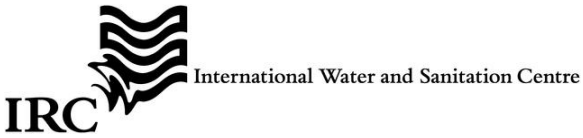

Ensuring Sustained Beneficial Outcomes for Water and Sanitation Programmes in the Developing World

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Table of Contents

Boxes and Figures

Abstract

Ensuring Sustained Beneficial Outcomes for Water and Sanitation (WATSAN) Programmes in the Developing World

By Brian Mathew

The two objectives of this thesis are firstly to suggest approaches to achieve sustained beneficial outcomes from WATSAN, and secondly how to 'scale up' application of these approaches, so that they impact positively on the lives of the millions of people who live without safe water or adequate sanitation.

To discover what these approaches are the literature is examined and practical lessons are drawn from two WATSAN programmes in East and Central Africa.

The conclusions are presented in the form of a Charter for the Sustainable Development of WATSAN, with nine clauses suggested to guide project and programme managers around the issues that need to be taken into account in this most important of development sectors.

The charter's clauses walk the reader through various stages of WATSAN development, through participatory project identification, need and demand response, sustainable environmental approaches, structured health education, staffing issues, decentralisation, and the practicalities of policy, allowing work to progress at the speed that communities need to acquire ownership whilst at the same time scaling up programme implementation to make a meaningful impact on the MDGs.

The global issues of financing the MDGs are also assessed, and the conclusion is that meeting the MDGs is possible in a sustainable manner. However, this will only succeed if there is a massive shift in the resources allocated towards those really in need, and a change in the attitudes of the political power brokers to allow this, promoting quality work, to be implemented by integrated teams, in a process-orientated, ethos-driven way, with WATSAN set as a keystone of wider human development.

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Chapter 1 Introduction

1.1 The setting

Sustained beneficial outcomes from water and sanitation interventions in the developing world are still an elusive goal for many people and their governments.

According to the United Nations, in the year 2000 1.1 billion people lacked safe water and 2.4 billion people lacked adequate sanitation (WHO/UNICEF/WSSCC 2000).

In Africa in particular, coverage[1] of safe water supply is estimated to be 62% with 47% coverage in rural areas and 85% in urban areas. For sanitation adequate coverage[2] in Africa is estimated to be 60% overall, with 45% in rural areas and 84% in urban areas (WHO/UNICEF 2000). Doubts, however, have been expressed over the validity of these figures (Carter 2004) (Harvey et al. 2004) and the reality is likely to be that much higher percentages of people do not have access to safe water and adequate sanitation, as in many countries fewer than half the existing water facilities are thought to be remaining in working order (HTN 2003).

1.2 The effects of unsafe water supply and sanitation

Lack of access to safe water and adequate sanitation are at the root of world poverty, in whatever way they are defined, and they are both a symptom and a cause of poverty. Briefly this is for the following reasons:

i) People's health suffers when they lack clean water and sanitation. This ranges from: morbidity, especially among children, resulting in reduced growth and life expectancy, to critical bouts of disease either individually or in epidemics, all too often leading to death. WHO (2000) estimates that every year 4 billion cases of diarrhoea result from unsafe water, inadequate sanitation and poor hygiene, resulting in the deaths of 2 million children under five. Malnutrition often resulting from constant bouts of diarrhoea weakens children and is an associated cause of around half of all deaths of children occurring in developing countries (Rice et al. 2000). The burden of carrying water also often causes injuries to the neck and spine (Curtis 1986).

ii) The time taken to collect water puts a huge drain on family resources. Women and children are usually at the forefront of this daily chore, which takes hours out of a day that could otherwise be used for a range of activities from the economically

[1] The definition of coverage for water supply is taken to mean water of safe quality and adequate quantity (20litres per person per day) is available within 30 minutes return journey time of the home (minimum level of service, WELL, 1998 & Howard et al 2003)

[2] The definition of coverage for adequate sanitation is taken to mean sanitation facilities (at least a pit latrine) are available at the householder's plot (minimum level of service, WELL, 1998)

productive to the life enhancing. From working in the fields or in the towns, to spending quality time with the family, or for children (especially girls) attending school. Being sick or looking after those who are sick because of lack of clean water and safe sanitation is a further drain on time (WSSCC 2004).

iii) Dignity robbed and pain caused by a lack of adequate and private sanitation, especially for women, leads to poor self-esteem and a feeling of hopelessness, which further locks people into poverty (WSSCC 2004).

1.3 The Millennium Development Goals (MDGs)

These three effects of inadequate water supply and sanitation keep poor people in a vicious poverty trap, which can be difficult to escape from. The UN Millennium Development Goals (MDGs), which aim to reduce the proportion of people living in poverty by half by 2015, recognised provision for safe water as part of the problem of world poverty, and the goal of providing access to adequate sanitation was added at the World Summit on Sustainable Development in Johannesburg in 2002. The fact remains, however, that due to population increase the world has to run hard to stay in the same place. The numbers of new water supplies and sanitation facilities required to reach the MDGs are staggering, with in excess of 440 million people in Africa alone requiring safe water and sanitation by 2015, if the international coverage targets are to be met (WHO/UNICEF 2000). Added to this, existing facilities are all too often falling into disrepair, demonstrating their lack of sustainability, and making the danger of a slide backwards in the numbers served a real threat. For example, of the estimated 250,000 handpumps in Africa, fewer than half are reckoned to be functional (HTN 2003).

The lack of sustainability of many WATSAN interventions was made clear in the following quote:

In developing countries, a significant number of projects, including those in the water and sanitation sector, fail to deliver benefits to society over the longer term. Part of the cause of this failure lies in poor understanding of the issues of impact and sustainability. (Carter et al. 1999)

The cause of this poor understanding is, according to the WSSCC (2004b), a lack of willingness to learn from past failures and listen to those who have pioneered new approaches.

1.4 Doubts over figures

There are doubts over the authenticity of WATSAN statistics. In order to arrive at official figures, the number of water points, either standpipes, handpumps, wells or springs, is, for example, often multiplied by a nominal number of hypothetical users to give estimates of coverage, whether they are actually working or not (Carter 2004) or whether they are used

or not. In Zimbabwe, for instance, a handpump fitted to a borehole is considered to supply water to 250 people and a deep well 150. In Mozambique 500 people are considered as having handpump coverage. What is certain is that no more than this number can be considered adequately served. Especially in rural areas where other non-protected sources are available and populations are dispersed, the likelihood is that much smaller numbers of people will actually be using each protected source. If people are living closer to traditional open hand-dug wells, rivers or streams, these will often be used in preference to more distant though safer sources (Feachem et al. 1978, Briscoe 1985).

With sanitation, the UN estimates for sub-Saharan Africa put coverage at around 40%, the actual situation, however, is likely to be much worse. In the district in Zimbabwe covered by the second case study in this thesis (chapter 5), actual coverage prior to the start of the programme was 9%, only reaching 40% after six years of well-funded programme implementation. This district was indeed poor, one of the poorest in the country, but certainly no poorer than many other rural districts elsewhere on the continent that have not had the benefit of six years of focused WATSAN implementation.

1.5 Water consumption

The average discharge a handpump can deliver is around 0.25 litres per second over a sustained length of time[3] . At this rate 500 people could only be served if they spaced out their collection from sunrise until sunset. In reality people require their water at certain times of day, peak use or demand factors (IRC 2000, Twort 1963) showing that users require one third of total daily water needs to be available in the space of one hour. If this is applied, handpumps should be allocated to just 45 people each, assuming a consumption rate of 20 litres per person per day (l/p/d). Satisfying user demand therefore requires that either individual water point discharges are increased, the numbers of water points for a given population are increased, or users accept queuing as the norm.

Drawers of Water 2, the repeat study of water consumption in East Africa[4] , shows average water consumption collected from water sources to be 19.6 l/p/d for unpiped sources. This is up from 11 l/p/d in the late 1960s (Thompson et al. 2003) despite similar journey and collection times. This apparent behaviour change may have resulted from increased hygiene awareness, but will have done little to decrease the burden on women's time. Carter has pointed out that a paradox exists here over distance to a water source, increased consumption and reduced time taken for water collection. Increased consumption requires more trips to the water source. If this happens without the water source closer to the home then the burden for the women and children actually increases (Carter et al. 1999), thus an increase in consumption of that noted in Drawers of Water 2 requires a halving of the distance to the water point, if a time saving is to be made. Data from WaterAid, also in East Africa, shows that new water points can result in a time saving,

[3] Approximate average discharge for a handpump at 45metres depth (WaterAid 2004)

[4] The original "Drawers of Water" survey was undertaken in East Africa during the late 1960's (White et al, 1972)

but not necessarily an increase in per capita use (Gomme et al. 2002). The situation is plainly more complicated than it might first seem, and the factors that influence behaviour change in this regard are more complicated than a simple matter of distance. The knowledge of users of why and how increased water use can be a health benefit is important for ensuring sustained beneficial outcomes from WATSAN, as it helps firstly to promote more water use, and secondly instils a greater appreciation and perception of the value of improved supplies. Health and hygiene education clearly have a role to play here.

Other studies, however, have clearly shown that people carrying water for long distances do use significantly less than those who have water close to their homes, especially if it is available in the yard (Cairncross and Cliff 1987). Cairncross in a more recent study points out, “Water supplies are likely to have an impact on diarrhoeal disease when they lead to hygiene behaviour change; that is, when the old source was more than 30 minutes’ round trip away, or when house connections are provided… The health benefits of water supply are most likely to be realised in exactly those cases where the time saving benefit is greatest; when the old source of water is farthest away, and the new one is on the plot of the individual household.” (Cairncross and Valdmanis forthcoming 2005)

1.6 Sustained beneficial outcomes for WATSAN

In the current situation in the developing world, where great need and population growth make the need to advance WATSAN coverage a priority, approaches to WATSAN delivery have been shown to be more complicated to achieve than previously thought, and a growing understanding of the complexity of these issues has led to doubts over claimed progress. In this situation the necessity to find ways to ensure sustained beneficial outcomes from water and sanitation has never been so pressing. This is because the human need in terms of numbers of people living without adequate water and sanitation facilities has never been so great. It is a need with explicit dimensions of quantity and quality. Quantity to reduce the proportion of people living without safe water and adequate sanitation, and quality to ensure that the problems, once solved, stay solved.

Sustained beneficial outcomes from water and sanitation interventions can be defined as outcomes which benefit the people, giving them a better quality of life in a way that is continued over time, and establishing within the community an expectation for a quality of service that will be expressed as an actionable demand if the service is interrupted or removed.

1.7 Islands of success

Despite the problems of the sustainability of WATSAN programmes in many developing countries, a number of water and sanitation interventions have shown themselves to be capable of generating sustained beneficial outcomes. In these cases, sometimes referred to as “islands of success” (Schouten and Moriarty 2003), the trend towards breakdown and collapse has been reversed, and in some cases for decades sustainable development of

both safe water supply and adequate sanitation has been the continuing outcome. These examples are not only a source of optimism that sustainable development is possible, but they can be a valuable source of lessons to be learned.

One of the themes of this thesis is that if lessons can be truly learned from the islands of success, then the target as a whole of reaching a 50% reduction in the numbers of people living without safe water and adequate sanitation is actually reachable or "do-able" (Brende 2004). Whether recipient and donor governments are up to the enormous challenge of "doing it right" in terms of approaches, and of allocating sufficient resources in terms of money and man/woman power is another question, however.

1.8 Objectives of this thesis

The two main objectives of this thesis are thus firstly to suggest ways to achieve sustained beneficial outcomes from WATSAN, and secondly how to "scale up" such approaches, so that they impact positively on the lives of the millions of people who live without safe water or adequate sanitation. If water and sanitation development can be scaled up successfully from working with a small number of villages to district level, or regional/provincial level, why can this not be done across all the districts in a developing country?
James Wolfensohn, former president of the World Bank, said in 2002, "The major challenge we face is turning what works for 1,000 people into a successful programme for 10,000, then 10 million then 100 million." (Davis 2002) What I hope to do in this thesis is show how this could be achieved.

To attempt to make the case, this thesis presents two case studies from Tanzania and Zimbabwe, where there has been a considerable degree of success in scaling up[5] sustainable water and sanitation development. In doing so it seeks to throw light on practical issues that are important not only to achieving sustainable development, but to scaling up these approaches through more widespread application, so that targets such as the MDGs can actually be achieved.

Sustained beneficial outcomes in water and sanitation result from solutions that are technically, socially, environmentally and economically appropriate to the people who use them on a daily basis for their needs. At the same time societies are constantly in a process of change. As a result the needs are not only growing, they are shifting, as rural people move to urban areas in search of work, and rural settlements themselves grow, becoming more urban in outlook. The human environment is thus increasingly an urban one wherever population growth is occurring, and this offers new opportunities as well as challenges. As this is happening, stresses created by increasing demand on existing services is leading to declining standards. The Drawers of Water 2 survey (Thompson et

[5] 'Scaling up' is used here to indicate accelerated access to improved service coverage. The reference is thus to the "output" definition of reaching more people, rather than the "input" definition of expanding organisational size (DeJong, 2003).

al. 2003), has shown queuing time at public taps has risen on average from 10 minutes to 18 minutes in urban areas and 17 minutes to 25 minutes in rural areas between the late 1960s and the late 1990s. The same survey noted a decline in daily per capita consumption in urban areas by 48% for those with house connections from 128 to 66 litres, due to falling levels of service (hours of operation). The need in the rural sector remains profound, however, and the point has been made that if greater attempts are made to address the needs of rural areas this may help to slow the rush to the cities (Carter et al. 1993) and in doing so help make the transition more manageable.

1.9 Changes in policy: supply driven to demand led, and project-based to Poverty Reduction Strategy Papers (PRSPs)

In terms of approaches to solve the problems of access to safe water and adequate sanitation, there have been two major shifts in recent years. Firstly at the project level there has been a shift of approach from supply driven to demand led. As Breslin points out, supply driven water interventions have not succeeded in providing poor communities with sustainable water supplies. "Communities that simply receive a water point and play a minor or symbolic role in implementation understandably do not feel a sense of ownership of the project." (Breslin 2003) Demand led approaches require communities to take the leading role, and much of this thesis will dwell on practical ways in which this can be brought about.

At the international level, there has been a shift of donor support from a project-based approach, where individual donor governments funded their own development initiatives in developing countries, to one of budget support. In this "new world order", developing country governments are increasingly requested and assisted by the international community, led by the World Bank, to produce Poverty Reduction Strategy Papers (PRSPs) under the heavily indebted poor countries initiative (HIPC)(Tan et al. 2001), to address, among other things, the water and sanitation sector.

The previous approach in which donor governments and northern NGOs essentially "called the shots", through their control of resources, led to some notable successes in terms of Individual projects and programmes. However, the resulting islands of success, were to be found in a much greater sea where water and sanitation conditions were not improving.

The logic behind the move to budget support has been to help developing country governments bear the brunt of the responsibility for their people, and in doing so, build their capacity to deliver services to their entire populations. The need for water supplies and sanitation is just one aspect of what good governance should deliver. Under budget support the need for an enhanced capacity within developing countries to deliver on water supply and sanitation is of great importance. Much of the experience to date of successful programmes, however, has been held by staff on specific donor supported programmes and by NGOs. They have in effect been pathfinders, who until now have only found ways for themselves and their immediate programmes to follow. The need then is for this

knowledge and expertise to shift and be scaled up, in both the mainstream public and private sectors. With the fading away of technical cooperation staff from developing nations, the need is now for national staff to undertake effective and appropriate action to improve the water and sanitation situation for their own countries. Many of the old donor funded projects and programmes offer valuable experience about how sustained beneficial outcomes have been achieved in water and sanitation. The lessons from both the successes and failures of these experiences need to be recorded and passed on to avoid repeating mistakes and to help make progress, so that islands of success can become "continents of achievement".

1.10 Methodology

This thesis is made up of published papers, and papers that are yet to be published, both in academic journals and on the internet, care of the Dutch-based organisation the IRC International Water and Sanitation Centre, known as IRC.

Much of it is based around the two main case studies from Tanzania and Zimbabwe, and from these I endeavour to show how lessons and themes from one programme have been used to shape another, and suggest how the lessons learned from both case studies may prove useful to the national, provincial or district planner and manager of water and sanitation programmes elsewhere in the developing world.

The data for the case studies comes from personal research and secondary sources such as project and programme reports. In primary data collection, use has been made of participatory rural appraisal, rapid rural appraisal techniques and more formal quantitative research methodologies. These have been used both to establish the effects of elements of the described development interventions, and as part of the implementation methodology itself. The detail of the methodology of each component of the research is included at the appropriate place in the following text.

Overall approach

The reader should be aware that this thesis is a thought piece, uniting experiences and detailed knowledge, the literature, descriptive case studies, qualitative and quantitative primary data collection, through to a series of syntheses in the final three chapters.

It is an attempt to apply to experience and field research the essential concepts of "reflective practice", a concept which is now being promoted strongly in higher education and learning (Davis 2003) as well as organisational development (Brockbank 2002). The essence of this idea is the creation of a culture in which reflection on and analysis of existing practice leads to improved effectiveness.

It aims to be a companion for those involved in the WATSAN sector, offering advice by analogy and example, rather than by blueprints or designs. Much of the writing has been inspired by the experience of working with islands of success in the WATSAN sector, and

from a desire to pass a “contribution to knowledge” on from these experiences, so that sustained beneficial outcomes can become the norm, and be scaled up to meet the need.

Along the way, in an attempt to quantify and qualify these observations and experiences, quantitative and qualitative research methods have been learned, used and adapted by the author. These methods have then themselves formed part of the experience to be passed on.

If there is a common approach, then it is to be pragmatic, as the need for practical solutions is of the greatest importance in the developing world today.

1.11 Structure

The thesis structure is as follows:

Chapter 2 Literature review
A review of selected literature from international efforts, projects, programmes and publications is explored to widen the resource base for the thesis, to provide more information about the broader WATSAN context and to give space to what other writers and practitioners suggest are important factors toward achieving sustained beneficial outcomes in WATSAN.

Chapter 3 WAMMA Tanzania
An organic approach to WATSAN, “Freedom to grow”
This brings experience from the WAMMA programme in Dodoma region of central Tanzania. It shows the results of northern NGO / southern government cooperation over a period of 14 years. Specifically brought to the fore are issues of needs-based and demand responsive approaches to project selection and implementation, participation, community management, departmental integration and appropriate management structures.

Chapter 4 WAMMA staff interviews
A separate study of the perceptions and attitudes of WAMMA staff to their work is included, to gain greater insight into what it is that enthuses and excites staff members of this organisation in their effort to develop WATSAN in the Dodoma Region of Tanzania.

Chapter 5 BIRWSSP
A process approach to district WATSAN implementation “by evolution”
Here experiences from a northern government to southern government funded integrated district water and sanitation project are described and discussed. Issues of decentralisation and the link to a national programme are investigated, showing the pitfalls as well as the positive aspects of this process. Light is also cast on the strategies undertaken for health education and sanitation.

Chapter 6 The ownership and management of productive water point gardens in a time of drought

The trial and development of thirty three productive water points for micro irrigation, broadening the debate from domestic supply to sustainable livelihoods, is described and discussed in this chapter. This pilot project grew out of the BIRWSSP programme in Zimbabwe. The chapter was first published as a research paper in 2003 (Mathew 2003) and appears in edited form in a compendium of experiences on poverty and productive uses of water at the household level (Moriarty et al. 2004).

The concluding chapters (7, 8, 9 &10)

In the concluding three chapters the thesis is drawn together.

In chapter 7 the topic of learning lessons is discussed and management issues are investigated to suggest a way forward to promote sustainable development.

In chapter 8 guiding principles are crystallised into a charter setting out how to ensure sustained beneficial outcomes for water and sanitation. How, for example, to:

- initiate programmes;
- allow approaches to evolve;
- take into account environmental and health concern;
- build teams;
- ensure long-term support, and supply chains become available through decentralisation;
- influence and promote policy;
- maintain flexibility through a learning approach;
- scale up while working at community speed.

In chapter 9 consideration is given to scaling up WATSAN, including the global financial and staffing implications as well as the issue of the need for a balance between urban and rural implementation. WATSAN is considered as a keystone of broader sustainable development, and what it will take to achieve the MDGs is suggested.

In chapter 10 a final section of reflections is included to give a personal standpoint on this most important of development sectors.

In writing this thesis I am relying to a large extent on my own experiences and research as a technical cooperation officer (TCO) with the Department for International Development DFID in Zimbabwe with the Bikita integrated rural water supply and sanitation project (BIRWSSP) 1996-2000, as Country Representative for WaterAid in Tanzania between 1991 and 1995, and on personal experience in the water sector as a consultant in Mozambique with the World Bank's Five Cities Programme 2001 - 02, as an advisor in Sudan with Euroconsult 1989 - 90, and in Angola and Zambia with Lutheran World Federation 1985 - 88, and as a volunteer with SAFAD in Honduras in 1984 - 85. The views expressed are purely my own.

Chapter 2 Literature review

This chapter examines what others have written about the state of WATSAN, and what it will take to ensure sustained beneficial outcomes from it.

It looks at the bigger picture in terms of the international efforts, dialogue and the current way forward.

It considers lessons learned from other projects and programmes, and attempts to synthesise from these, what they suggest are the factors needed to achieve sustained beneficial outcomes.
It examines conceptual models and a paradigm that is being developed to chart the way forward for the sector.
Lastly it observes the role of innovations, citing three important new approaches, evaluating their importance and considering where they will take the sector in the future.

2 Introduction

Practical experience from the field as well as a study of the literature available on the WATSAN sector reveals a progression of methods and approaches to WATSAN interventions over the past 70 years. This is important as it helps to put into context how thought has progressed over how sustained beneficial outcome from WATSAN can be achieved. This chapter firstly presents a simple time line of developments in the sector; secondly it examines how international efforts, dialogue and actions such as the International Drinking Water Supply and Sanitation Decade (IDWSSD) and now the Millennium Development Goals, acted and are acting as milestones of progress; thirdly it examines what practitioners and academics have written on the sector, and how their ideas have formed part of the progression; and fourthly it highlights current innovations in practice and approach that may lead the way to achieving sustained beneficial outcomes in WATSAN.

2.1 Timeline

The progression can be put in simple terms into a timeline, with largely technocratic solutions appearing as far back as the 1930s (Morgan 2000) and evolving in the late 1970s into village level operation and maintenance'[6] (VLOM), with the gradual realisation that participation by primary stakeholders (users) in implementation was important if solutions were to last or be sustained. Water committees were formed to manage maintenance, and later this evolved into longer term community management, an approach which has itself come under increasing scrutiny in recent years. The role of women as the primary users of water became increasingly appreciated, and this has led many projects and programmes

[6] The VLOM concept was introduced in an attempt to avoid the high cost, long response time, and unreliable service of centralised maintenance systems (Arlosoroff, 1987)

to focus particular attention on the involvement of women in all stages of project implementation from planning onwards. Sanitation, always the poor cousin to water, gained greater importance with the realisation that it had at least as big a part to play in the fight against disease (Esrey et al.1991). Health and hygiene education became prominent in projects and programmes to help ensure that full use was made of improved facilities, and this was especially helped with the development of usable participatory hygiene education methods, such as PROWWESS[7] (Srinivasan 1990) and PHAST (Simpson-Herbert et al. 1997). More recently the limitations of communities in terms of the sustained operation and maintenance of their water and sanitation utilities has been recognised, along with an appreciation of the need for support services to provide long term back-up to community managed systems (Carter et al. 1999; Schouten and Moriarty 2003). Attention is now also being given to the ways in which partnerships of institutions from very different origins - non-government, private, public and academic - can be brought together to innovate, develop policy, provide accountability and deliver in the WATSAN sector (Caplan, 2003).

2.2 The international efforts and actions

The following section concentrates on the International Drinking Water Supply and Sanitation Decade, the Dublin Statement on Water and Sustainable Development, Agenda 21 and the Rio Earth Summit, Vision 21 and the Millennium Development Goals (MDGs).

2.2.1 The International Drinking Water Supply and Sanitation Decade (IDWSSD) and WATSAN finance

The IDWSSD ran from 1981 until 1990 and was until the MDGs, the single most important international effort to bring safe water supplies and sanitation to the developing world.

Carter, Tyrrel and Howsam in their 1993 paper “Lessons learned from the UN Water Decade”, quoted figures from the 1990 Human Development Report (UNDP, 1990) that estimated the IDWSSD to have reduced the overall percentage of people living without safe water supply from 56% in 1980 to 31% by 1990, while those living without sanitation fell in percentage terms from 54% to 44%. Impressive though these results were, they fell far short of the Decade’s objectives of water and sanitation for all, and the increases in coverage “barely kept pace with the growth of the population” (Carter et al. 1993). Figures published at the beginning of the Decade estimated that around $30 billion would be required to reach the goal (Brown 1983), though by its end, it was estimated that only 25-33% of this figure was made available (Carter et al. 1993). Other estimates of the amount spent during the Decade were much higher, at $74 billion (Schouten and Moriarty, 2003), though the amount actually spent on poor rural or peri-urban community water supplies, as opposed to the water sector as a whole, was thought to be much less. Thus the use of the total amount spent on the WATSAN sector as a whole to emphasise the response to the

[7] PROWWESS or Promotion Of Women in Water and Environmental Sanitation is an initiative which started in the early 1990’s with backing from UNDP, WHO and the World Bank. PROWWESS was born out of SARAR, a UNDP/World Bank initiative for involving stakeholders in their own development. SARAR stands

needs of the poor is illusory, as it does not highlight the resources actually allocated to address WATSAN poverty (helping those not presently covered). This is a situation that appears to be repeating itself with the MDGs, as the proportion of funds spent on poor rural or peri-urban community water supplies is estimated to be in the range of 5 to 10% (Jolly 2004), see chapter 9 (section 9.2) for further analysis of the implications of this for the MDGs.

There will continue to be pressures put on development planners to upgrade areas that already have acceptable levels of water and sanitation coverage, at the expense of areas that have none (ODI and WaterAid 2004). This is because the residents of these wealthier areas are more visible, influential and vocal. This is not to argue against the undertaking of such work, but to emphasise the need for it to be accounted for separately from works to assist those who are currently unserved and in the greatest need.

So what were the lessons learned from the Decade?
Carter et al. (1993) point at the following three factors to explain the failure of the Decade to reach its goals:

- inadequate funding
- inappropriate technical solutions
- shortcomings of agencies, both governmental and non-governmental

Paradoxically the authors suggested that it was the lack of financial resources that was the main driving force behind the promotion of community managed water and sanitation schemes, and not the perception that a change of approach might actually lead to better, more sustainable outcomes. The need for communities to share or meet in full the costs involved was seen as a logical outcome of an ideological move to perceiving water and sanitation departments as marketing a product rather than providing a service. Carter et al. (1993) pointed out that despite the ethical pros and cons of this new way of looking at WATSAN, the practical implication was the need for the technical solutions to be affordable by the communities they were to serve, “as well as meeting other criteria of appropriateness”. These other criteria, including the ability for local or village level operation and maintenance (VLOM) (Arlosoroff et al. 1987), were promoted with factors such as convenience, time saving and privacy (the latter concerning latrines), generally taking precedence over health benefits.

Lessons highlighted by Carter et al. (1993) that remain relevant today include:

- A recognition that people may be willing and able to pay for higher levels of service than those offered and should therefore be involved in making technology choices.
- Although it is self-evident that women should be involved in making decisions about water and sanitation (because of their prime association), there are often cultural barriers to their increased participation that must be overcome if they are to be involved.
- “Community management, though realistic as a medium term measure designed to substitute for the inadequacies of government and private sector suppliers, is

unproven in the long term." Recognition of the need for support mechanisms have since been emphasised by Carter et al. (1999), and Schouten and Moriarty (2003).

- "Institutional capabilities must match the sophistication of the technology." Although cited by the authors for pumped and treated sources, this can really be emphasised for all water and sanitation technologies. This includes everything from ensuring the availability of spare parts and trained community technicians in projects with handpumps; to the fuel, oil and more complicated mechanical spare parts and trusted advice needed for larger more complicated schemes. Institutional support is required throughout.
- "The continued role of the state in sound policy formulation and regulation on a) standardisation of technical equipment & local manufacture (especially of hand pumps), c) water resource management and legislation."
- Lastly, and considered probably most important, "the integration of water supply, sanitation and hygiene education, provides together the best possibility of achieving health improvements".

2.2.2 The Dublin Statement on Water and Sustainable Development of the International Conference on Water and the Environment (ICWE) 1992.

The Dublin Statement stated:

- Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.
- Water development and management should be based on a participatory approach involving users, planners, and policy-makers at all levels.
- Women play a central part in the provision, management and safeguarding of water.
- Water has an economic value and should be recognised as an economic good.
- (European Commission 1998)

Often referred to since as the Dublin Principles, these statements set water within a holistic context that governments and NGOs could refer to in making their own policies, or cases for action.

2.2.3 Agenda 21

The Dublin Principles were used at the Earth Summit, held in Rio de Janeiro, to form the basis of Chapter 18 on freshwater resources of the summit's key discussion document, "Agenda 21". The seven key points of Chapter 18 are:

1. Ensure the integrated management and development of water resources.
2. Assess water quality, supply and demand.
3. Protect water resource quality and aquatic ecosystems.
4. Improve drinking water supply and sanitation.
5. Ensure sustainable water supply and use for cities.
6. Manage water resources for sustainable food production and development.
7. Assess the impact of climate change on water resources.

(European Commission 1998)

Chapter 18 of Agenda 21 further stressed the following activities linked to community management of water supply:

- Encouragement of water development and management based on a participatory approach, involving users, planners, and policy makers at all levels.
- Application of the principle that decisions are to be taken at the lowest appropriate level, with public consultation and involvement of users in the planning and implementation of water projects.
- Support and assistance to communities in managing their own systems on a sustainable basis.
- Encouragement of the local population, especially women, youth, indigenous people and local communities in water supply management.
- Linkages between national plans and community management of local waters.
- Integration of community management within the context of overall planning.
- (Evans and Appleton 1993)

2.2.4 Vision 21

In March 2000 the Water Supply and Sanitation Collaborative Council's "Vision 21" was endorsed by the Second World Water Forum meeting in the Netherlands at The Hague. This effort, dubbed "a clear statement of what is now possible, and of how the vision of universal access to water, sanitation, and hygiene can be turned into reality in the years immediately ahead", contains four components:

- Building on people's energy and creativity at all levels, requiring empowerment and building the capacity of people in households and communities to be part of the planning process, to take action, and to apply technologies that respond to actual needs.
- A holistic approach, acknowledging hygiene, water and sanitation as a human right, and relating it to human development, the elimination of poverty, environmental sustainability Committed and compassionate leadership and good governance, changing long-accustomed roles, leading to new responsibilities of authorities and institutions to support households and communities in the management of their hygiene, water and sanitation, and being accountable to users as clients.
- Synergy among all partners, encouraging shared commitment among users, politicians and professionals within the water and sanitation sector to combine technical expertise with an ability to work with users and politicians and with the sectors of health, education, environment, community development and food.
  (WSSCC 2000)

In brief, Vision 21 is a plea for full people's participation in WATSAN, an acknowledgement of WATSAN as a human right, and the need for good governance, integration and shared commitment for this to become a reality. This is development rhetoric, but can be important nonetheless in helping to establish benchmarks with which to judge progress to achieving sustained beneficial outcomes from WATSAN. An interesting question is

whether it will be used in this way to challenge the realities of implementation in the developing world and as a result drive progress, or become a cryptic epitaph on the tomb of the estimated two million children under five who die each year as a result of a continuing lack of safe water and adequate sanitation (Rice et al. 2000).

2.2.5 The Millennium Development Goals (MDGs)

Set at the Millennium Summit at the United Nations in New York in September 2000 and upgraded at the World Summit on Sustainable Development in Johannesburg in September 2002, the Millennium Development Goals comprise eight goals, which in turn have specific targets.

The MDGs are:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria, and other diseases
7. Ensure environmental sustainability (includes the targets for WATSAN)
8. Develop a global partnership for development

The influence and potential impact of WATSAN cuts across all the MDGs, making it possibly the most important single area of intervention, if it can be defined as such, as box 2.1 illustrates.

The Dublin Principles and Agenda 21 provided guidelines for national policies and they put WATSAN into context within a broader integrated water resource management (IWRM) framework. Vision 21 gave a succinct direction that WATSAN developments could take in developing countries. The inclusion of WATSAN in the MDGs formally linked WATSAN to the elimination of poverty, and in doing so it not only set the targets of reducing by half the proportion of people living without safe water and sanitation by 2015, but it closed the circle with other development issues and helped to make holistic approaches to the world's problems the way forward. This is important if governments from both the south and north are prepared to put it firmly on their agendas and actually do something about it.

Box 2.1: Links between Water and other MDGs	
Development Goal	**Link to Water and Sanitation**
Eradicate extreme poverty and hunger (Goal 1)	Without access to WATSAN: • Time and energy are lost searching for and collecting water • Poor health and frequent illness lead to lower productivity and lower income. • Household time, energy and budgets are consumed by coping with frequent illness • Child malnutrition is rampant, worsened by frequent illness due to lack of safe water and sanitation. With access to WATSAN: • Better health leads to greater capacity to develop and maintain a livelihood • Time and energy can be reallocated for productive activities and/or self employment
Achieve universal primary education (Goal 2)	Without access to WATSAN: • Diarrhoeal diseases and parasites reduce attendance and attention. • Girls are often obliged to stay home from school to help carry water and look after family members who are ill • School attendence by girls is reduced, and drop-out rates higher, where schools have no separate toilet facilities for boys and girls With access to WATSAN: • Schools are healthy environments • School enrolment, attendance, retention and performance is improved • Teacher placement is improved • Girls feel safe and can maintain dignity while at school
Promote gender equality and empower women (Goal 3)	Without access to WATSAN: • Women and girls face harassment and/or sexual assault when defacating in the open • Women in rural areas spend up to a quarter of their time drawing and carrying water - often of poor quality With access to WATSAN: • Women and girls enjoy private, dignified sanitation, instead of embarrassment, humiliation and fear from open defication • The burden on women and girls from water carrying is reduced • The burden on women and girls from looking after sick children is reduced • Increasing women's roles in decision-making to match their responsibilities, and bringing about a more equitable division of labour are known to help improve water supply, sanitation and hygiene. Demonstrating this can help to improve women's status in other ways.
Reduce Child mortality (Goal 4)	Without access to WATSAN: • Diarrhoeal disease, including cholera and dysentry, continues to kill more than 2 million young children a year • Bottle-fed milk is often fatal due to contaminated water • Hookworms, roundworms and whipworms breed and debilitate millions of childrens lives With access to WATSAN: • Better nutrition and reduced number of episodes of illness leads to physical and mental growth of children • There is a sharp decline in the number of deaths from diarrhoeal diseases

Improved Maternal health (Goal 5)	Without access to WATSAN: • Contaminated water and bad hygiene practices increase chances of infection during labour • Women face a slow, difficult recovery from labour With access to WATSAN: • Good health and hygiene increase chances of a healthy pregnancy There is a reduced chance of infection during labour
Combating HIV/AIDS, Malaria & other diseases (Goal 6)	Without access to WATSAN: • People face difficulty in cleaning, bathing, cooking and careing for ill family members • There is a higher chance of infections due to contaminated water, lack of access to sanitation and hygiene, worsening overall conditions of diseased people • Of the global burden of disease, 23% is a result of poor environmental health, 75% of which is attributable to diarrhoea. With access to WATSAN: • Fewer attacks on the immune system of HIV/AIDS sufferers, allowing better health • Better, more hygienic and dignified possibilities to take care of ill people, lifting their burden • HIV treatment is more effective where clean water and food are available. • HIV infected mothers require clean water to make formula milk • Less occurrence of contaminated water sources and standing water around water points reduces breeding grounds for mosquitoes • Clean water and hygiene are important in reducing a range of parasites including trachoma and guinea worm
Ensure environmental sustainability (Goal 7)	Without access to WATSAN: • Squalor, disease and degredation of natural surroundings, especially in slums and squatter settlements (Water resources are under stress) • Rural rivers and soils continue to be degraded by faeces • Due to urbanisation, numbers without adequate sanitation double to almost 5 billion by 2015 With access to WATSAN: • There is a sharp decrease in environmental contamination by faeces and wastewater • There are clean water and sustainable treatment and disposal proceedures • Better health is linked to a reduction in poverty, putting less strain on capacity of natural resources
Develop a global partnership for development (Goal 8)	Without access to WATSAN: • Poor health leads to low productivity • Lack of schooling decreases employment chances With access to WATSAN: • Public, private and civil society partnerships help deliver water and sanitation services to the poor • The poor themselves are empowered through their involvement in the sector, developing a capacity for planning, implementation, maintenance and management that transcends into other sectors • There are more options for employment creation, as water supply and sanitation provision is labour intensive

(Adapted from DFID 2004 and WSSCC 2004)

2.3 Evidence from other projects and programmes

This section examines the lessons that have been drawn from a selected range of academic papers, as well as reports of other WATSAN projects and programmes. These have been chosen either on the basis of their influence on the sector as a whole, or because through their successes they encompass an element that points toward how sustained beneficial outcomes may be achieved.

- It starts with the 1995 Narayan study for the World Bank, which has become a milestone for the way participation is included in larger WATSAN programmes, and also a defining moment for the introduction of demand responsive approaches.

- The WaterAid “Looking Back” report takes a participatory perspective on the impact of WATSAN from the beneficiaries themselves, which for this reason marks it out as a significant study of WATSAN.

- Carter, Tyrell and Howsam’s 1999 paper on the impact and sustainability of WATSAN has a new appreciation of why sustainability has not happened despite greater levels of participation, as well as explaining the reasons for this and making suggestions of what changes are required; it thus marks a sea of change in WATSAN thinking.

- This is followed by an investigation of an evaluation into the Kigezi WATSAN programme in Uganda. This ‘‘island of success’’ programme, which has been running for 18 years, offers insights into the achievement of sustained beneficial outcomes in one place over a period of time.

- Trevett’s work from Honduras, Central America (2002) examines a national support system for community water supply that which may have strategic implications elsewhere in the developing world, once support systems become more widely adopted.

- Sakthivel and Fitzgerald’s (2002) paper on “total sanitation” in India examines an approach to tackling sanitation and hygiene issues.

- Ken Caplan’s work with “Plotting Partnerships: Ensuring Accountability and fostering Innovation” (2003), examines the nature of partnerships in WATSAN and how they mean different things to different people and their aximize ions.

2.3.1 The contribution of people's participation, Evidence from 121 rural water supply projects (Narayan 1995)

The study by Narayan in 1995 of the contribution of people's participation in 121 rural water supply projects for the World Bank is of interest because of its sheer size and scope, as well as its influence on the Bank's thinking on water supply in the years since it was written. In particular it led to demand responsive approaches becoming the accepted modus operandi for community WATSAN intervention.

The survey asked three main questions:

1. To what degree does participation contribute to project effectiveness?
2. Which beneficiary and agency characteristics foster the process?
3. If participation does benefit project outcomes, how can it be encouraged through policy and project design?

To find answers to these questions, 121 evaluations of completed rural water supply projects were examined. These projects involved 18 separate agencies in 49 developing countries, and used a number of different technical systems.
The answer to the first question was clear: "Beneficiary participation contributed significantly to project effectiveness." "The proportion of water systems in a good condition, producing overall economic benefits, with the highest percentage of the target population reached, and with environmental benefits occurring, rose significantly with participation." "Participation also helped to assure equality of access to facilities, although its effects were less pronounced in this outcome."

The analysis showed that participation helped both individual and community empowerment, building management and aximize ions skills in the communities. It also strengthened local institutions in the process, which then undertook other development activities. Participation was cited as "the single most important determinant of the quality of implementation".

The answer to the second question, "Which beneficiary and agency characteristics foster the process?" was more complicated than the first.
The three most important elements related to beneficiary participation were found to be:

- user investment in capital costs;
- local ownership and control;
- agency responsiveness to feedback.

On the community side, the two main features decisive to participation happening were: "commitment before construction, or 'demand', and the degree of aximize ion of the beneficiaries".

"Projects flourished when the service provided, matched what consumers wanted and were willing to pay for."

“Forms of maximization, the other beneficiary characteristic important for participation, varied even within communities, but common to all forms were maximization, self-enforced rules and regulations that governed criteria for membership and access to (or exclusion from) the facility.” (Narayan1995)

On the agency side the two most important factors were the “relative autonomy of the agency involved, and the degree of client orientation”.

Three strategies for fostering client orientation were regarded as “essential for effective participation:

- Making beneficiary participation a goal to be monitored and evaluated, and rewarding staff for achieving it.
- Using local knowledge for designing and implementing projects.
- Investing in building the capacity of local people, including providing information to help people make informed choices and allowing time for communities to aximize themselves.”
  (Narayan1995)

The percentage of judged successes amongst the 121 projects amounted to just 17%. Ninety percent of these successes, although they represented just 15% of the total sample, involved non-governmental aximize ions (NGOs), either as supporting partners of government or in stand-alone roles. This indicated that the way that NGO-supported projects were implemented, was of a higher quality than purely government run projects. Narayan, however, highlighted the funding mechanism as “the most important factor affecting the demand responsiveness of projects”, and aximize i that the ability of NGOs to respond quickly in this regard, has led them to be more successful than large government agencies, which suggests an overly economic interpretation of the results.

