation phase is likely to remain low compared to of the funds needed. Greater flexibility is needed in terms of allowing non-cash contributions.

Financial contribution from the communities does neither automatically lead to ownership, which comes much more from being involved in clear decision making processes and jointly finding answers. Finance for daily O&M is different and communities should pay for the service that it is provided.

The participants summarise their recommendations in the following statements:

- The legitimacy of community management needs to be recognised
- The vacuum at meso level requires a programme approach.
- Capacity building needs time
- Is the focus on community cash contributions for implementation counterproductive? Should there be cost recovery at all costs?

Annexes

A. List of participants

B. Background paper on Community Management: the Way Forward

C PowerPoint presentations:
1. Introduction to IRC International Water and Sanitation Centre
2. The MANAGE Dissemination project
3. Introduction to Bayesian Networks
4. Participants' presentation to the panel

D. Poster presentations

E. Bayesian Networks
- Implementation of community managed water supply projects
- Sustainability of community water supply management

F. Country matrix

G. Evaluation of the workshop

H. Workshop agenda

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Annex B - Community Management: the Way Forward

IRC's route towards this workshop

(Paper prepared by Ton Schouten)

IRC has always been an advocate of community approaches in rural water supply and sanitation. Since it's foundation in 1968 it has highlighted the role of community people in improving their water supply and sanitation facilities. The focus was in particular on social, financial and management aspects of water supply and sanitation. Water supply and sanitation were not regarded as construction of systems only, but as as the creation of a service, including management aspects such as the creation of community institutions, cost recovery practices, rules and regulations and capacity building.

In the 1970s and 1980s the limitations of large scale, top-down approaches in water supply and sanitation came to the surface. Thousands of rural water supply systems were constructed, but many of these systems broke down after some years. Governments and donors did not have the resources to maintain and repair the systems. Hence, communities should play a bigger role in keeping their systems functional. IRC's message was that communities could and should be involved in the operation and maintenance of their water supplies and it developed tools and methods to make this possible. Community management should fill the gap that governments and donors left after construction.

Development thinking changed also in the 1970s and 1980s. Robert Chambers wrote his "Farmers First", participatory methodologies were introduced in development work. Top-down approaches were criticised because they were seen as blue prints implemented by mostly technical experts, not anchored in and without respect for local, social realities. Development interventions should be participatory and bottom-up, the rural community being the bottom. Such interventions could accommodate the complexity of development problems and would therefore be more effective. This thinking also entered the water sector.

IRC was part of these changes. Community management of water supplies became it's core business. Question however was, how to implement community management, how to create sustainable management institutions and practices in rural communities? Concrete methods and tools had to be developed to enable communities to improve their water supplies themselves.

In 1994 the Netherlands government rewarded IRC with a 4 year research project to develop methods and tools for improved community management. The project was carried by IRC and six partner institutions : Nepal Water for Health (NEWAH) in Nepal, the Water Sanitation Hygiene and Health Studies project (WSHHS)f the Aga Khan Health Servic, later the Water and Sanitation Extension Programme (WASEP) of the Aga Khan Housing Board in Pakistan, the Network for Water and Sanitation (NETWAS) in Kenya, The Pan-African institute for Development (PAID-WA) in Cameroon, Agua del Pueblo (ADP), later Servicio para el Sesarollo (SER) in Guatemala and the Centro Inter-

regional de Abastecimiento y Remocion de Agua (CINARA) in Colombia. The duration of the project was 4 years, from 1994-1998. The name of the project was Participatory Action Research on Community Management of Rural Water Supply. A participatory methodology, PAR, had to be used to strengthen the capacities of rural communities to manage their water supplies.

The research was carried out in 22 communities in the 6 above mentioned countries. Communities with different water supply technologies and with different social and economic parameters. Staff of the 6 partner organisations, supported by IRC staff, involved the communities in a common, participatory search in the key problems with the management of their water supplies, experimenting with solutions, creating community institutions, rules and regulations, and monitoring the newly created management structures.

Many important lessons on how to work on community level were learnt. Different participatory tools were tested and improved. The capacities of the staff of the six partner organisations to cooperate with communities were enhanced. Insights in the complexity of the problems and the diversity of communities were gained.

Here some of the lessons will be mentioned that had important implications for the concept of community management:

- Rural communities have indeed the capacity to manage their water supplies and make them reliable and sustainable, provided they can access support as and when they require this.
- PAR and other participatory methodologies are indeed effective tools to take communities through a self-determined process towards improved management and thus improved water supply.
- This process is lengthy, demands patience and involves capacity building of community people in management tasks and procedures.
- Community management is context specific meaning that each community creates its own specific management system, depending on social, financial, cultural and geographical parameters. No community is alike, no community management system is alike.

Two of the above mentioned aspects need some further elaboration: the fact that the process to create sustainable community management is lengthy, and the fact that this process and the management practices created are context specific.

By looking closer into these aspects some of the major constraints of the community management concept will be revealed:

- The community is a myth, differences in culture, gender, social and economic conditions, power relations, and in geographic parameters will result in different management systems. This demands flexibility of the intervention.
- Communities are not the harmonious entities. They are melting pots of different interests and roles, of latent or manifest conflicts. Creating a sustainable and commonly shared management system in these melting pots is therefore a difficult

and uncertain enterprise. It demands great facilitation skills.

- Capacities are built in individuals (members of water committees, caretakers etc.) and they get lost when these individuals leave the water committee or even the community. This means that the return of investment in capacity building of community people is uncertain.

The PAR Research project learned us that these complex community realities make implementation of management practices in communities time and thus money consuming. The sustainability of the outcomes is also uncertain, because deeply rooted cultural, economic differences and power constellations do not go away through the work of a dedicated PAR researcher. Social realities are often stubborn. They are also dynamic and community management practices can not always hold pace with the changes in rural communities, such as migration or increased poverty.

This does not mean that communities do not have the capacities to manage their systems. The PAR Research project showed that communities have and can develop very innovative ways to manage their water supplies. Communities have management capacities, they have traditions in securing and distributing water supply on which they can build. Management is not new for them, they are managing other tasks and needs in the community as well. Water supply may be more difficult to manage, because of the often low priority for management of water for household use in relation to other needs, but there is often willingness to improve water supply management.

One of the lessons learnt in the PAR Research project with the most far reaching implication is that implementing community management demands a context -specific approach. That is very justified because it respects local realities, but it is at the same time the main weakness of the community management concept as we have approached it so far. Because how then to scale up community management , how to make it repplicable? In short how to go from 22 communities in 4 years time to thousands communities in a somewhat shorter time span and at reasonable costs?

So far communities have been approached as rather isolated entities. As social institutions that have to create and maintain their rules and institutions for water supply all by themselves. In some countries that is indeed the case, communities are at their own mercy. But in other countries the governments has taken up the creation of rules and institutions that partly regulate life in rural communities. Through legislation, policies and the creation of service structures. It is assumed that in these countries community management will stand a better chance. If governments could create a kind of safety net and guidelines for communities managing their water supplies, this management could be more sustainable.

Water supply is still often being approached as a project, meaning that often foreign donors provide the resources to implement water supply in rural areas. Meaning also that water supply is often regarded as system construction only. But projects go, foreign donors go. They construct the system, nowadays they stay one or two years longer to implement community management practices, but then they "hand over" and go. Leaving communities indeed at their own mercy.

Should rural water supply not be approached as a service instead of a project, as something that first of all needs a framework, structures, laws and rules to make it survive over a long time span? Is a project not part of such a service, instead of a goal in itself? Is it not necessarily so that projects will fail if they are not embedded in a service structure? Who is responsible for creating such a service or support structure? Isn't there a role for a government and the means and resources that it has at its disposal? Then what is the role of communities in such a service structure?Is the context specificity of the community management concept not also the major hick-up for creating sustainable rural water supply?So are we back where we started some 30 years ago with the introduction of the community management concept: the role of governments? Is the snake biting in its own tail?

In 1998 IRC and its partners concluded it's PAR Research project. But that was not the end of IRC's involvement with community management of water supplies. The Netherlands government asked IRC and its six partners to disseminate the lessons learnt in the Research project. A new project was formulated which will run until the end of 2001.

IRC looks at this Dissemination project not only as a way to distribute information and lessons learned at community level. The project must have the objective to create better and more reliable water supply for rural people. Community management is a vehicle, not a goal in itself. Can we improve the vehicle? Is the vehicle still valid and will it indeed result in better water supply? These questions are part of this Dissemination project and IRC and its partners try to tackle these questions. By outreach materials such as videos an leaflets stimulating reflection and debate on the community management concept. By developing training to increase capacities in the water sector. And also by involving others in discussing the concept and improving its effectivity. This workshop is a mean to do so.

Different countries face different problems in rural water supply, different countries have different policies, legislation and support structures for rural water supply. In different countries the implementation of community management faces different challenges. This workshop will try to accommodate the diversity of the backgrounds of its participants. It will also try to accommodate the complexity of the concept of community management

In 20 years of working with the community management many lessons have been learned by people in different contexts and countries. By exchanging these lessons and by discussing them we can help each other in overcoming the constraints and creating new challenges for the future.

IRC thanks you for your participation and it hopes that the discussions will be fruitful, will strengthen the ties among you and will result in improved, safe and reliable water supply for many millions of rural people.

IRC International Water and Sanitation Centre

Sharing knowledge and experience
for
better water and sanitation services

1

Mission

IRC facilitates the creation, sharing and use of knowledge so that sector staff and organizations can better support poor men, women and children in developing countries to obtain water and sanitation services they will use and can sustain.

2

IRC's objectives are to

- Facilitate the sharing and use of quality sector knowledge
- Improve the information and knowledge base of the water and sanitation sector
- Strengthen sector resource centres in the South

3

Gateway to quality information

IRC, active as a resource centre for over 30 years, has a unique collection of information related to water supply and sanitation in the developing world. The collection includes unpublished reports and audio-visual material and is increasingly available electronically.

We provide:

- An extensive Web site
- A newsletter - SOURCE Bulletin
- Maintenance of the Interwater pages on the Web

4

Publications

There are more than 90 titles in our publications catalogue, many of them developed and published jointly with our partners.

This ensures that sector knowledge is readily available in the South.

Publications are available in hard copy in English, French, Portuguese and Spanish, and an increasing number of titles are also available on our Web site.

5

Training and experience-based learning

IRC and partners provide short training courses in Asia, Africa, Latin America and the Netherlands.

Topics include gender, community management, management for sustainability, monitoring for effectiveness, environmental sanitation and hygiene education and promotion.

6

Advisory and evaluation services

Advisory and evaluation missions provide opportunities for participatory learning.

We promote sharing of knowledge and experience and help participants gain insight into key sector issues.

Advisory services include project planning, appraisal, evaluation, monitoring, technical support and workshops.

We also provide online backstopping and tutoring.

7

Applied research and learning projects

Through desk research and the facilitation of applied research IRC helps to discover and document new knowledge.

We use learning projects to experiment in new areas.

Topics are selected with partners and include community management, gender and equity, institutional development, integrated water resources management, school sanitation, and hygiene promotion.

8

Advocacy

IRC helps to advocate change and raise awareness of sector issues amongst decision makers and opinion formers at all levels, to promote greater understanding and encourage stronger support for water and sanitation issues.

9

Guiding principles

- Working as facilitators
- Being equal partners
- Stimulating dialogue
- Creating a learning environment

10

Community Water Supply Management:

The Way Forward

In the 1970s and 1980s (International Water Decade) hundreds of thousands water supply systems were constructed in rural areas.

Many of these systems broke down.

Community management should fill the gap that governments and donors left after construction.

Question was,

how to implement community management,

how to create sustainable management institutions and practices in rural communities.

In 1994 a 4 year research project started, to develop methods and tools for improved community management. The MANAGE project.

IRC and six partners:

- NEWAH in Nepal
- WASEP in Pakistan
- NETWAS in Kenya
- PAID-WA (WSMC) Cameroon
- ADP (SER) in Guatemala
- CINARA in Colombia

involved communities in a participatory research into the key problems with the management of their water supplies.

MANAGE project: research and dissemination

Research (1994-1998): 22 communities, participatory tools, training, capacity building, conflict resolution.

Dissemination (1998-2001): IRC with the same partners, diffusion of lessons learned in the research project : training, workshops, books, website, videos, participation in conferences.

Promote community management, increase its effectiveness

Lessons learned:

- Rural communities indeed have the capacity to manage their water supplies
- PAR and other participatory methodologies are indeed effective tools to strengthen management capacities of communities
- The participatory process is lengthy, demands patience and involves capacity building
- Community management is context specific

Some major constraints of the community management concept:

- The community is a myth, community dynamics can hinder sustainable management
- Sustainable management demands representation, transparency and a long term perspective
- Capacities are built in individuals
- Community management can be as fragile and unsustainable as the water supply system itself.

How to go from participatory pilots to large scale sustainable implementation?

from 22 communities in 4 years time,

to thousands of communities,

in a shorter time span,

at reasonable costs

and with sustainable results?

Without proper support community management is doomed to fail

Support form intermediate levels (private or public) is needed, embedded in legislation, policies, rules and regulations, tasks and responsibilities for all stakeholders.

Water supply is still often being approached as a project. But:

Projects go

Foreign donors go

Rural water supply should be approached as a service instead of a project. A service implies institutional frameworks, structures, laws and rules. Projects are part of the service, not goal in itself.