The third question, “If participation does benefit project outcomes, how can it be encouraged through policy and project design?” was answered by the following findings:

- “The impact of participation throughout the project cycle was significantly greater than it was during any single stage.” Hence in project policy, participation should be promoted throughout the project cycle from design, through implementation, construction and maintenance.
- “Effective participation did not result when agencies retained control over implementation details – that is the what, when, how, and where of implementation.”
- “Issues concerning physical infrastructure and technology were generally addressed more effectively than issues concerning the social aximize ion necessary for managing the physical works.” This indicated that the need for institutional and social development in project design and policy were at least as important as the engineering, although less attention was being paid to these areas.

Other research over the years has added to the debate over participation.
The ways in which participation has to manifest itself for success in individual schemes differs according to the situation. According to Sutton (1999) the most important element is the way the community facilitation is designed. If done sensitively this can lead to the development of pride, sense of ownership, technical understanding and management capacity, all of which are required to sustain the intervention. The actual issue of who wields the spade during construction is of far less importance than the "software design, appropriate hardware selection and sensible training".

To make this point Sutton cites the following experience:

"In Zambia and Mozambique, among seven, large bilateral funded programmes and a further three, smaller NGO programmes, none has successfully addressed the problems of well maintenance. But all of them involve communities in construction, and successfully shift responsibility to them for long-term maintenance of the lifting device and the area surrounding the well. Thus technical training for such rural water supplies needs to look beyond the skills acquired during construction. It is necessary to identify – with communities – the additional expertise needed to maintain the well itself: to what degree this can be provided locally, and how much will outside assistance cost?
Sutton goes on to point out that "long term commitment to maintenance is usually underestimated during preliminary discussions on technical options".

Demand-responsive approaches (DRA)
One major finding of the Narayan study, which, it can be argued, has influenced the design of WATSAN projects and programmes ever since, was the emergence of "demand-responsive approaches" or DRA. Narayan wrote,
"Instead of being supply-orientated, they must become demand-responsive."

Although there were many useful findings in Narayan's 1995 study, the main recommendation that stuck was demand responsiveness.
Retrospectively this may have been because of all the recommendations, it appealed most to the economist minded World Bank that funded the study.

Demand-responsive approaches have since been defined as: where communities make informed choices regarding their participation, service level, and service delivery mechanisms. Communities decide:

- whether to participate in project;
- preferred level of service based on willingness to pay;
- how services are planned, implemented, operated and maintained;
- how funds are managed and accounted for.

(World Bank 2000)

This definition, used broadly, is at the heart of most successful WATSAN programmes. There can be problems, however, especially if too narrow an interpretation is put on the way DRA is used.

Schouten and Moriarty (2003) point out that demand' is "frequently reduced to a box to be ticked once a community has contributed 5 per cent or 50 per cent to capital costs, or contributed their labour ('sweat equity') to system construction. They have paid for it, so now they are supposed to feel that they own it, even if nobody has given them any legal rights over the system".

The issue of legal ownership of systems is seldom addressed in WATSAN programmes and this is an ongoing problem. However, even more fundamental factors need to be addressed when considering DRA. For a community to be able to demand a programme requires a degree of sophistication, unity and comprehension that may not initially exist, indeed communities themselves may be "driven by divisions of ethnicity, gender, language, caste or politics, making it difficult to get even something as rudimentary as a water committee up and running" (Cairncross 2004). So community building is often required along with flexible approaches for encouraging demand. Furthermore, if the issue of need is not addressed at the same time, a programme focusing only on those communities considered to be expressing demand, risks excluding poorer more marginal communities, the very people that most require assistance. This issue of the balance between demand and need is further explored in chapters 3 and 5.

The Narayan study concentrated principally on water. However,
Cairncross recently suggested a new way that demand-responsive approaches might work with sanitation. "The creation of demand requires the social marketing of sanitation. Instead of leaving that process to the sporadic efforts of NGOs, governments should be thinking about how they can put their own resources into creating a marketing strategy on a national scale. That might mean, for example, the creation of a Sanitation Marketing Department within every municipality. It might mean diverting resources towards the promotion rather than the production of latrines, thereby breaking the link that limits the number of toilets built to the size of the subsidy budget." (Cairncross 2004)

Gender was also a prominent theme in the Narayan study, pointing out for example, that "in most cultures, unless women are specifically targeted and strategies are developed for their empowerment, they will not be reached" (Narayan1995). Generally the trend in development has been supportive of the rights of women. However, these and the following findings also by Narayan remain pertinent.

"In most rural societies poor women are more disadvantaged than poor men.

- Women work longer hours and have less free time.
- They have less income.
- They are more isolated.
- They receive less information.

- They have poorer nutrition and health.
- They have less education.
- And they are often more illiterate than men.
- They are rarely community leaders.
- They do not participate in community decision making bodies.
- Although women are the primary carriers of water, they have limited power, access and control over resources."

(Narayan 1995)

A personal experience from Sudan is given in box 2.2 as an example of the importance of specifically targeting women in water projects.

Box 2.2 The importance of involving women – a story from Sudan (1989)

An example concerning the importance of involving women in planning and management comes from Darfur, Sudan. In the town of Geneina in the late 1980's a Dutch funded water supply project was bringing piped water to the peri-urban areas. Once the pipes had been laid, but before the pipe network had been commissioned, it was decided to clean the pipes of sediment by flushing them with water. An announcement was made by the water authority using a 'loud speaker van', that water would be freely available from the new water kiosks for three days, after which it would be switched off. A series of meetings would then be held in the area around each new water kiosk to decide how to manage the system.

During the flushing operation women came to collect their water from the uncontrolled kiosks and a number of 'fist' fights broke out between them as they struggled to fill their water containers. After the three days the water was switched off and the meetings were held. It had been agreed with the sheiks of the areas around each kiosk that there would be separate men's and women's meetings, as it was the women who did most of the water collection and they would not be able to speak their minds in the presence of the men.

At the men's meetings, the water and health staff were greeted and offered tea and generally congratulated for bringing an excellent new scheme to their part of the town.

At the women's meetings however there was much serious debate and animated discussion over what to do about the fighting, and how the management of the new water kiosks could stop this from happening in the future. It was pointed out that the fights were generally between women from different tribes and it was suggested by the women at the meeting, that women representatives from each tribe should be elected on the water committees so that the committees would be able to speak for all the tribes and find solutions to disagreements. The men and women then came together, the concerns of the women were presented and agreement was reached over inclusion of women from each tribe in the management of the water kiosks.

Blueprints and master plans and data collection
Narayan describes blueprint, master plan documents as “stifling” the growth and evolution of participatory programmes, as they shackle project implementation to fixed plans, whether or not communities are ready and willing to participate and express a demand.

Narayan’s assertion that “extensive village by village data collection is unnecessary”, is debatable, however, as without knowledge of where the need is greatest, it is difficult to target the first stage of the consultative process with villagers, over their possible future inclusion in a WATSAN programme. Stoupy and Sugden (2003), in a report written from WaterAid’s experience in Malawi, point out the serious shortcomings of district coordination in that country, resulting from the lack of up-to-date information on village water points that lead to some areas receiving more than their quota of assistance while others receive none.

A bias for involving community-based aximize ions?
Another aspect of Narayan’s study which also seems subject to questioning is the suggestion that intermediary community-based aximize ions need to be found to do much of the capacity building work with communities. In this some doubts may be raised on practical grounds, principally due to the lack of sufficient numbers of credible maximize ions that can fulfil this role in many developing countries, especially if considering scaling up WATSAN. Even within the Narayan report itself, examples are given that government agencies themselves (often with the support of NGOs) can undertake this work effectively with communities, if they are shown how to and are given the resources (see chapters 3, 4, 5 & 6 in this thesis for examples of how this has been done). Government agencies, especially at the local government level, have the advantage that they will not leave the scene when the funding ends, as may happen with some NGOs.

2.3.2 WaterAid, the “Looking Back” report

To write of sustained beneficial outcomes from WATSAN it is important to understand what those outcomes may be. The WaterAid “Looking Back” report (WaterAid 2001 and Blagborough 2003) did this by using participatory methods to research the impact that some of its older projects had in a number of countries over a period of ten years. The indicators, many of them chosen by the communities themselves, covered the “depth and breadth” (Blagborough 2003), of community life, and showed a level of impact that reached beyond the original objectives of the projects concerned.

“Clear signs of improvements to people’s living standards were seen in all reference communities, as were the benefits of project interventions enjoyed by women and children, and a general greening and cleaning of the environment.” (Blagborough 2003)

Impact depended equally on three very useful pointers for sustained beneficial outcomes:
- the technical quality of the interventions;
- effective community management;

- continued support to facilitate sustained development within communities.

(Blagborough 2003)

“Evidence of the impacts of water and sanitation projects on livelihoods, the socio-cultural life of communities, people’s mental and physical well being, educational opportunities, gender relations, community management and sustainability have all helped to show that water and sanitation projects are much more than interventions to reduce disease and the burden of long distance water collection. They are central to effective poverty reduction strategies both locally and internationally.” (Blagborough 2003)

Furthermore:

“With participatory impact assessments integrated into regular programme monitoring, the quality of programmes can be improved as staff understand, not just the range of changes that take place, but which changes are valued by communities and how they can be brought about.” (Blagborough 2003) This is a clear and simple strategy for ensuring staff are aware of beneficial impact in communities with which they are working and are able to adjust their work accordingly to maximize it.

Table 2.1 Benefits of rural water supply, raised by local communities (Blagborough 2003)

	Ethiopia	Ghana	India	Tanzania
Less tension/conflict	X	X	X	
Community unity	X	X		
Self-esteem (e.g. of school children)	X	X	X	X
Women's empowerment (e.g. non-domestic activities and less harassment)	X	X	X	X
Women's hygiene (e.g. menstrual, postpartum)	X			X
Family quality time	X	X		X
Improved school attendance (especially girls)	X	X	X	X

Teachers accept posting to village		X		

Benefits from WATSAN improvements will be perceived differently from place to place. The fact that the benefits are recognised by the people helps to put a value on the improvements that may lead to them being sustained. That the people's perception of these benefits is respected and understood by programme staff is also important. The empathy, understanding and solidarity of staff with the people has practical implications, for example in the facilitation of sessions to promote sustainable community management. Simply put, staff know what to talk about to get people's attention, agreement and understanding.

Box 2.3 The five hypotheses used in the WaterAid looking back report with summarised findings. (Blagborough, 2003)

Hypothesis 1: Projects constructed and managed by communities have a positive impact on the living standards of those communities, particularly in the areas of health (especially of children), economic status (especially of women), and school attendance.

The study provides ample evidence to support this hypothesis. Health impacts, while notoriously difficult to attribute to specific interventions, were generally attributed to the projects by the communities.

Clear signs of livelihood improvement in all reference communities were seen, with community members confidently linking improvements in economic status with drinking water supply. Perhaps the clearest evidence was that the time and labour saved from water collection (in most communities the responsibility of women) did improve economic status. However, it is noted that like in the measurement of health impacts, there are many other factors which may have contributed to the improvement in economic status, not just the water project. It can be claimed though that drinking water intervention did play a crucial role.

As far as school attendance is concerned, the communities clearly attributed the link of availability of water to improvements in school attendance.

Hypothesis 2: Project impact is less for the poorer sections of the community, and greater for women and children than for men.

Impacts between the different groups varied considerably, and therefore it was difficult to validate this hypothesis. Across all communities, the women and children were typically the groups who were most disadvantaged (through their direct involvement with water collection - women and children, and greater likelihood to suffer from water related disease) and hence they tended to benefit more from project interventions. However impacts cannot be said to affect women and children exclusively as they also relate to the general well being of the whole family. In Ethiopia, the study teams found no differences in the impacts upon groups of people who had different wealth status.

Hypothesis 3: Beyond the immediate, positive effects of education on improving sanitation, the environmental impacts of projects on their communities are negligible.

The environmental impact in several projects was both positive and significant, and therefore this hypothesis was rejected. Generally, there had been a greening as well as a cleaning of community surroundings and households. In India, kitchen gardens were maintained and irrigated by waste water routed away from the handpumps. In Tanzania, the project stimulated tree planting, and the maintenance of tree nurseries. Also in Tanzania, improved prosperity had led to more houses of improved quality and kiln-fired bricks had replaced wood as the preferred building material.

However, some negative impacts were observed. In several cases in Ghana, Tanzania and Ethiopia, Project team members noted stagnant water around water points and in at least one case, the stagnant water had become a breeding ground for mosquitoes. In Birshign (Ethiopia), the construction and maintenance of demonstration pit latrines was executed poorly, leading to full pits being left uncovered which resulted in insect and odour nuisance.

Hypothesis 4: Impact depends more on effective management than on technical quality of works.

Findings from the study reject this hypothesis. Team members are convinced that the impact depends equally on both technical quality of works and effective management. Hitosa's experience shows that community management is made more feasible when technical works are designed properly and when training support is available from the beginning. In all reference communities in Ghana, effective

Technical quality is important. Users of hand dug wells in North Gondar complained that the wells should have been drilled with much more expensive machinery to reach deeper ground water levels. Low water yield has caused the project to fail. In Tanzania, problems arose when the management committees failed in some of their project supervision roles or in looking after the daily operation of the water scheme. Issues of corruption on the misuse of collected revenues also emerged, along with weaknesses like failure to issue receipts for the collection of revenue from water points.

Hypothesis 5: Impact of projects is not associated with a longer period of provision of support to community organisations.
This hypothesis was rejected by the study. Continued and on-going support to communities facilitated sustained development within the communities. Projects that have been in existence for a longer period tend to have a greater impact than those that are relatively new. In Ghana ORAP's continued visits and advice to the reference communities proved instrumental in the water points providing uninterrupted supply. In India, support from LEAD to maintenance committees and village sangams contributed to the increased impact of interventions. In Tanzania it was found that the relative impact on hygiene behaviour was related to the duration and frequency of visits to the community by project staff.

2.3.3 Issues of impact and sustainability

In 1999 Carter et al, wrote on the impact and sustainability of WATSAN. They believed that the reason a "significant number" of projects in the sector were failing to deliver benefits was because of a poor understanding of the issues that could lead to sustainable outcomes.

They believed that a sound, practical, analysis of the two concepts of impact and sustainability must include:
On Impact:

- "a clear understanding of the present water and sanitation problems faced by communities;
- identification of the potential benefits which can be delivered by improved infrastructure;
- observation of the actual benefits experienced by users and consumers;
- and quantification of the magnitude of beneficial impact achievable in practice."

On sustainability:

- "a pragmatic definition of the concept;
- an understanding of the component elements of strategies for sustainability."

And that "from an understanding of what impacts can be achieved, and how they can be brought about in a sustainable fashion, sound strategies for the planning and management of development projects" could emerge.

In order to indicate the ways that potential beneficial outcomes of WATSAN can miss the mark they devised the following list of examples:

- People use less than the design per capita water supply volume.
- While distance to source has been reduced, women still have to carry heavy loads of water in clay jars or plastic jerry cans, leading to discomfort or injury.
- While water quality may be good at source, faecal contamination may be evident at the point of consumption.
- Periodic breakdown of new sources necessitates continued use of “traditional” contaminated sources.
- While latrines may have been built, they may not be fully utilised by all community members.
- While increases have taken place in water supply, attention to wastewater disposal may be inadequate or non-existent.
- Adoption of good hygiene practices may be limited.

(Adapted from Carter et al. 1999)

In effect this was a call to look beyond the immediate expectations of WATSAN schemes, at the realities of rural life and apply a pragmatic logic to accept and understand what was going on.

The authors pointed out that the causes of breakdown or non-sustainability are numerous and gave the following examples of some of the things that can go wrong:

- “Communities or households may never have been convinced of the desirability of new water sources, or particularly new excreta disposal facilities, in the first place.
- The financial costs which communities are expected to raise as a contribution to capital or recurrent expenses may be unacceptable, unaffordable, or impracticable (e.g. monthly or quarterly cash contributions may be impossible for households which only receive income at harvest).
- Communities may never have felt ownership of the new infrastructure, and governments may have been over-stretched and under resourced, so that repairs and maintenance have not taken place.
- Benefits promised at the outset of projects (e.g. dramatically improved health) have failed to materialise.
- Community education (e.g. hygiene education) and the attitudinal and behavioural change expected to be achieved by it, take a long time to produce results, and yet it often ceases prematurely in project situations.
- Even where full community participation or management has been planned in from the start, community-level committees and caretakers have lost interest or trained individuals have moved away. This can be a particular risk if community-level organisation is on a voluntary basis.”

Component elements of sustainability

Carter et al. (1999) suggested that the issues important to the sustainability of community water supply could be illustrated by the analogy of a chain with four essential links, the failure of any one of these links resulting in the failure of the whole chain.

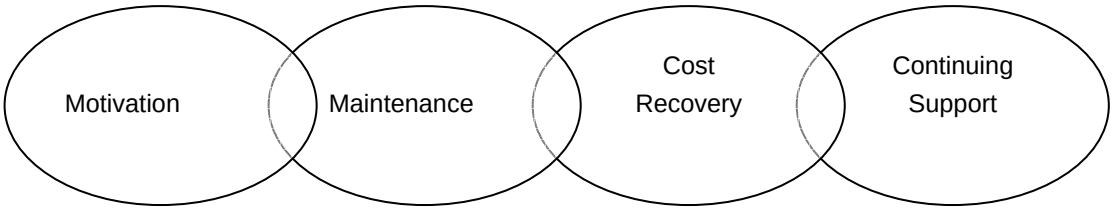


Fig. 2.1 The sustainability chain (Adapted from Carter et al. 1999)

Box 2.4 The “sustainability chain” factors (Carter et al. 1999)

Motivation

Without the motivation of the community to utilise the new source (or excreta disposal facility), sustainability is doomed. The users must believe that the new source is preferable to their traditional source. The obvious and immediate benefit of an improved water source is usually access, or proximity, while valuing of health benefits may not be prominent. On the contrary, the taste of “safe” water may be unfamiliar, and the universal conservatism of consumers may be an obstacle to change. Health education, and involvement of the community, to the extent of vesting ownership in them, will usually be necessary to bring about such motivation. Although this may be a time-consuming activity at the beginning of a programme, it is common for demand, and levels of motivation, to grow rapidly as the benefits of clean water become more visible. A significant further obstacle to the motivation of a community to use a new source may be the change from “free” water to some system of cash payment.

Motivation, value, worthwhileness, or self interest are essential features of the involvement of all stakeholders, not only the individual consumers. Caretakers and committees within the community, Government or non-Government organisations providing back-stopping for maintenance, those organising revenue collection, local Government, and private sector shareholders should all perceive participation and the delivery of high quality services as in their own interests, financial or otherwise.

Maintenance

A clearly structured, resourced, and trained maintenance organisation is necessary. The community-appointed caretaker(s) or committee may have an important role in maintenance (for which they need training), but in almost all circumstances they will need backstopping by some district, regional, or national level organisation.

Cost recovery

Staffing, training, transport, spare parts, materials, tools, and replacement units all cost money, and some (as few as possible ideally) involve foreign exchange. In times of increasing financial stringency and realism, the trend is to place this burden of recurrent cost on the community (Winpenny, 1994) Whether this is right or wrong, it is a pragmatic response to the fact that developing country Governments are grossly under-resourced.

Continuing Support

Evidence from the field (Bagamuhunda & Kimanzi 1998) makes it clear that community enthusiasm for keeping water committees functioning, for adopting improved hygiene practices, and continuing the collection of revenue for recurrent expenses, can wane within two or three years of construction. It is essential that the supporting Government or NGO maintains responsibility for such follow-up. This is a long term function, with a need to continue until there is such a ‘critical mass’ of good practice within a district, that there is no going back. This notion of continuing support is in opposition to limited term ‘projectisation’; the fact is however, that water and sanitation provision in developing countries can only work as a long term service managed jointly by community and external support agencies (Government and/or NGO together with donor or lender). Short term projects fail.

Carter et al. (1999) suggested that the development process itself might threaten or weaken the “traditional structures and values which make community management of development projects possible” (Carter et al. 1999). This would be especially so if a traditional community-based organisation, were to find itself undermined or marginalized by WATSAN activities, and it is important that sensitivity in approach allows the best to be made of what is already within a community. However, a contrary view exists that WATSAN projects themselves can bring community building and empowerment and help people to work together, often for the first time, and that this can then have benefits that transcend the management of WATSAN, leading to cooperation and self generated development manifesting itself in other ways. As noted by Juliet Waterkeyn in her work with health clubs in Zimbabwe, “The club becomes a pressure group for progress. It develops the capacity for planning systematically and making informed democratic decisions.” (Waterkeyn 1999)

On programme management Carter et al. (1999) believed a challenge lies within Government agencies themselves. “Bureaucracies, especially in developing countries, tend to be rigid in their structures, staffing, rules, and procedures, as well as providing inadequate remuneration to their staff. The radical change of approach from direct implementation of projects to the enabling of communities to manage their own schemes, requires major shifts in attitude, approach and technique, which have been very slow in emerging.”

It can be argued that a WATSAN programme can, if well organised, free staff from the shackles of rigid control structures, especially if they work in an integrated team and direct their energies to solving the problem in hand. An added benefit of working in this way is the synergy that develops between enthusiastic staff, who, because they come from different backgrounds, value the contribution that their partners can make and in the process find themselves on an exciting, interesting, fulfilling and satisfying wave of learning, with very tangible results for the people in the communities with whom they are working. More on this can be found in the WAMMA case study found later in chapter 3 and the WAMMA staff interviews in chapter 4.

2.3.4 Total sanitation

Sakthivel and Fitzgerald (2002) in their paper “The Soozhal Initiative: a model for achieving total sanitation in low-income rural areas” outline a sanitation initiative from Cuddalore District, India. This project has a strategy of “offering choices” for householders to decide on according to their means.

“Models of alternative designs were displayed both in the villages themselves and in the NGO centres where most of the hygiene communicator training took place. The models created interest, and enabled villagers to decide which design would be most suitable for their household.” (Sakthivel and Fitzgerald, 2002)

Over a period of two years the project has managed to raise sanitation coverage from a baseline of 6% to 25%, with 100% coverage as the planned target. In terms of numbers

8,274 latrines were completed in the period with a further, 3892 underway by October 2002 out of a total of 47,825 households.
A key message was that “households could build a usable basic latrine immediately, then go on to improve it later when more funds became available”.

A large number of hygiene communicators, 2,465 in all, were selected for training on the criteria of: commitment, communication skills and leadership qualities from already existing “self-help groups”. These were then trained using participatory tools in three two-day courses and encouraged to adopt good hygiene and sanitation practices in their own homes, before motivating other self-help group members to do the same and to demand latrines. Loans were accessed from the government to do this with the INGO WaterAid providing a bridging loan fund, while the government loans were being processed.

Box 2.5 Lessons learned in sanitation promotion (Sakhivel and Fitzgerald 2002)

- Building the capacity of community members to raise awareness is an effective way of unlocking latent demand for sanitation.
- Working directly with community based organisations complements and enhances a mass-communication campaign and approach, such as that adopted by the (Total Sanitation Campaigns) TSCs.
- Once demand is created, low-income households are often willing to contribute to building latrines. However, they still need public finance to complement their own efforts and to help them realise their aspirations. Well-designed financial mechanisms, in this case micro-finance can do this.
- Subsidies need to be well-targeted and well timed if they are to result in large numbers of latrines being built.
- Pooling the available finance between a number of low-income communities enables them to optimise resources.
- Delegating responsibilities an decentralising roles, especially on handling finance, is essential: the Soozhal initiative has shown that community groups can take on these responsibilities.
- Transaction costs for obtaining and monitoring loans from group savings and credit schemes are low compared to those of government subsidies: this benefits both borrowers and lenders.
- Soozhal’s imaginative and flexible approach has contributed to the rapid pace of sanitation coverage and changes in people’s hygiene practices in the target area. It has shown that low-income rural communities, if mobilised and well organised, can become empowered to take these changes into their own hands.

2.3.5 Evaluation from Kigezi Diocese water and sanitation programme

(Morgan, Kunihira and Carter 2001)
In this evaluation from an, Island of Success[8] project in Uganda the approach taken has been holistic, looking at poverty as a whole and how WATSAN interventions fit into this.

[8] For more on “Islands of Success” please refer to Chapter 1 (1.7)

Poor people were consulted on what it meant to them to be poor and vulnerable and they described some of the effects of poverty on their lives. These included:

- “Having no voice
- Having no dignity
- Having no respect among peers
- Having no influence at all about issues that concern them
- Limited or no access to facilities and services vital for them
- And therefore they, at times, felt helpless and INVISIBLE”

(Morgan et al., 2001)

The chief impacts of the programme have been beneficial changes in water usage, sanitation and hygiene practices and also in gender relations, with the quality of life for children and income-generating activities improving.

- Time and energy saving from bringing water points closer to homes
- Improved health from better hygiene and sanitation practices
- Increased income generating ability
- Improved gender relations
- Reduced domestic violence
- Improvement in attitudes to the Diocese of Kigezi and to their Christian faith

(Adapted from Morgan et al. 2001)

The evaluation identified that the general poverty of the District is largely due to land scarcity caused by high population density and growth at around 2.8% per annum, though many other physical, social and institutional factors contribute to the low cash incomes, poor health, and vulnerability of the population. “Farming on steep slopes, with very little replacement of soil nutrients has caused soil erosion and soil quality to decline. Few high value cash crops or other income-generating products are to be found. Flooding has affected homes and crops in the months prior to the evaluation. The effects of Uganda’s internal conflict of the 1980’s still linger, despite far greater security and general economic activity now enjoyed.” (Morgan et al. 2001)

The programme recognises that the response to poverty needs to be more than sticking plaster aid, it needs to address the underlying issues to offer a real way out. “If the project is going to have a sharp poverty focus, KDWD has to fully understand what is poverty in each specific community context and how to work with the poorest people to encourage their participation. This will probably include confidence building so they can discuss their needs and issues openly.” (Morgan et al. 2001)

Part of the selection criteria includes working with the most needy areas, and this is used in ranking applications for assistance, in order to address the problem of richer people taking advantage of the subsidies on offer and the poor losing out. This is a good example of the importance of taking need into account before demand (DRA) in order to include the poor.

Rainwater collection

Appropriate strategies have been worked out to concentrate on the cheaper technology options such as small rainwater jars and a gradual or partial roof replacement scheme for those with grass thatched roofs. This is because thatch roofs cannot be used to collect clear untainted water, and are usually found on the homes of the poorer people. The presence of shiny zinc on roofs can be used as a visible if impromptu measure of assessing relative wealth of an area.

Sanitation

With sanitation strategies there has been a move away from promoting only sanplats (or concrete latrine slabs fitted with a defecation/ urination hole, and used to cover a latrine pit), to promoting any type of latrine slab that can be afforded by the majority of the population, including simple wooden floor structures. The sanitation promotion strategies seem to have worked with 95% coverage recorded. This confirms that what is important to increase sanitation coverage, is promotion rather than subsidy.

Gravity flow systems

For gravity flow schemes the community raises a financial contribution of (Uganda shillings) Ush300,000 (approx US$160). The community elect a WATSAN committee, and choose two caretakers who are all given training. Community mapping is used to plan tap stand locations and the community provide locally available materials including sand and gravel, as well as food and accommodation to the technicians. Labour and storage of materials are also provided by the community.

Hygiene education

Hygiene education is undertaken by professional trainers who work with existing organisations and institutions to undertake two-day training sessions in the community using participatory methods. Widespread improvements in hygiene practices have resulted, including the use of simple hand washing devices with soap or ash. However, this was not universal, especially among poorer families who could not afford to buy soap, indicating that a degree of enhanced targeted hygiene and health education is required.

Respecting local government and people of other denominations

The programme is run by the Anglican diocese. However, it is noteworthy that communities from other denominations have also benefited without having to commit to anything other than their project. Sensitivity to working with local government is also recognised with an effort to ensure that the WATSAN committees and VHC are viewed as complementary to the established political and local government structures, rather than replacing them.

Comment on the role of NGOs, CBOs and the private sector

All non-government organisations, carry with them their own agendas, be they political, religious (as in this case), ethnic or simply ethical. Another agenda may simply be business, in effect self-promotion of the individuals within the organisation. In the Kigezi case the church offers a degree of legitimacy that shorter-lived organisations may lack. It is

a respected organisation that has been operating for many years in a fixed geographical location, and its own ethos of service makes it well suited to its work.

NGOs are often particularly good at delivering in WATSAN, because their small non-hierarchical management structures lend themselves to innovation. This can work especially well where there is direct collaboration with local government, with the approaches of the partners complementing one another. It is of great importance, however, that the work of local government is not compromised, and the best way of doing this is to work in partnership from the inside, building capacity of the local partner (often local government) until the need to be there is reduced to zero. Schouten and Moriarty (2003) point out, “An NGO engaged in a three year district level project does not fit the bill (as a support agent) however good its participatory practice.” They are simply not going to be around long enough. If they are transitory organisations, lasting only as long as their contract funding guarantees, it is incumbent upon them (the NGO, or private sector organisation) to ensure early on, that their local partners will be able to provide the long-term support service effectively.

Box 2.6 The “Right to Water”, the role of local NGOs and citizens (WHO 2003)

In the “Right to Water” a recent UN publication concerning a rights based approach to water, guidelines are given in the ways stakeholders including local NGOs, and citizens can contribute to realizing a right to water. Local NGOs are asked to contribute to the realisation of a right to water by:

- “Informing their constituencies on aspects of the right to water and how citizens can claim that right and assist others in fulfilling it;
- Building capacities among their members and constituencies on human rights generally;
- Promoting human rights, particularly the right to water, to local government, and monitoring the work of local government;
- Contributing to ensuring that there is a government policy for delivering the right to water for all, and that the policy is implemented;
- Supporting local service provision, for instance in the management of community water supplies. In this case, they may have responsibility for informing and training residents on the maintenance of water and sanitation services, and their proper use.” (WHO 2003)

This helps in clarifying the role of local NGOs from a legal perspective, and may provide a direction for strategy in the future. The “right to water” also points out that in order to realize their rights citizens may have to contribute financially and in other ways. They may have to “pay an affordable fee for connection” and also take some responsibility for:

- “Ensuring that a connection/water point /latrine is secured through collective action;
- Maintaining the connection/waterpoint, or for informing the relevant bodies that it is faulty;
- Ensuring that the water is kept in safe conditions within the home so that it is not contaminated, and so protect their own health;
- Disposing of waste and waste-water in a safe and sustainable way.”

Staff commitment

A further area in which the Kigezi programme appears to work well, is with its staff and the way it fosters their loyalty, ability and integrity, the following quotes being taken directly from the report:

“The programme team is blessed with staff who possess a high level of ability, commitment to service, loyalty to the programme, and integrity”.

“In general, the level of motivation of staff is extremely high.”

“These observations can be attributed not only to the individuals themselves, but in no small part to the example and encouragement of the programme coordinator.”

“The team work well together and support each other, including sharing work and backing each other up. Openness and transparency is encouraged.”

“Informal in-service training and pastoral care are very strong. Exchange visits to other programmes are organised regularly, the fundis (technicians) receive two weeks annual training, and they and their families enjoy a biannual week-long retreat.”

It is interesting to contrast the above with a quote from the author and travel writer Paul Theroux’s book Dark Star Safari (2002). Here he is speaking to Anne Holt, a 22-year old volunteer teacher at Soche Hill School, where he also taught in the 1960s and lamenting the schools collapse into near ruin.

“‘There is a serious money shortage in this country,’ Anne said. ‘That’s probably true,’ I said. ‘But how much does a broom cost? The students could sweep this place and cut the grass. I don’t think it’s a money problem. I think it’s something more serious. No one cares. You’re here to do the work, and you’re willing, so why should anyone help?’
‘I’m not just teaching,’ she said. ‘I’m learning a lot.’
‘Absolutely – that’s a good reason to be here,’ I said. ‘That’s why I liked being here.’”

Apart from the reference to the self-benefit of volunteer teaching, this story illustrates the need for motivation, caring, commitment, drive and ownership by local people in their institutions. This is clearly present among the Kigezi staff, and also present with many of the communities with which it works. It is this vital attitude which has been awakened in the islands of success but remains to be addressed elsewhere. The same is so wherever sustainability is an issue, be it with WATSAN, education, health or any of the other vital sectors required for sustainable development. The best place to start this turnaround is with programme and project staff. Where efforts are made to cultivate a “learning”, respectful work place (both up and down) this attitude can then be transferred by the staff themselves to the communities they work with, through the same process of listening, learning and respect. It is a form of liberation for all when this happens, a form of democratisation, and it also makes sense in simple terms of efficiency. The municipal authority in Luanda, Angola for example, working with poor peri-urban areas. has found that by listening to what communities have to tell them regarding their water situation, they now have a much more efficient system for problem identification than when they relied solely on their own staff to identify problems (verbal report by the Municipal Engineer to a DFID mission visiting the LUPP project 2004).

2.3.6 Support systems – the SANAA technician O&M programme in Honduras – Trevett (2001)

Work undertaken by Trevett in Central America in 2001 targets issues of long-term support. Trevett notes that in Honduras the “circuit rider system” has been copied from the US National Rural Water Association.

Known locally as the TOM, or Technician in Operation and Maintenance, this system now provides back-up for 4,023 rural water schemes and serves over 2 million people. There are 86 TOMs in operation, with around 47 schemes and 23,000 people assisted by each

TOM. This number can be compared with the BIRWSSP case study in chapter 6 of this thesis, where nine pump minders currently provide a back up service to around 22,000 people each. This is where the similarities end, however, as the TOMs are well funded, receive good wages and are all equipped with motorcycles. The pump minders in Zimbabwe receive very little salary and use bicycles to get themselves from pump to pump. The TOMs system has so far been funded in part by the USA through its AID programme, whereas the Zimbabwean pump minders are paid on an irregular basis by the Zimbabwean government.

Not withstanding these differences the case study is of interest because of the parallels elsewhere in the developing world, as the following extract shows:

Until the early 1990's institutions involved in the development of rural water supply in Honduras concentrated their efforts on constructing facilities. Training in such areas as operation, maintenance, and sanitation was provided only during system construction. Many systems were going out of commission far sooner than their anticipated design life. In 1992, the National Water Supply and Sewerage Company (SANAA) carried out a study on the operation and maintenance (O&M) of rural water systems. A number of common problems were identified, for example:

- Community water boards were not meeting on a regular basis.
- The monthly tariff, if collected, was inadequate to cover routine maintenance.
- The Community had not designated an operator to be responsible for upkeep.
- Water systems were not being chlorinated.

The TOM system was introduced to overcome these difficulties. It uses a simple classification to determine water system status which could be adapted for use elsewhere.

Box 2.7 Water System Classification and Respective Remedial Action Honduras (Trevett 2001)

Category	Description	Action
A	All the physical components of the system are working well. The water board meets regularly. Tariffs are fixed, are adequate, and are collected. The water supply is being chlorinated, and water quality standards are met. There is continuous or regular service	Motivate the water board to continue the good work
B	The system may or may not be functioning. There are operational problems that can be resolved without major investment. With minimal effort on the part of the TOM, the system can be moved up to "A" category.	Work together with the water board to resolve the minor problems in administration, operation, and maintenance
C	The system may or may not be functioning. There are operational problems, and there	Work together with the water board to resolve the minor

	may be technical problems with the water supply. Moving the system up to "A" category could require certain investments which are within the economic capacity of the community.	operational problems. Advise the board on the necessary system improvements, and their cost, in order for the community to raise the required capital.
D	The system is not functioning. There are many problems. Moving the system up to "A" category requires substantial investment probably greater than the economic capacity of the community.	Report the situation to the regional SANAA (National water & sewerage company) office. There is little that can be done by the TOM.

This system, which was launched by the National Water Supply and Sewerage Company (SANAA) as a pilot between 1993 and 1995, was stepped up to national level in 1995. The coverage achieved since has been mixed due in part to the arrival of hurricane Mitch in 1998, which led to 1,600 of the systems being badly damaged.

A target of 65% in category A was suggested to be a realistic objective, however in part due to the hurricane, by 2000 only 15% were in this category with 75% in categories B and C and 10% totally out of action, an improvement on the 38% immediately after the hurricane had passed.

The TOMs are expected to visit each of the systems in their areas twice a year, though they allocate their time according to need, with much of their work being spent helping with management activities such as conflict resolution, as well as with technical training for issues such as chlorination.

The cost of support systems

The cost of the system per year is in total US$1.25 million, equating to around 60 cents per person per year, approximately the price of a Coca-Cola. Currently around 65% of this figure is required for salaries and administration costs (paid by SANAA) and the remaining 35% for operating costs including fuel, per diems, equipment maintenance and technical studies (paid by USAID). This makes it an affordable service, which could be paid for out of local taxation, even if capital repair costs remain in the AID/donor domain. As such it is of importance to any developing country considering the real cost of a support system for its national water programme. Across the developing world the use of local taxation to fund this kind of support service, remains problematic for the present, however, largely due to other competing demands and the lack of effective local tax gathering mechanisms. The pump and engine maintenance (PEMS) service from the Dodoma region of Tanzania, for example (discussed in the next chapter), is paid for either in part by an annual contract, or on an "as needed" basis. These kinds of support systems require a regular level of funding to work properly, and for long-term sustainability local taxation would seem to be the most workable solution. Until this does become workable, however, either donor funding or

national taxation will have to continue to be used. This is an important factor in the failure of many attempts at creating sustained beneficial outcomes from WATSAN.

Box 2.8 Factors that contributed to the TOMS system success (Trevett 2001)

- "The model concept, based on providing advice, training and motivation of the water boards in situ, is an effective strategy for developing management capacity. With few exceptions, the water system is the only public service managed by the community, hence there is little or no experience in administering such services.
- The classification system from "A" to "D" is simple and easy to manage, enabling the TOMs and regional engineers to plan training activities according to individual community needs.
- The SAIR (Database) system provides SANAA with detailed information on the status of all the rural piped water systems. It facilitates the development of medium to long term operation and maintenance strategy, and helps identify common problems and regional performance.
- Regular visits by the TOMs help the water boards to keep on top of preventative maintenance and preclude minor problems from developing into major ones (THE STITCH IN TIME SAVES NINE PRINCIPLE). An important aspect of the TOMs' routine visit is motivation of the water boards. The latter can count on an institutional ally to back them on potentially unpopular decisions, such as increasing the monthly tariff.
- The TOM program has relative autonomy in the sense that there is little political gain to be made from interference in program management. Even at the local government level, political interest in tinkering with the program is likely to be minimal as no material resources are at stake. Although a few municipalities have provided some resources to facilitate TOM program activities, the political benefit is limited to adding credibility to their local development responsibility.
- Decentralisation to regional offices improves the efficiency of the program by making it more accessible to the communities and municipalities. This devolution has also introduced an element of competition between the municipalities or communities as quarterly results are made available to all the regional offices.
- Operational flexibility is provided for program management. The regional engineers are at liberty to manage the TOM program according to how they can best achieve their aims. Similarly, the TOMs can plan their visits and allocate time to each community on the basis of need.
- The personal and educational qualities of TOMs themselves is another major factor for the success of the program. The educational criterion for recruitment is a pre-university qualification in social work or primary education. In addition, the candidates must successfully complete a 12 week training course before being accepted onto the programme.
- The provision of resources (such as vehicles, motorcycles and educational materials) and availability of water quality laboratories and equipment (such as altimeters, chlorimeters, and GPS) also contribute to the efficiency and success of the program.
- Salaries of the TOMs are generally better than those of other state promoters or technicians; the use of a motorcycle during work hours also carries a certain amount of status.
- USAID support has been fundamental to the programme. The original concept was developed by USAID; but since its inception, USAID has played an advisory role rather than a managerial one. This approach has facilitated the perception of the TOM program as a national program.

USAID funding initiated the programme and has contributed to its success and stability. SANAA has had considerable leverage in requesting program funding for the program from the Ministry of Finance as a direct result of the steady USAID support. The counter argument remains, however, that as the program is in its fifth year, national funding should by now fully cover the total budget."

Another long-term problem that remains to be solved in the Honduran situation is environmental, and this threatens the survival of the water sources.

Probably the most challenging problem is that of deforestation which is occurring at the rate of 108,000 hectares per year. It has been estimated that the country could become completely deforested in 25 years. The loss of tree cover has led to a deterioration of surface and groundwater sources in terms of flow rates and quality. (Trevett,2001)
This underlines the need for holistic approaches, incorporating WATSAN into broader integrated water resource management (IWRM), mentioned earlier in this chapter.

2.3.7 Plotting partnerships (Caplan 2003)

Increasingly partnerships are being formed to tackle WATSAN in the developing world. These partnerships are between organisations of various types and include: Local government, national government, line ministries at either local or national level, community-based organisations (CBOs) non-government organisations (NGOs) and international NGOS (INGOs) as well as the private sector, which maybe represented by small local companies or multinational corporations. Added to this mix are academic institutions, consultancies of various hues and most importantly the communities themselves. Caplan points out that there are four broadly different types of partnership and contrasts their ways of working.

Innovation partnerships
There are innovation[9] partnerships, which attempt to "break the mould" of the ways projects have been attempted in the past. Caplan notes these are based on non-exclusive relationships. Their key approaches are "listening, brainstorming, and establishing open forums to capitalise on a willingness to share ideas". Their principal challenge is how to scale up their approaches, once they have been identified.

Accountability partnerships
There are accountability partnerships such as those between an implementing private sector organisation or NGO, a funding source (government or donor) and an auditing company. These are, because of necessity, based around contractual agreements and transparency. However, they may as a result lack "flexibility and responsiveness", "that beneficiaries and customers expect" (Caplan 2003). Caplan makes the point that "decision making in such partnerships is between signatories".

Task-orientated partnerships
The third category is task-orientated partnerships. These are "generally driven by an urgency to produce results". Typically these partnerships might be between two main parties, an NGO or a private sector organisation and a funding source (government or donor), involved in installing a water supply system. Caplan makes the point that their

[9] Innovation is defined as "the successful exploitation of new ideas" (Caplan 2003)

main challenge is that they "may miss out on opportunities to create a dialogue between different (other) partners".