- Who is responsible for creating such a service or support structure?
- Who supports the community after 'handing over'?
- What is the role of communities in a water supply service?
- Answers are context specific

IRC looks at the Dissemination project as:

1. A way to distribute information and lessons learnt.

2. A way to create better and more reliable water supply for rural people

The Dissemination Project:

1. Outreach materials such as videos, books and leaflets stimulating reflection and debate
2. Training and workshops to increase capacities
3. Involving others in discussing the concept and improving its effectiveness.

An introduction to Bayesian networks

A tool to support the planning and management of development programmes in the water sector and beyond

Patrick Moriarty

An introduction to BNs

- What is a Bayesian network?
- Why use a Bayesian network?
- Some technical details
- An example
- How to build a Bayesian network
- How to use Bayesian networks

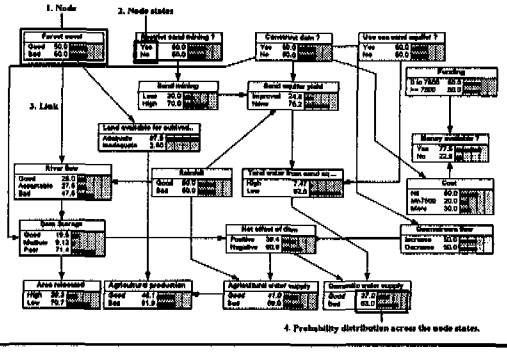
What is a Bayesian network?

- A **graphical** tool for building decision **support** systems (DSS) to help make **decisions** under uncertain conditions
- Simple to learn and easy to use
  - Do it yourself!

Why use a Bayesian network?

- To analyse the logic and consequences of different courses of action
- To help deal explicitly with complexity
- To show clearly the effects of uncertainty
- To synthesise the ideas of multiple "experts"
  an expert can be a professional, peasant, or computer mode
- To communicate ideas and promote debate
- To involve stakeholders
- To develop a clear reference point (marker) within a process

Some technical details



Some more technical details

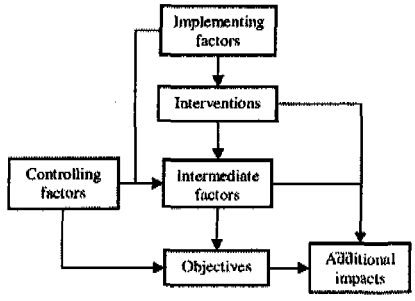
A conditional probability table (**CPT**)

		River flow:	Good	Acceptable	Bad
Forest cover:	Rainfall:				
Good	Good		0.60	0.40	0.00
Good	Bad		0.00	0.10	0.90
Bad	Good		0.40	0.60	0.00
Bad	Bad		0.00	0.00	1.00

How to build a Bayesian network

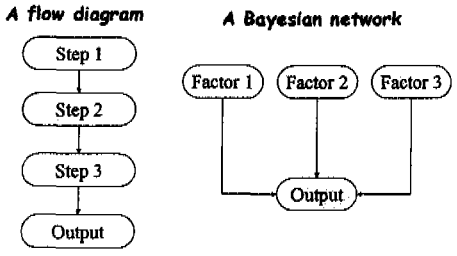
- Identify all the key factors in the **decision**
  there is a difference between the 'decision' and the 'system' - model the decision NOT the system
  - possible choices, variables which affect that choice, interactions between variables, people involved in the problem, uncertainties
- Capture the logic of the decision in the BN
  - define nodes and node states
  - arrange structure
  - be clear about scales in space AND time
- Define relationships
  - fill in conditional probability tables (CPTs)

How to build a Bayesian network I



How to build a Bayesian network II

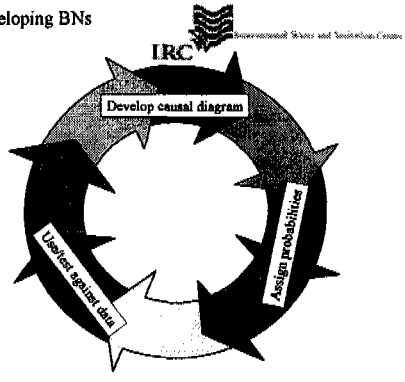
- Warning! BNs are *not* flow diagrams



How to use Bayesian networks

- To investigate interactions
- To understand potential consequences
- To promote debate
- To map processes - create institutional memory
- NOT to make decisions for you

Steps in developing BNs



Risks of BNs

- Forgetting where the 'relations' come from -
  - Belief Networks do not represent an 'objective reality'
  - They do make subjectivity transparent
- Focussing on the 'numbers'
  - The precise value of a probability in an expert Belief Network is irrelevant
  - Concentrate on major groups and large changes
- Becoming locked into the logic
  - BNs represent the group vision of those who design them
  - Other visions are equally valid - collecting and comparing many BNs can lead to greater insight

Moving forward with BNs

- We have used a BN to develop a conceptual model of experts shared beliefs in the key factors affecting scaled up and more sustainable community management. Similar exercises can be used to:
  - Develop and justify policy decisions
  - Identify and justify activities within projects and programmes
  - Identification of key data for monitoring and evaluation

- Where suitable data and skills exist more advanced DSS capabilities can be developed:
  - Validation of 'beliefs' using 'real' data - learning
  - Using for more advanced decision support - links to G/MIS (geographical/management information systems)

Community Water Supply Management

The Way Forward...

Contents

- Introduction
- Workshop
- Country results
- Implementation
- Sustainability
- Conclusions

Introduction

Goal of the workshop

- Working together on a common view for sustainable community managed water supply.
  - Can communities manage their systems? Is there a need for support?
  - How can communities be supported?

The Workshop

- Participants
- Clarifying expectations and focus areas
- Bayesian Networks
- Conclusions

Bayesian Network

- A Computer –based graphical decision support software
- To arrive at a common vision on which factors influence Community Management

Country results

- Ethiopia: focus on communities' capacity
- Ghana: capacity building for implementing agencies
- Malawi: invest in demand and community capacity and development of district structure
- Madagascar: increase human resource capacity of supporting and implementing agencies
- Uganda: concentrate on community capacity building

Country results

- Kosovo: human resource development for supporting agencies and legislation
- Bangladesh: solve the arsenic problem
- Sri Lanka: water resources management

Country results

- Difference between priority problems between Africa and Asia
  - In Africa water supply system performance through improved capacities key issue
  - Water resources management key issue in Asia

Implementation phase

- The implementation phase is critical for success of any community program;
- Most money, least time;
- Creates foundations for sustainability;
- Magnitude of roles and responsibilities.

National level

- Actors (governments, donors and support agencies)
- Policy and legislation for community management
  - Setting of national standards
  - Framework for implementers
  - Legal recognition of CBO's and of ownership
- Financial support
  - major funder
  - also to support agencies
- Support to decentralized decision making

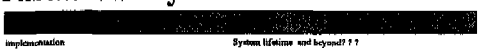
Meso-level

- Many actors (implementation and support agencies)
- Baseline information
- Technical planning and quality assurance
- Capacity building
- Time frame

Community level

- Capacity developed during implementation is baseline for sustainability
- It requires time and money
- Demand crucial to management
- Capacity (technical, financial, managerial) should be built on existing situation and capacities
- Ownership is not necessarily based on 5-20% community contribution

Sustainability Phase



MESO LEVEL:
Adequate support at meso-level for sustainable management at community level Spare parts and operation and maintenance

- Skilled manpower: Refresher trainings
- Costs recovery (tariff setting, fin. management)
- Funds for system extension and replacement
- Quality & quantity monitoring

Sustainability Phase

- Legislative support and management structure
- Conflict management and resolution Monitoring at micro-level (communities) for feedback at macro-level (regional/national) for remedial measures
- Co-ordination between all meso-level stakeholders

Main constraints for meso-level support
- Inadequate funding for operational and administrative costs
- Insufficient human resources (quantity and quality)

Conclusions

- Capacity building for sustainable management takes more time than planting a pump
- 5-20% community contribution makes no financial sense – can it lead to ownership or are there other ways?
- Cost recovery at all costs?

The way forward...

- The legitimacy of community management needs to be accepted by all
- There is a vacuum at meso-level – to fill the vacuum a program approach is needed
- In particular governments and donors should address meso-level capacity

Annex D – Poster presentations

Bangladesh, Watsan Partnership Project (WPP)
Abdul Motaleb (SDC Swiss Agency for Development Cooperation)

Bangladesh is a country with an area of 144.000 km2 and a population of more than 120 million inhabitants. Water is available in abundance. The main problem is the quality of the water with arsenic being a critical issue. After the joint evaluation carried out by the Government of Bangladesh, Danida and SDC in 1997, it was concluded that there was a need for more genuine community participation, affordable technology development and marketing, proper health and hygiene education and practices, and to cope with the problem of arsenic pollution of the groundwater.

This was the basis for a new strategy focusing on bottom-up, partnership based approaches, and demand responsive and gender balanced programs. The main objective of the WPP is to improve users' sustainable access and use of affordable water and sanitation facilities; and to develop and test an innovative replicable model for an enhanced collaborative partnership and synergy among the main actors in the sector.

The project is operated through a steering committee with representation from the major stakeholders in the sector: government line agencies, international development organizations like UNICEF and WHO, the major collaborative partners, like CARE and the donor SDC. The project management unit is working with guidance from the steering committee together with international and local NGO's, who are working closely with about 640 villages in the 2 northern districts of Bangladesh.

The main challenges are the sustainability of the Village Development Committees (VDC); how to cope with the arsenic pollution; and how to establish good partnership.

One of the aspects of dealing with the arsenic pollution of the groundwater is the monitoring of the quality of the water and the periodically testing of it, as it might change over time. An innovation of the project is that the villagers are doing the arsenic testing them selves. These Arsenic Survey Teams (AST) are selected within the village ensuring that the necessary resources remain in the village to carry further testing of arsenic levels periodically. Villagers carry out simple test strip testing, and only if they see a high indication call on district level support to come and confirm the results and take remedial action. The combination of carrying out arsenic screening, patient identification and mitigation activities made the villagers confident to cope with the problem of arsenic at a low cost.

Lessons learned already include that it is possible to establish good partnerships and work from bottom-up towards good community management. Also that while these processes initially require high investment costs, over time they cover more people and area, leading to a sustainable and cost effective situation.

In the longer term it remains to be seen how well the VDC's continue operating and managing their systems, and the factors influencing the sustainability of this need to be identified to improve such processes.

Ethiopia, Community Water Supply Management
Asfaw Dingamo (Ministry of Water, Mines and Energy Resources) & Wolde Hanna Seyoum (NCA)

Since 1997 a National Water Resource Management Policy is in place in Ethiopia. Policies derived from it target full cost recovery for the urban domestic water sector and partial cost recovery for the rural covering at least operation and maintenance costs. Currently only about 28% of the population has adequate access to potable water.

In the Southern Region of Ethiopia more then 90% of the population lives in the rural areas. The domestic water supply coverage is only 24%, compared to 82% in the urban areas. Of the water schemes previously implemented, about three out of four is still functioning indicating good operation and maintenance practices. In the Southern region the (federal state) government in co-operation with NCA and other NGOs developed stepwise plans for implementing water supply schemes. A 10 step plan was developed for hand pump and spring water schemes, and a 14 step plan for motorized and piped gravity schemes. Under these plans villages can apply for water supply systems, after which the local government in cooperation with NGOs prioritizes which villages have the most crucial needs, based on the distance to the closest water source.

In the rural villages, after a testing period the water management is handed over to the WASHE (Water Supply and Hygiene Education) committees, while in urban areas however, management is handed over to the local government before handing over finally to the local people. In this way the government is responsible and committed to giving training and follow-up.

Problems and challenges
The major challenge is the sustainability of the water schemes, which has a lot to do with the sustainability of community management. In the Southern region the critical problems are derived from inaccessibility and the fact that a large part of the population consist of nomadic pastoralists. The nomads live in a largely cashless society and hence have problems making cash contributions for capital and O&M costs. This is compounded by governments inability to convert what they do have and are willing to contribute (cattle) into cash. To cope with this problem the supporting agencies are working in a more holistic approach, trying to create a market for the pastoralists in order to make some money.

Another problem, also affecting some sections of the nomadic population is hygiene education as people have strong beliefs and taboos about hygiene and changing this behaviour takes a lot of time.

Other problems have to do with the shortage of contractors and the shortage of skilled and experienced manpower.

Ghana, CWSA (Community Water and Sanitation Agency)
Philip Amanor (Greater Accra Region) & Francis Awindaogo (Northern Region)

CWSA's aim is to facilitate the provision of water supply and sanitation facilities to rural communities and small towns in these donor funded programs. The vision is to reach 85% coverage in the project area by 2009. In addition to hardware provision, hygiene education is given and capacity building is provided for district assembly staff, district tender boards and community water and sanitation teams. Private sector staff like caretakers and contractors also benefit from training. The set-up is paid by funds raised from both donors and communities with a wider range of stakeholders from the water sector collaborating in the programs.

The regional offices of CWSA give strong support to local government District Water and Sanitation Teams (DWST), who in turn are the work closely with the communities. In the implementation phase the DWST's make people aware of projects that are in place and how they can apply. CWSA then contracts the contractors and gives them training. There is a pilot going on with giving more responsibility to the district assemblies, including own fund raising. The government is responsible for the CWSA's salary and administrative costs. At district level a team is responsible for monitoring. Monitoring mainly focuses on implementation and system performance. In small towns O&M is more centralized. The main problem is that District Assemblies are understaffed and lack funds.