Thus a potential failing is that they do not take account of the silent partners (or stakeholders) in the communities, especially over the longer term. Failing, for example, to take the time to "determine the most appropriate operation and maintenance mechanisms" (this point is also made earlier on in this chapter by Sutton (1999)). Caplan also makes the point that task orientated partnerships may not take the time to sufficiently "engage with the policy arena to bring lessons learned to the debates".

Policy-orientated partnerships

Policy-orientated partnerships are generally made up of a number of groups concerned with "determining more appropriate policies, laws, regulations and standards". Caplan sees such partnerships in WATSAN as typically being between "consumer associations, the regulator, municipalities and the operator". Their driving force is considered to be creating sustainability. The principal drawback Caplan sees is when they become self-serving vested interest groups and move away from their avowed intent. For them to thrive Caplan believes they require (small 'p') political will, and "openness to explore around options", "understanding that gold-plated solutions while desirable, may be impractical".

Box 2.9 Summary of the driving forces, challenges and strategies of the four partnership types (Caplan 2003)

	Innovation	**Accountability**	**Task Orientated**	**Policy Orientated**
Primary Drivers	Responsiveness Targeting	Contract Grievance Mechanisms Results	Urgency Efficiency	Sustainability Creating Advantage
Challenges	Scaling up	Flexibility Responsiveness	Sustainability Dialogue	Deliberations Speed Politics Communications
Strategies	Payment mechanisms Technology Targeting Subsidies Multi-objective approaches	Public Hearings Satellite Offices Complaint Hotlines Verification	Technology Community Labour Subsidies for connection	Standards/Regulations Non-exclusivity Dialogue Multi-stakeholder Advisory Group

Caplan makes the point that partnerships in the real world generally contain elements of all four orientations. He suggests a model (Fig. 2.2 below) to analyse the performance of partnerships: how this could be used to "establish a more common understanding of what is expected from a particular partnership project", and more importantly how such introspection might "offer a greater understanding of the incentives and constraints of different partners". In doing so Caplan suggests the analysis can offer "some guidance on how the partnership will need to transform in order to achieve its goals" (Caplan et al. 2001).

In the model below (fig 2.2) the parties to the partnership can map their orientations (shown in the curved lines) together to gain a greater insight into where they are, where

their partner thinks they are and where they need to go, so as to reach their objectives. If both parties come from opposite orientations a coming together in the centre of the matrix will be needed to achieve these objectives.

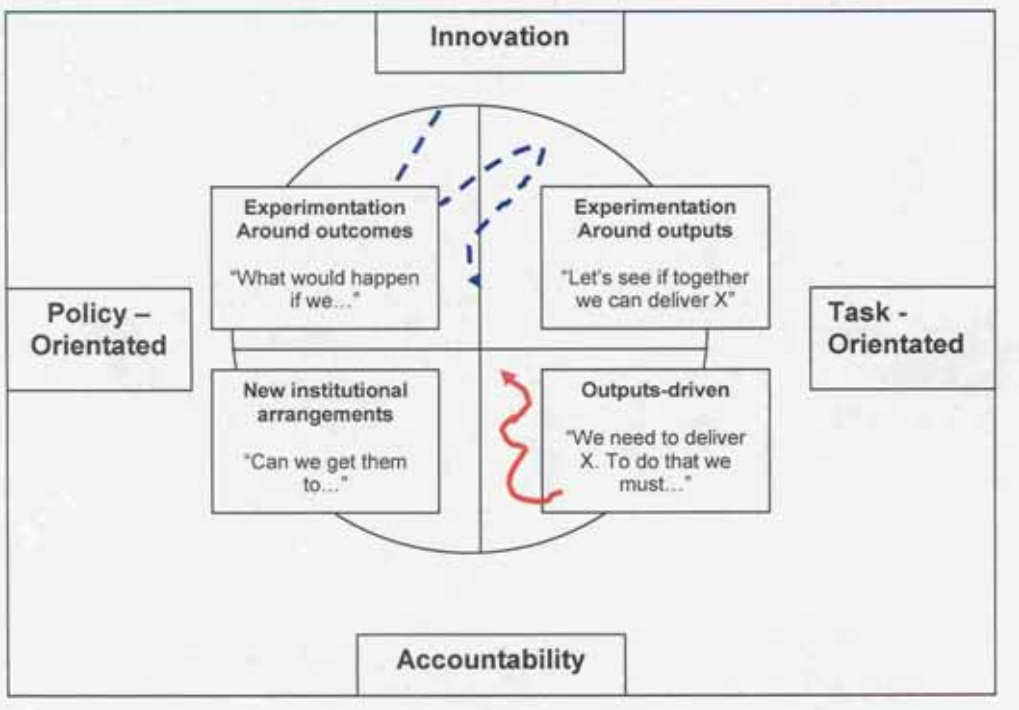


Fig. 2.2 Partnership Model (Caplan 2003)

2.4 A synthesis of approaches

The literature points to the importance of involving the beneficiaries in WATSAN interventions in the developing world. Narayan's World Bank funded research emphasises the importance of participation throughout the life of a WATSAN programme as being significantly greater than at any single stage. How ironic then that in many, if not most large scale World Bank, multilateral and bilateral funded projects since the Narayan report was written in 1995, the emphasis has been on just one aspect of participation, that of raising a 5% contribution from the communities targeted. A single process fraught with issues of problems of affordability for the communities involved, and a lack of transparency of what happens to the funds once they are surrendered into local government coffers.

The three issues that resonate from the WaterAid "Looking Back" report (Blagborough 2003):

- technical quality of interventions
- effective community management
- continued support for communities
- and the four related issues that stand out in the 1999 Carter paper (Carter et al. 1999):
- motivation
- maintenance

- cost recovery
- continuing support

offer a better synopsis of what all WATSAN programmes should be undertaking in order to achieve sustained beneficial outcomes. To attempt this, the staff of organisations involved with WATSAN need to have empathy, understanding and solidarity with the communities they work with, as well as a firm base within local government, or another local organisation that is not fragile and likely to fold as soon as project funding ends.

Support systems need to be effective, affordable and their importance recognised for the long term by local government and communities. While not generating dependence these systems have to maintain a spirit and passion of public service.

As the implementation of WATSAN is commonly the result of a partnership of both individuals and organisations within government, as well as a partnership of donors, government, NGOs and communities, an ability to understand how the dynamics of such partnerships work, can be useful to avoid the friction that not surprisingly arises when a number of parties come at a single issue from a range of standpoints, each with their own baggage of separate agendas. An appreciation of this can help channel energies more effectively and thus promote the achievement of sustained beneficial outcomes.

2.5 Conceptual models and paradigms

Academics in a number of institutions are now seeking to create conceptual models and paradigms to encapsulate the WATSAN sector and its workings in an effort to come to grips with what it is that needs to be taken into account for successful WATSAN intervention. Here, with some analysis, are three of them.

2.5.1 The building blocks model

Harvey and Reed (2004), in their book Rural Water Supply in Africa, refer to building blocks required for achieving sustainability. These they consider to be:

- the policy context
- institutional arrangements
- financial and economic issues
- community and social aspects
- technology and the natural environment
- spare parts supply
- maintenance systems
- monitoring

They emphasise the importance of taking a holistic approach that addresses all the sustainability factors and the relationships between them, and propose the analogy of a wall built out of all the building blocks. Many of these project elements we will see are important in the case studies that will be presented in this thesis, but is there not more to

getting approaches the sector right, than effectively ticking seven rather technocratic boxes?

2.5.2 The "Carter Paradigm"

It can be suggested that these building blocks, while important, are not the whole story of what leads to sustained beneficial outcomes in WATSAN interventions. According to Carter (2004) there are other things, including quality, process, integration and ethos, that are of as much importance as the building blocks envisaged by Harvey and Reed. These five pointers to sustainable development, presented here as the "Carter Paradigm", could become a simple and effective tool for analysing success and failure in WATSAN programmes (see fig. 7.1 below) by addressing not just Harvey and Reed's (2004) building blocks, but the ways they are applied.
Thus not only were the right things done, (the building blocks), but were they done well (the quality)? Was there necessary attention made to culture, trust and partnership (the process)? Are vision, attitudes and values of staff and community cultivated and taken into account (ethos)? And is the whole lot coordinated effectively (integration)?

It may seem obvious that quality, or doing a job well, is essential, but how many projects have failed in the developing world because not enough attention was paid to the quality of implementation? Likewise it is the process of paying attention to culture, trust and partnership that can ensure not only appropriate strategies are used in communities, but that the teams themselves learn to respect one another's abilities and strengths and work effectively together.

The integration of institutions and departments allows staff to coordinate and work more effectively than they could have done on their own. With a range of different disciplines and skills available, the effectiveness of the integrated team becomes greater than the sum of its parts. As the reader will see, integration in both the WAMMA and BIRWSSP cases played an important role in the development of programme capacity.

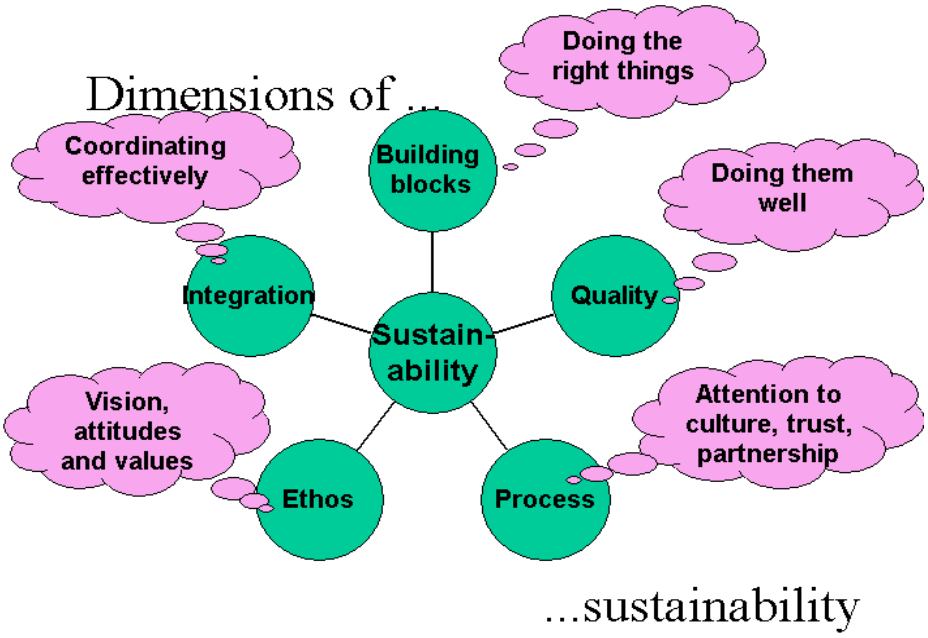


Fig. 2.3 The Carter Paradigm (2004)

Ethos, perhaps the most difficult of these dimensions of sustainability to assess, is expressed as vision, attitudes and values, and as with process, it is both important for beneficiaries and staff, though in different ways. In both WAMMA and BIRWSSP for example, the ethos of self-help and ownership was fostered in communities to build self-dependence, management capacity and unity.

2.5.3 Complexity and simplicity

Schouten and Moriarty (2003) present a “causal diagram of the main factors affecting the achievement of widespread equitable, sustainable community management” (fig. 2.4). While suggesting that this conceptual representation refers to balances rather than absolutes, they acknowledge it is a simplification of the realities that exist within communities.

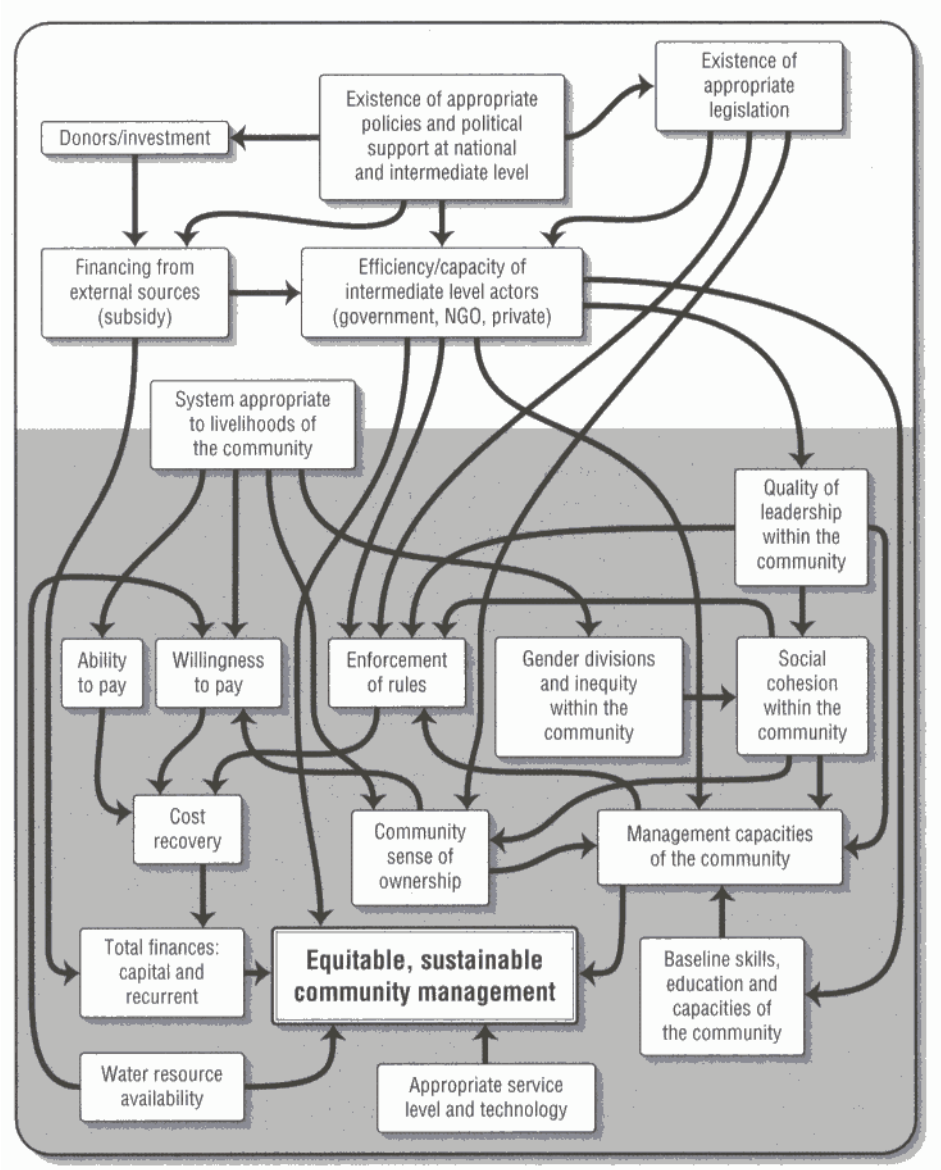


Fig. 2.4 Causal diagram of the main factors affecting the achievement of widespread, equitable, sustainable community management (Schouten and Moriarty 2003)

It is an interesting model with the community factors held in the lower grey area, and the external factors sitting above in the white area. It emphasises the interrelationships that communities must contend with, and outside agencies understand, if they are to play a positive role in promoting sustainable development. As a model for problem solving it is of use in understanding the “nature of the beast”, however due to the uniqueness of each and every situation, individual solutions will have to be developed by those most directly involved from within the communities and support agencies.

The interrelationships that form a major part of the environment from which we seek to see sustainable development emerge, is so complex and interwoven it can appear to be, in

Carter's words, "more of a bowl of spaghetti than a problem tree". In such a world achieving sustainable development can be "more of an art than a science" (Carter 2004). With this much complexity, a paradigm that points out broad areas of importance is perhaps more useful than an interwoven conceptual framework for implementation. Informed yet empirical "suck it and see" approaches with observance of Carter's paradigm may offer the best chance for success, and by taking such a course this thesis suggests that attempts at achieving sustained beneficial outcomes can be as easy to achieve as opening an unlocked door.

2.5.4 Bridge to sustainable development

Another analogy may be to incorporate Carter's dimensions of: quality, process, ethos and integration along with the original Harvey and Reed's building blocks (now referred to as project elements) into a new building block model (fig. 2.5). These building blocks form the arch work of a bridge. The bridge itself provides support for a road, along which people deprived of safe water and adequate sanitation (and their governments) can travel to achieve sustained beneficial outcomes, thereby avoiding the threats to sustainable development symbolised by the river. The building blocks in the arch are all dependent on each other. If one is taken away this will lead to the collapse of the arch and the destruction of the bridge.
Either way the analogy itself is unimportant. What is important, however, is that all these aspects are included and provided for in project design, implementation and long-term support.

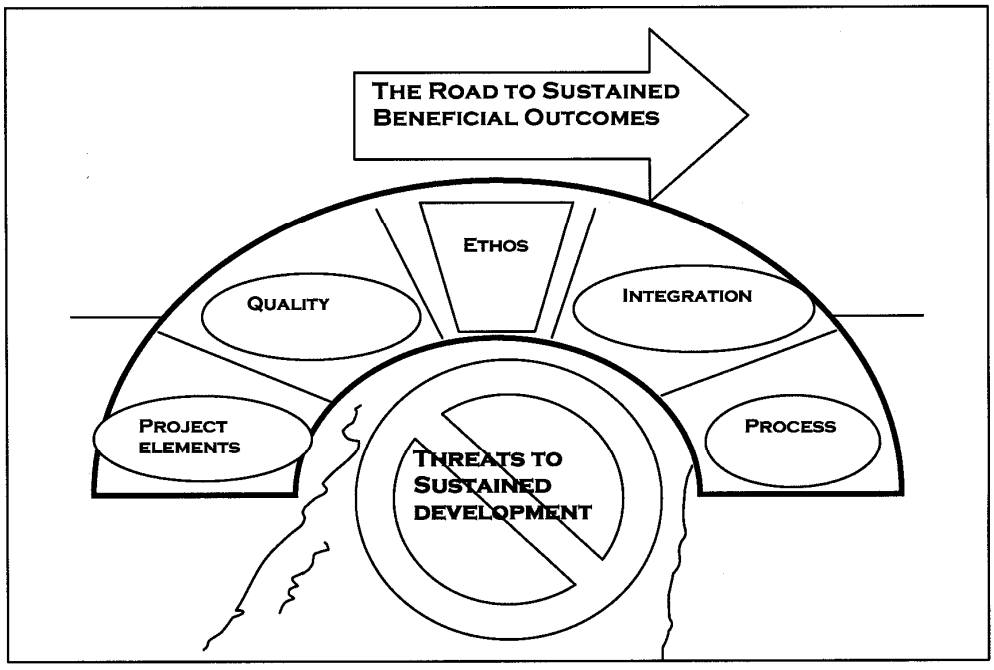


Fig. 2.5 The "bridge" to sustained beneficial outcomes

2.6 Innovative approaches

Innovative approaches to all aspects of WATSAN are an enduring feature of the sector. Experimentation and trials of new and innovative approaches have helped to push forward knowledge and often led to sustained beneficial outcomes. For example, developments of village-level operation and maintenance (VLOM) handpumps, mentioned earlier on in this paper (2.1 and 2.1.1), have helped communities to undertake their own repairs. Three important areas of innovation are highlighted here as current and relevant to the future of WATSAN, and to the search for sustained beneficial outcomes:

- productive uses of water within the context of a sustainable livelihoods approach
- ecological Sanitation or ECOSAN
- solar water disinfection, or SODIS

2.6.1 Productive uses of water within the context of a sustainable livelihoods approach

Lovell, in his book Productive Water Points in Dryland Areas (2000), anticipates the future of rural water supply as incorporating productive uses of water. Conventional WATSAN in effect coming out of its ”shell” of concentrating on domestic use and accepting a wider holistic responsibility for supporting livelihoods. This is part of a wider move to addressing “livelihood strategies” as opposed to single issue development, and is a trend which is apparent in both the MDGs and the Dublin Principles mentioned above, and is starting to make inroads into projects and programmes on the ground, as illustrated in the Kigezi example.

The UK Government white paper on International Development (DFID1997) defined sustainable livelihoods as “comprising the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base”.

This approach to development incorporates five “capital assets” (below), and in doing so, attempts to be holistic. It takes into account the interrelated nature of the factors that people require for their livelihoods and that these are dynamic, in that they change with time and can be exchanged one with another.

Box 2.10 Capital Assets (Lovell 2000)

Natural Capital
The natural resources that are essential for livelihoods, e.g. land, water, wildlife, biodiversity and environmental resources.

Social Capital
The social resources (networks, membership of groups, relationships of trust, access to wider institutions of society) upon which people draw in pursuit of their livelihoods.

Human Capital
The skills, knowledge, ability to labour, and good health important to pursue different livelihood strategies

Physical Capital
The basic infrastructure (transport, shelter, water, energy, and communications) and the production equipment and means, which enable people to pursue their livelihoods.

Financial Capital
The financial resources that are available to people (Including: savings, supplies of credit, salaries or pensions) and which provide them with different livelihood options.
(Adapted from Scoones1998)

Lovell makes the point that "groundwater is perhaps the only natural resource stock, still widely under-utilised in dryland areas, and productive groundwater development is one of the few natural resource development options that anticipates increasing population and land pressure and the need for agricultural intensification and livelihood diversification in the future", and that "in many dryland areas a doubling of present use (of groundwater) to allow production in conventional water supply programmes will have a negligible impact on hydrology but enormous impact for rural poor in terms of improved health, nutrition, income and self esteem".

Lovell also made the point that respondents from productive water schemes had reported that social capital had in effect been generated by the sharing of experiences and pooling of ideas and resources. Similar experiences are also to be found in the productive water point case study included in chapter 6 of this thesis. A lesson passed directly on from Lovell's work to BIRWSSP (chapter 6) was that ensuring plot sizes in communal gardens remain the same for all families is another way to ensure that the poor benefit. This happens in two ways: it prevents influential people from taking more than their fair share, and secondly, poorer families in rural areas are often smaller [11] families, thus per household they can benefit more. In addition to this, younger more resource-poor members of communities are more likely to benefit from communal water point gardens, as they are often marginalized from the development of privately owned wells, not having the

capital to construct them in the first place (Moriarty 2000).

The scale of the potential of productive water is well illustrated in the Tanzanian City of Dar es Salaam, where 90% of the leafy vegetables consumed in the city are produced within the urban and peri-urban areas on small irrigated plots in private gardens and open public spaces (Stevenson et al. 1996).

The reader will note the inclusion of a specific piece of research relating to productive water in chapter 6 of this thesis. The potential for harnessing productive water systems to generate capital offers a new resource, which by improving livelihoods can ensure sustained beneficial outcomes from water projects. It can broaden the range of beneficial outcome from water projects more commonly focused on domestic uses, and in doing so create capital that can be used to repair or replace schemes, and hence it has the potential to enhance sustainability of such schemes.

2.6.2 Ecological sanitation, or ecosan

Another, related area which today seems ripe for development, extending the realm of beneficial outcomes from WATSAN, is that of ecological sanitation or “ecosan”. Ecosan has been practised for thousands of years with the use of ”night soil” or human excreta to fertilise garden plots. This technique can be dangerous and unpleasant because of disease possibilities and the smell. As Morgan writes, “Raw excreta is reviled, odorous and unpleasant in the extreme, the excreted products, particularly the faeces, are known to carry a multitude of pathogenic organisms which carry disease.” (Morgan 2004) Recent work by Morgan in Zimbabwe, however, has investigated how composting human excreta with soil and wood ash, leaves and other kitchen waste can, over the period of a year, produce a natural compost that is safe to handle and an excellent conditioner for poor soils. Population pressure on the land, mentioned in the Kigezi evaluation, is increasingly common and as this happens, exhaustion of the soil with falling levels of agricultural productivity is almost inevitable, leading to crisis and potential famine. Morgan’s work shows how this situation can in part be remedied at the household level, with human faeces turned into a useful productive resource rather than filling pit latrines, or more dangerously, where sanitation is not available, allowed to pollute the neighbourhood.

The “fossa alterna” is one of the ecosan systems developed by Morgan. It involves two shallow latrine pits that are alternated every year to allow filling and emptying. The level of nutrients in a typical poor Zimbabwean topsoil have been compared with those in compost produced in the fossa alterna.. The results show seven times the level of nitrogen, over six times the level of phosphorus and almost five times the level of potassium in the compost compared to the soil. When the compost is mixed on a one-to-one basis with the topsoil the increase in productive capacity is impressive (table 2.2).

Table 2.2 Increases in the cropped weight of various vegetables with the use of fossa alterna compost mixed with poor topsoil at a ratio of 1:1, compared to cropped weight of vegetables planted in poor top soil only (Morgan 2004)

Vegetable	Increase in cropped weight over 30 days
Onions	2.7 X
Spinach	7 X
Covo (a green leafy vegetable)	8 X
Lettuce	7 X
Green pepper	4.6 X
Tomatoes	10 X

Such increases in vegetable production from small gardens and productive water point plots could make a substantial difference to the lives of poor people in the developing world, providing them with a small but sustainable household-level resource and productive capacity.

Morgan, who is also the inventor of the ventilated improved pit latrine (VIP), has also considered the recycling of both the building materials and the pit contents of VIP latrines. He makes the point that "there are at least half a million VIPs in Zimbabwe alone, each with a life of between 10 and 12 years before they fill up and become abandoned" (Morgan 2004). With the potential re-use of most of the building materials in the superstructure and slab, new ecosan latrines can be built, and by mixing topsoil into the top layers of the filled pits it is possible to make a start on composting the contents, while avoiding the unpleasant task of digging out the whole pit.

Morgan describes the use of the "arbor loo", (the simplest of the ecosan designs consisting of a shallow pit 0.5 - 1m deep, covered by a slab, in which a tree can be planted once the pit has filled up and the slab moved to another site) and the fossa alterna as being particularly useful and appropriate for use in southern and eastern Africa. The use of urine-diverting systems require more management and knowledge than does the arbor loo or fossa alterna. It is a "more sensitive concept, its success depending greatly on meticulous use and regular maintenance". He does, however, suggest that with each adult producing around 1.5 litres of urine a day, urine can be collected in plastic containers and mixed with water (three parts water to one part urine) to produce an effective fertiliser, especially for maize and green leafed vegetables.

Box 2.11 Morgan's conclusions on the use of ecosan (Morgan 2004)

- Eco – toilets offer a wide range of options suitable to a wide range of potential users.
- Even with the lowest cost options, the toilets can provide far more than a safe sanitary disposal system.
- The humus derived from shallow pit eco-toilets and urine diverting toilets is rich in nutrients and can greatly enhance the production of vegetables when mixed with even the poorest of top soils.
- The urine also has great value as a liquid plant food when diluted with water. It is particularly valuable for green vegetables and maize.
- When harnessed together eco-humus and urine have enormous potential for enhancing food production in both rural and urban areas. Ecological sanitation offers hope and forms vital links between health, sanitation and agriculture.
- By adopting some of the ecosan principles, some problems with existing excreta disposal methods, such as the pit latrine may be overcome.

2.6.3 Solar water disinfection, or SODIS

Work undertaken by Meierhofer et al. (2002) has helped to establish the current state of the art of the SODIS technique. Here drawing from Meirhofer's work are some of the key lessons of SODIS.

SODIS, which has started to come to prominence in only the last few years, was originally researched in the early 1980s by Professor Aftim Acra at the American University of Beirut. It involves two effects of light from the sun, heat (from infrared radiation) and UV-A radiation. These can kill pathogenic micro-organisms in raw water if it is stored in clear mineral water-type plastic bottles (of up to 2ltrs) and placed in direct continuous sunlight for a period of six hours. On cloudy days the bottles need to be left for two days to make the water safe to drink. The effectiveness of SODIS is increased if the bottles are left on corrugated zinc roofing sheets as this helps to reflect the rays back into the bottles and provides a secure rack so they do not roll off.

The method is potentially important because it is so cheap and easy to use. The plastic bottles cost a matter of cents, and if the technique is learned and understood it could provide millions of poor families, who currently live too far from safe sources of water to make their use practical, with a system for purifying the raw water that they collect closer to their homes and use for drinking and cooking. Turbidity is a problem if it is greater than 30 NTU (nephelometric turbidity units). In this case simple straining is suggested as a method of pre-treating the water. (see appendix 1 for a ready method for estimating if turbidity is greater than 30 NTU).

Clear plastic bottles in good condition are more effective than old scratched ones, and shaking the bottles ¾ full for twenty seconds to aerate the water prior to filling completely is suggested as this improves the disinfection process.

The method has been tested for socio-cultural acceptance in seven countries across three continents including South America, Asia and Africa with an average acceptance rate of 84% after participation in demonstration projects, which makes it suitable for inclusion in participatory health education classes.

Barriers to SODIS becoming widely adopted have included doubts over the effectiveness of the system to sterilise water on cloudy days and the number of bottles a family would have to own to provide sufficient drinking water. Another problem the author has encountered has been the availability of functioning water testing equipment and trained staff to use it and thereby prove the system works to those that might adopt it.

The SODIS method is, however, cheap and easy to use and if more widely trailed (tested and promoted if found to work) it may have a vast potential to improve the health of people where improved water facilities have little hope of being introduced in the short to medium term.

2.7 Summary

This chapter started with a time line of developments in the WATSAN sector.
It acknowledged the bigger picture in terms of the international efforts (the UN Decade), dialogue (The Dublin Principles, The Rio Conference and Vision 21) and the current way forward (the UN MDGs).

It also examined what various researchers, practitioners and academics have had to say over the over the last decade on the importance of effective community participation, in first demanding and then managing water supplies, the importance of the technical quality of interventions and of support mechanisms and of how partnerships between agencies need to be understood, and how conceptual frameworks are being developed to present and interpret this knowledge.

Lastly it observed the role of innovations. It cited three new approaches, evaluating their importance and considering where they will take the sector in the future; the first two expanding the realm of WATSAN from domestic water and sanitation to sustainable livelihoods, and the last considering a new form of affordable home water purification for those who use unsafe water sources.

Chapter 3 Wamma Tanzania an organic approach to WATSAN “Freedom to grow”

The following chapter is the first part of a case study concerning the partnership of the international NGO WaterAid, and the Tanzanian government departments of Maji (Water) Maendeleo (Community Development) and Afya (Health) in the “WAMMA” water, sanitation and health education (WATSAN) programme in the Dodoma Region of the United Republic of Tanzania.

This is a programme that which has by working at the speed communities were comfortable with, scaled itself up to provide access to safe water sources to 75% of the population of Dodoma Region. It covers the history and background of the programme and the approaches adopted, from village and needs identification, through to programme management. It also includes research findings from 2002 in three of the villages where project work started in the early 1990s, assessing performance and asking villagers themselves what they consider to be important in the management of their water schemes. Lastly it considers the potential for scaling up the WAMMA approach to address WATSAN issues elsewhere in the country.

Box 3.1 Summary - The WAMMA Programme, Dodoma, Tanzania

Description of Outputs

This is a system of integrated long-term support to community managed water supply, sanitation and health education in the Dodoma Region of Tanzania, supported by a partnership between the Government of the Republic of Tanzania and the international non governmental organisation (INGO) WaterAid. The WAMMA concept is based around district teams of middle level (facilitators) staff from the Departments of Water, Health, Community Development and Education, the name WAMMA being derived from the initials of the participating government departments. There are five district WAMMA teams who in addition to working with a number of new village projects each year provide a back up service of support to existing water supply schemes. Associated with this is the pump and engine maintenance scheme or PEMS, which comes under the district water departments, and provides a part subscription funded service of technical advice and support to the village schemes requiring this assistance.

Scale and Time Frame

WAMMA has been operating since 1991. The population covered by WAMMA supported water supply systems has risen from 200,000 to 1,300,000 over this time frame, providing safe water to 76% of the rural population, from 487schemes distributed across the five districts of the Dodoma Region in central Tanzania.

Technology and Water Resources

Because of the great depth to aquifers, often in excess of 100m, the technology utilised for community water supply in the Dodoma Region is predominantly deep boreholes equipped with either rotating mono or reciprocating climax pumps driven by diesel engines. Gravity pipeline systems are sited where springs of sufficient capacity exist, there are also a number of TANIRA hand pumps in communities where groundwater is shallow enough to permit their use.

Main Institutional actors

The main institutional actors at district level are the Government Departments of Water, Health, Community Development, Education and Planning. At Regional level, the Regional Water Engineers Department has provided much of the lead, in concert with the other Regional Heads of Department. The Programme office of WaterAid in Dodoma continues to provide logistical and financial support to WAMMA.

Links to Sector Reform

The WAMMA programme as a Government / INGO partnership has linked to the National Water Policy since its inception, participating in national debate and discussion over the reform of the sector. The ending of the Government policy of free water in the early 1990's being fundamental to the WAMMA approach of community management of water supplies, including paying for O&M costs.

Financing

The financing for the WAMMA programme has come from both Government and external sources, principally through WaterAid, with further financing support being provided by the Belgian Survival Fund with the International Fund for Agricultural Development (IFAD), and more recently the World Bank. As part of the Demand Response Approach (DRA), communities raise 5% of the capital costs and raise a community water fund to pay for operation and maintenance costs.

Factors in Success and failure at Community Level

Ownership of the installations by the communities who use them, generated by involvement from planning through implementation to the management of operation and maintenance, plays a major part in the success of the schemes. Memories of the very real hardship faced by communities, prior to the refurbishment of the schemes has also promoted sustainability, as the value of the scheme is appreciated. Where water from alternative sources has been more easily available however there seems to have been less incentive to raise funds for repairs when these have been required.

At Strategic Level

Six key factors have lead to success with WAMMA these have been: 1) New Government Water Policy favouring community management of village water systems, 2) Field Workers made available by government departments to form integrated teams, which once formed are committed and take great pride in their work, 3) Backing from senior government officials maintained throughout, 4) Needs based approach allowed to evolve into a demand responsive approach, with time given to communities to opt in when ready, 5) The acceptance of the importance of community development and the training of staff in the use of participatory methods, 6) Donor resources maintained, to allow the integrated teams to continue their work over a long time period.

3. Introduction

This chapter provides a case study of the Government of the United Republic of Tanzania/WaterAid partnership known as WAMMA in Dodoma Region. Analysis of this programme, which has run now for over twelve years, is important because of the size of the programme, its longevity and the overall sustained beneficial outcome to the people of the region. Access to safe water has, for example, risen from 20% to 76% between 1991 and 2002, despite a rise in population of the region over the period from 1.3 to 1.7 million people (Regional Water Engineer's data, Dodoma 2002 and WAMMA 2002).

3.1 Context: Dodoma Region, Tanzania

Dodoma Region is in the centre of Tanzania, in an area bordered to the west by the rift valley and to the north and east by the Massai Steppe. It is a semi-arid area with around 550mm of rainfall annually. The region is on a plain 1000m above sea level with isolated ranges of hills, and is split into five districts. It currently has a population of around 1.7 million people (2002) who are from a number of tribes, including principally the Wagogo, Wabena, Wahehe, Wanguu, Wamassai and the Wakaguru. Though most people speak Kiswahilli, this is not always the case, especially among older women in the rural areas. The region is one of the poorest in the country as characterised by coming 18th out of the 20 mainland regions in terms of per capita GDP (Jarman et al. 1997). There are few natural resources other than a largely subsistence agricultural sector of maize, millet, sorghum, vegetables (where sufficient water is available for small scale irrigation), cattle, goats and poultry. Dodoma town is the capital city of Tanzania, but most ministries retain their offices in Dar es Salaam, which has until now deprived the local economy of service delivery opportunities. Moves are currently underway to relocate all government ministry headquarters to Dodoma, though the success of this endeavour is yet to be known.

Fig. 3.1 Map of northeastern Tanzania, showing the location of Dodoma and the surrounding regions (Shand 1997)

3.2 Context: History and background of the programme

The international non-government organisation (INGO) WaterAid has been active in the Dodoma Region of Tanzania since 1983. Its first local partner was the Anglican Diocese of Central Tanganyika. From 1986 WaterAid developed a partnership with the Water Ministry (Maji in Kiswahilli). WaterAid's work with Maji revolved around the refurbishment of Ujaama (see below) village water schemes. These water supply systems mostly consisted of diesel engines fitted to mono or climax pumps on deep boreholes, or gravity pipelines fed from springs.

The Ujaama or "freedom" villages were formed after Independence in 1961, under a process known as villagisation. Between 1969 and 1976 scattered rural communities were encouraged to resettle at locations where services such as schools, health centres and water supplies were to be made available by the government (Lorgen 1999).

By the 1980s the downturn in the Tanzanian economy was stretching government resources so much that the centralised operation and maintenance of rural water supplies was no longer sustainable (Jarman et al. 1997). Many of the village water schemes had broken down and could not be repaired because of the lack of government funds. The region, which then comprised the four districts of Dodoma Urban, Dodoma Rural, Kondoa and Mpwapwa had a population in 1991 of around 1.3 million people. Access to clean water was approximately 20% and some communities had particularly acute problems that meant women in unserved villages were walking distances of 20km or more during the dry season, to collect water of poor quality from open wells.

The WaterAid programme with Maji prior to 1991 was largely technical and doubts arose over several key areas. To address these concerns an internal evaluation in 1990 recommended the following shift in priorities:

- Assist those in need of a better water supply to develop or repair their own scheme which they themselves can operate and maintain.
- Through health education, encourage those who develop their own schemes to realise as fully as possible the potential for improvement in health.
- Assist Maji and Afya (the health department) to implement these objectives developing their capacity through training and experience.

The evaluation noted that "the implication of modifying the objective in this way is more emphasis on sustainable water schemes; integration of health education with the engineering and an approach with Maji and Afya in which WaterAid takes more initiative" (Bennel et al. 1990).

This emphasis on the importance of self-help and of the integration of water and health departments were to be important influences in the years ahead, as was the new role for WaterAid in capacity building and institutional development with its partner organisations in government.

3.3 The new programme

Freedom was given to the new WaterAid country team to develop an integrated strategy with colleagues in the participating government departments. This approach had the advantage that flexibility on the ground allowed the programme to literally grow "organically", enabling the programme to find its own shape and work in the most effective way the situation would allow. The need for the involvement of the department of community development (Maendeleo ya Jami) became obvious at this time as the skills of Maendeleo would be needed in approaching and planning with the communities in the villages. So along with the water and health departments, the community development department became a founding member of the integrated team soon to become known as WAMMA.

3.3.1 Villages of greatest need survey

It was the belief of the WaterAid staff that communities with the biggest problems should be reached first. As members of an international non-government organisation in the charity tradition, they felt that it was right to take a humanitarian, needs-based approach and to temper it with the WaterAid ethos of self-help. So with new personnel, new equipment and new enthusiasm (Mathew 1988) the work was to be targeted where the need was greatest. For this to happen it was important to know where the need was, and so the "villages of greatest need survey" was conceived. Its objective was to identify, district by district, the villages where people were having the biggest problems with access to water.

The study was undertaken with all those who were willing to help. The Regional Development Director, the District Executive Directors, the District Commissioners, the Regional and District Departments of Water, Community Development and Health, and the officials and clerics of the Diocese of Central Tanganyika, as well as headmasters of rural schools. All leant a hand to offer advice on where the villages with the greatest need for improved water supplies could be found. Villagers in obviously needy villages informed the team of even more needy villages than their own, saying, "We have problems, yes, but you should see how the people in that village are suffering." Humanitarianism was clearly going to be a common feature that would help link community and development effort.

3.3.2 Birth of WAMMA

The villages of greatest need exercise had a "knock on" benefit of not only helping to start the process of integration between government departments, but of making the process work, by providing a shared role of information collection. The integration became formalised as heads of departments in the districts agreed to attach members of their staff to the new teams. At this time a name for the new programme emerged.
The name WAMMA was derived from the first letters of the names of the participating departments of:

WA WaterAid
M Maji (the Water Department)
M Maendeleo ya Jami na Wanawake Na Watoto (Department of Community Development and Women and Children)
A Afya (the Health Department)

The initials spell WAMMA, and they were first conceived at a small staff meeting under a guava tree on the outskirts of Dodoma. After checking that the name had no bad connotations in any of the local languages it was discussed with the regional heads of department and then formally agreed.

3.3.3 WAMMA - Continued evolution

The WA later evolved into WAwezeshaji or “facilitators” in Kiswahilli to better reflect the nature of the partnership after the WaterAid engineers had been withdrawn from the district teams, their capacity building work completed. The Department of Education joined the WAMMA teams as child-to-child health education was taken on as a strategy, and the Department of Planning has also since joined. There are WAMMA teams in each of the (now) five districts of Dodoma Region, with involvement on an advisory basis from the department heads at regional level.

3.3.4 The link between need and willingness and its importance

As villages identified under the villages of greatest need survey were contacted and discussions with them held, WAMMA discovered an interesting thing. Communities with the greatest need for water were also often the most willing to do whatever they could to solve their own problems once they realised that with assistance, they could. Whilst this willingness might be considered hardly surprising, the application of this knowledge was of great importance as it helped to guarantee the high level of participation and ownership essential to long-term success. Sustained beneficial outputs from WATSAN can be more assured if the community fully approves of and supports the intervention. Need in this case equates to a real demand, far more profound than a project only insisting on a 5% contribution to capital costs before project work can go ahead.

With communities willing, training was readily received, community bank accounts were opened, construction work was started and 12 years on most of these early schemes are still operational.

Fig. 3.2 below illustrates the structure of WAMMA across the districts of Dodoma to the regional centre and how WaterAid interacts with it. The level of WaterAid involvement has been scaled back over the years as capacity has developed. Currently the main function of the WaterAid office in Dodoma is administration of its funding support to WAMMA and offering advice.

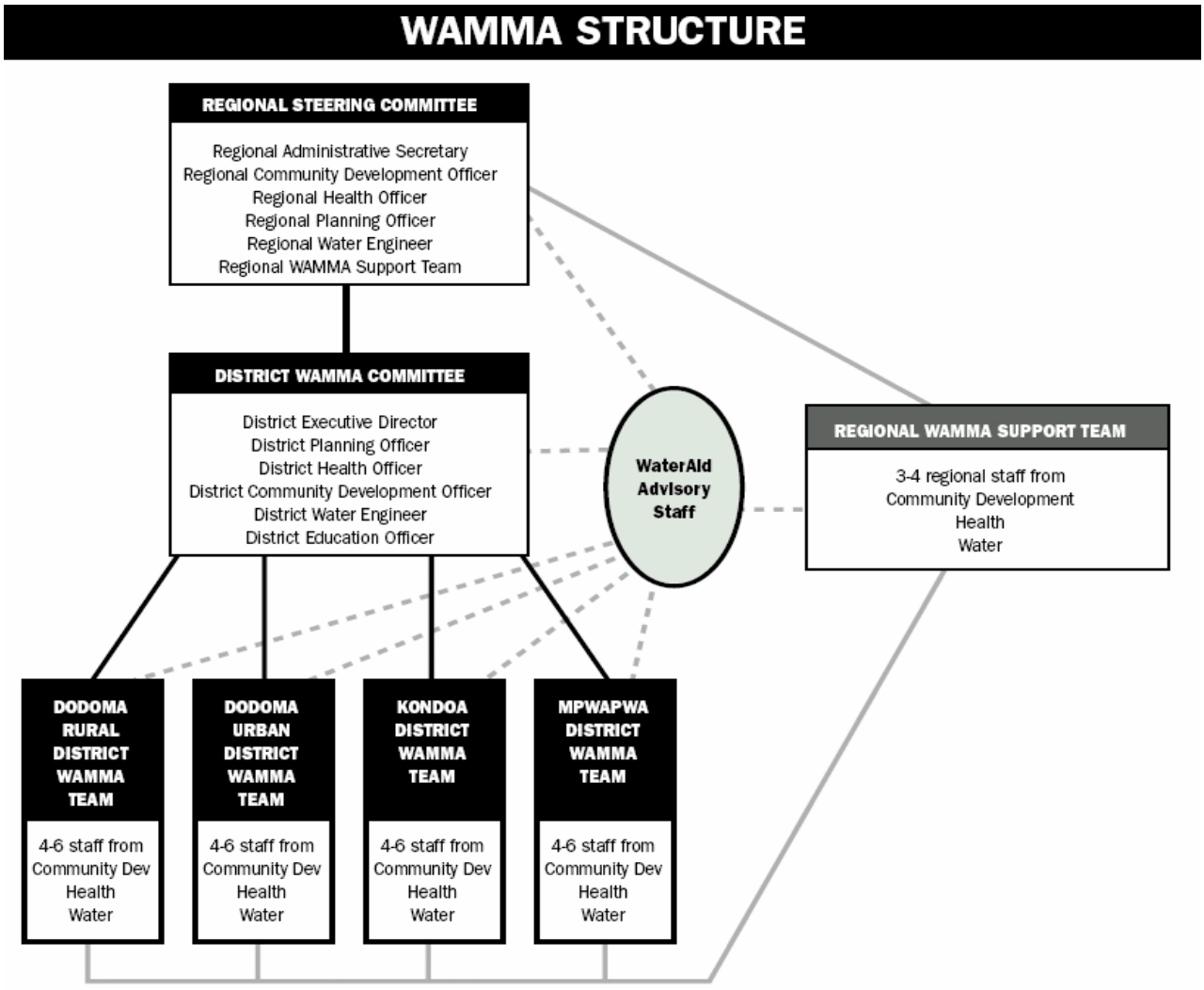


Fig. 3.2: WAMMA structure (Jarman et al.1997)[10]

Because the initial criterion for support was need, the location of the early projects looked as if someone had fired a "scatter gun" at the map, the villages receiving assistance were so randomly situated. Working with scattered communities had an unanticipated benefit of informing a large number of other communities of what was going on. As members of neighbouring communities came to buy cattle, visit family members, trade or just pass through, they took notice of what was happening, asked questions and then told their friends and families when they returned home. This enabled the word to spread of how an organisation called WAMMA could assist communities with water and sanitation problems, so long as the communities themselves were ready to do certain things (organise, raise a water fund, ready themselves for construction, collect building materials).

[10] Mpwapwa District was split into two districts in the late 1990's, Kongwa previously a sub-district now enjoys full district status, and has its own WAMMA team.

3.3.5 Needs-based approach evolves into DRA

The initial approach of proactively finding the villages with the greatest need gave way to one of encouraging villagers to contact WAMMA. A leafleting campaign, which asked people if their water scheme was “alive or sleeping” was launched to encourage communities to come forward for assistance and meet the project halfway, by organising and making themselves ready.

The scaling up of operations, increasing the number of schemes so that a large proportion of the villages in a district could become involved, became organic. The presence of operating village schemes became the best advertisement that WAMMA could have to encourage other communities to join the process. Not only were the working schemes on show and evident, the management systems in each new village project were themselves spreading the word. People were proud of what they had achieved, and happy to share this with their friends and neighbours in other villages. Thus some years before the term “demand-response approaches”, or DRA, became widely known, it was in effect operating in Dodoma, with the programme responding to the demand of the people for improvements in their water supplies. Such an approach can make planners uneasy as the planning is essentially in the hands of the community, whether they get involved or not. Given time, however, the WAMMA approach to DRA has been shown to be effective with 75% of the population of Dodoma Region now having access to a safe water source in their village.

As one of the ways of judging readiness, communities were asked to raise a water fund and open a bank account, which they would later use to run their scheme (of around Tsh500,000 currently US$500). After some debate within WAMMA, cash contributions were also asked for to cover capital costs, and this could be higher if a borehole had been deliberately damaged (Jarman et al. 1997).

3.3.6 The ethos of self-help vital to DRA

The WaterAid ethos of self-help was fundamental to WAMMA from the beginning. Self-help, or the desire and ability of a community to work together to achieve a common aim (in this case to successfully manage their own water supply), is a vital aspect of what has become known as the demand-responsive approach (see box 3.2 below). The emphasis was very much on the villagers to help themselves by getting involved in the project. Communities that were not ready to do this, were not forced to accept a project, but encouraged to contact the WAMMA programme when they were ready.

3.3.7 Self-help not prejudicial to scaling up

This ability of WAMMA to work at the speed the villages were comfortable with, rather than forcing the pace to fit in with project targets, was instrumental to its success. Some might regard such a strategy as being laudable in terms of quality, but prejudicial to scaling up in terms of reaching all the villages in a district. In fact it was both good for the quality of participation and good for scaling up. The secret to success of scaling up in this way is to spread the word with enough villages so that collectively implementation makes a

meaningful impact, even with the limitations of working at “community speed”. Just as a farmer scatters seed to plant a field, if enough of the seeds germinate he will get a good crop, in the same way enough communities will be demanding to get involved to achieve effective scaling up. WAMMA had, as a result of this approach, a constant demand for new projects from villages that were ready and willing to participate. Much of the planning and mobilisation was, in effect, done by the villages themselves through their enthusiasm to become involved they were both self-selecting and prepared for the work. After the initial programme inertia was overcome (staff learning the new approaches, villagers starting to see the fruits of their labours) a social momentum developed that drove the programme forward.

Having faith that those villages that do not get involved immediately will get involved later is a necessary part of the process, as to push communities before they are ready would be prejudicial to their chances of managing their scheme in the long term. This dilemma remains with overly centrally planned projects, when communities are selected for development without respecting their willingness or readiness to become involved. With the WAMMA approach this was not a problem.

Box 3.2 DRA Definition (Adapted from World Bank 2000)

DRA Defined

A demand responsive approach (DRA) is where communities make informed choices regarding their participation, service level, and service delivery mechanisms. Communities decide:

- Whether to participate in project
- Preferred level of service based on willingness to pay
- How services are planned, implemented, operated and maintained

3.4 The continuing role of WAMMA

The role of WAMMA is essentially to work with communities to help them either rehabilitate or build new water schemes, develop the capacity to manage them in the future and promote health through increased knowledge and improved practices of sanitation and hygiene. This involves conducting a participatory rural assessment or PRA and a technical survey, working with the community on an agreement for village contributions and providing training for everything from hygiene and sanitation, to operation and maintenance, while monitoring construction activities.

A participatory approach is essential to WAMMA. The process starting with open village meetings, discussion groups, water committee formation and the agreement of work rota’s of those able and willing to participate in construction activities on certain days.

Participatory techniques evolved as new techniques were learned and adopted. Village mapping, the use of transects and other PROWWESS (Promotion of the Role of Women in Water and Environmental Sanitation Services) and SARAR (Self esteem, Associative strengths, Resourcefulness, Action planning, Responsibility) (Srinivasan 1990) techniques

were used to empower community members in the planning, implementation and management of their schemes. This process became formalised in the WAMMA project cycle of planning and is detailed in box 3.3

The WAMMA Project Cycle

1. Planning stage

The Village contacts the district for support

A request for assistance can come through various channels to the District Government, e.g. through the village executive Officer (VEO) or through the Ward Executive Officer (WEO). If the village has prioritised water in their plan then the request for assistance will be directed to the District Water Engineer's Oiffice in the first instance.

The WAMMA team collects primary and secondary data

WAMMA collects primary data from the community at a full village meeting held during an initial visit. At this point WAMMA verifies if the village meets the criteria set out in the National Water Policy, i.e. whether a village water committee exists, is functioning and gender balanced, and whether community contributions have been collect (usually 5% of total project costs). Secondary village data is collected at District level from other departments, such as the health, planning water and education.

Initial planning at District level

WAMMA reports its findings to the district heads and initial planning of the project takes place. A tentative project plan is drafted which outlines resources needed and preparations for the participatory rural appraisal (PRA) begins.

Planning at community level

WAMMA returns to the village and, together with selected village members, carries out a PRA in the areas of water, hygiene and sanitation. This process lasts between 10 – 12 days. During a 1 day feedback session to the community on the findings, next steps, potential costs and roles and responsibilities are discussed.

Technical survey and project design

WAMMA carries out technical surveys in the village which, together with the PRA findings and discussions with District department Heads, will feed into a project design. The Project design is a response to the priorities captured during PRA.

Project funding agreed

Once funding has been secured, either from the district and or external funding agency and the proposed work is approved, the project will move into the second stage of the cycle.

2. Implementation Stage

Pre-work

A full village meeting is called and preparatory work takes place. WAMMA and the community agree on the project's design, costs, resources, roles and responsibilities. A separate meeting is then arranged for the signing of the project agreement or contract.

Construction and training phase

The construction and training phase then begins and the following activities take place simultaneously:

Water

WAMMA, with the help of selected village members, installs the water system. The community contributes labour and some materials. The work is usually completed within 6 to 12 months.

- Hygiene and Sanitation

Training of Hygiene Promoters and sanitation Technicians (Sanitation Fundis) takes place during construction of the water scheme. WAMMA trains these volunteers, selected during PRA, on some basic hygiene messages and methods of promotion. Sanitation Fundis are trained on latrine technologies and construction.

- Training of VG (Village Government) VHC (village Health committee) and VWC (village water committee)

WAMMA trains these village institutions on their roles and responsibilities for the project and for its future management.

- Monitoring of progress

On average, WAMMA visits the project (under construction) monthly and monitors progress. Review meetings are held with the community and where necessary WAMMA gives support and advice on the operation and maintenance of the scheme.

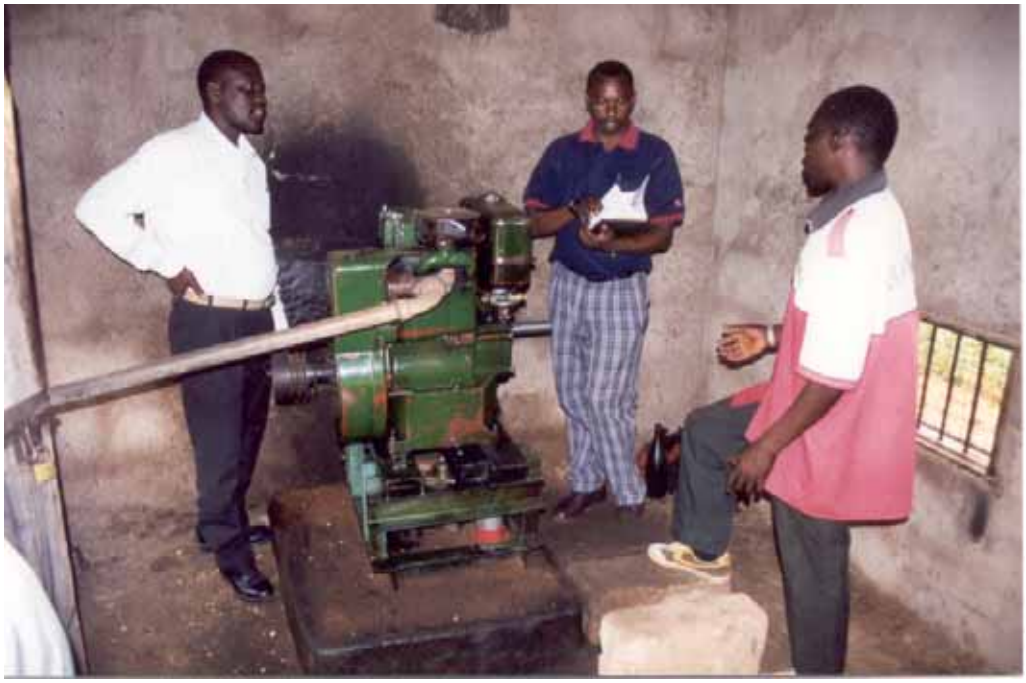
- Training and support

Once the water system is operational WAMMA provides more in depth training in the areas of water, hygiene and sanitation promotion. For example, Hygiene Promoters are given follow up training and additional materials. The VWC receives further training on monitoring and guidance on the costs involved in running the scheme successfully. Emphasis is placed on the project's sustainability.

<u>Main evaluation</u>

Once the project is completed, usually after three years, a formal evaluation takes place. This evaluation is carried out by WAMMA, selected community members and Government Extension Workers from another village. The team spends about six days evaluating progress against the main issues raised during PRA. The evaluation findings are discussed within WAMMA and at district level and are then fed back to the community. Recommendations are applied to future planning processes.

Taken from "Methodologies in WaterAid Tanzania" (Glockner, 2002)
(see appendix 1 for associated flow chart)



3.7 Water systems may be working, but how many use them?

The issue of how many people actually use the safe water points is a legitimate one. Commonly in the dry season pumps are run for twice as long each day as during the wet season. This is because water is not available from other traditional sources such as shallow wells and riverbeds and it indicates that when other (free) water is available, it is being used in preference to safe water from the schemes, which has to be paid for. Hygiene education is a feature of all WAMMA projects and it is assumed that people are still collecting their drinking water from the safe source, but “multi-sourcing” water for other purposes from free traditional sources. This assumption is not, however, proven and further research with pocket chart voting, wealth ranking and household questionnaires would cast more light on the situation. It should become a standard feature of WAMMA work at each scheme, to identify risks to health and the level of access to safe water by the poorest and most vulnerable.

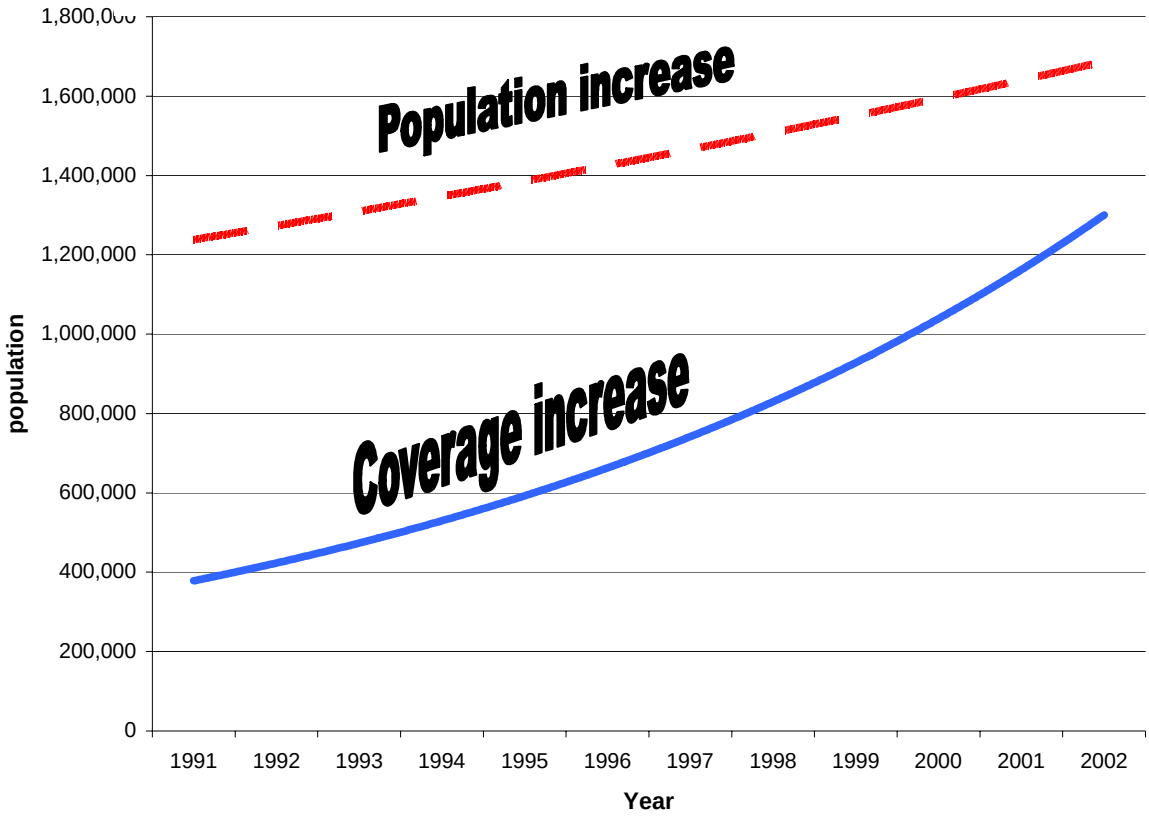


Fig 3.3 The increase in safe watercoverage, Dodoma Region Tanzania (RWE, Dodoma 2002).

3.8 Factors for success

In this section some of the factors that were important to the success of WAMMA as a programme are discussed.

3.8.1 New National Water Policy

In 1991 the Tanzanian government was in the process of initiating a new National Water Policy, which was to end the concept of free water. This gave the responsibility and ownership of the failing water installations to the villages to pay for and run as best they could. In practice communities had no knowledge of how to do this.

The willingness of government to accept that it could no longer keep the installations working, meant that the way was clear for WAMMA to help communities learn how to manage their own schemes. Had the politics been different it would have been very difficult, especially if the politicians had still been declaring that water was free, which had been a common political cry in Tanzania since independence. Water had officially been free from independence right up until the change in the government's water policy in 1991.

It was a realisation that the old policy had led to the breakdown and dilapidation of most of the country's rural water infrastructure that led to its repeal. It also perhaps explains why communities had not developed self-help solutions of their own prior to WAMMA. If they had tried to do this before 1991 they would not have been allowed to.

3.8.2 Plateau/flat management style and shared vision

The style of management that emerged in WAMMA is at least partly responsible for its success. The WAMMA teams work at district level and are made up of "middle level" professional staff from all of the participating departments. These middle level staff are the facilitators who work with the communities in their villages. The WAMMA team members report to each other as much as they do to their individual heads of department, though each district has a WAMMA coordinator, who can be from any of the participating departments. Thus a style of flat or "plateau" management has evolved for the work of WAMMA, which has parallels with management styles favoured in modern business in the developed world (Nicholson 2003). Within WAMMA shared vision and team learning are promoted in a working environment where there is no hierarchy in the immediate team workplace, and the focus of the work is the results, in terms of sustained beneficial outcomes for the communities involved.

The humanistic objective of helping people to achieve better access to safe water, sanitation and hygiene is itself a noble goal, and recognised as such by the staff members of WAMMA. This recognition of their role in a worthwhile cause also appears to be a motivating factor to the staff, as the results of interviews show (chapter 4).

The fact that the staff are from different departments also helps, as there is less personal professional rivalry to get in the way; everyone in the team is effectively on the same level, so what is important is getting the job done. There is nothing to gain by point scoring over colleagues, as each team member is on a different departmental career ladder. District heads of department are kept informed of the activities of their staff allocated to the WAMMA teams and retain responsibility for them, meeting together on a regular basis as the district WAMMA committee (fig 3.2). However, the work schedules and the activity planning are left up to the WAMMA teams themselves to decide and implement. Because of this the WAMMA teams are, as far as their work is concerned, free from the often stultifying complications of pyramid management structures, so common in African government offices, where the boss is king and little gets done without their authorisation. With plateau management, freedom of thought and lateral thinking reap their rewards in terms of job satisfaction through achieving results. Mutual respect, self-motivation and peer group pressure more than replace the need for orders that sometimes never come.

The commitment and shared vision that the plateau management in WAMMA promotes, leads to a higher quality of involvement of the staff in their work, as Peter Senge puts it in his book the The Fifth Discipline.

The practice of shared vision involves the skills of unearthing shared 'pictures of the future' that foster genuine commitment and enrolment rather than compliance. (Senge, 1990)

3.8.3 Staff motivation

In individual interviews carried out with WAMMA staff members in 2002 the message that came across over and over again was that the staff were motivated by being able to help communities help themselves, and by the personal fulfilment that they got out of doing this. (Please turn to chapter 4 for the full text of the interviews and further analysis). The capacity of WAMMA staff to understand, plan with, and eventually empower villagers to manage their own affairs is very much linked up with their own motivation and their solidarity with each other and the communities. For WAMMA team members the chance to help people has become a career choice as evidenced by staff retention. WAMMA teams have grown as new departments have joined, but few members if any have ever quit the organisation.

3.8.4 The need for a living wage

The motivational factors listed above obviously need to be balanced with the provision of a living wage that allows staff to concentrate on their work and avoid the need for moonlighting and absenteeism, so common in the government sector in African countries (Rashid 1995). Working conditions inevitably form part of the context within which the staff in WAMMA have felt motivated to work. The general economic situation in Tanzania for government workers in 1991 was not good; "by 1985 an average civil servant's real salary in Tanzania had dropped to less than one-fourth of what it had been a decade earlier" (Lienert 1999). To help with this, WaterAid assists with paying the government field allowances. This was helpful in enabling the WAMMA teams, who were all government staff, to do their work and avoid hardship. At the same time it offered recognition of the hard work that staff were putting in.

It must be emphasised, however, that the vision, commitment and ownership of the WAMMA programme by the staff was of the greater importance, especially when it came to the quality of the work undertaken. Many large donors regard the payment of allowances as a bad practice as they consider it unsustainable. However, paying workers a pittance so that they have to look elsewhere just to survive is also unsustainable, as well as self-defeating, because work simply will not get implemented properly if staff have to moonlight to feed their families.

3.8.5 Advisory staff

The issue of advisory staff is an interesting one, and also an important factor in the success of WAMMA. The WAMMA programme in its early years reached a maximum of seven resident and largely expatriate advisory staff, this high figure being reached in 1994 when each of the districts of Mpwapwa, Dodoma Urban, Dodoma Rural and Kondoa, had a WaterAid engineer attached to them. In addition there was a mechanical adviser attached

to the regional pump and engine maintenance training unit (PEMS), a health and community development coordinator and the country representative. One of the engineering positions at that time was occupied by a Tanzanian engineer, on secondment from the National Training Institute for Water Technicians in Dar es Salaam. As the programme continued, these advisory positions were scaled back. The role of the advisors effectively melted away as the need for external training and leadership input decreased.

It could be questioned whether outside advisors were ever needed. During the first few years, however, when the programme was getting off the ground, the advisers acted as catalysts for change. The advisor's role was to introduce and trial new appropriate techniques and ways of doing things, as well as helping with design work, providing on-the-job training and overseeing progress. Because of their distance from local pressures they could be risk takers and troubleshooters, thus helping the programme to move forward rapidly in inventive and novel ways. Having done this job, however, it was necessary for them to withdraw, gradually changing the nature of their work as they did so, until they left the programme with government WAMMA staff capable and in control. To quote the Chinese philosopher Lao Tzu:

> When the best leaders work is done the people will say we did it for ourselves. (translated by Mitchell 1988)

This was the philosophy that was being followed by WaterAid. Not to have done so could have incurred either resentment or dependency or both, which must be avoided especially by external advisers, who by the nature of their role are transient. With WAMMA, the continuing level of commitment and capacity within the teams speaks volumes of the success of this policy. The timely application of outsiders, the evolving sensitivity of their approach to the requirement to have them there, and their careful withdrawal once their job has been completed, are all important elements of using advisory staff be they expatriate or locally hired.

3.8.6 Champions

WAMMA had champions in government at national and regional levels. This was a factor in the success of the programme. The Regional Water Engineer, who has seen WAMMA grow from its first beginnings to what it is today, has, for example, been a constant guardian of the process, ensuring that the WAMMA programme has not only stayed on track, but that it has become accepted and respected as a Tanzanian initiative. This was recognised by Johnston and Jarman (1997) and remains true today. Other senior staff at the regional level from all the government departments represented in WAMMA, have also played their role in guardianship of WAMMA, for which they are rightly proud.

3.8.7 Institutional memory

The institutional memory of WAMMA is within the organisation and its staff, and the fact that so many people at regional and district level have remained within WAMMA's ranks

has been a lasting strength. As new staff have joined they have learned the methodology from their colleagues, and this has provided valuable continuity to WAMMA's work. This contrasts to other situations where NGO projects staff schemes with their own recruits and when project funding comes to an end, their staff either leave or are laid off and take the institutional memory with them.

3.8.8 WaterAid, consistent long lasting support

Consistent support from WaterAid since the programme started in1991 (and to Maji since 1984) has enabled WAMMA to flourish, focusing on the work in hand rather than worrying where the next source of funding was coming from. This support, which has changed over the years according to need, has been unwavering. Advice, training and capacity building have played their role along side the financing and procurement of materials, transport and allowances. Had this support been terminated after a fixed term, as is common with many donor funded development initiatives, it could have been potentially devastating to the WAMMA programme, unless other funding had been found to fill the gap.

3.8.9 Attracting new donors

Dependence on just one donor, as outlined above, can be a danger. However, the success of WAMMA bred success in terms of funding, and other donors have been encouraged to give their support to what was and is the most useful and functional mechanism for improving access to water and sanitation for the rural population in Dodoma Region. The Belgian Survival Fund, for example, enabled the drilling of new boreholes for communities which previously had none. More recently the World Bank has also become involved in funding the programme in Mpwapwa district though WAMMA's independent offshoot membership organisation "MAMADO". With new donors, however, can come new threats, especially if pressure is brought to bear to change tried and trusted approaches. The World Bank's insistence, for example, of using the private sector to implement construction works with tight implementation schedules, has led to fears that communities may be pushed too fast, and as a result may not be fully involved in planning or implementation, and that this may lead to a lack of eventual ownership. In short a return to the old way of doing things that has been seen to fail so often in the past. However, with funding available, it is far better that WAMMA embrace such new initiatives and help them to succeed by actively promoting community participation and management, than stay on the sidelines and in doing so, become irrelevant. The trial is also likely to establish new ways of working with the private sector that may result in replicable and sustainable models. Time and an Engineering Knowledge Research Project (KAR) funded by DFID will tell (WMC 2004).

3.9 Return visits to schemes, 2002

This section recounts a return visit by the author to three of the villages and their water schemes in April 2002. All of the schemes had been set up in the early years of the WAMMA programme and the section draws out issues of relevance to WAMMA today.

3.9.1 Songambele, “leaping forward”

Songambele (or “leaping forward” in Kiswahili) village had grown and prospered over the years since its community had rehabilitated and expanded its water system. The tap stands were being used when I arrived and a female member of the committee was operating the taps and collecting a water fee of Tsh10 (US$0.01) per 20ltr bucket (US$0.50 /m³). Boys were pushing specially designed carts with plastic jerry cans and two women were loading a jerry can onto the back of a bike for the short ride home. A new school had been built along with many new buildings. With water available all year round from the water scheme, brick making and building can now be done in the fallow period when the harvest is over and people have time on their hands.

Songambele village has been able to maintain its water supply for twelve years. All the while it has been paying the salaries of its two pump attendants, the allowances for up to eight water sellers and three water committee office holders, the fuel, oil, spare parts and mechanical assistance required to keep its system functioning. The bank book was readily produced and showed about 1.5 million shillings (US$1,500) in the water fund account. Using a target chart PRA exercise, members of the village water committee (VWC) and village government (VG), put the following factors forward as the keys to their success.

Most important

- Ownership of the village water supply
- Community participation and involvement
- Water fund

Next most important

- Commitment
- Initiative, desire for moving forward
- Having competent and reliable pump and engine attendants and mechanics
- Trustfulness and transparency for accounts and other activities
- Being able to have clean and safe water

Lastly

- Liberating the family from problems of stress (caused in the past by the lack of a reliable water supply)
- Improving community well being: the time saved during water collecting allowing the community to undertake other productive activities
- Vision for future activities
- Memory of walking long distances for water in the past

Clearly for the people of Songambele ownership and participation along with the self-generated means to pay for their water system, were the most important factors that had led to continued operation and sustainability over time.

It emerged that the committee members themselves had been changed and re-elected several times since the initial training, and that none of the current membership apart from the pump operators had received formal training in the schemes management. They had learned from their predecessors and from their experience on the job. Motivation and the resulting willingness to do the job were the main driving forces behind the scheme's sustainability.

Profit and loss calculations

The fact that the scheme has continued to function over the ten-year period is in itself an impressive achievement, but doubts must be put over the transparency of present accounting procedures. On the basis of the accounts shown during the visit the following calculations listed below (table 3.1) indicate that the amount of capital accumulation is less than might be expected. Whether funds are being reaped at the standpipes by the operators or by the treasurer or a combination of the two is unknown, but the figures suggest that far more money should have been raised than has been. Even taking just the 37 months available from the water committee's accounts, the estimated net income for the period should have exceeded US$12,000, accruing at a rate of US$300 per month. The actual figures show a tenth of this with just US$31.82 per month and US$1,740 in the village water account at the end of the period. The implications of this are important. Should there be a breakdown', for example, the reserves might not be adequate to pay for all the necessary parts. Ability to pay for the replacement of the whole system is also in doubt, as would be any self-funded expansion of the scheme with the present level of recorded income. The way the scheme is being run may also eventually sap confidence in the water committee by the rest of the community, especially if, as suspected, some members are "milking" the system. The following two examples should start to ring alarm bells: i) a conversation with a newer resident living on the fringes of the village showed little understanding or ownership of the village scheme, and ii) children at one of the village's two schools had no idea who was running the scheme. So room quite clearly exists for a reawakening of the community at large to the processes involved in the management of their water supply.

This illustrates that communities change over time, and that support systems have to react accordingly if they are to help water scheme management retain legitimacy and thus sustain the service.

Table 3.1 Songambele water committee, income and expenditure calculations

18/04/2002					
(calculated in US dollars at an exchange rate of US$1 =				Tsh1000)	
Expenditure	**per day**	**per month**			
6 collectors per day @ US$0.30	1.80	54.00			
Village pump attendants @ 2 x US$7		14.00			
Fuel & oil					
fuel dry season 9l/day					
fuel wet season 5l /day					
average fuel consumption per day	7litres				
Monthly fuel cost		105.00			
Total monthly costs		**173.00**			
Estimated income					
dry season daily gross income	24.00		4800	people @ 10lpppd[11]	
wet season daily gross income	10.00		2000	people @ 10lpppd	
average daily gross income	17.00		3400	people @ 10lpppd	
average monthly gross income		**510.00**			
Estimated balance					
Total monthly costs		173.00			
monthly net income		337.00			
Annual estimated net income		**4,044.00**			
Triangulation test					
Bank balances	**Actual**	**estimated**			
start 24/9/98	562.67				
end 29/10/01	1,740.15				
net income per month over 37 months	31.82	337.00			
net income over 37 months	1,177.48	12,469.00			

3.9.2 Ngomai, continued need for support

In Ngomai village we arrived to find that the water system was not running and that it had been out of action for a week. The story then became more interesting as we heard that

[11] 10 litres per person per day is the average consumption rate recorded from diesel engine powered water schemes in Dodoma Region (Gomme, 2002), it is half the UN guideline of 20 litres per person per day, and reflects actual use.

the need for an engine overhaul had been used as an opportunity by the newly appointed village water committee chairperson to steal some money that had been withdrawn from the bank to pay for the spare parts. When the pump had been out of action for a few days the rest of the water committee and the village government had become suspicious and the chairperson had been arrested and charges made after they had called in the police. The district water department-based pump and engine maintenance service (PEMS) had been called in to have the repairs done properly. The rest of the water fund that was still held in the bank was safe and amounted to Tsh4,000,000 (US$4,000).

This case study showed a number of things:

- The village government and other water committee members were able to tackle a serious problem, find support and manage the situation so that a solution could be found.
- The water committee was raising funds sufficient not only for operating, but for overhaul and replacement.
- Money held in the bank was more secure than that held in cash, as three signatures were required for withdrawal.
- The committee were alert and took action to have the chairperson arrested as soon as they knew what was going on.
- There remained a need for support in the form of trusted advice and trained staff from the district to assist in the purchasing of parts and help with the repairs.

3.9.3 Mzula, weak village leadership

In Mzula village constant arguing between themselves and the neighbouring village of Mungano over contributions to their shared water scheme had led to the split of the single

water committee into two. These had then failed to cooperate and resulted in Mungano village being cut off for failing to pay for the water they used. Villagers from Mungano could still purchase water from Mzula when the system was running, but had no working taps of their own. When an engine problem had occurred four weeks before my visit, it had been decided to delay repairing the engine until the traditional wells in the nearby riverbed dried up. The cash in the water fund had all been spent (no accounts could be found at the time of the visit) and the committee felt it better to keep their bank balance of Tsh200,000 (US$ 200) until it was needed to have the system repaired, which was in the committee's mind when the traditional wells ran dry. Village women expressed an alternative view and said they wanted their taps working and were prepared to pay as usual for the water if the pump could be fixed. The scheme had, however, worked more or less continuously since it had been refurbished in 1993 apart from a breakage the previous year, which had taken a month to be fixed. The current problem of weak village leadership, arguments between the two villages and unclear finances/accounts, being coupled with a failure of the water committee to manage the scheme as desired by the community, showed the need for continued support to help the community get their scheme back on the tracks.

3.9.4 The continuing need for local support agencies

From the visits it would seem that the need for support agencies for village water schemes continues to exist. The nature this support should take needs to be flexible and appropriate. WAMMA has shown that communities can look after their own schemes. However, the level to which they do this depends to a large extent on the internal dynamics of the communities, with some villages more organised than others. Events such as the

theft of the money at Ngomai and the breakdown at Mzula can test the village water committees and village governments to the edge of destruction. The presence of support agents from WAMMA provide a level of security by helping communities to sort out their own problems if they get too much for the village institutions to solve on their own. The facilitation role that WAMMA offers is appropriate and cost effective; to use an old English aphorism “A stitch in time saves nine.” If a community can solve its problems on its own, this is ideal, however, in the real world this is not always possible and if the alternative is a total and very expensive breakdown, then the presence in the district of a support service like WAMMA, that can help villages to find their own solutions, is surely preferable.

The Pump Engine Maintenance Service (PEMS) was still found to provide an important function, and until the private sector can offer a service of equal quality, reliability and coverage, PEMS will continue to be needed. WAMMA and PEMS thus remain crucial to the long-term sustainability of the village water schemes in Dodoma Region.

3.9.5 The importance of transparency in village accounts

Transparency of accounts in water committees is an important sustainability issue, as made plain during the field visits. Clear accounting and more open financial reporting are needed to ensure that the payments made for water by villagers are not used for anything else apart from maintenance, replacement or expansion of the village water schemes. The fact that the large majority of the village water schemes are still operating years after they were rehabilitated shows that the WAMMA approach has worked. However, greater focus is required to assist village water committees to be transparent with their water fund management. This will allow the funds they are generating to be used for the replacement of pumps, engines, tanks and pipes, or for their systems to be extended according to need. Tim Ndezi (WaterAid programme manager, Dar es Salaam) suggested that the lessons learned in Dar es Salaam, where water committees have become legal entities, could also be useful for Dodoma, and that this might further strengthen committees and enable them to withstand non-legitimate requests for funds, which I was told are sometimes made by cash-strapped village governments. Where there is transparency, however, village government can have a valuable role in monitoring expenditure, offering internal checks and balances on a daily, weekly or monthly basis. With clearer, more transparent accounting, village water funds could also carry progressively more of the cost of the WAMMA and PEMS support services.

3.9.6 Population shift makes assessment of coverage problematic

The picture of increasing coverage has been somewhat complicated in recent years by the move of some of the residents of rural communities back to their pre-villagisation homes. This process means that some people, previously considered covered, because of the proximity of their homes to working water points, may now be living at remote locations outside the realistic catchment of the village water system. This is likely to be a new challenge to WAMMA in the years ahead, perhaps in partnership with the private sector. The great depth to groundwater in the region (commonly in excess of 100 metres) makes it

difficult to see how conventional water systems (e.g. boreholes with pumps) can be made to serve scattered homesteads economically. Other systems, including the safe utilisation of low permeability shallow aquifers, currently accessed using traditional wells (box 3.4) or rainwater storage, may need to be considered by the individual families involved when returning to their ancestral homesteads.

Health education will play an important role here, in helping people to make rational choices on their selection of water source, and possible dual sourcing of drinking water and water for other uses. Sanitation will also be a continuing issue. Currently due in large part to bylaws, sanitation levels are impressive in Tanzania with coverage put as high as 90% (UNDP 2003). However, traditional practices are hard to change and a recent WaterAid study noted, ”Though construction and use of latrine is enforced by the state law, still some go to defecate in the bush.”(Kashililah et al. 2000) This being the case, continuing health education will be of added importance to those leaving their Ujamaa villages for their ancestral homes, where bylaws are unlikely to be implemented.

Box 3.4 The use of traditional shallow wells

Extraction of water from low permeability shallow aquifers is common in much of Africa and often becomes the sole method of water extraction when other more technical sources have broken down. The problem with these sources is that they are often seasonal, yielding only a small amount of water a day, also they can become easily polluted, as they are usually open to the elements, and are as a result easily accessed and contaminated by wild or domesticated animals. Humans themselves can become a major source of pollution for these wells, especially if the numbers taking water from them increase beyond a family size. Work undertaken by the Zambian Central Board of Health (Sutton, 2002) takes into account these traditional wells and suggests low cost methods of protecting such sources. The problem remains however that if the numbers of people using open traditional wells get too large, gross contamination is difficult to prevent. In the Zimbabwe case study at Bikita (Chapter 5), 29% of the population were using traditional wells prior to the initiation of the project, with an average of 90 people using each source. However strong traditional beliefs associated with these wells made working with them difficult. In Bikita for example the traditional practice of burying children who died in childbirth near to traditional wells and springs, so that their spirits could be calmed by the waters, was still remembered if not practised. Health education efforts instead promoted using protected sources for drinking water with traditional wells and open contaminated sources used for other purposes, such as laundry and cattle watering.

3.10 The cost of WAMMA

The cost of WAMMA, is difficult to quantify precisely. WaterAid generally cost their programmes at £15 per beneficiary (Cocker 2002). The recipient country Tanzania, however, carries a significant proportion of the costs of the WAMMA programme including the wages of the government staff, who make up WAMMA, and the provision of some of the materials and equipment, making it a real partnership between WaterAid and Tanzania.

3.11 Summary of lessons from WAMMA

The experience of WAMMA over the past 12 years has seen access to water and sanitation steadily increase. The broad approaches used in Dodoma may have relevance in other places where governments, donor organisations and NGOs are assessing their own strategies for reaching the MDGs. To summarise:

1. By undertaking the villages of greatest need survey communities that had major problems of access to safe water were identified. This enabled those communities most in need to be targeted first, using a self-help approach.
2. The integrated teams set up to do this work in each of the districts became moulded into the interdepartmental teams known as WAMMA.
3. By targeting villages on the basis of need, word spread of what even the poorest villages could do to improve their situation. Demand-responsive approaches emerged as communities requested assistance and made themselves ready for change.
4. Fundamental to this approach working, the government had actively changed its policy to promote community ownership and management of water supplies. This was vital as it removed political blockages and made efforts to empower communities in managing their own water supplies possible.
5. Amongst the staff of the participating government departments of WAMMA (water, health, community development and later education) a flat integrated management structure of equals emerged, as all were middle level implementers rather than heads of department. With the team members bringing their own expertise from their parent departments there was synergy, with the whole greater that the sum of its parts and an equality of status within WAMMA.
6. As staff became more proficient with the use of participatory methods in the villages, the team spirit developed along with their commitment to the work and vision of what they could achieve.
7. Judicious use of outside advisors in the first few years of the process provided not only training, but confidence for the new WAMMA teams to act as proactive catalysts for change in the villages in water sanitation and health education.
8. Long-term financial support from WaterAid provided sufficient equipment, materials and transport to allow the work to take place and assure the continuity of WAMMA's work.
9. Success in implementation attracted new donors.