A distinction is made between rural community schemes and small towns. In the former WATSAN committees call on the services of area mechanics to take care of operation and maintenance. In small towns water boards manage the water systems and have the ability to cut off those that don't pay. Replacement costs are partly the responsibility of district assemblies.

Constraints as they were identified include problems with the groundwater resource and slow fund mobilization by communities. This is linked to the procedure use which insists that communities have to pay 5% of the capital cost, then establish a water and sanitation committee, then set up an O&M fund (roughly 2% of total costs) before work can start. This process is time consuming and leads to delays in project implementation time.

An important point is that providing water for productive purposes can make the system more sustainable.

Kosovo, School Water & Sanitation, Hygiene & Reconstruction
Nora Lamoja & Salihu Merita (UNICEF)

After the war in former Yugoslavia, in 1999 an interim UN administration was established in Kosovo. As more then 50% of the Kosovo population is under the age of

25 years, a lot is invested in education and schools, especially in the rural areas which were neglected by the previous government, lacking investments, and had to suffer a lot from the war. The UNICEF program started (rural) school water and sanitation projects with a total of (indirect) beneficiaries of 350,000. By now, the emergency programs started are slowly changing into structural development.

Problems and challenges
In the emergency phase not a lot attention was paid to community participation and management. The problem therefore now is WHO will manage the systems, especially once UNICEF decided to phase out itself. On the one hand UNICEF's co-operation with the (local) government departments has increased by involving them to take responsibility for hygiene education and operation and maintenance (especially the software part after all hardware has been (re)constructed). On the other hand, the schools themselves get some small funds from both the government and the parents of the students but still this is not enough to cover all operation and maintenance costs. This problem still needs to be solved.

Madagascar, Environmental Sanitation, Water Supply and Primary Environmental Care (AEPSPE)
Jean Rakotondrainibe (Ministry of Energy and Mines)

There is poor access to potable water and excreta evacuation installations, resulting in high disease incidence and mortality. From 1998 the government launched a strong effort to improve the situation by setting a new policy framework and by implementing programs financed by partners such as World Bank, UNDP, and UNICEF. The latter organization executes the AEPSE (Environmental Sanitation, Water Supply and Primary Environmental Care) program.

Major objectives of this program are to increase water supply and sanitation coverage and access and to contribute to a national sanitation policy. Strategies that are applied include hygiene education, use of cost-effective technologies, school sanitation, community participation, awareness creation, active participation of women and children, cost sharing by communities and using child-to-child promotion. A framework is developed for the coordination and implementation of the program. At national level coordination is given by different ministries. At province level the government coordinates and gives advice, monitoring and evaluation.

Problems and challenges
The weak link is the district level, where NGO's fulfill the main role. They assist directly in the projects, but often not in the follow-up as they often leave to start new project. The communities have a number of responsibilities like cost sharing, ensuring effective participation of all groups and hygiene promotion. Different technologies are used over the country (either say what these are or don't say anything!).

While the country is quite well endorsed with water resources, but quality is often a problem, especially with respect to salinity.

Malawi, Community participation and demand management for two gravity fed rural water supply schemes

Michael van de Watering (DHV consultants, the Netherlands)

The objective is to increase the capacity of sector actors to ensure sustainable delivery of potable water to 2 rural areas, Nkawanga and Dwambazi, in Malawi. The main activities are:

- identification, organization, and arrangements for contracting of expertise not available within communities and to be provided by community support groups;
- identification and provision of training and support to community support groups;
- preparation of final scheme designs in collaboration with consumer communities;
- preparation of tender documents for private sector and community implementation;
- provision of materials, procurement and management services including warehousing, transportation to work sites and storage;
- co-ordination and supervision of support services, including the training of communities to be provided by community support groups;
- overall supervision of the construction works.

The project is a pilot for a government approved implementation manual on community management. In one area the community is open and committed. In the other community, it will take some more time and effort before they are ready for community management. It is felt that the project is stepping late into the project cycle. This makes that time is very short for such a process testing. However, it offers the opportunity to give critical feedback on the manual. Other challenges include the extreme poverty in the region and the bureaucratic and hierarchical institutional set-up.

Regarding the community management component it can be said that the community did not participate in the first needs assessment and project planning. A number of points for action need to be undertaken.

- Training is needed for building an institutional structure of the community, based on existing community service groups and the district development committee.
- Capacity building is needed at community level in the area of O&M, decision making skills and management skills.
- After an assessment of the current situation, health education material will be developed and information events organised on this topic.
- An assessment of the economic situation of the communities is needed, i.e. their ability to pay, whether they are used to pay and possible in-kind payment mechanisms.

The way of getting to this might be by inter-communal collaboration, if feasible taking into account at distances and language problems. It focuses on the fact that the communities in the two different areas can learn from each others experiences. Gender will be a mainstreamed throughout all activities. Two challengers are time and overcoming the lack of funds at district level. Also the size of the rather small communities may be unfavourable for this process.

Sri Lanka, ADB (Asian Development Bank) assisted third Water Supply and Sanitation Sector Project
Ruwan Liyanage (National Water Supply and Drainage Board)

The ultimate goals of the projects are to improve health and well-being of people in selected urban and rural areas, benefiting approximately 1 million people. This is done by implementing a water supply and sanitation program in accordance with national policies. Furthermore water and sanitation at schools are improved and attention is paid to water resources development. This project consists of three packages: improvement of the water supply and sanitation facilities, policy reform and institutional development, and water resources planning and development. The activities that are executed are community water supply and sanitation, small town water supply, water resource planning and catchment development and school water supply and sanitation.

The community management approach is emphasized by a new organizational approach in which a consolidation engineer is appointed for supporting the communities. The communities themselves take care of construction, whereas NGOs come in for the software part to give trainings. This has meant a big challenge and improvement. The government gives communities a basic subsidy, which allows communities to implement gravity schemes up to a certain ceiling. Most other technologies cost more then this ceiling amount, meaning that the community has to bare these extra costs them selves. This relates probably to the fact that in this wet environment also cheap rainwater harvesting techniques are popular. Furthermore, it appears that CBO's become more financial sustainable, if water were used for productive purposes as well.

Problems and challenges
Overall problems include:

- conflict over water rights
- problem of data aggregation and generalisation
- lack of data available for micro planning
- complexity of a quality assurance system
- most of the poorest are not contributing
- the interference of political influences
- conflicts between farmers and drinking water communities on water resources
- lack of co-ordination on community management between NGO's, CBO's and officers.

Uganda, facilitating the development of rural people
Ronald Mugisa (FORUD, Foundation for Rural Development)

FORUD is an NGO working with communities in western Uganda with a "people central" approach where work is with people and building on what already exists through a participatory baseline survey. Water, hygiene and sanitation form the core activity, but other integrated programs like agriculture, technology and HIV/AIDS are executed as well. Both donors and communities contribute with financial resources. The donors are SIMAVI and Missoer/SNV Netherlands.