3.12 Challenges for WAMMA

Although the WAMMA teams have shown themselves to be able and enthusiastic in their work of empowering communities to develop and run their own water schemes in a sustained and beneficial way, as an organisation WAMMA is to some extent an illusion. Yearly meetings of all five WAMMA teams known as the INTERWAMMA meetings are held

and help to build a sense of unity across the districts, and the achievements of WAMMA are recognised and valued at district and regional level. However, all the members of the WAMMA teams are individually staff of either the water, health, education or community development departments. As such the organisation in each district only has a voice to the extent that the heads of department in each district want it to hear what it has to say.

Under the Local Government Reform Programme (LGRP) a major programme of reform is currently underway in Tanzania. This programme of decentralisation is bringing new change and a great deal of aid money through the Poverty Reduction Strategy process (PRSP) to local government. In this new climate WAMMA, if it is to survive, has to prove its worth as a resource worth keeping, especially in the face of a new body called the District Water and Sanitation Team (DWST). This body is the new official channel through which planning for water and sanitation is to be done under the LGRP; it is made up of heads of department and so removed from implementation. If the DWSTs regard the WAMMA teams as a means of facilitating their work, then WAMMA has a future, if not it risks being sidelined and eventually disbanded. With pressure from the LGRP donors to involve the private sector rather than government staff in implementation, this is a real threat, not only for WAMMA, but for the WAMMA way of doing things, of working at community speed and striving for sustained beneficial outcomes.

3.13 Scaling up

This chapter has attempted to describe some of the history and development of WAMMA as well as its processes, thereby capturing how a small programme in 1991 was scaled up to reach a population of around 1.3 million people today. WaterAid itself has, since1995, scaled up its operations in Tanzania and is now operating in Tabora, Singida, Kiteto and Dar es Salaam. It is working with a number of models, with local NGOs and with government, and in doing so it is reaching more people and helping them to help themselves achieve access to safe water, sanitation and health education.

Scaling up to national level, to see development of this sort in all the regions and districts of the country, is beyond the remit and the means of a single NGO, but not of government. The Poverty Reduction Strategy process signed up to by the Tanzanian government along with the World Bank and other donors, makes the sort of funding required for national scaling up a potential reality. WAMMA has been involved in the national debate over water and sanitation since 1993. Methodologies, procedures and ways of doing things developed in WAMMA are crystallising into the government machinery, as a current round of training illustrates, using the participatory community-based planning process known as “Opportunities and Obstacles to Development” (Usangu 2004). The question remains, however, if the WAMMA approach of integrated district WATSAN teams could be of use in helping to scale up water and sanitation development in Tanzania as a whole to reach the Millennium Development Goals by 2015.

The WAMMA approach involves existing government staff, it builds on community demand, it has at its disposal robust and proven techniques and methods of planning, implementation and evaluation. Every district in the country has the raw materials to develop these resources in the form of middle level staff in their water, health, education and community development departments. It can thus be postulated that the formation of WAMMA style integrated teams in every district of Tanzania under the LGRP DWSTs would be best way for Tanzania to reach its MDGs for the water sector and for these goals once reached to be sustained.

Chapter 4 The WAMMA Interviews

This chapter investigates the perceptions and attitudes of members of the WAMMA staff to their work.

It is included to gain greater insight into what it is that enthuses, excites and drives staff members of this organisation, in their effort to develop WATSAN in the Dodoma Region of Tanzania.

Understanding how staff perceive their work is important to WATSAN programmes, as it is the staff who are the change agents, and unsung heroes of development work.

Achieving success is greatly dependent on the attitude and actions of staff, and thus an important matter that planners and managers should consider in their efforts to ensure sustained beneficial outcomes from WATSAN.

4 Introduction

Interviews were carried out with a member of each of the district WAMMA teams in April 2002. These interviews focused on what motivated the team members and villagers, their vision of the programme, and to what extent they felt that ownership and commitment was important both in the communities and within the teams themselves.

Five WAMMA team members were interviewed, one from each of Dodoma Region's five districts. The interviewees were from the water department, the community development department and the education department. Three of the respondents were women and two were men.

The interviews were carried out in private with each team member, using a semi-structured interview process (Fontana and Frey 1998). The respondents were selected and interviewed during a preparation workshop for the WAMMA 10th anniversary celebrations in April 2002. The names of the respondents have been hidden to respect their anonymity.

The questions posed during the interviews were from the check list in section 4.1 The WAMMA staff themselves have English as a second language and their responses were recorded and transcribed in their own words. Some of the questions were difficult to answer, but for the most part were fully understood and well responded to. From the interviews an interesting picture emerges of the way the WAMMA staff think and operate as a team. A level of similarity in the answers and shared insight exists despite that fact that all the staff interviewed came from different district WAMMA teams.
A shortcoming of the interviews was that no staff member from the Department of Health was interviewed, though as the reader will see, the subject of health was very much on all the interviewee's minds. This emphasises the integrated nature of the work, with staff from

different departments very much aware of each others' areas of expertise. In some cases interviewees were asked a question in different ways in order to gain greater insight or to ensure the question had been properly understood. This explains why some of the questions are only asked to one or two of the respondents.

4.1 The check list

- Tell me about your job.
- What do you enjoy in the work?
- What don't you enjoy?
- Do you find you are motivating other workers?
- Do you find other workers motivating you?
- Tell us of your experience with the communities.
- What motivates you to work with them?
- What motivates the community in a village to be involved with their water scheme?
- What seem to be the best ways to get people motivated?
- What did you do before you worked on this job?
- How do you compare this job with your last job?
- What is your vision of the programme?
- How do you see yourself within this vision?
- Do communities also have a vision?
- What do you think it is?
- Who owns the water schemes?
- How would you define the ownership?
- Do you also feel as if you own the programme?
- Tell me about it.
- You have worked for X number of years with the programme; this shows commitment to the programme. Tell me about it.
- How committed do your fellow workers feel?
- How committed do villagers feel?
- Is there any difference within villages in the level of commitment?
- Between men and women?
- New residents and old residents?
- Better-off residents and poorer residents?
- To what extent are children committed?

An exercise was carried out during the sessions to determine the factors that staff members found most personally motivating and important to them in their work. For this a series of eight topics were printed on slips of paper, the object being for each member of staff to arrange them in order of importance. The factors were as follows:

- salary
- job interest
- job security

- self advancement
- achievement
- self status
- allowances
- responsibility

4.2 Motivation factor analysis

Responsibility was chosen as the most motivating factor with three out of five of the staff, with achievement and job interest being ranked first by the other two, whilst salary ranged from being ranked 2nd to 7th in importance as a motivating factor. Likewise payment of allowances ranged 4th to 8th in importance. This does not diminish the importance of salary or allowances, but it shows that the chance to have real responsibility, to achieve important results in an interesting job, are at least as important if not more so than what a staff member takes home at the end of the month in terms of his or her salary and allowances.

The following bar graph (fig. 4.1) shows the accumulated values of these factors to the staff involved in the survey. A factor chosen as being most important was given a score of 8 and least important a score of 1, thus a maximum value score for each factor is 40 (5 x 8) and a minimum score 5
(5 x 1).

This study in many ways complements work undertaken by Fredrick Herzberg in the 1950s in which it was found that the factors that cause job satisfaction are achievement, recognition, the work itself, responsibility, advancement and growth (Herzberg 1959). Factors such as work conditions and salary were termed “hygiene factors”, necessary for physiological needs and creating dissatisfaction if they were not present, but not motivating in the psychological sense of the need to achieve and grow or be enriched through one’s work.

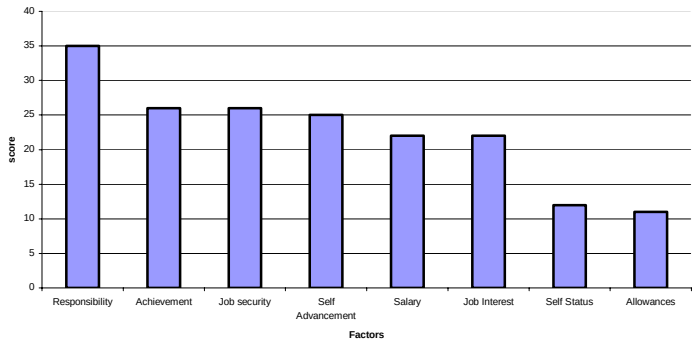


Fig. 4.1 WAMMA staff motivation factors

Clearly a motivated and committed staff are crucial to successful WATSAN programmes, and this mini survey of WAMMA staff emphasises the importance to staff of the Herzberg motivation factors. Management of WATSAN programmes must thus seek to make use of the Herzberg factors to ensure staff do get the responsibility, achievement and job interest they desire, as well as the working conditions they need, in order to get the best possible level of staff performance.

4.3 The WAMMA staff interview analysis

The transcript of the interviews has been edited together by question to allow easier analysis. The questions are printed in bold and the transcriptions of the replies in italics.

4.3.1 What do you enjoy in the work?

Respondent 1: Increasing knowledge, and being able to influence and improve sanitation.
Respondent 2: Community mobilisation.
Respondent 3: More effective working, and influencing for improving health.
Respondent 4: New ideas and vision, improving work in planning.
Respondent 5: Working with people from other departments, communicating with the community at ground level.

As the first question in all of the interviews, the answers are short to start with. However even here, before the respondents had warmed to the questioning, the theme of enjoyment of the work revolves around growing personal knowledge, improving work, and working with the people in the villages. It will perhaps come as little surprise to those with experience in fieldwork that working with communities with something they (the people) recognise and need (water, improved health, sanitation) is an energising process. Each community and each group of individuals worked with offers new insights, new challenges. Thus even though the techniques used may remain the same, the people and the environment are constantly changing, and this makes it difficult for staff to get bored.

4.3.2 What do you not enjoy?

Respondent 1: Lack of transport to work, but WAMMA has helped with this.
Respondent 2: Nothing.
Respondent 3: None, only emphasised more her enthusiasm for the programme.
Respondent 4: Bottlenecks in working, including when people hinder the work.
Respondent 5: People who display arrogance of their department.

The lack of much response on this question seems to signify that the WAMMA staff are largely satisfied, with a few grumbles about people from other departments outside WAMMA who fail to appreciate the way that WAMMA staff integrate their work, along with the ubiquitous delays of materials and supplies to ongoing works.

4.3.3 Do you find yourself motivating other workers?

Respondent 1: did not understand the question….
Respondent 2: ditto
Respondent 3: ditto
Respondent 4: Yes it is his job to do this.
Respondent 5: “Yes because as a community development worker I have skills in this area.”

Not a useful question this; staff may also have felt that it would have sounded rather opinionated to claim to be “motivating colleagues”.

4.3.4 Do you find other workers motivating you?

Respondent 1: “Yes, because of the integration of the departments.”
Respondent 2: “Yes.”
Respondent 3: “Yes because by working together, we learn skills from each other.”
Respondent 4: “Yes learning from others in the team, with different strengths.”
Respondent 5: “Yes learning from others because of sharing experiences and respect.”

Integration of the departments in the WAMMA teams shows clear advantages in terms of the motivating effect of being able to share experiences and learn from people in other departments with other skills.

4.3.5 What makes you want to work with communities?

Respondent 1: Reliable transport, allowances, equipment to do the job.
Respondent 2: “Because of the good relationship between me and them (solidarity) the community and community leaders, and my head of department, who allows me to do anything to achieve my responsibility for going with and joining with the communities.”
Respondent 3: Responsibility for undertaking the job to help communities improve hygiene and sanitation.
Respondent 4: Sharing knowledge to assist communities. “Myself I feel as if I do what I’m been supposed to do by my government.”
Respondent 5: Learning from communities, the “two-way traffic”. With communities there is as much to learn, as well as to give.

Clearly for at least one member of the team the logistics of getting around was important. But for the rest other things like solidarity with communities, responsibility, duty and learning from the communities, in a “two-way traffic” was important. What is now being called “real participation” in “community driven development circles” rests on good communication and understanding between project staff and communities (Binswanger et al. 2003), this is demonstrated here in the language of the staff.

4.3.6 What motivates the community in a village to be involved with their water scheme?

Respondent 1: “Community level, I think that community they need to solve their problems, I think if the problem is water and the problem is solved the community will be happy.”
Respondent 2: “Training and the relationship between me (the fieldworker) and the village, trust built up through the participatory approach.”
Respondent 3: “First of all I think they did not know how to look after their scheme. I think after mobilisation and approaching them what is good and what is bad, I think at last they were with us after mobilisation. I think their knowledge will make them recognise this is good and this is bad. That is why, the way we approach them and the way we give them knowledge.”
Respondent 4: “Ok really what make them to be involved is the problem or I could say the need, the need forced them to get involved, for in the community they have got so many problems. Those problems they be forced to hear, maybe I could say not water department or whatever, if they see some of those officers from the district they know they have the solution to one of their problems. This need makes the community to participate in solving their problems.”
Respondent 5: “The community are motivated first because of water, which is very vital, ok its need for water, the first thing is need, the other, water is very essential in development, so that’s why the community know that without water there is no development.”

The primary motivator in the opinion of the fieldworkers is need, and the perception and understanding of it by a community. A participatory approach generating enhanced knowledge, is also a factor that the interviewees cited as motivating communities to become involved with their schemes; this and a perceived relationship between the community and the fieldworker, based on trust and understanding.

4.3.7 And what seems to be the best ways to get people motivated (in the villages)?

Respondent 2: “First of all is the meeting and planning together, yes planning together for the need of the people, then we implement together. Then the project going through without any problem, while there is communication between me and them.”
Respondent 3: “I think as we use the WAMMA team, because they know how to approach the community, they have skills to approach the community.”
Interviewer: “What are these skills?”
Respondent 3: “We met with them in their villages then after that we plan. First of all they know what they need, we did the PRA after that they say their needs, after this they discuss how to solve the problem. Participation, I think so.”
Respondent 4: “I could say mostly participation… but that participation is the good channel in order that people would be free to speak to share what they have.
From there you get the solution and plans to solve their problem. Where you put some money or whatever in order to move from the bottlenecks.”
Respondent 5: “The best way is to involve them, from the first contact.”

Planning together with the communities, having the capacity to use participatory methods, using these skills, and doing this from the outset in an atmosphere of mutual respect are what the WAMMA staff saw as being the best way to get people motivated in the villages.

4.3.8 How do you compare this job with your last job?

Respondent 1: “I’m doing the same because my job is to improve health education through primary schools, although in the team I am increasing something, because also I’m educating the community to improve the water and the sanitation. It is more challenging now because I have learnt more than my job description, because from now I know the policy of water from Tanzania.”
Respondent 2: “This job is better than the first. Anyhow here is my profession and I like to be in this position in integration with the communities, with the water department, health department, community organisation department, and I need to be a mobiliser.”
Ananade: “I think this job for the time being I enjoy it very much because it is some part of my last job. There is some connection because we are dealing with adult education about their health and also this from WAMMA.”
Interviewer: “So do you enjoy the work before or now?”
Respondent 3: “I think now, I enjoy the work very much because I’ve got very good to approach people, and I enjoy it very much because I achieve more. I like it very much, and I had capacity building about how to approach adults.”
Respondent 4: “Really that time was a bad idea, I was thinking that if a community have some problem and myself I’m a civil work man, if I go there I build a structure there they should use it because the problem of using and getting water. Then I go there to build maybe tanks and cattle troughs, then I should say I was foolish. Because that thing was coming in my head from the school or whatever, but after going to the community I see that if you want to inject something in the community, you should come somewhere to negotiate, to know their real problem. And then what you have now you share with them (the community) and you come to the real answer. Rather than go there and you think, Oh these people, they could absorb this thing that I have in my head because I work for the government, I’ve got money so I’m going to put a structure there. I could see for myself that technically I’m a technical man, that time I was thinking I was losing somewhere, but after going somewhere further with participation I could say the software package I see is very important in the project. And most of the NGOs and CBOs and donors they are escaping that, and think they are loosing because they put some money for the mobilisation of training communities, so they seem to be losing, so they just jump that element, they jump to the structures or whatever. They build schools, they build maybe water projects, they build roads, but they didn’t engage the community.”
Interviewer: “So compared with your old job your new job is better?”
Respondent 4: “I could say it is very better, and I could see the sustainability inside.”
Respondent 5: “This one is very interesting, because water has got the greatest need in the life of people, in living people are depending much on water, than on structures, especially in the rural areas, so I’m doing what the people need. That what I’m enjoying doing, I’m solving need of the people, the greatest need of the people.”

In comparing the work they are undertaking now and what they were doing before they joined WAMMA, the general perception is that the team members are all doing the work that they were trained for. However, their work with WAMMA is more enjoyable and fulfilling, because by working with colleagues from other departments in an integrated team, by learning and using a participative approach, they see the work as being more useful and rewarding than it was before.

4.3.9 What is your vision of the programme? And how do you see yourself in this vision?

Respondent 1: “The programme is good and communities are appreciating, and plan is to continue to implement these activities within the community, so it’s better to expand. Myself is maybe to improve more from last year according to our experiences.”
Respondent 2: “Expanding, the changes, any changes, things are moving ok. I to myself I’m better to be nearest to the community and we can sit or we can make something so we improve.”
Interviewer: “But you are enjoying helping being the centre of that, the catalyst?"
Respondent 2:”Many women they can improve job interest, accounts for water committee, many women can do that opportunity, to do that.”
Respondent 3: “I think my vision is to continue mobilizing the community about water, sanitation and hygiene, and also not community only, even ’child-to-child’ in order to convey the message to the neighbours and community.” Interviewer: “How do you see yourself within that vision?”
Respondent 3: “I think the question is so nice, because we changed the community from unknowing to knowing.”
Respondent 4: “My vision now I’ve work on this for ten years mostly, myself I see we should have some organ that can stabilise the strength we have, in order maybe after these NGOs and donors are moving, they can bear this load in order we can get something ourself.” (In this Respondent 4 is referring to the setting up of a new NGO in the region called Mamado, this NGO is locally based and made up of WAMMA members and supporters, it has been set up partly in order to access funding from the World Bank for continued WAMMA style work in the region, as the bank’s current policy discourages government from acting as an implementer, and WAMMA itself is made up of government departments.) “Because donors and NGOs they can be somewhere, here there is no person or local intermediate NGO who can continue with the activity, which has been here for let’s say ten years (WAMMA).”
Interviewer: “So what you want to see is some new organ to take it forward?”
Respondent 4: “Yes really, maybe they could get financial or materials to the activities.”
Interviewer: “Where do you see yourself within this vision?”
Respondent 4: “Well actually in 1996, I was visioning where we are going to end as WAMMA, because I been in my district since 1994, I been with WAMMA from 1991. I was thinking if I was not there who would move the item. If WAMMA has somewhere to be as a central point for them, these resources like water department, health department,

community people, education people, in order not to be disbursed (sent back to working in their old departments again) that strength could remain.
(A worry of WAMMA being broken up, and a need to solicit conditional PRSP funding to continue has led to the formation of a local NGO staffed by government workers to carry on WAMMA's role in one of the districts.)
I think if the other regions could have a tool like this, I think the other regions could get something, because we have got a strength that can solve many problems at one time. So we are avoiding more cost because we go as a team we solve many things at a time."
(Scaling up WAMMA or WAMMA's approach to other regions in Tanzania)
Respondent 5: "My vision is to advance myself and even to advance in our way, so I'm expecting if I can have someone to sponsor me so I can learn more to have a degree, in fact to advance me in our work."

The responses to "What is your vision of the programme? And how do you see yourself in this vision?" varied from the practical, to the personal, to the strategic. Broadly the themes were of continuously improving the quality of the work, continuing the work and expanding the work, both within the districts of Dodoma Region and to other districts and regions. There is a feeling amongst WAMMA staff that they do have something that is special that should not only be allowed to continue and improve in its quality within their districts, but should also be introduced elsewhere in the country as a model.

It is interesting that with the sole "self-advancing" response to this question the accent is still on WAMMA and how continued training might feed back to the benefit of the organisation.

On the strategic side funding is a necessary part of the WAMMA programme, and the need to work within the national Poverty Reduction Strategy process (PRSP) funded by the World Bank and other donors means playing by different rules. Rules, which on the face of it preclude government departments from involvement in implementation, are a threat to the way that WAMMA has been working, and risk "throwing the baby out with the bath water" especially if the WAMMA model is ever to have a place in influencing policy elsewhere in the country. Hence the formation of a local NGO, effectively staffed by government workers, to continue the WAMMA way of doing things, may eventually become part of the WAMMA legacy.

4.3.10 Do you think communities also have a vision? And what do you think it is?

Respondent 1: "Yes, they think they can do more than that activity through this WAMMA programme (WAMMA as an entry point for other development activities, i.e. having learnt that they can solve water and sanitation problems, they are able to go on and tackle other problems)."
Interviewer: "So do you think this WAMMA programme helped them to have a vision?"
Respondent 1: "Of course!"
Respondent 2: "Yes yes."

Interviewer: “What do you think that vision is?”
Respondent 2: “To improve the system of water, yes.”
Interviewer: “Do you think it is important for the community to have a vision? Mtazano a vision?”
Respondent 2: “Yes because everything when they plan to improve, improve the system for water and sanitation, they change when they get some problems, because they know the project is theirs to prioritise.”
Respondent 3: “Yes they expect afterwards they will make their life better.”
Interviewer: “So before the project do the villagers have a vision?”
Respondent 3: “No they don’t have.”
Interviewer: “If the project is five years old do the villagers still have a vision?”
Respondent 3: “I think so, they will have because for the time being we will continue with mobilisation to give them their knowledge about how to keep their health and solve their problem. I think it will be so nice and they will have a nice life.”
Interviewer: “Do you think the villagers also have a vision?”
Respondent 4: “I could say they have a vision, because if we are talking about the water fund, it is somewhere (Village water funds for Dodoma now are worth collectively well over US$100,000, these are used for operating the individual schemes.), but there is no coordination, how say Ngomai (a village) as an example, they want to have another borehole, but they have their money, they paid for a survey and they got another borehole, but the challenge comes how to get a donor to buy a pump and engine! So they have a vision, but they don’t know how to go next.” (An example where more support is needed for communities to make the best of what they have.)
Interviewer: “From what you are saying, the vision the communities have is a small vision, it’s about their water supply and your vision is about the whole programme, and maybe about other districts, other regions.”
Respondent 4: “Yes.”
Respondent 5: “Of course, their vision is to develop their status from a low status to a high one.”

The question about the vision that communities themselves have, showed essentially a vision restricted to the community, dominated by a sense of personal and communal development and progress. Achievement with water and sanitation showing the villages the potential for collective action through the application of shared social capital and offering an insight or an entry point for other development initiatives, that could be inspired from within the village itself. A point that was also made, however, was that just because an idea comes from within a village it is not necessarily destined for success, good planning is also required and at times this may be beyond the capacity of a village, requiring support from outside. This reality check is important as it points out the limitations that can exist with purely community inspired initiatives. The presence of a village water fund as an indicator of a community’s vision was also an interesting way of quantifying the presence of vision.

4.3.11 Who owns the water schemes?

Respondent 1: “Now days the communities know well how to run the schemes.”
Respondent 2: “They own, the villages, the villages.”
Respondent 3: “The community.”
Respondent 4: “The village government, village community.”
Respondent 5: “It’s the villages not the government, the villages through village councillors and village government.”

General agreement exists amongst the WAMMA staff that water schemes are owned by the villages, and that the communities are empowered to manage them effectively.

4.3.12 How would you define the ownership?

Respondent 2: “Yes the ownership is there, yes for the whole community. That all village know. The ownership is with the villages, the community.”
Respondent 3: “I think they have ownership because they organise all their things themselves and they discuss and minute all the things themselves how to continue with the project.”
Respondent 4: “They have got a say, they can say they can change this because they have a voice on it. Because it is not some bodies (else’s). They can take the private sector to run or for maintenance, but to own, that’s an extra inner thing.”
Respondent 5: “The villagers don’t know how they can define the ownership, but they know that the programme or the scheme is theirs, they know that, but how to define is something difficult.”

Defining what ownership actually is in a WATSAN context is difficult, the fact as pointed out in the responses that villagers do certain things, organise, work together, have meetings, take minutes may help to indicate that ownership exists. The “extra inner thing” is perhaps as good as any definition of what this ownership actually is, and the last comment about villagers themselves knowing that the scheme is theirs, but not actually able to define the concept is also fair. Knowing that a scheme is “not somebody else’s” (i.e. the government’s) is also a way of looking at ownership.

4.3.13 Do you also feel as if you also own the programme? Tell me about it.

Respondent 1: “Yes I feel we sit together to plan and we go together to the community and we share together to arrange something to ensure that a programme was completed or the project was completed. So in the team we make sure that all programmes which we plan are implemented. I feel part of the WAMMA team.”
Respondent 2: “Not only (me).”
Interviewer: “Do you feel part of WAMMA?”
Respondent 2: “Yes.”
Respondent 3: “Yes I feel it.”
Respondent 4: “Somehow, because if we engineer the programme, we have got something to say on that, although it is not direct like the community.”

Respondent 5: “No, no ownership of WAMMA, but I’m in WAMMA, yes I’m a team member.”

Ownership may be the wrong word here. However, belonging, or feeling part of WAMMA, as can be seen from the replies, an important thing for the staff members.

4.3.14 You have worked for a number of years with the programme, this shows commitment to the programme. Tell me about it.

Respondent 1: “Make sure in the community all religions, boys, girls, women and men, all people work together they participate fully.”
Respondent 2: “Yes, for full to WAMMA yes and for this commitment to WAMMA I get many experience in PRA to do this.”
Respondent 3: “Yes I’m committed.”
Respondent 4: “Myself I feel proud because of one thing, first of all transparency, I worked for WaterAid for more than ten years. Myself in my heart I really love transparency. I was working with this NGO for more than ten years because I’ve had that transparency, and I was feeling if the government system could be assure that the things that are coming from the top are reaching the bottom it would be very good. But sometimes, because of the bureaucracy of the government, bureaucracy are good, but if you scratch you do something without telling the reason, you burn that bureaucracy, although the bureaucracy is good. But that awareness of myself thinking to be transparent in everything, someone can come and look at the accounts and reports, auditing. So for myself it gives me a confidence of working really.”
Respondent 5: “I have worked for many years, so my commitment is to know the need, the problem of the community. And I have to facilitate the communities to first of all identify the problem and then sit together with them to plan and implement even to evaluate. So its my commitment to struggle with the problem.”

From the responses, staff commitment to the programme is tied to the work, to the training and capacity building, to pride in achievements and in personal responsibility for carrying out the work. A duty to undertaking the work in the right way respecting and participating with the communities also is a factor in this commitment.

4.3.15 How committed do your fellow workers feel?

Respondent 1: “Sometimes there is a delay of funds, same motivation is there.”
Respondent 2: “Yes, we developed together. There is water, health education, community development.”
Interviewer: “And everyone works together?”
Respondent 2: “Yes there is good participation, anyway we do anything the coordinator ask, there is a job here, we can do together.”
Respondent 3: “Yes I think they are committed because we are in one team and when we work in the village we just say the same thing, if it is hygiene, sanitation or water, we just

go with one idea, not just the department for education, or water or community development, we are just one team."
Respondent 4: "They feel because of one thing, my experience in my district. I share everything with the team, if I move the team will not die because the team is not (me). The team is a number of people, so if we are in a team you should do everything openly, accounts, returns, reports and the money is in the bank, you prioritise. So for that thing everything is transparent. You build things confidently, no one could say there is something mischievous. So if I go to my district, are people are planning, they are processing the money, they are going to the community, they are writing, they are reporting firstly."
Respondent 5: "I think so."

In asking, "How committed do your fellow workers feel?" the clear response was of a unity of purpose, of the team's joint commitment and responsibility.

4.3.16 How committed do villagers feel?

Respondent 3: "I think they are committed because they are minding and taking care of their machine for water. They know how to keep it in a good position by keeping somebody to look after that. And if somebody destroys the pump, they will be taken, they will take action."
Respondent 4: "Yes because we do the planning session with them, planning, implementation, operation and maintenance is with their hands. What we are doing is equipping them with skills and knowledge to know their roles and responsibilities, for that thing for them after finishing the project, they are part and parcel, 'this project is ours'. Ownership, they were (in the past) thinking this was government property, now they know it is theirs."

The responses portray that commitment within the villages is there, and this is shown in a factual way related to the acknowledged (within the village) change in ownership from government to community, and through the self acknowledgement that this has been achieved through the WAMMA staff's role of empowering communities through education and solidarity with them.

4.3.17 Is there any difference within villages in the level of this commitment, between men and women?

Respondent 1: "Before (the programme)1994, but now it is the same."
Respondent 2: "No there is no difference, because when I can talk about the hygiene with the men or the women there is good cooperation."
Respondent 3: "I think that for the time (before the programme) they did not know how to manage their project, I think they did that. After being with team WAMMA and discussing about gender issue, I think now they are all equal women, men are equal in the project."
Respondent 4: "The water policy was only just starting in 1991, the government were working only with men in the community. Now we have changed, they realise a man and a woman, they have got the same share, they have got the same idea, they have got

something to construct in the community. And I remember one project in Sefala, the men said the women cannot dig the trench, and I said 'who suffers' is the man or the woman? Let's make this practice, let's put the trench in portions, let's see who will finish first. Actually practically the women work much harder than the men."
Interviewer: "How about in the long term for a community, is there a difference over time after a scheme has been built in the way the women participate and the men participate?"
Respondent 4: "Yes there is a difference, in some communities the water committee is mostly handled by women who are leaders like the chair, the treasurer, keeping domestic points are the women are managing those things actually. And sometimes at those meetings in the district there is one village called Nzungo and they selected one woman and one man for the meeting, so we know they have got their respect, they know the women have got their position, very, completely different from where we started."
Respondent 5: "Yes you know there is tradition and practices and so forth, so there is differences of commitment between men and women."
Interviewer: "How would you describe?"
Respondent 5: "The women have got many commitments, but you can find the decision makers always are men. The commitment of decision making always seems to be of men rather than women."
Interviewer: "But when you are doing your work empowering the community, at the end of your work, is it the same that the men are more committed to the project than the women? Or is it the women who are more committed than the men?"
Respondent 5: "You know changing of attitude takes time, so you can find some communities changing is easier than some communities, but the change is there but not equally. Some communities change easier, other communities can go slow, but the change is there, but the change of attitude can take time."

The responses on the issue of differences in commitment according to gender showed a change from pre-WAMMA days to the present, though as the last respondent said, differences do remain especially in the extent to which women have been allowed to become decision makers. The differences in the responses may also have a tribal influence. Respondent 5 (the last respondent) works with a district with a high percentage of the conservative Gogo tribe. This factor in itself is important because it underlines the fact that ethnic differences can also influence the ways in which messages about social change can be accepted from place to place.

4.3.18 Is there any difference within villages in the level of this commitment between new residents old residents of villages?

Respondent 1: "The ownership, the villagers they feel commitment."
Respondent 2: "The early people who settled has more committed."
Respondent 3: "I think that the problem is somehow with Chibiwa (Village). Chibiwa is somehow an urban town, so sometimes it occurs because there are business men. Sometimes they will come, but the government villages, they are so near with the project."
Interviewer: "So it is a matter of education for the newcomers?"

Respondent 3: “Yes we just get them seminars and I think they know their responsibility.”
Respondent 4: “Of course, those who were there during construction they know, those that come later are enjoying the fruits.”
Respondent 5: “Foreigners (newcomers) can make some changes in the community so that changes can make the originals to be more committed than the first time, so foreigners make changes.”
Interviewer: “Newcomers can bring a new spirit?”
Respondent 5: “Yes and even the community can listen to the foreigner.”
Interviewer: “Are newcomers interested in keeping the scheme working?”
Respondent 5: “Yes sometimes, sometimes not.”

With the question of the relative commitment of old and new residents of a village to their scheme, the logical answer that seems to emerge is that those who were there at the beginning of a scheme, who undertook the planning and the hard work of building the scheme will have a greater understanding and commitment to it. The last respondent implied that newcomers may also bring something new to enliven such a scheme, and he may well have a point, though as he put it when asked if newcomers were interested in keeping a scheme working, “Yes sometimes, sometimes not.”

4.3.19 Is there any difference within villages in the level of this commitment between better-off residents and poorer residents?

Respondent 1: “It’s not different, but in the community the poor villagers they have a time table to help the poor villagers, they get water free and they contribute by working something. Everybody is committed, everybody needs water.”
Interviewer: “And rich and poor?”
Respondent 2: “The rich people for giving the contribution, in some of the villages the rich contribute a lot and the poor a little.”
Interviewer: “But the level of commitment?”
Respondent 2: “Is the same.”
Respondent 3: “I think it is the same for the time being, before it was something different but with skills and knowledge, now it is the same.”
Respondent 4: “Rich and poor have their levels of contribution, if there is a bottleneck the rich people may have a role, but all have a role.”
Respondent 5: “It’s both ways, sometimes you can find in other villages poor people are very, very committed in water projects. But you can find in other communities rich people are more committed than the poor. Because it depends on the nature of the riches, you can find in other communities like the Massai or cattle owners, cattle keepers know what is essential to be with water very close, because of their cattle. You can find they are very committed in keeping their scheme continuing. But in other side you can find rich people maybe who are farming, or who are interested in agriculture. You can find poor people are very committed in the scheme, because they don’t have tractors, they don’t have vehicles to fetch water very far.”

In spirit it would seem that there is little difference between the commitment of poor and richer people to their scheme, though this can differ in certain circumstances (as illustrated above). The ability for welfare cases (the very poor, destitute, disabled or elderly) to receive water for free does exist in a number of villages, as do arrangements for people without access to cash to contribute in other ways for their water. The principle that wealthy people should contribute more, especially when there is, as Respondent 4 puts it, “a bottleneck”, for example to assist in raising the initial cash contribution for capital costs, is well established. The WAMMA principle that all who can, should contribute, and the fact that this contribution may differ from household to household in cash terms should not imply any difference in commitment; people give what they can.

4.3.20 To what extent are children committed/responsible/mobilised?

Respondent 1: “For example we have a subject on how to improve the environment, for example school environmental cleaning, so when they (the children) go to their family they do as their school do. For example, my in my district at Pahi School, so when district leaders come to visit the schools, in drama or in song they play, when they play they have a message there about how to improve their water sources or their health.”
Respondent 2: “Yes, with school clubs health education, cooperation with the teacher.”
Respondent 3: “With child-to-child this leads them to be mobilised so much, it is so nice to use this convent of child-to-child.”
Respondent 4: “Child-to-child is helping to put ideas in the children’s minds.”
Respondent 5: “Sometimes you can find, but not in deep.”

The commitment of children is related to their involvement and participation in the child-to-child health education initiative. The way this commitment evolves with these individuals as they grow to adulthood is not really dealt with, and is perhaps an area worth continued investigation.

4.4 Conclusion

These interviews show how staff consider the WAMMA programme, their understanding of what is important to its success, and also their own enthusiasm for it. In understanding how the WAMMA programme has achieved what it has over the past 12 years, understanding how the staff perceive their involvement is important, as it is the staff themselves who are the change agents, and the unsung heroes. Achieving sustainable beneficial outcomes for WATSAN is greatly dependent on the attitude and actions of the staff that attempt to bring it about, and an important area that other programmes might do well to consider. An internal report on WAMMA produced by WaterAid in 2002 also considered the shortcomings of some PRA methods that had to some extent become stale to staff through their over use (Gomme et al. 2002). This, however, only goes to emphasise the importance of taking staff needs and staff motivation into account as a vital facet of achieving sustained beneficial outcomes in WATSAN.

Chapter 5 BIRWSSP A Process approach to district WATSAN implementation "By Evolution"

This is the second major case study of this thesis. It covers in some detail the processes, techniques and issues involved in the Bikita Integrated Rural Water Supply and Sanitation Project (BIRWSSP), Zimbabwe, as well as some reflection on the management of the wider national programme of which it was a part.

BIRWSSP fulfilled all of its output objectives and exceeded targets in some areas such as sanitation, whilst remaining within budget. By achieving sustained beneficial outcomes across a district, it is of relevance to those interested in scaling up access to WATSAN elsewhere in both the methods employed and in the scale of its implementation.

Box 5.1 Summary ZIMBABWE – Bikita Integrated Rural Water Supply and Sanitation Project (BIRWSSP)

Description of Outcomes

A district based project, part of the National Integrated Rural Water Supply and Sanitation Programme. This project pioneered participatory methods and capacity building for the implementation and management of decentralised water and sanitation work by a Rural District Council.

Scale and Time Frame

The project with support from the Department of International Development started in 1996 and ran until 2002. It worked with a population of just under 200,000 people and brought coverage of safe water supplies up from 49% to 95.6%, sanitation coverage being raised from 9% to 40% over the same period.

Technology and Water Resources

The technology being adopted for communal water points was of medium depth boreholes 40 – 60m deep and deep wells up to 30m deep, equipped with extractable (hook and eye rod, open topped) versions of the Zimbabwe bush pump, a robust hand pump of local manufacture and design. Individual households with their own family wells were also assisted with a material subsidy for up-grading. The technology on offer for sanitation was the four (cement) bag version of the "blair" ventilated improved pit latrine, equipped with a hand washing tank facility of which 11,990 were installed. Alternative designs including the "abor loo" were tried out but with limited success due to their un-popularity amongst national policy makers.

Main Institutional Actors

The project was managed by the Rural District Council which operated the accounts, provided transport, chaired the monthly planning meetings, and took part in much of the day to day work of the project, along with officials from the Ministries of Health, Agricultural Extension, National Affairs and the District Administrators Office. At Provincial level there was coordination with the Provincial Administrators Office and at National level with the Office of the National Coordination Unit for the Integrated Rural Water Supply and Sanitation Programme IRWSSP based in the Ministry of Local Government and National Housing.

5. 1 Introduction

This chapter is a case study of the Bikita Integrated Rural Water Supply and Sanitation Project (BIRWSSP) in South Eastern Zimbabwe. The case study covers the broad range of interventions on offer, from health education to the adoption and use of appropriate water and sanitation technologies and the use of productive water points for communal gardens, the latter broadening the impact of conventional water supply by handpump, to help provide for the livelihoods of rural people. It is a long story, and it includes fourteen major sections, which are included to give the reader a full understanding of BIRWSSP as a "development package".

5.1.1 Bikita District, background

Bikita District is in the southeast of Zimbabwe. The altitude ranges from 400m to 1000m, as the district straddles the escarpment between the central plateau and the low-lying areas of the Save Valley. Rainfall in the district varies from a high of around 1000mm in the upland to a low of 400mm in lower-lying and rainfall shadow areas. Bikita has a population of about 200,000 people (based on extrapolation from the 1992 census at 2.9% per annum growth). It is largely a communal farming area and was classified prior to independence in 1980 as a tribal trust land. The people of the district
are mostly of the Karanga tribe, a subgroup of Zimbabwe's majority Shona tribe. The settlement pattern is largely of small "kraals" or sub-villages known locally as "subuku", of between 100 to 300 people. Between five and ten kraals may be found in a VIDCO or village development committee area, and six or seven VIDCOs in a ward. There are 29 wards in Bikita District. The district also has a large number of small-scale indigenous commercial farms situated in three of the wards. On the eastern side of the district, in an area comprising 18% of the driest land, is the Save Valley Conservancy. This area, formerly comprising 18 large commercial cattle ranches, now makes its income from game viewing and hunting safaris. The people of the district suffered greatly during the 1991/92 drought, and again faced hardship from the drought of 2002, and from the general economic collapse in the country as a whole that followed the 2000 general election.

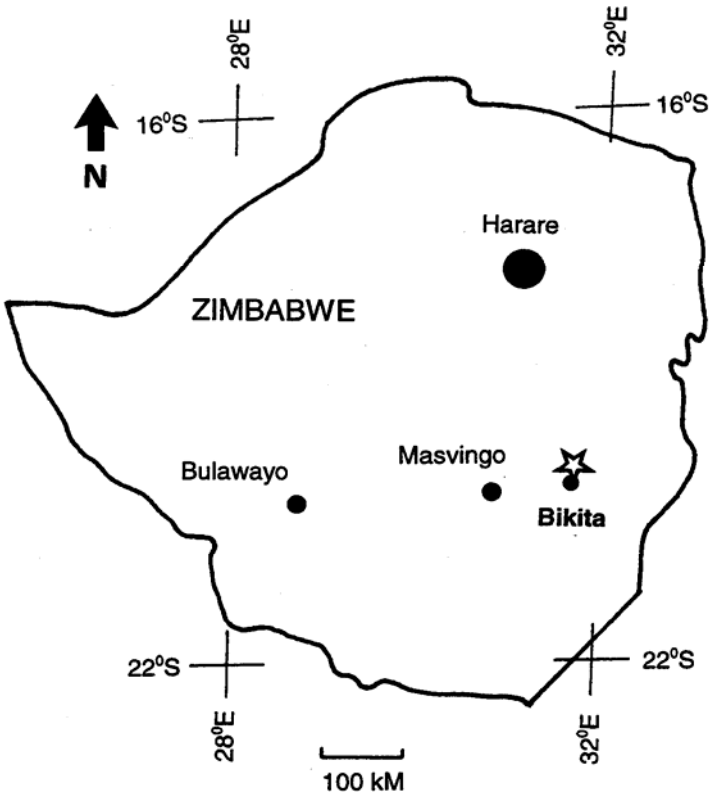


Fig. 5.1 Map of Zimbabwe (Peart et al. 1997)

5.1.2 Project conception

The Bikita Integrated Rural Water Supply and Sanitation Project (BIRWSSP) was conceived as part of the national Integrated Rural Water Supply and Sanitation Programme (IRWSSP).

The Department for International Development DFID (then the Overseas Development Administration or ODA) first became involved in supporting the district during the 1991/92 drought, when assistance was sought by the Zimbabwe government for an emergency project to help the people of Bikita District. The emergency support was channelled through the international non-governmental organisation WaterAid, and was implemented by the offices of the District Development Fund (DDF), the Ministry of Health and Child Welfare (MOHCW), and the Ministry of National Affairs, Employment Creation and Cooperatives (MNAECC), the Department Of Agricultural, Technical and Extension Services (Agritex), with coordination and management provided by the District Administrator (or DA). The DA is the representative of the Ministry of Local Government and National Housing (MLGNH) at district level.

The Bikita Integrated Rural Water Supply and Sanitation Project (hereafter referred to as BIRWSSP) came as a comprehensive follow-up to this emergency work, differing from its predecessor in that it was to be a decentralised project managed by the elected RDC rather than the DA. It was part of the national integrated rural water supply and sanitation

programme (IRWSSP). The government line ministries provided support in the form of personnel, while the RDC coordinated the work, managed the finances and allocated project resources including the transport and materials. Monthly meetings of the district water and sanitation subcommittee (DWSSC) were used as project management meetings to bring together the heads of the participating departments under the chairmanship of the Chief Executive Officer (CEO) of the RDC to discuss performance of the previous month and plans for the following months work. Decentralisation was seen as leading to better, more focused governance in the rural areas and was widely supported by both the Government of Zimbabwe and the donor community.

5.1.3 Achievements of BIRWSSP

In the course of the six years of project implementation the BIRWSSP managed to reach many of its objectives and in some cases exceed them. The following graph (fig. 5.2) illustrates the progress made over the years.

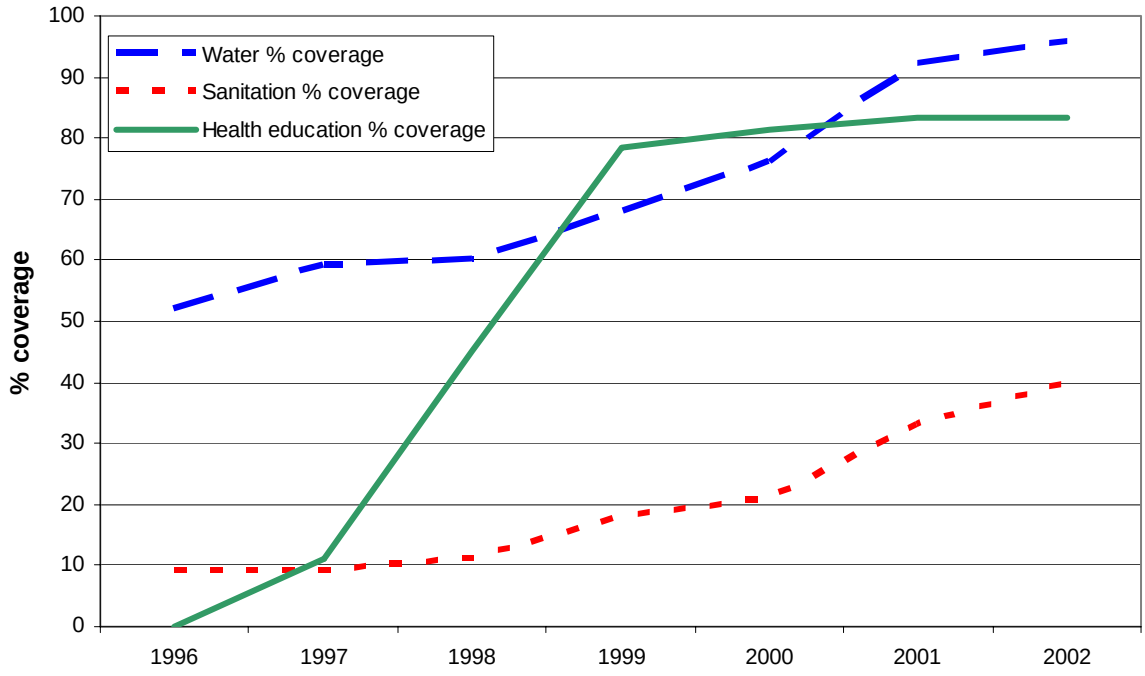


Fig. 5.2 Main outputs of BIRWSSP

The coverage levels referred to in fig 5.2 are based on the Zimbabwe government (GOZ) standard level 1 as outlined in the box 5.1 with the exception of health education. The health education achievements are based on the project target of one community health club for each VIDCO area.

Box 5.1 Government of Zimbabwe (GOZ) Standard Service for WATSAN

Water

GOZ Standard Service level 1 for water was defined in terms of "shallow well units"(SWU), each shallow well unit being able to provide enough water for 50 people on the basis of 20litres of water per person per day. A borehole equipped with a hand pump is considered equivalent to five shallow well units or 250 people, a deep well fitted with a hand pump equivalent to three shallow well units or 150 people. Privately owned "family wells" are now considered to be equivalent to half a shallow well unit or 25 people, as family wells are commonly used for domestic requirements of the surrounding households, and not only by the family who built them. The Standard also establishes that no community should have to walk more than 1.5km to reach a water point.

Sanitation

GOZ Standard Service level 1 for sanitation provides for one "blair" ventilated improved pit latrine per two households, in effect 50% of households to have a "blair" latrine, as culturally latrines are not shared. In the BIRWSSP case the project target was to "near standard level 1" or 33% coverage of households, as the 50% target was considered "not practical".

Because of the estimated rise of the population by 2.9% per annum, there was in effect a moving target for coverage of both water and sanitation.
By 2002 the district had new water points with a total capacity of 2,072 shallow well units, some 272 (or 15%) more than the original project design, allowing 95.6% of the overall target of 100% to be met. On sanitation 11,990 latrines had been constructed, 64% more than the 7,300 originally planned. Sanitation coverage was thus raised from 9% at the beginning of the project to 40% by its end. Both of these major objectives were achieved within the original total budget of £2,725,000.

5.1.4 Process approach rather than blueprint

If the WAMMA programme in Tanzania was given freedom to organically "grow" (see chapter 3) with ongoing funding watering its expansion, BIRWSSP in Zimbabwe was given freedom to evolve its strategy in a process approach, within the confines of the national programme and its overall project budget. This allowed the RDC to use the project document as a starting point rather than a blueprint. Whilst the overall objectives of increased coverage of water and sanitation remained, the ways in which these were to be achieved were left to a large extent up to the RDC to develop as it went along. The design numbers of boreholes to be drilled, deep wells to be sunk, and latrines to be built, all necessary for costing and designing a project, were used as guidelines rather than set plans, with the targeted increases in coverage used as the main goals.

5.1.5 Cost savings and the open market

One reason for meeting and even exceeding the design targets with the original budget was cost savings and the use of competition on the open market. The adoption of the low cost four-bag Blair VIP latrine allowed a savings of 33% of the cost of cement on the standard design (requiring six bags of cement); this was used to help more households obtain safe sanitation. With borehole drilling the abundance of drilling companies in the open market also brought the price down. The RDC's tender board made full use of this opportunity to get the best price they could for this significant element of the overall project cost, and this in turn allowed for the drilling of more boreholes. Please refer to section 5.11.5 for more information on the tender board. Getting the best price for materials and contracts is perhaps not the most important aspect of project implementation, but the fact that it was done shows a level of willingness and a commitment from senior staff and councillors that permeated much of the project and this has helped to ensure success in achieving the project goals.

5.2 Insights into scaling up from start up

This section examines the start-up phase of BIRWSSP, some of the frustrations as well as how communities were identified.

5.2.1 Piloting and getting the project moving

The possible techniques and methodology to be used during the project first had to be introduced to the district heads of department, their appropriateness to the situation discussed and agreed before work could be started. A frustrating delay was funding (see the section 5.12.3), but during the first year of work this delay was turned to an advantage as it gave sufficient time for the piloting of techniques without the need to rush headlong into implementation at scale. Methodologies to be implemented later across the district were first tried out in one ward and honed to fit the situation. Direct technical cooperation (or TC) funding from the donor (DFID) was accessed to allow the pilot work to get underway and bypass the logjams and delays of the official system.

5.2.2 Building partnerships between the project and the communities

Being time and budget constrained and focusing on just one district in a classic bilateral donor development project, there was a danger that the project would take on a purely supply bias and that communities might not be properly consulted or involved in the planning process. To get over this potential problem the project adopted a similar initial approach to the Tanzanian WAMMA system, of locating villages with the biggest water problems. As with WAMMA it was found that those communities with the biggest water need were also among the most keen to solve their water problems. This factor was used to help generate a sense of partnership between communities and project staff, with a commitment by the RDC to ensure the individual schemes were implemented in partnership with willing and enthusiastic communities and not simply imposed to reach coverage targets.

5.2.3 RDC owning policy

Adopting a needs-based approach also had a humanitarian logic which appealed to the councillors in Bikita RDC. Decentralisation, bringing democratically elected councillors into the planning process for the first time, brought new challenges but also new opportunities. The vision of councillors who depend on their electorate for support could have been directed in a number of ways, not all of them helpful, so with decentralised management it was important that this vision was focused, united, uniform and just. Open involvement with councillors from the beginning, offering them respect and at the same time clear and fair goals based along humanitarian lines with the concept of self-help through community-based management, helped a united vision for the project to be generated and owned by the councillors. This was maintained despite sometimes heated debate in the Bikita RDC Council Chamber over aspects of project implementation, such what to do about the failure of borehole drilling in a village, or the numbers of new boreholes being drilled in a particular ward .[13]

5.2.4 Zoning the district

In order to tackle the water problems of the district in a manageable way, the district was divided up into four geographical zones comprising seven or so wards each. The second driest zone was targeted first, because by the common agreement of the councillors it had received the least help in the past. Work was planned to start in the first zone during the first year and then a year later to follow in the next zone, and so on until the whole district was covered. A second wave of work was planned to cover any villages that had been missed out first time round, either because they were not ready to be involved, or the first attempt at drilling had failed to find water. This process is similar to that adopted in the Kigezi Diocese programme in Uganda, where Kabale District was similarly divided into three zones with work concentrating in one at a time and rotating around the zones (chapter 2) (Carter et al. 2001).

5.2.5 Surveying and participatory planning

A system was required to identify where the people who lacked safe water and sanitation were living. The approach adopted in each zone was to collect information on all the kraals or sub-villages through a massive data collection exercise, using participatory village mapping, handheld global positioning systems (GPS), 1:50,000 maps and eventually a GIS. Known as the VBCI or village-based consultative inventory, this mirrored a process that was being promoted nationally by the IRWSSP (4.1.2), though at a much greater level of detail, and in effect took the role of the WAMMA “villages of greatest need survey” (chapter 3.3.1). With the emphasis on participation by the people at sub-village level, an effort was made to mobilise a sense of ownership with individuals as well as communities from the pre-planning stage (Mathew 1996).

5.2.6 Village mapping methodology

At the village mapping sessions all the adults in the sub-village or kraal were asked to participate and make a map of their community. This was done at a place and time agreed beforehand with the community in each kraal. Boundaries were drawn out using sticks on the earth (sometimes chalk or charcoal were used if the mapping was done on large flat rock outcrops), with rocks and stones added to indicate the hills and colourful seeds or bottle tops used by the village women to place their own households on the “living map”. The facilitators would then work with the group, asking each woman in turn how many people lived at her home, where they got their water from, if they had a latrine or not and so on (see appendix 3 for the forms used to collect information during the village mapping sessions). In this way the information came together from over a thousand kraals. The training of volunteers from each VIDCO was an essential aspect of the community work. There were many kraals to cover and each mapping session would take up most of a morning. Two copies of each map were made on A1 sheets of paper, with one held by the BIRWSSP office and one retained by the kraal. Global positioning, a relatively new development in 1996, allowed the accurate locating of the kraals onto 1:50,000 maps, and later on to a geographical information system or GIS.

5.2.7 District databases

The information was collected by ward and processed by the project team, which was based at the RDC and headed by the RDC Planning and Works Executive Officer. A database of information was created and held in Excel files on the project computer and in paper form in a rack of filing cabinets. This showed each kraal by name, where people were getting their water from, how many people were going to each source, how many people were living in each household and whether or not they had sanitation facilities. Technicians also visited all the water points to record the coordinates, assess their performance and chronicle their state of repair. (Sample sheets from the data collection exercise and database are presented in appendix 2 and 3). The information collected in the VBCI was a powerful planning tool, villages without access to safe perennial water supplies standing out clearly from the rest.

Box 5.2 Water sources used in Bikita District prior to the start of BIRWSSP
(an example of the data collected from the VBCI)

Boreholes and deep wells:	49%
Rivers	34%
Traditional wells	29%
Family wells in need of up-grading:	17%
Up-graded family wells:	7%
Springs	5%
Dams	4%
(the overlap in percentage is due to dual use of sources)	

Box 5.3 Comment on the value of project/programme databases

In a district wide project with specific coverage aims, a complete data set was important to the project planners and managers, as work could be planned and progress logged. Also important, the lack of progress in specific areas could also be highlighted for analysis, evaluation and future action (see Fig 5.5 sanitation performance).

Keeping the data up to date can be time consuming but if this is done, ongoing work can be followed quickly from the office, and support services made easier to administer.

5.2.8 Ward planning

The information collected during the VBCI was presented back to the community at ward level and discussed at open ward planning meetings of the ward development committee or WADCO, to which representatives of all the sub-villages, both women and men, were invited. At these gatherings the team findings were presented, debated, verified and challenged by local knowledge until a ward plan was agreed that proposed the allocation of new water points for communities. What would be expected from the communities in terms of suggesting sites for water points, clearing access routes for surveyors and drillers, making bricks and providing labour for construction activities was also outlined at this time. Once the ward plan was agreed with the community at the WADCO meetings, work was allowed to proceed.

5.3 Promoting ownership and efficiency through participatory methods

The use of participatory rural appraisal (PRA) methods for the collection of information, and of ward planning meetings to debate and decide the strategy in each ward, played a part in both introducing the project and institutionalising the ownership with the communities involved. Targeting according to need and demand is efficient, because resources are not wasted where they are not needed, and because demand ensures greater participation in construction and ownership in the final product, the new water scheme.

The use of participatory methods then continued with the training of communities. The emphasis was on educating, encouraging and empowering. Most practitioners in water and sanitation are familiar with PROWWESS and SARAR (Srinivasan 1990) (chapter 3.4). These approaches were adopted and adapted to suit the needs of the project, from the initial PRA work to the training of water committee members and community members in general. The strength of these techniques was the opportunity that they gave people to understand and take decisions that would affect their lives. Water and sanitation projects and programmes are far more likely to succeed in the long term if they adopt this approach to planning, implementation and long-term support, than if they either ignore or pay lip service to the voices of the people. Participation has to be real.

5.3.1 Three participatory training exercises

Included in appendix 5 are three general training exercises, which were amongst the most popular used by BIRWSSP. They were used in many of the training sessions, first to train trainers and then in the villages themselves. They are:

- The crossing the river exercise, used to emphasise the need for learning for oneself and not being carried by others
- The ant and the elephant exercise, to show the effectiveness of group solidarity
- The two donkeys exercise, used to illustrate and assist in training for conflict resolution

5.4 Technical water issues

In this section technical issues concerning water finding, drilling, digging, extracting and protecting are presented.

5.4.1 Groundwater and abstraction

The groundwater in Bikita is held in the regolith, a mantle of fragmented and loose material composed of alluvial deposits and weathered rock (Lovell 2000), and in the deeper fissures of the granite bedrock. It was in these two strata that the search for water was undertaken. Mechanically drilled boreholes had proven more reliable than hand-dug deep wells during the1992 drought, as they were often up to 20 meters deeper than the hand-dug wells. For this reason boreholes formed the mainstay of the abstraction technology, adopted by the project for communal water supplies.

5.4.2 Surveying for communal water points

Once a community had been targeted on the basis of its need for a new water point, three places were proposed by the community to find the site for the water point. These three locations were then surveyed by private sector water surveying companies, using electro-resistivity arrays. Careful use of the RDC's own trained personnel to assure that the testing company was doing its job correctly was found to be important. Overall the project achieved an 85% success rate using electro-resistivity methods. Later in the project, where the 15% of failures had occurred, divining was used to relocate sites for boreholes while the drillers were still in the area. With water divining the RDC then achieved a success rate of 10 successful boreholes out of 13 (77%) at the previously failed village sites. The diviners were paid a "bounty" if a hole they had divined proved to be successful and nothing if the hole was dry.

5.4.3 Electro-kinetic sounding

An experiment using electro-kinetic sounding (EKS) was also undertaken to find water. The theory behind this approach is that if a kinetic energy impulse is sent into the ground by hitting a circular steel plate with a sledgehammer, the impulse will cause any underground water it comes into contact with to vibrate. Groundwater contains charged

particles, and their vibration within the earth's magnetic field creates an electromagnetic impulse that can be measured using an array of dipoles connected to a personal computer.

The problem with this approach was that the success of the technique to find water, which it appeared to do, was not matched by the quantity of water it actually found. Thus when drilling on a EKS-located site only a thin perched aquifer was struck, which was of insufficient capacity to supply a handpump. This is mentioned to inform other programmes of the limitations of using this technique (Peart et al. 1997) and to contrast it with the results of water divining, which achieved a relatively high degree of success, mentioned above (section 5.4.2).

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5.4.4 Drilling with the private sector

The drilling work was undertaken by the private sector. On the awarding of a contract and the arrival of the company and its equipment, inspections were made of the materials to be used. For example: the thickness of the casing and screens and the type of slots to be used, the size and quality of the gravel pack and the performance of the test pumping equipment.

Special health education sessions were given to the drilling teams along with supplies of free condoms, to help to mitigate against the spread of the HIV/AIDS pandemic. Drillers were often known to socialise in the communities they were working with, and the measure was undertaken to protect them as much as the communities.

The drilling team were accompanied to the sites by project technicians and executive officers from the RDC. As part of the community contribution communities were asked to prepare simple roadways in advance of the arrival of the drilling rigs. Drilling was undertaken to a depth of around 50m with the first water strikes usually being hit at around 20m. Casing was installed in the unconsolidated layers of weathered granite, and slotted screens with a gravel pack were used for capturing aquifers encountered in this layer. Beyond 25m the rock was generally strong enough to be self-supporting. If this was the case the boreholes could remain unlined from here on to the base. Problems did on occasion arise during the first stage of drilling, especially with the sandy nature of the top layers, and it is worth noting the importance of the driller having sufficient quantities of wide diameter construction casing to protect the well head during drilling. These sections of casing could then be removed after the drilling had been completed.

RDC staff were assigned to drilling teams, not only to show the drillers where to go but to ensure that correct procedures were used. It was not uncommon to find drillers unequipped for the conditions they encountered, and having informed RDC staff on hand helped to ensure that work was undertaken according to plan and drilling progress was maintained.

5.4.5 Test pumping

After drilling a successful borehole an eight-hour test pump was followed immediately by eight-hour recovery test. The rate during the test pump was determined by the driller's assessment of output during the drilling. Discharge was timed and measured regularly throughout the test (using either a 20 litre bucket or a 200 litre drum depending on the rate), and water level draw down within the borehole recorded using an electronic depth tester. The results were graphed on a logarithmic scale to give an indication of aquifer properties. Measurement of recovery of the water level after the eight hours of pumping was equally important to "draw down" during the actual test, as it helped to show how well the borehole would perform in the longer term. Perhaps the best indication of performance was the time that it took for the water level to return to the static water level. Poor performing boreholes tended either to run out of water during the test, or fail to return to the static water level (SWL) after eight hours, indicating a restricted or perched aquifer. The object of the test pumps was to assess current productivity and to allow communities to make rational choices over the use of their water resources in the future, whether, for example, they might be able to use their water point for productive purposes, and whether higher capacity mechanised pumps could be fitted.

5.4.6 The use of extractable user friendly pumps

With both the boreholes and deep wells installed by the project, the open topped extractable version of the Zimbabwe bush pump were fitted. These pumps were considered to be more user friendly by their design than the original non-extractable version. The piston and pump rods could be extracted from the rising main without the need to take out the whole pump. This procedure is necessary to replace the seals on the

piston, and it means that seal replacement can be undertaken in a matter of 20 minutes by hand , rather than the non-extractable version which can take a full day's work and also requires the use of heavy lifting equipment including "shear legs", ropes and pulleys or block and tackle.

However, the jury can still be said to be out over the matter of the choice of technology, as the extractable version is fitted with nitrile rubber seals which need to be replaced far more often than the leather seals on the non-extractable bush pumps.

Box 5.4 Comparisons of bush pump seal life

Life time of extractable 50mm nitrile rubber seal = 1 to 2 years
Life time of extractable 63mm nitrile rubber seal = 1 to 2.5 years
Life time of non extractable leather seal (cups) = 1 year to 8 years
(one leather cup seal recorded as lasting for 12 years before the need for replacement, BIRWSSP)

The smaller diameter of the extractable pump cylinder (either 50mm or 63mm as opposed to 75mm in the non-extractable) also results in less water pumped per stroke (Erpf1998). This is especially noticeable to communities who had their old non-extractable replaced by an extractable pump. More information over the systems for maintenance of these pumps can be found below in the next section (4.5). Some of the trained community-selected bush pumps mechanics also seemed to prefer the non-extractable version, possibly because it gave them more work per session, involved more people in lifting the heavy pipes, and in doing so made them feel more important (Morgan 2000).

5.4.7 Head works for water points

The building of brick walls to surround water points replaced the earlier use, adopted by the District Development Fund (DDF) since the 1980s, of barbed wire fences. These had the advantage that clothes would not get torn when people came in to collect their water. Also, unlike the fences, the walls could not be stolen. The theft of wire had often been a problem, with many fences taken either piece by piece for making animal snares, or wholesale by more serious thieves. Prior to the BIRWSSP project 56% of fences on communal water points had been stolen (data extrapolated from VBCI 1996-1999).
The building of a concrete apron around the actual water point was to a standard design, with a channel constructed to take spilt water away from the water point to a soak away. Laundry slabs were also constructed to a standard design with four basins equipped with concrete washboards. Many of the laundry slabs were sited under trees as women usually selected the sites and preferred to have shade when they did the washing.

5.4.8 Environmental action planning and works

The wider environment around water points was also of concern, as a number of pre-project water points had been destroyed by gully erosion or swamped by sand and soil moved during floods. For this reason communities were encouraged to produce environmental action plans and to carry out works to protect their water points and the wider water catchment, where this was required. Agricultural extension workers advised communities on the correct location of works to protect the water points. Trees were planted, and contour drains and diversion ditches were dug, along with gully reclamation activities using biological control measures. Sisal and vetiver grass were planted across gullies to help in gully reclamation. Pits used for digging clay for brick making that were located close to water facilities were filled in and new pits kept away from watercourses. Much of the damage to the environment occurred during climatic events such as the January 2000 cyclone. At such times inundations of water caused considerable damage, washing away roads and causing landslides in the worst cases. Environmental protection measures installed by villagers appear to have helped to prevent greater levels of damage by diverting flood waters away from some more vulnerable water points. At the same, time at least one unprotected water point was completely destroyed, indicating the value of environmental protection measures.

5.5 Community-based management (CBM), and support systems

The principle of community-based management (CBM) was a Zimbabwe government policy introduced in 1996, and designed to put maintenance of water facilities more in the hands of the communities that used them. CEO of Bikita RDC, Johnson Mpamhadzi, when asked about CBM in 1999 said, “Once you give people the option to own their own borehole they take it (the borehole) as their own and maintenance of such will take long before it breaks down, because it will be theirs, it will be looked after” (Mahaka 2000). It could also be argued, however, that CBM was introduced in order that communities should take over more of the management and expense of maintaining their communal water points from the “three-tier” maintenance system, which the government was finding increasing difficult to afford.

The three-tier maintenance system involved a government department known as the District Development Fund (DDF) - Water Section and had been a feature of pump maintenance in Zimbabwe since the mid 1980s. The introduction of CBM was a prime feature of the national IRWSSP from 1996 onwards. The following section examines elements and issues of introducing CBM into the BIRWSSP.

5.5.1 Reform of the three-tier maintenance system, unresolved issues and problems

The three-tier government maintenance system for water supply in Zimbabwe has run since the mid 1980s.

- The first tier, made up of a three person water point committee including a pump caretaker, was responsible for operation and preventative maintenance and reporting breakdowns.
- The second tier consisted of mechanically trained “pump minders” who were paid by the DDF. They had two or three wards each to cover and were equipped with a set of tools and a bicycle to get them around. They recorded their repairs and reported to the DDF District office on a monthly basis.
- The third tier was the DDF district maintenance team, who were responsible for more major repairs. They also put together reports of repairs undertaken by the pump minders each month, and held stocks of spare parts for distribution to the pump minders.

The rationale of the three-tier system was that it attempted to merge the benefits of community maintenance with the resources of a central government department (adapted from Robinson 2002). Over time, however, maintenance had come to be regarded by community members as a government responsibility and very little ownership of the installations existed in the community.

5.5.2 Strengths of the three-tier system

The strengths of the old three-tier system were:

- By initiating the principle of community involvement in maintenance and repair work it laid the foundations of CBM.
- The professional DDF pump minders, who, day in and day out, were undertaking repairs of pumps in the communities, had as a result gained much skill and ability in their work. As a support system for the communal water supply it was close to ideal, as it was cheap to operate, and effective when properly funded.
- The availability of spare parts while the DDF had been properly financed had been of great value. The collection of information on the numbers of repairs undertaken by the DDF has provided a useful indication of the performance of water pumps and the state of the service being provided to the community.

5.5.3 Weaknesses of the three-tier system

- One weakness of the three-tier system has been its reliance on a central government department to fund and operate it. By 1997 the budget of the DDF water section had been slashed by central government to 37% of what it had been in 1990 (Robinson 2002), and this situation continued to get worse. This meant that in Bikita, the DDF water section no longer had its own working transport or stock of spare parts. Essentially its role had become one of training provider to BIRWSSP, with less and less ability to function independently. DDF on a number of occasions failed to pay the wages of the pump minders. This task was taken on by BIRWSSP on a temporary basis, as the pump minders also had a role in providing training to the new CBM bush pump mechanics.

- As the spare parts stocks dwindled a further strength of the three tier system ebbed away. The RDC has shown that parts can also be sold to communities, however, the present economic collapse is making these parts increasingly difficult for communities to afford.

With the change to a policy of community-based management, it must be questioned whether the DDF role might have been better performed by the RDC, and the whole department transferred to its management. This would have allowed greater coordination with the linking of information on sales of parts, with information on the use of support services by pump minders under the employment or retention of the RDC. For its own reasons, however, central government retained the DDF under central control and has continued to limp along, sometimes finding funds to pay the wages of the pump minders and more often not doing so. The rhetoric of decentralisation has not been matched by effective action, to allow the RDCs to fully manage this essential service.

5.5.4 Large number of community members trained in CBM

The move to community-based management sought to put the ownership in the hands of the communities themselves. To this end BIRWSSP endeavoured to train large numbers of newly elected committee members in new and re-formed water point user committees. It also trained at VIDCO level, teams of elected bush pump mechanics who would be available, within the community, to undertake repairs for a small payment in cash or kind. The idea was that down time for pumps would be reduced significantly because of the large number of mechanics available. Tools were also made available at VIDCO and ward level. A supply chain was put in place using the commercial outlets of the RDC and the councillors, who retained small stocks of spare parts for sale at ward level. Some local shopkeepers also stocked spare parts.

Opinions amongst villagers about CBM differed. The following responses from female members of the Urayai water point users committee in Ward 19 show knowledge of their roles and commitment to their scheme:

Box 5.5 Members of a water point user committee on their responsibilities (Mahaka 2000)

Health representative: “I am responsible for hygiene, I mobilise the community to use the water point properly and keep it clean”.

Secretary: “I am the secretary I write down everything that we discuss at our meetings, I note down the money that is coming in and going out”.

Security: “I am the security here, I am the eyes of the community making sure that the pump is well taken care of and no parts are stolen. If there is work to be done, I check that the people are working together”.

Treasurer: “I am the treasurer, if money is collected I look after it”.

Local Village Pump Mechanic, (living in the area but not on the committee): I was voted in as one of the pump mechanics for the Vidco, when the pump breaks down we are called in. We dismantle it (the pump), pull out the rods and check to see what is wrong, and fix what ever is broken”.

Other responses to the introduction of CBM were not always so positive, however, and a female interviewee at Nzwiso water point in 2002 was recorded as saying, “The borehole was owned by DDF, but now they say they don’t have money, so it has been thrown to the community” (field notes).

5.5.5 Problems with CBM in Bikita

The down side of this new approach, as indicated in the last quote, was that while CBM worked well in some areas of the district, it did not in others. The bush pump is a robust piece of machinery and requires very little maintenance, especially when it is new. The newly trained bush pump mechanics were thus not always getting as much practice as they needed to help them remember what was required for making repairs. In some areas there was also reluctance on the part of water users to pay the newly trained bush pump mechanics to repair the boreholes. This was made worse by the drought and general economic collapse, which made even payment in kind a real problem for communities. The CBM concept is still in place, though it has required the support of the old DDF pump minders and the RDC to keep it going.

5.5.6 Retaining pump minders in support of CBM

The confusion at national level over how to take forward the District Development Fund's (DDF) water supply support function remains. The need would appear to be to handover the function to the RDCs, along with whatever equipment and funds remain and let the RDCs decide rationally how to retain the pump minders. This appeared to have been the direction the government was prepared to take as early as 1997, but it has for its own reasons (possibly its lack of faith that RDCs could undertake this role) been unable to actually do this and so the confusion has continued. The total wage bill for the pump minders in Bikita is equivalent to one bottle of Coca-Cola per year per household across the district. This remains an affordable cost for an RDC to raise from local taxation or other means. The district "development levy" tax revenue could, for example, be a source for this funding. The RDC's participation in the Save Valley Conservancy (a private conservation/hunting area) is also raising revenue that could be used to help pay for this service, and other districts may have similar independent sources of revenue that could be tapped to pay for this vital service. It may be argued that if local government cannot manage to help communities maintain a utility as important as water, what is their function at all?

5.5.7 Scaling up and support systems

Some level of support services for CBM are required if village water supplies are to be maintained. In considering what this is to be, it is important to look carefully at existing systems and see what is good about them before getting rid of them, and thus not to "throw the baby out with the bath water"!

In the case of Zimbabwe this responsibility would appear to be the RDC's so that community-based management (CBM) is supported by:

- a professional team of locally available pump mechanics (minders);
- a supply chain of spare parts for sale.

Scaled-up water supplies require scaled-up support services. From the experience of Bikita, the RDC is the logical home for these services, but time has yet to tell whether this will actually happen.

5.6 Health education

Health and hygiene education have all too often been peripheral to water and sanitation work. Theoretically important because of the need for communities to make the most of new infrastructure, health education has been difficult to implement, with the effect that little gets across to the population at large. One of the most exciting aspects of the BIRWSSP in terms of implementing health education has been the adoption of the “health club” methodology. The following section tells the story of this adoption and how it transformed health education in the district.

5.6.1 Health clubs, learning from Makoni

The need for community health education was stipulated in the project design document, but with delays in funding, it was to take a year before a strategy was adopted to make the health education element of the project operational. The breakthrough came in early 1997 when a visit by the Bikita District health education officer, assistant environmental health officer and the project adviser, was made to a UNICEF-sponsored project in Makoni District. This pilot project, which was being implemented in three wards by the Zimbabwean NGO “Zimbabwe Ahead”, was immediately obvious by the active participation of villagers, as a new and exciting way of effectively implementing a community health education programme.

5.6.2 Health clubs, what they are

The health club approach revolved around community health clubs formed at village level, where villagers were encouraged to join a structured weekly course of participatory health education classes (Waterkeyn 1999). These were run by Ministry of Health and Child Welfare (MOHCW) ward level environmental health technicians (EHTs). As part of the process each participating community member was given a membership card. On the front of the card was a line for the name of the member and the group, and inside 15 health topics were printed. The topics ranged from germ theory and oral rehydration solution (ORS) preparation, to HIV/AIDS. On the back of the card were a number of activities to undertake at home, such as building a latrine, erecting a pot rack, using a covered container for storing drinking water, and having separate cups for each member of the family to drink from. At each weekly session one of the topics would be taught and discussed using what came to be known as PHAST, or participatory hygiene and sanitation transformation techniques (UNICEF 1998). At the end of the session the relevant topic section in the membership cards would be signed off by the EHT to show that the member had participated (see appendix 6 for full details of the health club membership cards). Each health club might have as many as 60 to 80 members attending

each session, sometimes even more, with improvements in knowledge and practices of health and hygiene at the home the principal aim.

5.6.3 Health clubs, training of trainers

The health clubs in Makoni District were clearly exciting and enjoyable for all involved and the decision was made to adopt them as the health education methodology for Bikita District. The ward level MOHCW environmental health technicians, along with some of the nurses stationed at the rural health centres, were given training in how to run community health clubs using the PHAST methodology.

5.6.4 Health clubs develop a life of their own

Health clubs were then set up in all the wards of the district and proved an immediate success. Rural life does not offer too many distractions and the clubs provided a chance to socialise and at the same time be educated in a practical way. The original plan was that each club would operate for the coverage of the15 health topics and the home improvements and then the EHT would move on and set up a club elsewhere. What quickly became apparent was that the health clubs were generating a life of their own, and the members wanted to keep their health clubs going. Village community workers (VCWs), who received a small stipend from the MNAECC, had usually joined the groups because as volunteers in the community they generally enjoyed getting involved in mobilisation efforts and felt it their duty. These VCWs were then given additional training so that they could take over the running of the existing groups, while the EHT moved on to the next area. Repeat sessions could thus be held for those who had missed sessions or just wanted to go over a topic again.

5.6.5 KABP study and evaluation of the health clubs

The rapid rise in the popularity and success of the health club methodology is illustrated fig 5.2. Its effectiveness was also tested two years after the clubs were started with a knowledge, attitudes, behaviour and practices survey (KABP). This survey showed a marked change in health knowledge and practices amongst the adult participants (Mathew et al 1999).

The study took a risk-based approach, focusing on the health and hygiene risks which people are facing, so that the impact of the health clubs could be assessed and the outstanding risks targeted. This was approached both in terms of people's knowledge, their lack of knowledge, and their practices in the home, at school and at social gatherings. A combination of qualitative and quantitative methods was used including the following:

- Focus group discussions amongst separate groups of men and women in the health club and control areas using the risk-based check list questionnaire, described later in this section, to semi-structure the discussions and allow group scoring (appendix 7). Around 10-12 adults attended each adult FGD.

- Individual interviews were also undertaken using the risk-based check list questionnaire. A total of 233 interviews were undertaken including 115 adults, 54 secondary school students and 64 primary school pupils.
- Observation with home visit check lists.
- Random selection of interviewees and home visits by selecting every third house. Adult respondents interviewed at home, child respondents from study areas selected at random by their school teachers.
- Video recorded debriefing discussions with the study team.

Four villages were targeted for the survey in four different wards of Bikita District. Two of the villages had no health clubs and acted as the control, and two of the villages were chosen where health clubs were present and had been active since 1997.

The study can thus be said to conform to the Loevinsohn criteria for studies of health education interventions, in that the design for the study was controlled and randomised using an adequate sample size, examining objective changes in knowledge and behaviour; interviewer bias was controlled for; and the method is repeatable (Loevinsohn 1990). Changes in morbidity and mortality could not be ascertained from clinical records as these covered larger areas than the study took into account and could not be broken down to the individual health club areas.

The interviews and focus group discussions (FGDs) were carried out in the following locations:

Table 5.1 Location of KABP study areas

Ward	VIDCO	Health Club / Control	Secondary schools	Primary schools
16	Matema	Health Club	Chikwira	Chigumisirwa
1	Tafara	Health Club	Tabudirira	Magocha
20	Rusununguku	Control	Tafera	Nebarwe
5	Munanga	Control	Simbaravanhu	Marecha

The study team was recruited from other districts in the province in order to avoid bias; all were mature trained health workers with knowledge of communities and local conditions, which might not have been the case with students. A gender balanced team (four men and four women) undertook interviews and focus group discussions; the male team members interviewed men and boys and the female team members interviewed the women and girls. This was found to be the best way to get people to open up and tell what they knew during the pre-test. It was interesting to find that men said that they felt intimidated if women were present during their sessions.

The time period allocated was sixteen days. Two days were spent doing a pre-test of the check list questionnaire, another day orienting the team, and then three days spent in each village undertaking the questionnaires and focus group discussions (FGDs), with a

weekend day visiting social gatherings. Debriefing and discussing the results of the observation sessions took a further three days.

The quantitative methods adopted revolved around an 84-point knowledge check list/questionnaire, a 17-point home visit observation check list and a 15-point school visit observation check list. The majority of the questions were scored as follows:
(A) for an unprompted risk identification at interview, or healthy behaviour during observation
(B) for a correct prompted answer with a correct explanation
(C) for unidentified risk/incorrect explanation during interview or risky behaviour during observation
To get a (B), correct explanations were sought to avoid the problem of team members misunderstanding responses during prompting by recording knowledge when respondents were simply saying “yes” to every question without understanding it.

The qualitative side of the survey used focus group discussions and visits to social gatherings such as beer parties and church groups, though check list s were also used to guide the researchers during the visits and aid the record keeping. Video and group work was used in the debriefing sessions to record as much as possible from the researchers’ observations and insight.

5.6.6 The results

The results from the quantitative side of the survey were entered into a computer using the Excel spreadsheet, and graphs were used for illustration and analysis. The results are presented in Figs: 5.3, 5.4, 5.5, 5.6, 5.7 and 5.8.

The subject areas in fig 5.3 refer to knowledge of risks grouped under personal hygiene, water collection and storage, malaria, food storage, social gatherings, sanitation, bilharzia, unhygienic related disease identification, sexually transmitted infections (STIs), STI disease identification, with the last section showing the overall average result. The subject areas are graphed in the order they were asked.

The graph clearly shows greater knowledge amongst health club members as compared with the control group. Most marked is the knowledge of water storage and collection (with an increased knowledge rating of 55% for the health club members over the control group), though a generally higher level of health knowledge among the health club members exists throughout the subject areas. The average difference in ability to correctly identify health risks without prompting was 12%.

The results from the focus group discussions were also tabulated and are displayed in fig 5.4. The general level of health knowledge appears greater for both the health club and control groups, as the highest common denominator effect applies. The results reflect the best of the focus group’s knowledge as a whole, rather than the results of the individual

interviews, where the knowledge of individuals is better reflected. Again a significant difference in knowledge of health and hygiene risks is shown on the graphs with the health club members showing a significantly higher level of knowledge, with on average 23% more health risk identification.

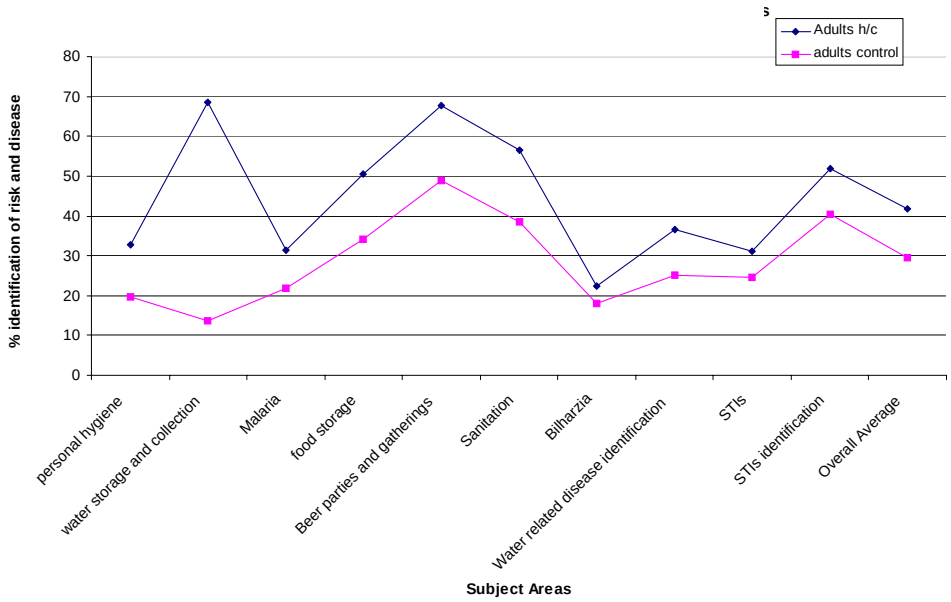


Fig. 5.3 Comparison of health risk and disease identification, between adult health club (h/c) members and the control group (individual interviews).

Information from the survey was fed back to the EHTs to give a greater understanding of the impact of their work at the health clubs and to assist them to focus and target more effectively in areas such as bilharzia, personal hygiene and sexually transmitted infections (STIs)/AIDS.

In fig 5.5 a number of individual risk factors have been isolated, to show the percentage of unprompted risk identification responses by people in the health club area and the control area.

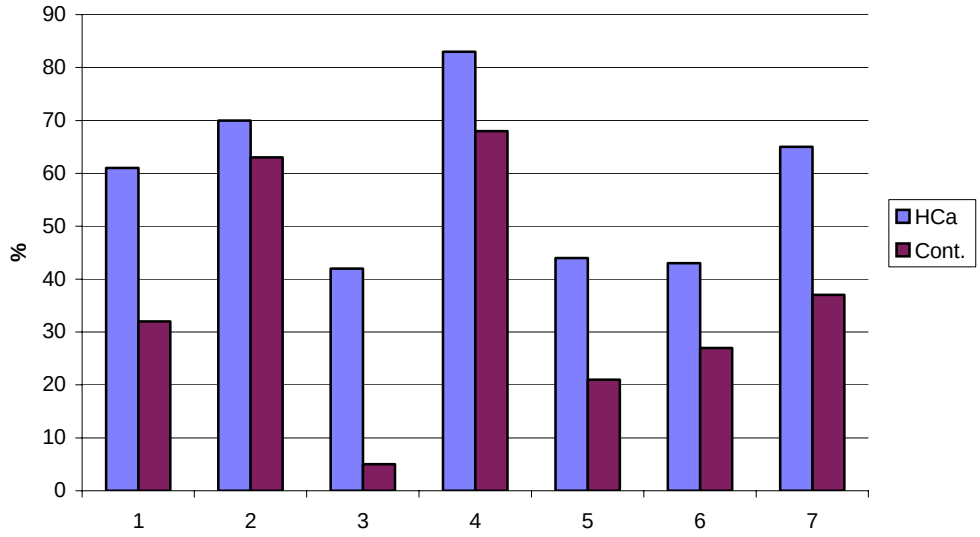


Fig 5.4 A selection of risks identified by respondents without prompting with comparison between adults in health club areas (Hca) and the control area (Cont.).