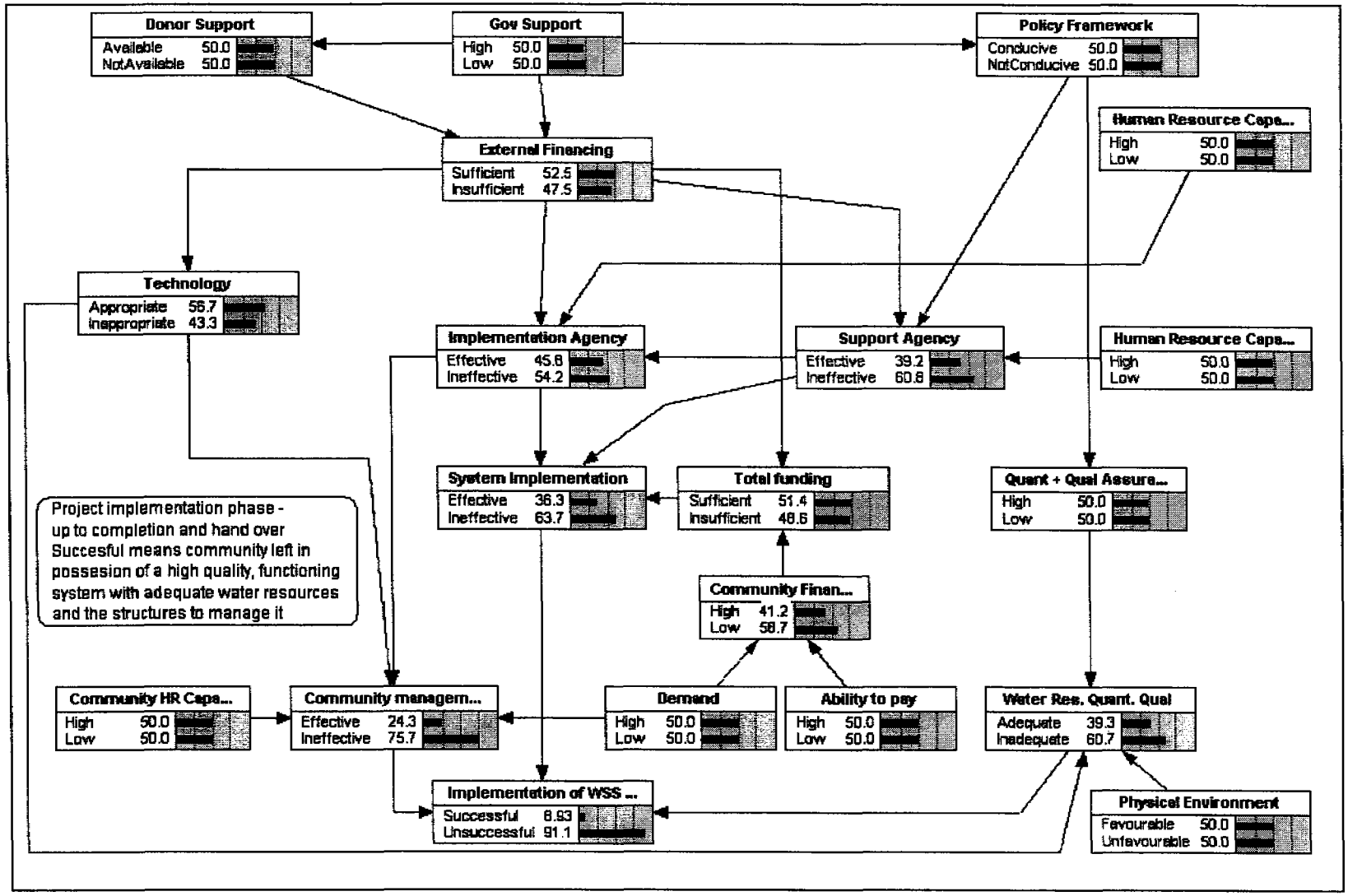
FORUD helps the community in a participatory and democratic way to set up water management structures, like Village Health Committees, Children Health Committees and Watsan Committees. FORUD provides them with training, focusing on capacity building, financial management and O&M. The entry point at community level is the Local Council System, in which elected officials are in place. They are targeted to be in water management structures, as they have the power to set-up by-laws that are valid by court.

There is a big difference between NGO and government implemented projects. The government uses contractors and private companies ate district level. The issue of O&M is given little care by them. The government's target is to provide everyone with water, while sustainability is considered to be of later concern. This creates a big gap between the NGO and government approach to community management. The government has well set up policies, right from the central to the local government. There is decentralization of power to district level. However, there policies are not widely known, especially not down to community level. The relationship between NGO's and government entities needs to be harmonized.