The risks are as follows:

1 = not wasing hands after visiting the latrine,

2 = not washing hands before handling food

3 = not having separate cups for drinking water,

4 = using streams and rivers for drinking water

5 = not covering faeces in the fields

6 = leaving children's faeces in the yard

7 = having sexual intercourse with prostitutes

The most pronounced difference in knowledge is using separate cups for drinking water (risk 3), which is one of the health messages specifically promoted by the health clubs. Changes in knowledge were, however, not always so pronounced. Awareness of the risk behaviour associated with bilharzia was found to be low both in the health club group and the control group, with only 4% difference in knowledge between the groups (fig 5.3). The bilharzia risk in particular needs to be addressed, as 4,519 cases were recorded at clinics in the district during 1998. An example of an STI indicator is given by risk 7 and shows that health clubs may be having some impact in this vital area. With HIV/AIDs now the new number one killer in Africa and average life expectancy in Zimbabwe down from 60 to just 39 years (UNAIDS 2002) it is important that health education is not restricted to purely hygiene-related topics.

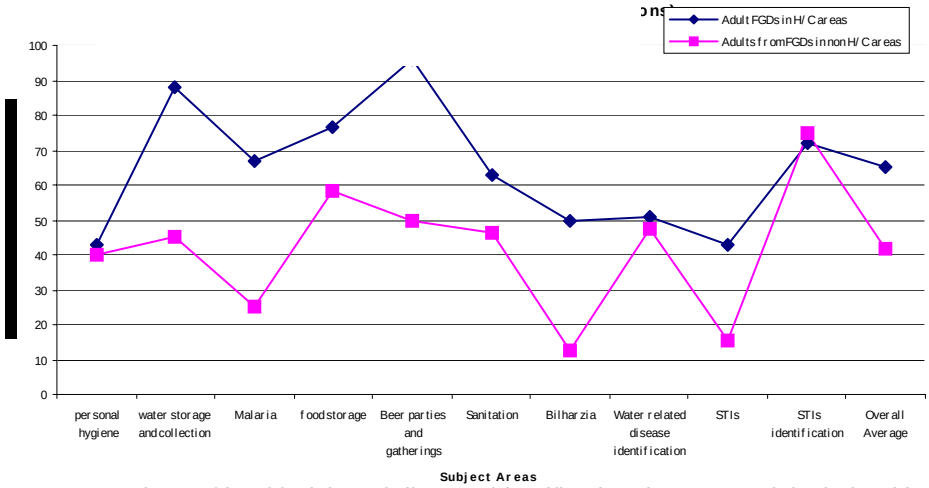


Fig 5.5 Comparison of health risk and disease identification, between adults in healthclubs (H/C) and control areas (focus group discussions).

The graphs above effectively refer to knowledge of health risks, but what of practices? Have these been changed by the health clubs? In fig 5.6 hygiene risks observed at households are shown. The higher percentage indicates the greater risk. The beneficial effects on behaviour change, in areas with health clubs is evident with generally a higher level of risk identified in the control area. Health clubs are thus shown to be having a beneficial effect on behaviour change as well as knowledge.

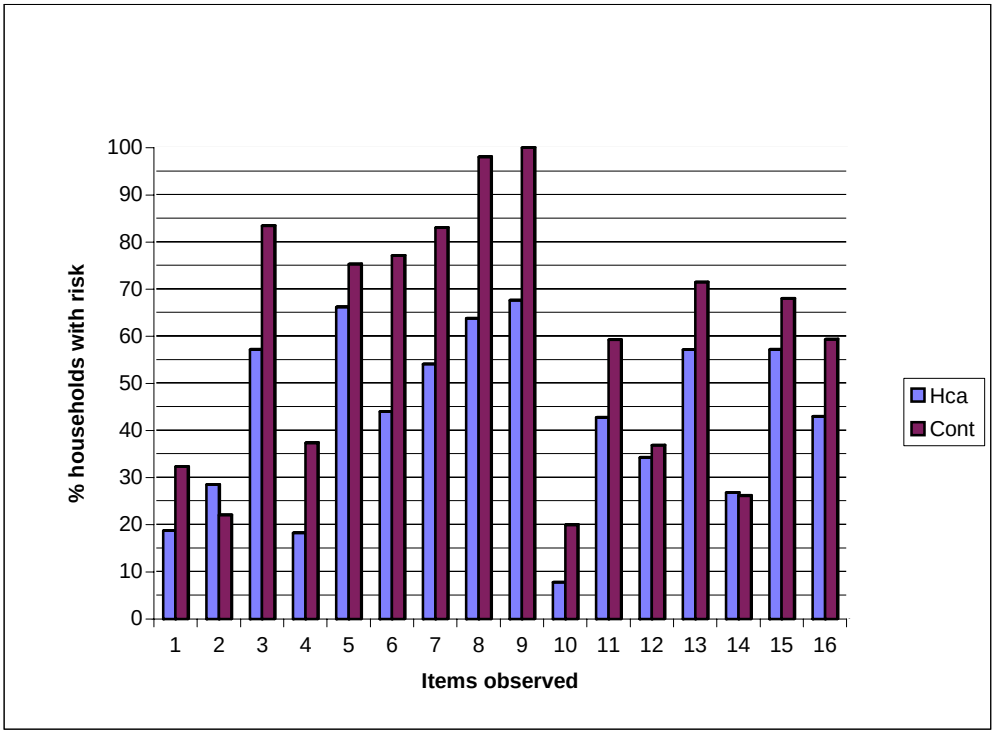


Fig 5.6 Hygiene risks observed at households, with a comparison risks between at households in health club areas (Hca) and in the control areas (Cont).

Hygiene Risks:
1 = no refuse pit.
2 = no pot rack.
3 = no individual drinking cups.
4 = no covered water container.
5 = no water ladle.
6 = no latrine.
7= children not using latrine.
8 = no hand washing facility at latrine.
9 = hand washing facility not being used.
10 = clean home.

The observations and questionnaires at the schools showed more knowledge in the health club villages for both secondary and primary school pupils in the subject areas of personal hygiene, water storage and collection and sanitation (fig 5.7).

When all the results are combined together on one graph (fig 5.8), a comparison can be drawn between school children and adults in the health club and control areas. Primary school students from the health club areas are shown to exceed not only their counterparts at school, but also the adults from the non-health club (control) areas, in knowledge of these three subjects areas.

Generally the most striking factor between the health club and control groups, whether adults or children, is knowledge of water storage and collection, which appears uniformly strong amongst the adults, secondary and primary school children in the health club areas. What is also obvious is the uniformly low position of adults in the control areas, which only exceeds the knowledge of school children in the identification of STIs. Whilst the latter is not surprising considering that adults would have a greater likelihood of having encountered STIs than children, their general poor level of health knowledge emphasises the need for adult health education.

The results of the visits to social gatherings such as beer parties and church meetings were also revealing and important. Health and hygiene risks are a major problem at these gatherings as evidenced by cholera outbreaks in the district. The difference in behaviour at gatherings between control and health club areas was less apparent than the evidence revealed through interviews, visits and focus group discussions. Lack of facilities at the gatherings resulted in unsafe practices, such as defecation in the open, and little or no attempt at hand washing, or the effective cleaning of beer mugs and other utensils. More worrying, however, were the high levels of promiscuity and it is difficult to see how health clubs can hope to overcome this on their own.

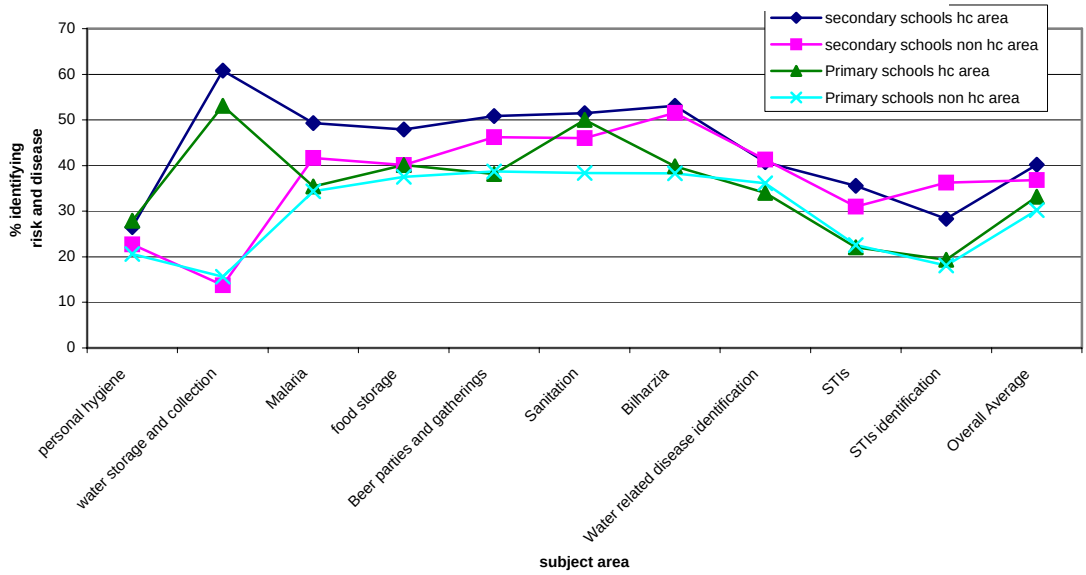


Fig 5.7 Comparison of health knowledge amongst school children between health club (hc) and non health club areas.

From the evidence of the KABP study undertaken in Bikita we can see that health clubs are a successful method of promoting health and hygiene education, resulting in beneficial behaviour change. More, however, needs to be done building on this technique to improve the lives of rural Zimbabweans.

5.6.7 School health clubs and promotion of hand washing with soap

A direct consequence of the KABP survey was the launch of the school health clubs initiative in the district in 1999. In the following two years an active programme of training for teachers from all of the district's 86 primary schools and 36 secondary schools took place. Teachers from every primary and secondary school in the district were invited to attend a series of workshops to learn the PHAST techniques and use them in setting up health clubs for their schools. Unfortunately to date no funding has been available to undertake a repeat KABP to assess the impact of this work.

As a means of putting into action the theories of hygienic behaviour promoted at the school health club sessions, hand washing water tanks with taps were built at a number of participating schools near to the toilets to encourage hand washing after defecation.

Box 5.6 Using what is there - soap for hand washing at schools

A useful technique for encouraging the use of soap was tried out successfully as part of the BIRWSSP health and hygiene campaign at schools and is included here for others to try.

At the end of term the head master of one of the primary schools in the district asked his pupils to bring back to school the small pieces of soap often left over from their mothers' laundry, after their holidays. The result at the beginning of the next term was that enough soap was collected to provide soap every day at the hand washing tank for the whole of the following term.

This kind of self-help technique was more valuable than any gift of soap could have been. It promoted action learning, resulting from the effort the children had made to collect the soap and then use it after they had been to the toilet to wash their hands. The practice was sustainable and unlikely to be forgotten by the children.

5.6.8 The future of health clubs threatened

The politics of the last few years in Zimbabwe, since the run up to elections in 2000, has been volatile, and the economic collapse is devastating to the lives of millions of rural and urban Zimbabweans. People from rival political factions have intimidated each other and Bikita has suffered in common with much of the rest of the country. In this situation any gathering of people for innocent purposes, such as at the health clubs, can become a target for political groups and a risk to the members concerned. Health club membership during these periods of instability has not surprisingly dropped and many clubs have gone into deep slumber, some ceasing to function altogether. Some, however, are still active and one can only wonder at this. Scaling up water, sanitation and health education is problematic at such times. Across Zimbabwe WATSAN projects have folded as donors have withdrawn their funds because of the political situation.

Another area of concern is the morale of the people. It is difficult to mobilise vision and enthusiasm about health education, improved water supplies and sanitation if people are worried about where their next meal is coming from, or whether attending a gathering to talk about health topics may put them in personal danger. The people need better than this and it must be the duty of politicians to resolve such problems, so that the development of progress to a better, healthier and happier tomorrow can be assured.

As an issue for water and sanitation across Africa and the rest of the developing world, it is worth considering the price that the people have to pay during times of political and economic instability and the difficulty that this presents any attempt to scale up access to WATSAN.

5.6.9 Health clubs: a relevant approach for scaling up

Having said this, and given the right conditions, health clubs for adults and children are clearly an exciting and relevant approach, to be considered by those looking at ways to

scale up access to health education in the wider developing world. This is because health clubs:

- excite interest and mobilise communities;
- offer a structured course, leading to increased knowledge and changed behaviour;
- provide practical advice on affordable improvements to the home;
- can be implemented by existing health staff and community volunteers;
- are cost effective to implement.

5.7 Approach to sanitation

The sanitation side of the project was informally related to the health clubs. The logic was that if people were to benefit from having latrines at their households they should understand fully the need for having them. This would in turn lead to people being:

a) enthusiastic to build the latrines;
b) likely to use them properly, encouraging children to use them;
c) likely to rebuild them at some future time when their design life had run out and the pits had filled up.

Through the health clubs the sanitation ladder[12] was introduced, with the simple "cat method"[13] advocated for those with no other alternative. A series of models of increasingly improved latrines was discussed with the use of pictures printed on A5 size cards. In practice the four-bag Blair ventilated improved pit (VIP) latrine was adopted as the latrine of choice, the Ministry of Health and Child Welfare (MOHCW) rejecting simpler and cheaper designs as inferior and unacceptable (see section 5.7.3).

5.7.1 Latrine building

The training of trainers, latrine building course was provided by Mvuramanzi, a local NGO with a proven track record in sanitation and community water supplies. The type of Blair latrine adopted for the project was the four-bag Blair VIP model. This reduced the cement required for construction from the standard six bag model to just four bags and made it a more affordable option. The four-bag model had a hand washing facility, a small concrete tank with a 3mm brass pipe leading from the base as a tap and plugged with a bird's feather. The hand washing facility proved a very popular and useful addition to the standard VIP design. If the tank was filled with water every morning and soap used, it made the whole package an excellent and hygienic addition to a rural home.

The cost of the construction of the Blair latrines was shared by the householders and the project. The project provided four bags of cement, a piece of reinforcement mesh for the base slab, a chicken wire square for the roof slab and a piece of fly screen for the vent

[12] The sanitation ladder is a participative approach to sanitation promotion in which alternatives for household sanitation are discussed and ranked by participants on a ladder of aspiration, with the ultimate choice, usually a VIP "blair" latrine at the top.

[13] The "cat" method is the simplest form of improved sanitation, and therefore usually placed at the first rung of the sanitation ladder, the faeces being buried as a cat buries its midden.

pipe. The householder had to dig a circular pit 3m deep and 1.3m wide, collect 1/4m³ river sand, 3/4m³ pit sand, make 1,500 bricks and pay the builder (Morgan 1995), usually $10 equivalent in local currency, or with payment in kind. This is a substantial investment in both time and money and requires the householder to really want to own a latrine, as well as to be able to afford the inputs. Work with health clubs in Tsholotsho also came to a similar conclusion, though there an even cheaper design using just three bags of cement was adopted (Waterkyn 2000).

5.7.2 Women latrine builders

One of the most exciting new developments in latrine construction came with the training of women as latrine builders. The EHTs who were undertaking the training found that women trained in latrine building preferred to work in teams. They also worked faster than the men who tended to prefer to work alone. Members of each female team did not charge each other and so reduced the cost of the latrines to each other. Interviews with female latrine builders also revealed that money they made was kept in the family and often used on the children's education, while the men kept a higher proportion of their earnings to themselves and presumably spent a significant amount on beer. Beer drinking amongst men is a highly popular afternoon activity in the district on almost any day of the week. The women's teams also used all four bags of cement in the latrine construction, whereas it was not uncommon for the male builders to siphon some of the cement away for other purposes, thus weakening the structures. By 2001, a year before the end of the project, 26% of the latrine builders were women.

By training women to become builders the effect was twofold, increased construction productivity was matched in importance by the increasing self worth and solidarity of the women team members. The same was also found amongst the CBM bush pump mechanics, half of who were also women. As a factor for scaling up, challenging gender stereotypes can release untapped resources and at the same time help empower the often forgotten other half of rural populations, who "hold up half of the sky" (old Chinese adage), the women.

Box 5.7 Interview with female latrine builder Mrs. Masuka (Mahaka 2000)

5.7.3 BIRWSSP The experiment with the ecosan "arbor loo"

The project experimented with one cement bag options with the arbor loo environmental latrine (Morgan 2004), the simplest form of environmental sanitation or "ecosan". Basically this was a standard Blair latrine slab, fitted over a shallow 0.5m deep hole in the ground, with a simple reed or grass surround. The idea was to move the latrine each time it filled up (every couple of years or so) and plant a fruit tree in the pit. Household cooking ash and grass had to be added each time the latrine was used to prevent smells and the breeding of flies, and to build up usable compost. Eight of these trial latrines were built without payment by health club members at the homes of old or very poor people in their neighbourhood. The pilot never caught on, however, as policy makers from national level disapproved of them and made this clear to the District MOHCW. The technology of the Blair latrine is well understood and respected in Zimbabwe; it is also aspired to by many, as well as being the national standard for rural areas. Perhaps for this reason also it was an uphill struggle to introduce something that was regarded by some as a poor substitute. The fact remains, however, that even though the project exceeded its target and reached 40% sanitation coverage, 60% of the rural population remained without safe sanitation at the end of the project. In the present economic climate it is difficult to see how these people will gain safe sanitation, without the widespread use of more affordable alternatives (see chapter 2.4.2 for more information on ecosan).

5.8 Family wells

The project assisted individual families who had their own household wells to upgrade them. Training was provided to the latrine builders to undertake the work. For each participating family well owner, a small amount of reinforcing wire, three bags of cement, a windlass and a lid were provided by the project. The cost of digging the well, paying the builder and purchasing the bucket and rope was left to the householder to raise for him or herself. Although family wells were usually only owned by one family, they were often used by four or five families for their domestic water, it being culturally unacceptable to deny water to a neighbour. Owners also often used them for watering their vegetable gardens, though this productive use was not extended to neighbours.

Family wells had the advantage that their ownership was clear and maintenance was up to the owner to organise. There were, however, also disadvantages, for example the wells, which were sealed with a tin dustbin-type lid, were effectively open for some of the time and thus more liable to contamination (especially from dirt on people's hands entering the well via the bucket), than the closed communal water points with fitted bush pumps. The ownership of the family wells also tended to be with the wealthier members of the community, who could afford to build the well in the first place. It could be argued that the intervention was not especially pro-poor, though once built all had access to them, as it was culturally unacceptable to deny water. Other disadvantages were that shallow groundwater was not available in all locations. This was indicated by the fact that only 24%

of the population claimed to be using them for their domestic requirements. They also were more prone than boreholes to run dry in a drought, being generally of shallow depth. As a scaling up issue, family wells are worth considering elsewhere, especially where reliable water at shallow depths exists, though issues of access for the poorest in the community will still need to be addressed for both domestic and productive use.

5.9 Productive uses of water

In August 2000, BIRWSSP started a pilot project[14] to diversify livelihood strategies and move away from valuing water solely for domestic purposes. Recognising that many boreholes had a capacity to deliver more water than was needed only for domestic requirements, 33 three communities, already successfully running their high yielding water points, were offered the chance, where land was also available, to set up gardens and grow vegetables communally, using water from the water points for irrigation. The 2002 drought and economic collapse made the productive use of water and the ability to grow food under small scale irrigation, of particular significance to the population of the district (Mathew 2003).

Research undertaken by the author in 2002 evaluated how important the productive water point (PWP) gardens were to those who are working in them and their families.

- Examining the processes that have allowed the gardens to be sustainable, including how collective ownership has been important to their management.
- Questioning what impact the use of community water supplies for irrigation has on wear and tear of the pumps.
- Asking what lessons might be passed on to communities in other places where rainfall is unreliable, but where existing communal water supplies can do more than provide for drinking, cooking and washing requirements.

In evaluating how important the productive water point (PWP) gardens are to those who are working in them and their families, this research has shown that the PWP gardens are of great importance. They are not only a coping strategy, but have become a newly established means of production within the communities, which seems likely to be perpetuated to the betterment of the lives of the garden members and their families. Furthermore this intervention has been pro-poor, assisting the poorest members of the community more than the wealthy.

The processes that have allowed the gardens to be sustainable have been related to collective ownership and the development of a common purpose. Recognition within communities of the value of a social capital that materialises for those that are willing to work collectively, has itself been an incentive to work together and make the PWP gardens function. The unity amongst members, which exhibits itself in joint working on plots, sharing of inputs and management duties is inspiring and offers a ray of hope in an otherwise depressing political and economic environment.

[14] The full research report on productive water in Bikita is in the Chapter 6.

The impact of the use of community water supplies for irrigation on the wear and tear of pumps is recognised as an issue of importance. Communal use of the pumps for gardening as well as for domestic requirements is, however, likely to increase the perceived value of the installations in the eyes of the community and this may lead to increased community contributions, especially from garden members, when the need arises to undertake repairs. Increased focus on what communities can do for themselves should not, however, abrogate district authorities from their responsibilities to provide a safety net in the form of trained personnel and a supply chain of spare parts, to help communities keep these installations working.

If we ask what lessons might be passed on to communities in other places where rainfall is unreliable, but existing communal water supplies can do more than provide for drinking, cooking and washing requirements, the answer is simple, such water supplies can if the conditions are right be used for productive water point gardens. And what are the conditions?

- Communities must be fully involved from the outset and empowered to take advantage of what is available, in a spirit of unity and equality.
- There must be full agreement of all parties prior to work commencing over the change in the use of the land, and all plots held by members within the garden should be of the same size.

In terms of scaling up water and sanitation projects, productive use of water offers a new perspective to WATSAN interventions. Up to 30% of the BIRWSSP water points exhibited such a possibility from the perspective of water capacity and sustainable aquifer yield, given the current use of handpumps for water abstraction (which limits abstraction rates to around 0.25 litres per second). The possibility thus exists providing the other criteria of institutional capacity and available land are met, for around 150 gardens at productive water points in the district, offering enhanced livelihoods to as many as 23,500 people or 12% of the district population. By undertaking pumping tests at water points the scope of this possibility can be technically ascertained and either used for future planning purposes or incorporated into existing programmes. With more boreholes being used for productive purposes the importance of looking at sustainable aquifer yields increases. This will be especially so if mechanical pumps are fitted to the boreholes with greater discharge rates.

This element of BIRWSSP really only touches on the possibilities of productive uses of water, but it is a start. Scaling up water and sanitation may need to address the quality of the scaling up as well as the quantity, and in doing so rethink basic needs (Moriarty et al. 2003). To encompass the productive benefits of domestic water supplies is a next step in enhancing the benefits to be gained from improved water supplies.

The full details of the 2002 research on “the ownership and management of productive water point gardens in a time of drought”, can be found in
chapter 6.

5.10 Training in BIRWSSP

Training was offered to the staff and community in various ways during the course of the project. Arguably the most important was for the fieldworkers from the health and agricultural extension departments, who were based at ward level. These were the foot soldiers of the project. Knowing their wards intimately, they were at times included together in integrated training sessions and sometimes separated for specific courses related to their specialities. Examples of such training included training of trainers courses on health club training, latrine construction, environmental action planning, water point user committee training for the community-based management of water points, and gender awareness training. These courses not only trained staff in the techniques that were needed for project implementation, they acted as team building and morale boosting exercises. Participatory approaches were promoted throughout with the use of role-plays, to brainstorm and test out which techniques would be used in the field, and then again in the field to help villagers find their own ways to implement community-based management.

5.10.1 The use of outside trainers and of targeting training

Trainers from outside the district were used alongside district trainers in many training sessions. The outside perspective offered by these trainers was often as useful as the new knowledge that they were bringing to the sessions themselves, as they could look at the situation from a new angle and enliven debate. As important was the need for properly targeting the training to those who would actually be using it in their work. This may seem obvious, but a national effort to introduce an excellent range of PHAST-type health education training materials to the district a year prior to the start of BIRWSSP was targeted at administrators and as a result nothing came of it. To use a biblical analogy, ”the seed fell on stony ground”. Having good training materials is important, but they must be targeted if they are to yield useful results.

5.10.2 Distance learning courses and IWSD

Apart from on- the-job and in-house training, one fieldworker a year was sponsored to go on the three-month diploma course in water supply and sanitation at the Institute of Water and Sanitation Development (IWSD) in Harare. The officer was chosen on the basis of performance during the previous year. This was something of a reward for good work. Participation for senior staff in a number of distance learning courses was also supported. Courses included a diploma in transport management for the Transport Officer, help toward charted status for the Finance Officer and the Internal Auditor, and a Masters course in development management undertaken by the Chief Executive Officer. Distance learning courses have the advantage that the officers remain in post during their studies, and have the chance to apply what they are learning directly into their work. There is also less danger of the “training and vanish syndrome”, where a staff member is sent away for training and never returns, having found pastures greener while at college.

5.11 Management issues

This section examines procedures and issues concerning project management in the Bikita Integrated Rural Water Supply and Sanitation Project. Whilst less concerned with community matters, they are nonetheless important to ensuring sustained beneficial outcomes and so could be classed as “boring but important”.

5.11.1 IT Systems

BIRWSSP used a number of IT systems from simple spreadsheets used for budgeting and analysis, to accounts software and a GIS. In terms of scaling up work in the sector, the use of IT systems obviously can have a very useful place in enabling rapid analysis of data, efficient processing of accounts and information management. However, careful thought needs to go into how they can be used by staff with limited computer literacy and experience. User-friendly interfaces are perhaps a good place to start by making the use of the equipment easier to understand, with firewalls to prevent data from being degraded by inexperienced hands.

5.11.2 Computer accounts training

Computer accounts training in the PASCAL accounts database programme was given to RDC accountants. This was given to increase the speed and accuracy of accounting so that it could be used for management purposes and not only for auditing transparency. The exercise was successful though it was felt that greater use of the package could have been made for management accounting purposes. In practice feedback on project spending to the district water and sanitation committee remained sporadic. For scaling up work in the sector, management accounting is a useful tool, and should be put to good use to give implementers a proper understanding of how their spending is matching their planned budgets.

5.11.3 ArcView GIS training

Training was given in the use of the ArcView GIS programme. Global positioning information of villages and water points had been collected since the beginning of the project. Using simple handheld battery powered units fieldworkers could position anything from water points to whole villages. The integration of this information along with all the other data collected during the village-based consultative inventory (VBCI) and afterwards, into a GIS was a logical next step. This was because the potential to combine the spatial and numerical data on one information system could allow analysis to be undertaken a great deal faster than it had been. The GIS was set up and used in the planning of the fourth and final zone. However, it was complicated, and although staff in the RDC were trained in its use, it was felt that a simplified interface was really required before it could be used on a day-to-day basis without advisory support.

5.11.4 Allowances

One delicate issue that had to be addressed at an early stage in both the WAMMA and BIRWSSP programmes was that of allowances. This topic is never far from the fieldworker's heart, as often allowances can make up a significant percentage of take home pay. In Tanzania, prior to WAMMA, allowances were usually only paid if there was money remaining in the departmental budget. This was seldom the case and it meant that there was little incentive to undertake fieldwork, especially if it entailed personal expenditure that could not be reclaimed. The rates of allowances for travel, to cover overnight expenses and lunch in Zimbabwe were increased on a yearly basis to satisfy worker demands for better conditions, but then seldom actually paid because the budget ran out.

Not surprisingly allowances are a big issue for fieldworkers and this was true of both Tanzania and Zimbabwe. The levels of allowances are often quite high, which means if paid in full there is less money for project implementation, materials, pumps, pipes, transport and so on, so what to do? For the first four years of WAMMA in Tanzania the solution arrived at was that donor (WaterAid) paid half the rate of the allowance on the premise that the government should pay the other half. This meant that staff would go out to work satisfied that at least they would be getting something for the days they worked away from their families. In Zimbabwe the same discussion ensued with district level staff initially insisting that that they would not work on the project unless their allowances were paid. In the end a middle way was found with lunch allowances being paid only if staff were out all day long. Ward level staff such as environmental health technicians and agricultural extension staff received a smaller field allowance for the number of days each week that they were expected to be involved in project activities.

The topic of allowances and what to do about them is difficult, but important to the issue of scaling up. If staff take on extra responsibilities and face hardship as a result, it is difficult to deny them what they regard as legitimately theirs, even though departmental budgets cannot pay for it. During the initial period of the BIRWSSP and prior to the funds arriving, "cokes and buns" were provided during the piloting work. Job satisfaction therefore became an important element for those involved. As all who have been involved with PRA work know, working closely with people in the field offers a sense of fulfilment and purpose, which is a reward in itself. However, it cannot be relied on interminably, and if allowances are not paid resentment can follow, with corresponding falling levels of productivity. It therefore must be addressed, with reasonable and workable solutions worked out amicably between the parties involved at an early stage in the programme.

5.11.5 Transport management

With BIRWSSP, rather than simply distributing new project vehicles among participating departments and risking losing control of this vital asset, the RDC established a transport pool. The transport pool enabled the RDC to allocate vehicles as they were needed on the project. This policy of controlling transport use by the lead organisation was taken directly

from experience in the WAMMA programme and suggests that wider use of this approach is a necessary aspect of scaling up WATSAN activities. If valuable resources are to be properly targeted in integrated programmes, the means of getting either staff or materials to where they are needed, on time, is of great importance. In the early days of WAMMA, an initial suggestion was made that new project vehicles be handed over to heads of individual departments rather than having their use reserved for the teams. Had this been done it would undoubtedly have frustrated the free movement of the infant WAMMA teams, as some senior staff members would very likely have found other tasks for the vehicles to do, and this lesson was passed directly on to BIRWSSP.

Motorcycle training
The specialist INGO Riders for Health, were invited by the project to give a course in motorcycle operation and maintenance. This was given to all fieldworkers who were already riding or being provided with motorcycles by the project. The motorcycle training was particularly effective in promoting the safe use of these potentially lethal machines. Only one serious accident occurred during the project and that involved a fieldworker who had taken his machine out of the district on private business and broke a leg after falling off.

Motorcycles make fieldworkers mobile in a cost effective way, and with proper training they can be used to reach remote locations rapidly, that it would be next to impossible for other motorised transport to reach. They are, however, really dangerous in untrained hands, and nothing can be more dispiriting than to have the death or serious injury of colleagues because of motorcycle accidents. It was for this reason that BIRWSSP invested in the training. As a scaling up issue, this is important. To be effective fieldworkers need to be able to reach their communities in good time and in safety, and motorcycles are probably the best way of doing this in rural areas where settlements are scattered and roads either poorly maintained or nonexistent.

5.11.6 Management controls

The necessity of keeping firm control of transport, allowances and finances is particularly important as a project or programme starts up. This is because of the delicate nature of the project or programme in its early years, when like a seedling it needs to be nurtured. Influential parties who may wish to obtain resources for their own ends may need to be actively discouraged at this time and senior management needs to exercise firm control until the project is strong enough to stand on its own feet. Control measures could then be relaxed according to need over time. It is much more difficult to do this the other way round, i.e. after people have started to abuse the system. To use an English aphorism, “It is too late to close the stable door once the horse has bolted.”

5.11.7 Tender board

Both the water surveying and the borehole drilling were put out to tender on a yearly basis with advertisements in the national press. The Finance Committee took on the role of the

tender board, with technical guidance given by the RDC Executive Officer (EO) Planning, the project advisor and the District Development Fund (DDF). Certain factors were looked for including proven ability to deliver, the availability of equipment and skilled personnel. The conditions of employment of the contractor teams, whether for example, they were properly clothed and equipped with safety equipment, was also a concern.

As drilling companies seldom submitted their prices in exactly the same way despite requests that they did so (some, for example, charged for mobilisation while others did not), a simple analysis by spreadsheet was used to make a comparison of total costs for a hypothetical seasons drilling, as a way of assessing the best real price on offer, thus enabling like to be compared with like.

Tendering was also used for other purposes, for example the construction of a large project store, the purchasing of cement and the purchase of handpumps and other materials. In all these cases verification of the private sector companies' ability to deliver on time, a product of sufficient quantity and quality was considered along with the price. Whilst the tendering procedure was enshrined in law under the Rural District Councils Act the councillors had never before been given the opportunity to run tender boards. Rather than becoming a boring but necessary duty, the chance to get the best value for money for the project, and thus secure more boreholes, handpumps or other facilities for the district from the money saved, became a real challenge and one which generated a degree of collective satisfaction amongst committee members.

5.11.8 Technical and financial planning and evaluation

Yearly workshops were held with line ministry staff, project technicians, RDC executive officers and councillor chairpersons of RDC committees, to evaluate past performance and put together plans for the coming year's activities. The use of computer spreadsheets proved valuable in putting budgets together quickly, comparing drafts and working out what was possible with available funds. Spreadsheets were also useful for analysing the results of work undertaken ward by ward. The performance of latrine construction, for example, was very usefully shown on bar graphs. With one bar for each environmental health technician it was very obvious where the project had been performing well and where it had been performing poorly. Questions could be asked to heads of department, as to why work in certain wards was lagging behind, while in others it was steaming ahead.

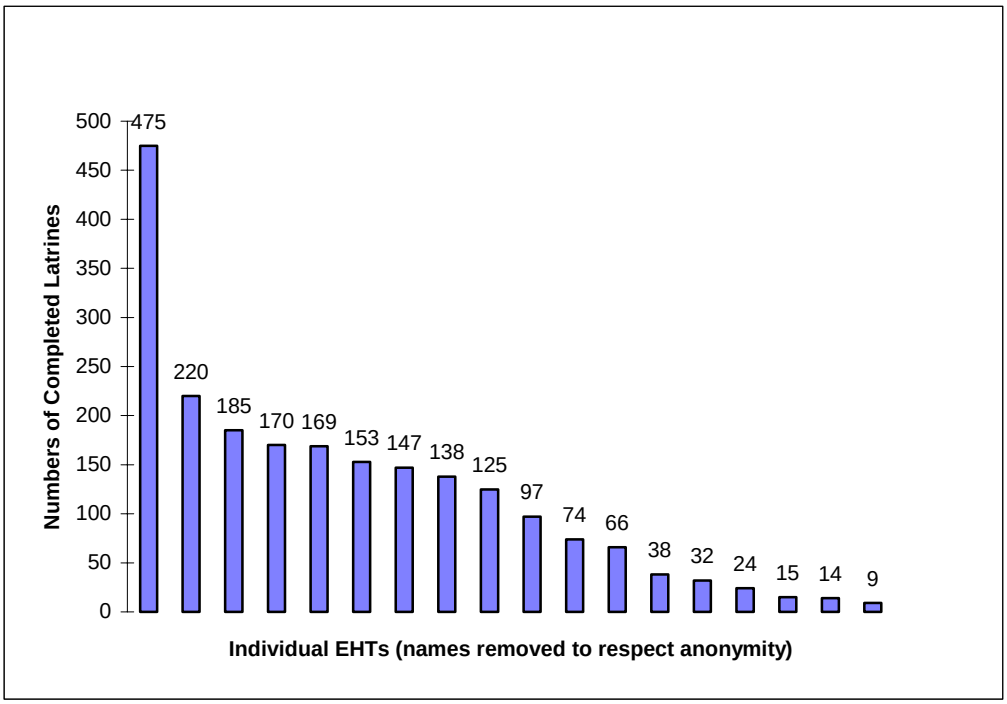


Fig. 5.8 EHT Sanitation performance

5.12 The experience of decentralisation

The experiences of the use of decentralised management of water supply and sanitation in Bikita are summarised here.

5.12.1 Local ownership, vision and commitment

Making the RDC the management unit allowed decision making to be done in a timely fashion and delays to be minimised. In Bikita local ownership and vision of the project promoted commitment and helped to ensure that the best use was made of resources. Flexibility of approach was possible as the evaluation of progress was ongoing and could be fed back into decision making.

5.12.2 Local responsibility

RDCs are the representative bodies of local government at district level. As such they can be more relevant, sympathetic and responsive to their local communities than distant central government. Whilst other traditional tribal structures exist, the RDC councillors are democratically elected with local council elections, often vigorously fought affairs even within the confines of the ruling party. RDCs are made up of two levels: the elected representatives (councillors) and the appointed executive (staff). Councillors rely on the votes of the public and they are usually aware on a daily basis of the situation in their wards as they live there, and as in Bikita often hold responsible jobs within the community as teachers, businessmen and farmers. For the executives who administer the work of the

RDC, the same is also true. Not only are they and their families often from the area, their performance is observed and monitored by the councillors. The councillors select the Chief Executive Officer and influence management through their participation in both full council meetings and on committees. Furthermore by allowing a council to make its own decisions and policy, it becomes more mature and capable. Policy decided by vote binds all council members to the principles adopted and helps to prevent maverick promises being made by individual councillors to gain short-term, vote-buying popularity. At the same time, staff members have to report to councillors sitting on committees on a regular basis, and they are answerable to the committees for both their performance and their conduct.

Implementation at the local government level can be more sustainable as the institution and all its new capacity remain after the end of the project. Issues of long-term sustainability are more widely discussed during implementation, because the implications of possible future failure are more pertinent to those who remain than they are to outsiders. Support mechanisms for communities, such as know-how, the availability of spare parts and the maintenance of tool stocks, can be handled and fine-tuned by those who are going to continue to be involved with them, way after project funding has come to an end, while the project itself is still running (Mathew 2001).

On the negative side a district council with no previous experience of implementing a large programme will have a limited capacity to implement at the beginning, and Bikita was no exception in this. Capacity can be built but proactive advisory support is needed at the start of a decentralised project, to show what is possible and to provide training. This then needs to be gradually pulled back to allow self-dependence to develop. With the emphasis inevitably on implementation, much of the early capacity building was focused in Bikita on the fieldworkers and the development of the techniques that they were going to use with the communities. Capacity within the RDC executive itself was the next target with the need for systems to provide adequate backup for the work going on in the field.

Respect given to the RDC councillors at the beginning of the project in terms of introducing the project and what it could achieve, was later backed up with training. The checks and balances provided by a functional, democratically elected council are important for ensuring efficiency and transparency of the executive and its procedures. This and local knowledge afforded by decentralisation, make for a better quality, more sustainable project than could be provided purely by line ministries in rural areas.

5.12.3 Delays in the funding process

Delays in the system of project funding were extremely frustrating for many districts, and Bikita suffered as much as any in this regard. Requests for funding had to make their way through the complicated and slow government system, from the RDC to the provincial coordinator, to the National Coordination Unit (NCU) of the IRWSSP, to the Ministry of Local Government, to the Ministry of Finance, to the donor. Then the funds had to get back out down the same channels and could, as a result, take a year or more to be processed.

One year BIRWSSP received no funding at all because of these bureaucratic delays and subsequently missed a drilling season. BIRWSSP was not alone in finding this a problem. Eventually a special account system was set up by the NCU to avoid the logjam at the Ministry of Local Government. The process remained slow, however, and became further complicated by the collapse of the Zimbabwean economy.

These problems, whilst specifically related to Zimbabwe, will have been felt elsewhere. As an issue this is important for scaling up, as sufficient and timely release of funds enables plans to be put into action. Failure to do this risks losing the momentum of programmes to deliver and can sap the motivation of programme staff and communities. Clear, transparent and efficient financial systems are an important requirement for effective scaling up.

5.13 Synthesis

The WATSAN programme in Bikita District has resulted in considerable advances of coverage of water supply, sanitation and health education, as well as with building the capacity of the RDC itself.

Lessons were brought from the WAMMA experience in Tanzania in terms of initial data collection and using need and demand as the principle forces behind project identification and implementation

New lessons were also learned within the different context of Bikita, as a district project with specific aims of increased coverage. These included the importance of maintaining flexibility and adopting a process approach to planning to match the situation on the ground. Putting the overall control of the project in the hands of a district council which until then had never had the experience of implementing such a large programme of work, was also challenging. The outcome, however, was rewarding as capacity and ability to manage are born out of doing. Lesson learning occurred from field staff, to administration staff, to councillor level. Lessons were learned about:

- participation with communities
- project management
- policy formulation

Participation with communities: from data collection, to ward planning, to implementation and training in CBM, sanitation (especially the training of women as builders), productive water, and structured health education through the health club approach.

Project management: from chairing the district water and sanitation subcommittee, to data processing, to preparing tenders and managing tender boards, to managing contracts for surveying, drilling and construction by the private sector, to running vehicle fleets, to budgeting and management accounting.

Policy formulation: based on humanitarian grounds and fairness for the communities of each ward, with a hard-nosed approach to keeping the executive on line through the finance committee.

5.14 The national programme

The Integrated Rural Water Supply and Sanitation Programme (IRWSSP) has been running in Zimbabwe since the middle of the 1980s, and 47 out of 57 districts have implemented projects as part of the programme. The programme is based on the concept of integrating the development of water and sanitation facilities with the promotion of health education.