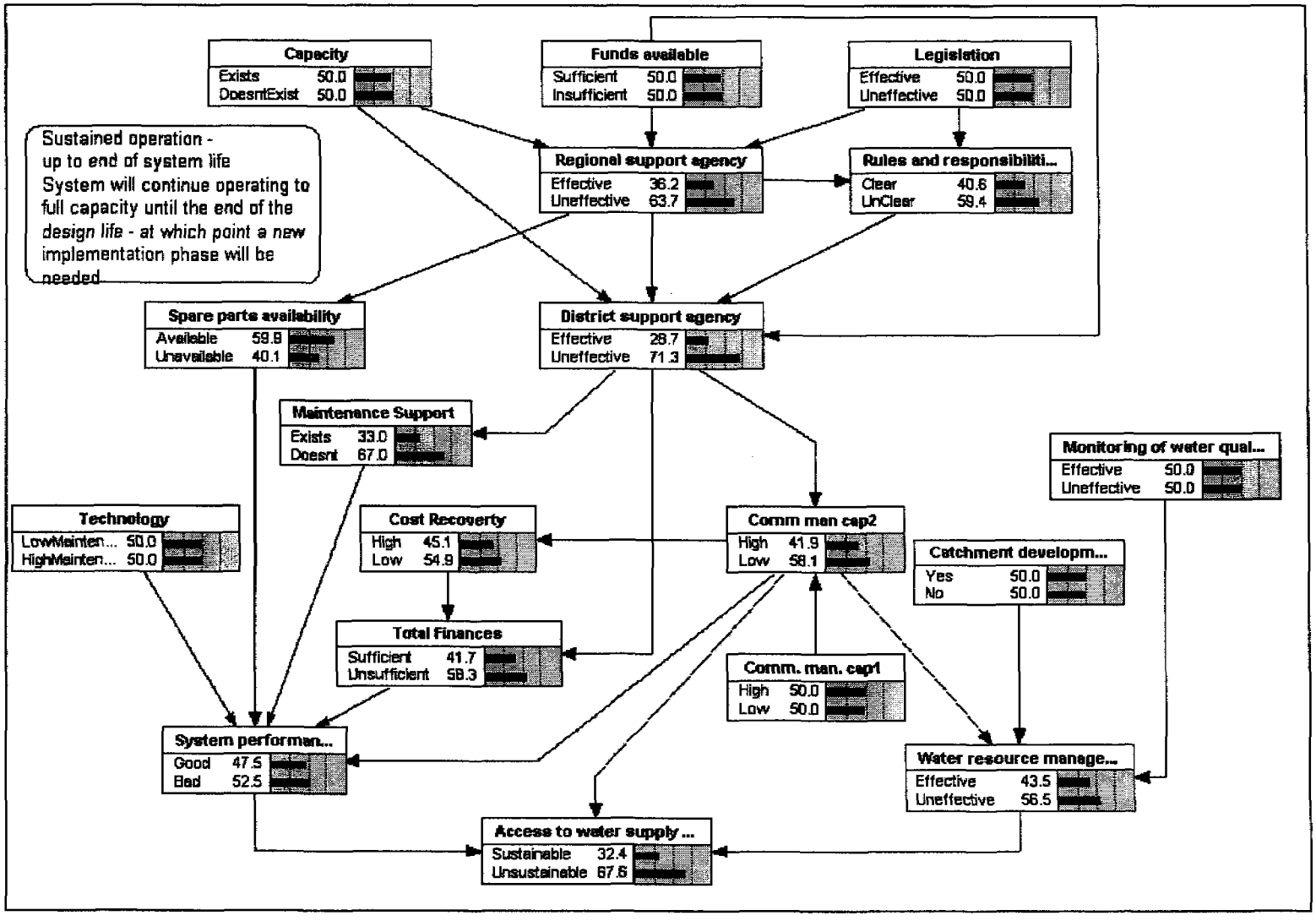
Looking at the organogram of all organizations (both governmental and NGO's) involved in water supply and sanitation, most characteristic is that these organizations work in parallel and there is little cohesion. The governmental tasks are decentralized to the districts. These hire contractors for their work, only doing the hardware not software. On the NGO side, it seems that an attempt has been made to mainstream NGO activities. A distinction is made between big international ones and small grassroots NGO's. The big ones are financing the grassroots of organizations that implement the facilities and support community management. Still a number of problems and challenges is identified. There is a huge need for harmonization of the methods used by NGO's and governmental organizations. NGO's do not participate in policy making, although they contribute to the sector. In order to be able to participate in policy formulation the NGO's should strengthen themselves into a network. But also local government's capacity needs to be strengthened. Finally, a platform should be created where all stakeholders can come together for the development of a sustainable implementation program.

The coming together of NGO's and government will be needed to make Uganda achieve the Vision of 2025, where every citizen of Uganda will have safe and clean water.

Annex E – Bayesian Network on implementation of WSS projects



Annex E – Bayesian Network on sustainability



Annex F - Country Matrix

Country	Ghana	Ethiopia	Malawi	Uganda	Madagascar	Sri Lanka	Bangladesh	Kosovo
Succes of implemenation	74%	57%	33% (2%)	57%	62%	55%	51%	69%
Donor support	High	High	high	High	High	High	High	High
Government support	High	High	Low	High	High	High	50/50	High
Policy framework	High	High	high	High	High	High	High	High
Human resource development of the implementing agency	50/50	50/50	high	50/50	50/50	High	50/50	High
Human resources development of the support agency	High	High	Low	High	50/50	High	High	50/50
Human resources development community level	High	50/50	High (low)	50/50	High	High	High	High
Demand	High	High	High (low)	High	High	High	High	High
Ability to pay	50/50	50/50	Low	High	low	50/50	High	Low
Water resource availability	Adequate	Adequate	Adequate	Adequate	Adequate	50/50	50/50	Adequate
Chances for sustainability	61%	61%	31%	47%	34%	60%	70%	37%
Spare parts availability	High	High	50/50	High	High	High	High	High
Capacity at meso-level	High	High	Low	High	Low	High	High	High
Fund availability	High	High	High	High	Low	High	50/50	50/50
legislation	High	High	Low	50/50	50/50	High	High	50/50
Monitoring water quantity and quality	High	High	Low	50/50	50/50	50/50	High	50/50
Catchment development	50/50	50/50	High	High	50/50	50/50	High	50/50
Community management capacity	High	High	High	50/50	High	High	High	50/50
Technology maintenance requirement	Low	Low	High	High	High	50/50	Low	High
District support agency	50/50	50/50	Ineffective	Effective	Ineffective	Effective	Effective	50/50

Annex G - Evaluation of the workshop

Participants	1	2	3	4	5	6	7	8	9	10	11	12	average
Content													
Presentations	9	8	8	10	8	8	8	9	10	9	8	8	8.58
Bayseian Network	8	8	9	10	7	8	8	9	10	7	7	7	8.17
Theme group discussi	10	8	8	9	8	10	6	10	9	6	8	7	8.25
Quality of facilitators	10	8	8	10	9	9	8	8	10	8	8	8	8.67
Quality of materials	9	8	9	9	9	10	8	10	8	5	7	8	8.33
Excursions + free time	10	8	8	9	7	7	-	10	9	8	6	8	8.18
Logistics													
Quality of accomodati	9	8	7	8	8	8	8	7	10	8	8	6	7.92
Quality of food	10	8	7	8	8	7	7	7	4	4	8	7	7.08
Logistical support	10	8	5	10	7	8	8	5	8	5	7	6	7.25
											average :		**8.05**

Length of workshop
One participants thought that the workshop was too long, the other felt it was OK.

How did you find out about workshop?

1 very educative and skills developing workshop for management staff
2 quite useful
3 The workshop is generally good, but needs more elaboration and time for the key issues to be addressed.
4 Through IRC website
5 Through a colleague
6 Through IRC website
7 Via a colleague
8 Good
9 It was very interesting and very usefull.
10 Letter from IRC to our institution
11 Good
12 It was experience sharing.

Was there a part that you particularly liked?

1 Bayesian Network
2 country presentations, BNs, Panel discussion
3 Yes
4 Bayesian Network
5 Discussions on community participation and those on community management, the capacity building aspect
6 Group discussions
7 Nice to meet the different people from different places
8 Yes
9 I really appreciated the participatory approach that allowed each participant to express his/her point of view
10 Yes, water resources
11 Problems of meso level, huge and challenge to overcome.
12 The introduction and practical aspects of the BN

Was there a part that you particularly disliked?

1 No
2 No
3 No
4 No
5 The technical discussions on water schemes and the definitions
6 No
7 No
8 No
9 No
10 No
11 Not clear about BN. How the weightage were taken?
12 No

What are the main issues that you will report on this workshop?

1. Factors to consider for succesful programmes
   Exposure to projects which have historical background to learn about e.g. water systems in The Netherlands
   Sharing of information of different background from different countries
2. The BN as a decision supporting tool
   The effect of community contribution on sustainability
   The role of meso level institutions in ensuring sustainability at community level
3. Sustainability of the WS systems
   The networking need
   The need of decentralisation for the sustainability of community management
4. -
5. Difference between implementation and sustainability phase and importance of building foundations in the fir
   Community management in general
   The different people I met.
6. Community management in general
   Financing
   Implementation vs. sustainability
7. General awareness of community water management
8. More support should be given at meso level
   Other then community contribution, other factors should not be overlooked to grant sustainability
   Learn other tools to ensure sustainability
9. The importance to work on meso level
   The necessity to emphasize work on human resource development
   The meaning of community financial participatory
10. More computers
    Quality and variety of the food
    More time to raise country/region specific issues
11. Management issues to be taken care of holistically
12. Country experiences
    Community contribution
    Legitimisation of community ownership

Would you recommend that a colleague attend this workshop?

1. Yes, I highly recommend
2. Yes
3. Yes
4. Yes
5. Yes, this or similar workshop, but it would depend on their background and years of experience
6. Yes, definitly
7. No, but a counterpart in a project I would send.
8. Yes
9. Yes
10. Yes
11. Yes for continuous development
12. Yes

Would you be interested in being involved in a similar workshop in the future, and if yes, on what subject?

1. Yes, Policy development, Project Planning, Management Workshops
2. Yes, community capacity building as a tool for sustainable water supply delivery
3. Yes, in water supply of sanitation issues, cost recovery & financing, Monitoring & Evaluation
4. Yes, cost recovery (during sustainability phase) & Conflict management and resolution (sust. phase)
5. Yes, Participatory learning
6. Yes, School Sanitation & Hygien Education
7. No
8. Yes, on water supply and sanitation, Cost recovery, Evaluation
9. Yes, on Government involvement to strenghten the meso level
10. Yes, Water Resources, Schools Saninitation & Water Supply
11. Yes, how the meso level can become effective by taking corrective measures
12. Yes, Financinf for community management of water and sanitation

The Bayesian Network

Did you enjoy working with the tool

1 Yes it was quite good
2 Yes
3 Yes
4 Yes, very much
5 It was okay to learn
6 Yes
7 So so, seems to need a lot of time. I doubt I will use it.
8 Yes
9 Yes
10 Yes, but not enough time for all individuals to practice. More computers are needed.
11 Yes, but not with sufficient satisfaction
12 Yes

Did you think it was appropriate?

1 Yes
2 Yes
3 Yes
4 Yes
5 Yes, the way of thinking is good to learn for projects in general
6 Yes
7 Yes to focus thoughts]
8 Yes
9 Yes
10 Yes, it can be applied more works, should know basic theory behind network.
11 -
12 Yes

Is it something you would see yourself using in the future for your work?

1 Yes
2 Yes
3 Yes
4 Yes, I hope so
5 Probably at the first pahse of projects
6 Might be
7 No
8 Yes
9 Yes
10 I would like to prepare network activities, which I am being involved.
11 To see with the praqctical elements in our own work and situation
12 Yes

Would you be interested in further information on how to use this tool?

1 Yes
2 Yes
3 Yes
4 Probably, if in future I will be using it.
5 Will look that up on the internet
6 Yes
7 No
8 Yes
9 Yes
10 I will like to keep in touch with you all and IHE.
11 Yes.
12 Yes

General comments:

1 There are topics which need more time for discussion, eg BN
2 It has been a useful forum for sharing country ideas and learning a new decision making tool
3 The workshop should be given extra time to cover indepth some relevant issues. Generally the system of instruction is good, keep it up! Next time prefer location close to town & social establishments.
4 The workshop is going to be very useful for me in the future.
5 Working on weekend days was too much, and not really necessary
6 -
7 Provides good opportunity to meet many people with different backgrounds. Considering aim of the worksho it is suitable for higher up people. The outcome is rather general, more suitable for raising awareness. Friendly facilitators, good at streamlining. Food: more rice and spices.
8 The facilitators have to be more friendly.
9 We had enough time to implement all that was planned
10 -
11 Our presentation of findings and recommendations was good. Panel discussions were very usefull and effect
12 The objective of the workshop was achieved.

Annex H: WORKSHOP AGENDA

Sessions	Sunday 18	Monday 19	Tuesday 20	Wednesday 21
8:45 - 10:30	Arrival of participants	Welcome speech Introductions Shadow friend Programme and objectives Housekeeping	Housekeeping Poster Presentations	Housekeeping Poster Presentations
11:00 - 12:30	Arrival of participants	Presentation IRC 7th Video Background paper	Intro to BN cont.	Finish Causal diagrams
12:30 - 14:00	Lunch?	Lunch	Lunch	Lunch
14:00 - 15:30	Arrival of participants	Expectations and fears Poster presentations	Poster Presentations Causal diagram - factors affecting scaling up of CM	Excursion to Waterschap
16:00 - 17:30	Arrival of participants	Introduction to BN	Plenary feedback	
18:30	Dinner	Welcome drinks (17:30) + dinner	Dinner	Dinner

Sessions	Thursday 22	Friday 23	Saturday 24	Sunday 25
8:45 - 10:30	Housekeeping Poster Presentations Feedback on finalised causal diagram/s	Housekeeping Examination of BN in plenary - exercises on using	Free day Amsterdam Shopping in Rotterdam Countryside?	Housekeeping Individual work on critical analysis of posters
11:00 - 12:30	Identification of 4 key factors Discussion on key factors in groups	National/regional groups synthsise 'where we are' and 'way forward' using BNs and experience from workshop		Plenary work on presentation of workshop results
12:30 - 14:00	Lunch	Lunch	Packaged lunch	Lunch
14:00 - 15:30	Poster Presentations Plenary feedback on 'key factors'	National/regional groups synthsise 'where we are' and 'way forward' using BNs and experience from workshop		Excursion to Neeltje Jans
16:00 - 17:30	Presentation and discussion of 'synthesised' network Develop CPTs in groups	Plenary report back		
18:30	Dinner	Dinner	Dinner (probably later)	Dinner

Sessions	Monday 26	Tuesday 27	Wednesday 28
Morning	Plenary work on presentation of workshop results	Housekeeping Consolidation of outcomes Recommendations Next steps Networking Evaluation	Departure of remaining participants
12:30-14:00	Lunch (probably earlier)	Lunch	
Afternoon	13:00 Go to Delft 15:00 Presentation and panel discussions at IHE 17:00 Farewell Drinks Return to Olaertsduyn	Departure of participants	
18:30	Dinner (probably later)	Dinner	