To do this there has been much training and capacity building of personnel and institutions, the mobilising of communities, the establishment of sustainable operation and maintenance systems and the transfer of technical and organisational skills and knowledge to user committees. At national level the IRWSSP was run on an inter-ministerial basis with the main sector ministries meeting under the chairmanship of the Ministry of Local government and National Housing (MLGNH) in the National Action Committee (NAC), with secretarial services being provided by a National Coordination Unit (NCU).
Provincial and district water and sanitation subcommittees were established, with linkages with WADCOs and VIDCOs. With decentralisation the RDCs were made the project managers and resources for implementation were channelled through them instead of the line ministries (adapted from IWSD 2000).

This was the framework, but what was the district perspective on it, and how did it work? The following strengths and weaknesses section may help to throw light on this.

5.14.1 Strengths

- A coherent policy with guidelines and targets in terms of coverage for water supply and sanitation, as outlined in its service level requirements, was important for districts as it gave them a clear direction and set of objectives.
- Establishing national standards of technology to be utilised in the sector allowed for Zimbabwean solutions to be promoted (the bush pump and Blair ventilated improved pit latrine (VIP). This helped to ensure that spare parts for the pumps were of a standard type. At the same time a degree of flexibility in the development of these technologies was allowed, with for example the development of extractable open top versions of the bush pump and more affordable versions of the Blair latrine, that could be made with fewer bags of cement.
- Training and advice to help districts deal with various procedures was provided by the NCU.
- Coordination in terms of linking donors to districts, helped finance to be channelled to districts where development was needed.
- An institutional memory of developments in the sector within Zimbabwe was initiated and maintained.

- An annual forum for discussion of the sector through the Annual Sector Review Meetings was provided.
- The Institute for Water and Sanitation Development provided a high level of training in Zimbabwe.

5.14.2 Weaknesses

- National level organs were often seen by the districts as overly controlling, appearing to use their position to control the release of funds for reasons that were never quite clear. Whether this was the case or not, the NCU lacked financial management capacity and the effect was a stultifying bureaucracy with long delays in funding of sometimes a year or more. This resulted in delays to implementation and a feeling of dependency and poor morale in the districts.
- Due to limited staff and capacity the NCU had a mandate well beyond its means to deliver. Because of this it did not make the best of its national position to learn from what was going on in the districts and facilitate the sharing of knowledge.
- The use of the provinces to provide coordination to the districts within their area gave yet another layer of bureaucracy. The lack of capacity and institutional weakness at provincial level was often more of a hindrance than a help, and created a top-down impression to the districts that stifled the free movement of information in both directions.
- Decentralisation offered many challenges to the sector nationwide. The NCU's approach to this seemed often to be to blame districts for their lack of capacity, rather than to help with addressing the issues. In doing so it hampered its own role of enthusing and promoting the sector.
- Because the NCU was almost wholly donor funded, it lacked the credibility it might have had with both the civil service and the districts. Government funding would have shown greater national commitment to the sector, and helped to create a greater sense of solidarity with both national and local government.
- Poor collection and presentation of information meant that achievements in the districts often went unreported.
- The IRWSSP approach was supply orientated, and this may have led to too much emphasis being put on infrastructure numbers, rather than the capacity of communities to manage their own water supplies. Self-help and demand-responsive approaches need to be adopted and balanced with what support can be provided at district level.
- Once the decision to adopt CBM was taken, the value of the support services offered under the three-tier system (especially the pump minders) seemed to be written off before a workable replacement or realignment under the RDCs had been considered.
- The refusal of the NCU to countenance alternatives to the Blair latrine has meant that sanitation remains unaffordable for many poorer families, this despite the lively work being undertaken by NGOs and individuals with great knowledge in the sector in Zimbabwe. The work on ecosan in particular offers a productive potential which poor Zimbabweans could well do with in these trying economic times.

5.14.3 Future

The political and economic problems of Zimbabwe over the last few years have been great. It is hardly surprising given these conditions that the sector should currently be in a poor state. There is much, however, that has been achieved and much working infrastructure and capacity remains, as the summary table of physical structures in the water and sanitation sector illustrates (see appendix 8).

Scaling up to national level with decentralised district water and sanitation projects requires proactive national coordination with an active learning approach, a clear vision and an ability to share ownership from bottom to top and vice versa. When the current political crisis has been resolved the highly indebted poor countries initiative (HIPC) may be offered to Zimbabwe. If this happens the Poverty Reduction Strategy process (PRSP) may allow another attempt to be made at national scaling up. If lessons are learned from the past, next time it may be done with greater success.

Chapter 6 The ownership and management of productive water point gardens in a time of drought, Zimbabwe

6. 1 Introduction

This paper presents practical experiences and new research into the provision and use of household water supplies from communal and family owned productive water point gardens in Bikita District, Zimbabwe.

Traditionally the people of the district are subsistence farmers who rely on rain-fed agriculture and livestock. Where shallow groundwater is available, households have dug wells to supply their domestic requirements, water cattle and other livestock, and to irrigate small family-held garden plots.

Recognising the importance of productive water, the DFID funded Bikita Integrated Rural Water Supply and Sanitation Project promoted productive water point (PWP) gardens, as a pilot project to diversify livelihood strategies and move away from valuing water solely for domestic purposes. A high yielding water point is considered productive when it has the capacity to deliver more water than is needed for the domestic uses of the community it serves. Thirty-three communities, who were managing their high yielding water points effectively and had suitable land available, were offered the opportunity to establish irrigated community gardens. The project also supported a significant number of households to upgrade their family wells, many of which were also used to water vegetable gardens.

Bikita District covers an area of approximately 10,000 km², and has a population of around 200,000 people. Eighty-one percent of the district is classified as belonging to the poorer natural regions (4 & 5) with mean annual rainfall ranging from 400mm to 700mm. The 2001/2002 rainy season was extremely poor for agriculture with early rains, which allowed seed to germinate, followed by a prolonged period of drought, which then withered the seedlings. When the rains did come they were too late and of insufficient duration to sustain another crop. The result was a total crop failure across the district and much of the country. The rain was, however, sufficient for wild grasses to grow and this has helped to maintain the cattle stocks of the area, unlike the drought of 1991/92 when even the grass died off. The problems brought by the drought have been exacerbated by the political and economic crisis, which because of high inflation has made the purchase of basic necessities including grain increasingly expensive, while at the same time depleting the real value of savings where these have been held.

6.1.1 Historical, cultural and economic perspective

Bikita District is an area of largely communal farming, with some small-scale farming areas. The people are predominantly Karanga Shona speakers and fall traditionally under the administration of five chiefs, the smallest traditional administrative unit being the

Sabuku or Kraal. The district's modern administrative structure consists of a Rural District Council (RDC) made up of elected councillors, representing thirty wards. The wards are subdivided into between five and seven village development committee (VIDCO) areas. In the last two years there has been an attempt to merge the base Sabuku and VIDCO structures into new village assemblies. Agriculture in the communal farming areas is predominantly subsistence rain-fed maize and millet farming with small household vegetable plots. Wealthier families also commonly own a few cattle and goats. Approximately a quarter of the land area is covered by locally owned small-scale commercial farms. Before 1980 the district was classified as a tribal trust land and during the struggle for independence it was considered a "hot" area for the Rhodesian security forces.

To the east of the district is the Save Valley Conservancy. This is a commercial cooperative venture concerned with tourism and hunting and is made up of 18 former commercial cattle ranches. It was formed following the 1992 drought and covers approximately 18% of the land area of the district. Some of the original ranch was resettled in the 1980s, however, because of the lack of water in most of the remaining land, it is unsuited to communal farming.

Minerals are also of economic importance to the district, with Bikita Minerals open cast mine and factory employing a workforce of around 700, mostly local people. The diamond mining group De Beers has also been involved in prospecting in the district and it is hoped that this may lead to further development in the sector in the years ahead.

6.1.2 Water and sanitation

As a result of the 1992 drought DFID, then ODA, provided emergency assistance for water supply to the communal areas through the NGO WaterAid. This was followed up in 1996 by the Bikita Integrated Rural Water Supply and Sanitation Project (BIRWSSP), which was also funded by DFID. This project, which came under the National IRWSS Programme, was decentralised to and managed by the RDC, with support from the district offices of agricultural extension (AGRITEX), health, environment, community development (MNAECC) and the District Development Fund's (DDF) water department. The project's main aims were the provision of safe domestic water supplies, sanitation and health education. After a run of seven years it came to an end in December 2002. Since January 2001 the project has operated without the need for in-house technical cooperation assistance and advice. My role from February 1996 until December 2000 was to provide this assistance and so it was with particular interest and enthusiasm that I was able to undertake this research, among the
friends, colleagues and scenery with which I was so familiar.

6.2 Pilot productive water point gardens project

6.2.1 Background, potential scope and future possibilities

The purpose of the pilot productive water point project was to promote productive water point gardens, to diversify livelihood strategies and move away from valuing water solely for domestic purposes. The idea was not altogether new and had been researched in some detail by the DFID funded collector wells project based in Chiredzi. Where the Bikita pilot differed, was that it sought to use existing domestic water supplies and in doing so potentially show the way to tap the potential of existing resources. In Bikita District alone there are over 450 functioning water points (boreholes and deep wells) of which anything up to a third (as indicated from BIRWSSP pump test data on project boreholes) might be used for productive water point gardens.

One of the beauties of such an expanded scheme becoming a reality in the future is the modest funding that would be required. The agricultural extension service (AGRITEX) has the ability to provide extension advice and community work, Bikita RDC already possesses pump testing equipment and familiarity with analysis of the results. The main expenses required for such a programme to take off in the district would be for transport and the purchase of fencing material, with most other inputs including bed preparation, erection of fencing, management of gardens and the water points coming from within the communities themselves.

The hope in the district was that the pilot PWP gardens project might, along with the collector wells project, become a forerunner of a province-wide livelihoods programme, extending out, not just to the rest of Bikita, but to the five other districts of Masvingo Province. This “Ngadi” or gardens project remains on the drawing board as the political differences between Zimbabwe and Great Britain have, for the moment at least, put a stop to new UK funded, government- to-government development projects in Zimbabwe. DFID’s current assistance is understandably being directed towards emergency feeding during the present crisis.

6.2.2 Criteria for initial selection of communities to benefit from productive water point gardens

When the productive water point gardens pilot project was launched in August 2000, the district councillors themselves were actively involved in selecting villages to participate in the pilot. Each councillor was asked to provide from his or her ward, three candidate villages. These were to be chosen on the basis of three criteria:

1. The village needed to have a water point, which was capable of providing sufficient water over and above that required for domestic purposes.
2. The village had to have an active water committee with a banked water maintenance fund.

3. Suitable land had to be available in close proximity to the water point, with the full agreement of the whole community.

Once the councillors had each submitted the evaluation sheets for their three candidate villages, these were scrutinised by the project team. Visits were made to cross-check information and in some cases pump tests were carried out, where older water points were chosen and doubt existed over their capacity. Boreholes constructed by BIRWSSP during the period 1997 – 2002 had undergone 16-hour pump and recovery tests, so this information was used to assess their technical viability. The information from these pump tests was compared with village population figures to give a good indication of performance and likely ability to provide enough water over and above the domestic requirement.

Once this information was analysed, communities were again contacted and the conditions for involvement discussed and agreed. These are listed on a check list and presented in appendix 9.1

6.2.3 Research objectives

The current drought in the region makes the productive use of water and the ability to grow food under small-scale irrigation, of particular significance to the population of the district. The objective of this research has been to examine the dynamics of this intervention during the current drought.

- Evaluating how important the productive water point (PWP) gardens are to those who are working in them and their families.
- Examining the processes that have allowed the gardens to be sustainable, including how collective ownership has been important to their management.
- Questioning what impact the use of community water supplies for irrigation has on wear and tear of the pumps.
- Asking what lessons might be passed on to communities in other places where rainfall is unreliable, but existing communal water supplies can do more than provide for drinking, cooking and washing requirements.

6.2.4 Methodology

To undertake the research effectively in the limited time available (seven days), a series of visits were made to communities with productive water point gardens.

Meetings were held with the membership of the gardens and the crops grown were recorded. Resource ranking was carried out by the garden membership as a whole to determine how people benefited in households with different levels of resource base. The division was thus made between:

- households which owned cattle;
- households which owned goats but no cattle;
- households that owned neither cattle nor goats.

This helped to create three broadly homogenous household groups of similar capital ownership. It also avoided the need to talk of ranking by wealth directly, which might have proved divisive and controversial in the current crisis. In a small number of cases people had other sources of income, salaries and pensions for example. However, these people mostly owned cattle and so found themselves in the cattle owning group, which removed the need for more openly intrusive questioning or means testing.

Once the groups had selected themselves, pocket chart voting was used group by group. The pocket voting used a standard health education-type 16-pocket chart, made from clear polythene pockets sown onto a denim backing. In the pockets were placed pictures of livelihood activities, chosen by the group to represent their main means of making a living. The subjects included:

- rain-fed maize farming
- cattle farming
- salaried work
- communal gardening in the new productive water point garden
- private gardens (usually at home)
- poultry keeping
- vending of produce or by re-sale
- goat tending
- fruit trees (cultured or wild)
- sewing clothes
- beer making

The people were asked to decide in their groups how they would prioritise each activity in importance to their livelihoods, and to show this by allocating a total of 20 stones to the productive activities that were most important to them. The groups were asked to do this twice, firstly for a normal year with normal rainfall, and secondly for the 2002 drought year. The allocation of the 20 stones was then converted into a percentage, thus each stone was equivalent to 5% of total productive capacity.

In the case of the first garden visited (Nzwiso) more detailed individual interviewing was used to gain understanding of household economies using a check list, which can be found in appendix 9.2. Due to the time that the individual interviews took and the need to cover as many gardens and members as possible, the same check list was then used as a pointer for focus group discussions (FGDs) at the subsequent gardens. This was done after basic data had been collected from individuals at the beginning of the sessions. The basic information established the size of households, the presence of wage earners, ownership of poultry and other animals, and the amount of rain-fed cereals farmed. The

FGDs were then used to gain understanding of the ways the gardens were being managed, the number and size of plots per member, and how members gained their membership of the gardens in the first place. Water point community-based management was also discussed to establish the record of repairs on the handpumps in the past and the importance of community ownership to both the gardens and the water point. There was also more general discussion of the current drought and access to grain supplies from the Grain Marketing Board (GMB).

Conducting the PRA at Mujiche productive water point garden (6-2-4)

The four productive water point gardens researched were:

- Maniki, Ward 22, Rusoswe VIDCO, Grid reference E36630 - S780300
- Nzwiso, Ward 13, Rujeko VIDCO, Grid reference E354510 - S7791029
- Mapetere, Ward 10, Bungu VIDCO, Grid reference E350168 - S87786828
- Mujiche, Ward 13, Manyanye VIDCO, Grid reference E358406 - S7785947

6.3 Results

6.3.1 Membership

Garden membership appeared to be widespread, ranging from 49% to 68% of all the households in the settlements surrounding the gardens. The percentage of membership split between the resource groups in the gardens visited was, when averaged between Mujiche and Mapetere gardens, 37% cattle owners, 22% goat owners and 40% non-livestock owners.

The bulk of members joined at garden inception following meetings called by the ward AGRITEX staff. Members contributed to constructing the gardens with labour and cash for ploughing where this was needed. In some cases pooled money was also used for purchasing seeds for the whole membership. In the case of Mapetere garden the seed purchased collectively was only sufficient to plant half the area of the garden for the first season. Subsequent profits from the sales of the first crop enabled the members to purchase more seed, and thus enthused by their first success the whole garden was planted.

The mine company Bikita Minerals also contributed seed via the RDC at the beginning of 2002 and this was used to assist garden members at a number of PWP gardens across the district.

When people wanted to join the gardens after they had been established, this was sometimes allowed by the garden membership, though a fee of between Z$500 and Z$600 (approximately US$50 at the official rate, though the Zimbabwean economy was in free fall at the time and the parallel rate would have been around US$1) was charged to compensate the original members for their construction work. Only a very small number of people joined in this way, including just two at Mapetere Productive Water Point (PWP) garden. The small size of the gardens at 0.25 hectares, meant that most plots were allocated quickly and seldom was there room for latecomers to join.

6.3.2 PWP gardens as pro-poor interventions

The capital resources of garden members were largely limited to what they were producing from their small holdings, with very few receiving salaries, or pensions of significant value. Broadly households with cattle were larger, had larger amounts of land, poultry and other income opportunities than those without cattle (fig. 6.1). This was reflected in the assessment of the importance of the PWP gardens to their household economies during the pocket chart voting exercise, and is shown graphically later (fig. 6.4 & 6.5). The larger proportion of female-headed households amongst the non-livestock owning group was evident in the garden with the largest membership visited at Mujiche. Here 28% of the cattle owning households were seen to be female headed as opposed to 69% in the non-livestock owning group. The fact that the allocation of garden plots was the same for each household irrespective of household size or influence meant that the poorest members of the gardens were benefiting proportionately more than the wealthier cattle owning households with their larger households. This, coupled with what poorer people were indicating through the pocket chart exercise, showed the pro-poor nature of the PWP gardens.

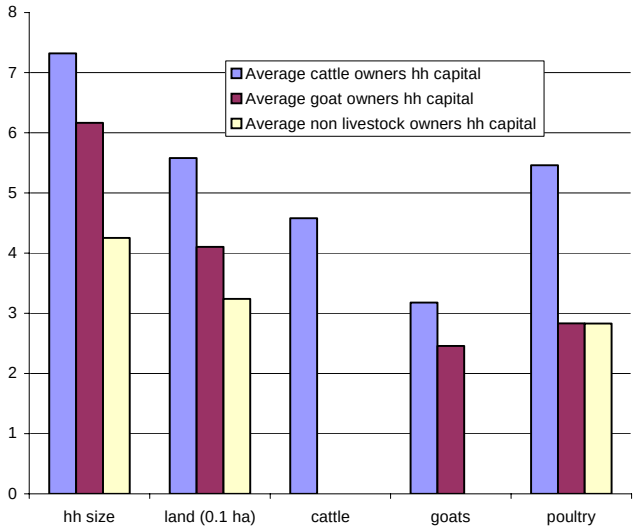


Fig 6.1 Differences of household size and capital ownership by livestock owning group

Households owning cattle had an advantage of a greater spread of capital than non-livestock households. By owning cattle they may benefit from milk and meat which can be consumed or sold, as well as from draught power for ploughing their own fields or for hiring out to others, and a source of manure for field or garden. The relative size of capital assets amongst the garden plot owners when divided by the number of people in the household is displayed by individual in fig. 6.2 below. Here the area of rain-fed fields farmed (marked as land in the graphs above and below) and poultry kept, are remarkably similar between the resource groups, but the greater spread of available livelihood opportunities still makes the livelihoods of cattle owning households more broad based and thus secure.

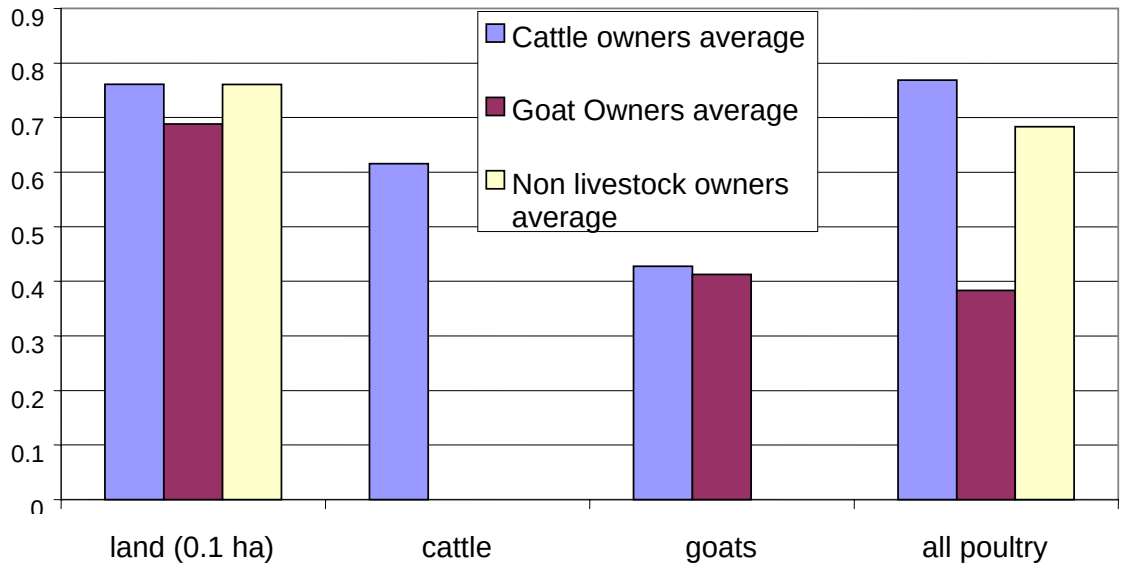


Fig 6.2 Average capital assets per individual family member

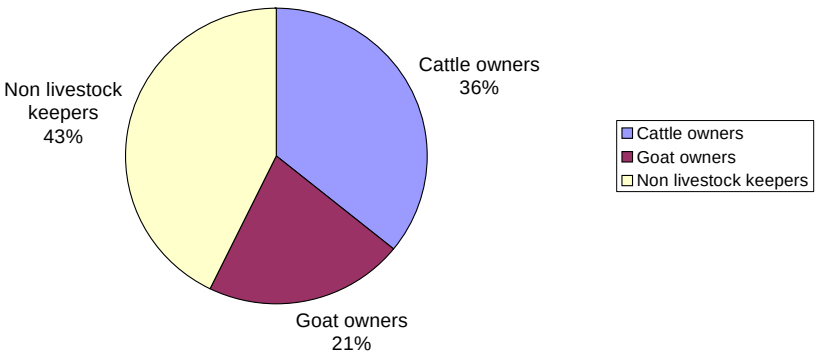


Fig 6.3 Breakdown of membership at Mapatere PWP garden

The pie chart above shows the breakdown of membership at Mapetere productive water point garden, the majority, 64%, do not have cattle.

The question of whether the very poorest would have been able to join even at the early stages is valid, whether they would have felt able to make the investment in terms of time and money may have been questionable. However, the numbers of people joining the gardens compared to the numbers in the surrounding kraals indicate that a significant proportion, between 49 and 68%, do join. Waughray (et al. 1996), put the percentage of those who joined similar PWP gardens at collector wells in Masvingo province, and who were among the poorest in the community, as being 49%. This would indicate that garden membership in the Bikita PWP gardens is made up of a fair cross section of the community, and that this does include the poorest.

During the research there was no evidence of exclusion of the poorest in the communities. The members certainly included some very poor people, including many from female-headed households, some of whom had lost or divorced their husbands and had no rain fed-fields at all. The reason why people decided to join PWP gardens or not, seemed to depend on their personal willingness to work alongside others and their perception of how doing so might lead to a better, or at least more secure, life. Very destitute people may have been excluded from the gardens, but there was no evidence of this during the research and many obviously extremely poor people had joined the PWP gardens.

6.3.3 HIV/AIDs, coping strategies and the benefits of group solidarity

In a number of cases grandparents had joined the gardens in order to find a way to feed themselves and their grandchildren, as the parents of the children had died, leaving them in their old age with young children to support and bring up. This situation is symptomatic of the effects of the HIV/AIDS pandemic that is sweeping Zimbabwe, and is also further evidence of the pro-poor impact of the productive water point gardens intervention. According to the UNAIDS statistics (2002), 33.7% of the adult population are HIV positive, and 780,000 children in Zimbabwe have either lost one or both parents. During 2001 an estimated 200,000 people died of HIV/AIDS in Zimbabwe, a figure equal to the entire population of Bikita District.

Box 6.1 Selina's story

The following is a quote from Mrs. Selina Vanhukwavo, a 70-year old grandmother from Nzwiso PWP garden. When I asked her how useful she found the garden she told me, "I do not know what I would have done if I had not joined the garden group, my plots in the garden are growing all that myself, my husband and my three grandchildren are eating. We have had no maize meal from the GMB since April and it is now August. My maize, groundnut and roundnut crop completely failed this year and what we grow in the garden is keeping us alive." Selina told me that the chance to have solidarity with others was one of the things that had made her join the group in the first place, before the drought had started. The opportunity to work with others and to meet and talk and help each other out was valuable to her. She said that before she had become a member of the garden she had often had to ask others from her extended family for food. Now she was able to help others with what she had. She found the other members helped her as well and this was important for her. Earlier in the year one person had even paid her water fund contribution for the maintenance of the water pump as she had no money at the time.

The desire for being part of a group, as mentioned by Selina, was also expressed by others that we interviewed, especially among the elder members. This reflects the value of the social capital that materialises for those that are willing to work together. There seemed to be a unity among members, which exhibited itself in work at and management of the gardens. Evidence of joint working on plots, sharing of watering duties and inputs such as insecticides was found at all the gardens.

It is clear that the PWP gardens themselves have become a coping strategy to help the members get by during the drought and the other crises, economic and health related, that they face. A fear was expressed by some that more dangerous coping strategies such as prostitution were on the rise, and this might further spread the HIV/AIDS menace. The fact that knowledge of these problems was being openly expressed at public meetings was in itself encouraging and a tribute to the work of the health education department.

6.3.4 Production

The production of vegetables varied from garden to garden as did the proportion of the crop used for home consumption or for selling on to generate cash. The following table illustrates this.

Garden	Number of members	m2 per member	Value of monthly production per member in Z$	US$ (US$1=Z$300)	Proportion sold
Nzwisiso	12	167	1312	4.37	none
Mapetere	18	111	2800	9.33	most
Mujiche	53	38	480	1.6	Half
Maniki	34	59	not listed		Some

Table 6.1 Monthly production of individual household members at PWP gardens in Bikita, Zimbabwe

The vegetables grown at the gardens included cabbage, onions, tomatoes, spinach, beans, green maize and a perennial leaf vegetable called covo.

In the case of Nzwiso and Mujiche PWP gardens, members chose what they wanted to grow in their plots independently. In the other two gardens all members agreed to grow the same types of vegetables in the same positions in lines. In Maniki the members had worked on a collective seed bed to raise the seedlings together prior to planting them in the individual members plots.

The figures for the value of the monthly production were worked out by multiplying the claimed production of bundles of vegetables per month by an average figure of Z$40 per bundle[16]. As can be seen from the chart above, the proportion of produce sold varied, with the dynamics of the drought leading some people to sell more where this was possible in order to raise money to purchase maize meal. This was the case at Mapetere and Mujiche PWP gardens, where marketing opportunities existed at the nearby townships of Nyika and Duma. At Maniki PWP garden, however, the members claimed the local market was becoming more difficult to sell to, due to a lack of cash amongst neighbours who comprised the bulk of their market.

The production estimates shown above and below compare with those produced by Chris Lovell in his book Productive Water Points in Dryland Areas (2000). Lovell estimates the total annual benefits of a productive collector well garden as US$2,091, the Bikita figures are thus in the same general ball park. In the table below monthly production is calculated for the whole garden and converted to yearly production and again into the US$ equivalent. The exchange rate of US$1 to Z$300 was used as an intermediary between the official exchange rate of US$1 to Z$50, and the parallel rate of US$1 to Z$600, which existed at the time of the research in August 2002.

Garden	Number of members	Value of monthly production per member in Z$	Value of yearly production per member in Z$	US$ (US$1=Z$300)
Nzwisiso	12	1,312	188,928	630
Mapetere	18	2,800	604,800	2,016
Mujiche	53	480	305,280	1,018
Maniki	34	not listed		2,091

Table 6.2 Estimates of production from PWP gardens in Bikita, Zimbabwe

The significance of these tables is that it shows that productive water point gardens can provide a significant input for rural communities. This is obviously all the more important during drought years when other sources of nutrition and income are harder to come by.

Box 6.2 The value of production at Mujiche PWP garden

At Mujiche productive water point garden, where pressure of membership (there are 53 members) means that each member has just four plots, the gardeners are producing four bundles of leafy vegetables per week each and a further four from their private household gardens. By selling half of this production (Z$30 per bundle sold) they were able to raise on average Z$480 per month per family, or enough to purchase a 50kg bag of maize from the Grain Marketing Board (GMB) if grain was on sale. This is enough to provide 83% of the recommended cereal ration for a family of five for a month (WFP 2003), and thus a significant input to a family budget, especially when the rain-fed maize crop has failed due to drought.

On the basis of the data collected during the survey, the current 33 productive water point gardens in Bikita serve an estimated 5,000 people. If this is multiplied by the number of water points that could potentially supply productive water point gardens (around 150), the number of beneficiaries of productive water point gardens from existing water points in Bikita District alone is in the region of 23,500 people. There is thus a potential to benefit the livelihoods of over 12% of the rural people living in Bikita District by using currently existing water points. Using the figures from table 2 above, this could generate an increase of approximately US$180,000 in agricultural production per year in the district. Given that the current estimated usage of groundwater is only about 4% of annual recharge (Lovell et al. 1996), from a hydrological perspective this is also a sustainable development option, though due to local conditions it would not be possible at all the water points.

6.3.5 Pocket voting exercise results at PWP gardens

The importance of the PWP gardens to the livelihoods of the members was also illustrated by the pocket voting exercise. Here members in their resource groups ranked the relative importance of the various productive activities that they were involved with. The relative importance of the PWP gardens can be seen in the following figs. 6.4 and 6.5, to be more

important to the poorer non-livestock owning households than their wealthier neighbours, and of enhanced importance to all groups during a drought year.

Mapatere PWP garden

The following graph shows how the members of Mapetere PWP garden ranked their productive activities in both a normal year (NY) and the 2002 drought year (DR).

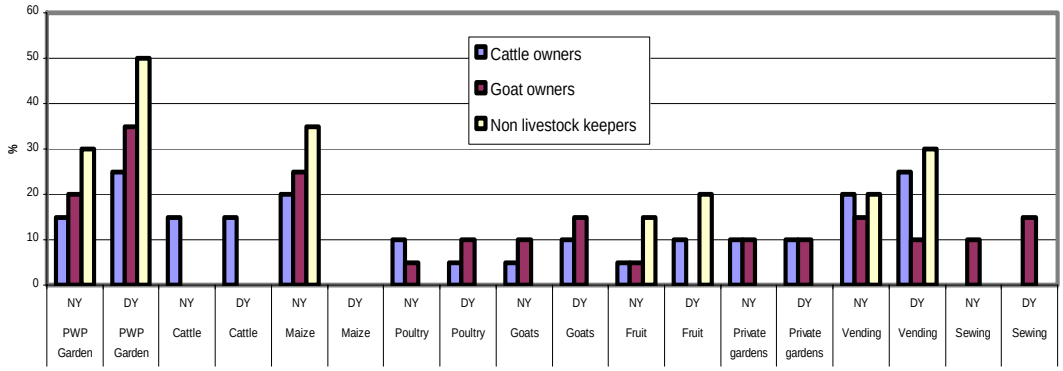


Fig 6.4 Mapatere PWP garden pocket voting results for normal year (NY) and drought year (DY)

The first set of columns illustrate that the PWP garden in a normal year is twice as important to the non-livestock owning group than the cattle owning group. In the drought year the importance of the PWP garden is seen to rise for all the groups. However, the proportion remains the same with the non-livestock owning group still claiming to value the gardens twice as much as the cattle owners. The non-livestock owning group setting the productive value of the gardens at 50% of their total productive capacity, which further emphasises the pro-poor nature of this intervention.

Rain-fed maize production is also seen to be relatively more important to the non-livestock owning group in a normal year at 35% of productive capacity in a normal rainfall year, compared to 20% for the cattle owning group. However, the effect for both groups is striking for the 2002 drought year, with no harvest reducing the value of rain-fed maize to zero for both groups.

Gathering fruit also appeared to be more important for the non-livestock group. Production from private gardens in the case of Mapatere was restricted to the cattle and goat owners. One reason for this was the need to have access to water from private wells to water these gardens. Private wells are a valuable asset and at Mapetere were owned exclusively by the comparatively wealthier livestock owners, hence private gardens do not appear as a productive factor in the livelihoods of the non-livestock owners at Mapetere.

The importance of vending or selling produce has increased amongst the non-livestock owning group at Mapetere from 20% in a normal year to 30% during the drought and amongst the Cattle owners from 20% to 25%. The goat owners at Mapetere appear to be selling less produce, but doing more sewing work. All groups claimed to need cash to purchase grain from the GMB.

Mujiche PWP garden

At Mujiche the PWP garden was vaued at 20% for the goat and non-livestock owners during a normal rainfall year and just 5% by the livestock group. This increased to 50% for all the groups for the drought year. Rain-fed maize farming was considered to be the most important activity during a normal rainfall year with steps of 5% leading up between cattle owners at 35%, goat owners at 40% and non-livestock owners at 45%. As with the other gardens no harvest occurred during the 2002 season. Poultry keeping was considered more important for non-livestock owners than livestock owners, but fruit collecting was not valued by non-livestock owners during the drought, who claimed there was less fruit on the trees. Beer brewing was only being undertaken by the livestock owners, and then only during normal rainfall years, as the drought meant there was no maize or millet to brew with. With vending the goat owners and non-livestock keepers claimed to be selling more during the drought in order to raise money to buy maize from the GMB. The cattle keepers on the other hand, claimed to be selling less and consuming more of their own produce.

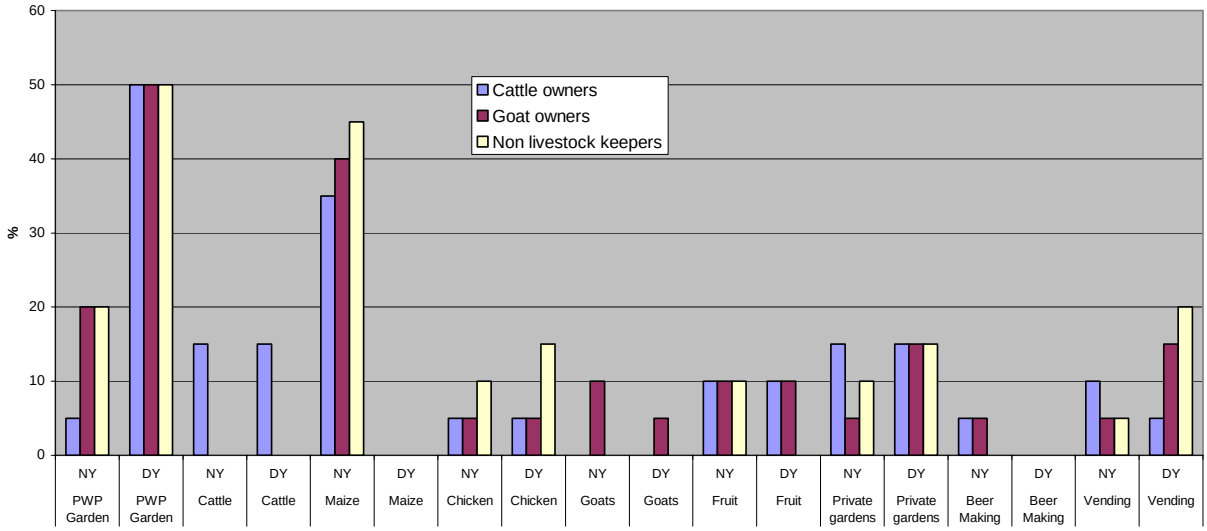


Fig 6.5 Mujiche PWP garden pocket voting results for normal year (NY) and drought year (DY)

6.3.6 Private productive water point gardens at family wells

The owners of two upgraded family wells visited during the research were found to be better off than most of the communal gardeners, with more land for rain-fed agriculture,

more livestock and more vegetable beds. This should perhaps not be surprising, since the capital cost of sinking a private well marks out such individuals as being relatively well off. Both these wells had also been upgraded with concrete aprons, windlasses and closing lids, the work being undertaken in partnership with the BIRWSSP project. The ownership of a private well close to the home saves on time spent collecting water for domestic use and this time can be used in the garden. The limit on the number of beds in the garden depends on the decision of the owner to make and tend the plots, rather than on the available space in a communal garden, which depends in turn on the number of other members of the garden.

Of the two upgraded family wells visited, one household had increased its vending to get cash to buy grain, while the second had reduced vending because of the increased home consumption of garden produce. Both had ranked an increased importance in their gardens during the drought as far as their livelihoods were concerned. For Mr. Zinduna Makaranga the drought had another interesting effect, his work as a water diviner and well sinker was in particular demand. This demonstrated a local understanding that drought years were the best years for well sinking, because the water tables were likely to be at their lowest and thus wells dug successfully during a drought tended to last longer than those dug in normal rainfall years.

Fig 6.6 Resource base of the Makaranga brothers

Box 6.3 Farming and gardening activities at the two upgraded family wells, productive water point gardens

The scope for family wells to become a meaningful livelihood enhancing asset for their

Every week Mr. Zinduna harvests from his family well garden:
7 bundles of rape (May till the end of August), 3kg of tomatoes (June till August), 1 bundle of covu a week (year-round), 75 pumpkins per year
His household consumes 1 bundle of rape a week and he sells 6 bundles at Z$30 per bundle. All his tomatoes are eaten at home as are the other vegetables and fruit. His main pest problems are aphids, red spider mite, grasshoppers and cut worms. He has 2 cows, but no savings and told us that wild fruit did not produce this year because of the drought.

Mr Zinduna's neighbour is his brother Mr. Kupu Makaranga
He also has an upgraded family well and an impressive garden with the following numbers of vegetable beds and fruit trees:: 6 beds of rape, 6 beds of tomatoes, 8 beds of covu, 2 beds of shallots, 2 beds of sugar loaf cabbages, 1 bed of onions, 1 bed of carrots, 4 mango trees, 1 avocado tree, 3 banana trees, 2 pawpaw trees.
The family harvests: 4 – 5 bundles of rape a week (May – August) for home consumption, 3 – 4 kg tomatoes a week (April – October) (some sold), 2 bundles sugar loaf per week (August – December)

owners by providing water for private PWP gardens has to a large extent been met by the efforts of owners recognising their worth and planting private gardens. To date 1,505 privately owned family wells have been upgraded in Bikita District. These serve around 25 people each for their domestic requirements, as traditionally water cannot be denied to a neighbour. However, for gardening purposes restrictions commonly apply, so that only the immediate family can use them for this. Given that most of the upgraded family wells have sufficient water for a single household garden, we can expect the current beneficiaries in Bikita District of private family well PWP gardens to number in excess of 10,000 people.

6.3.7 Ownership

Ownership was found to be important amongst all the garden members, be they communal or private. Universally members agreed that the gardens belonged to them, and they felt that this ownership made them special and sustainable.

Comments about the water point ownership were less strong. There was usually an acknowledgement of the importance of the water point and of its ownership by the community as a whole. There was also evidence of contributions made by garden members to community water funds, set up to hold money should it be needed for repairs to the pumps. A typical comment, made by Selina Vanhukwavo, was that "the garden belongs to the members, the borehole to the wider community, the two are linked as without the borehole there would be no garden". However, the activities of the water committees were broadly less impressive. Water points were obviously not being well kept, there could not be said to be a great deal of active commitment to the water points.

6.3.8 Technical performance of bush pumps at PWP gardens

The bush pumps that we visited were, apart from one, in good shape and had given long years of service. We found one A-type bush pump that had repairs made on it in January 2002 (a section of new 2" pipe had been fitted along with two new leather cups), but prior to this had been operating continuously since its installation without any breakdowns for 14 years. When pumps are as reliable as this, there must be some question within communities over what function a water point user committee actually has, and so perhaps not surprisingly many committees become inactive and forget to supervise the less important tasks of keeping the surroundings clean. Only one of the PWP gardens visited was having problems with its pump. This garden was at Maniki and it was fitted with a 63mm diameter extractable version of the bush pump. The extractable bush pump is designed to have the piston removed by pulling its hook and eye connected pump rods up the rising main, thus facilitating ease of nitrile rubber seal replacement on the piston. In this case the seal had become worn and broken and the pump was performing so badly that the community had resorted to collecting water from open wells in a sand river for their garden. They were only using their now poorly performing pump for drinking water. The problem here was not so much that the seal had become damaged (as all seals eventually require replacement), but that the community had done nothing to make the repair. This was despite the presence of trained bush pump mechanics in a neighbouring village and parts being on sale from the Ward Councillor. The committee even had ample funds available (Z$2,999) in their water fund account. In this case two factors seem to have had an influence on the failure of the committee to make the repairs. Firstly the secretary of the committee, a dynamic woman, had left the village to remarry. As the driving force behind the committee, the other members seemed to have had difficulty in deciding what was to be done after she left. The second factor was the presence of an alternative water source in the sand river, which meant that decisions could be put off. A further discovery while removing the pump rods was that the aggressive water had started to eat away at the rods, especially on the hook connection. This may have been made worse by the increased use of the pump for irrigation purposes. It is likely that the damage to the rod linkages will eventually cause major problems for the borehole, leading to the need for expensive repairs which, if the WPUC remains inactive, are unlikely to be done. We replaced the seal in under 20 minutes with the help of one of the laid off DDF pump minders who came with us for the trip.

The maintenance service available to users of all pumps in Bikita District is under community-based management. Water point user committees have been trained to manage their water points, raising funds for spare parts and spotting problems as they arise. Teams of community bush pump mechanics have been trained from all the VIDCOs in the district, to take apart and replace broken seals and other parts, and keep the pumps in good working order. In addition the District Development Fund's Water Department have nine pump minders equipped with bicycles and tools available to provide more specialised assistance should the need arise. The problem with this ideal is that the community bush

pump mechanics often get little chance to undertake repairs because of the reliability of the pumps. This means they forget how to do the repairs and lose confidence in their own abilities. Many refuse to undertake repairs without the presence of the DDF pump minders. The bush pump mechanics also expect to be paid for their services, and this can also lead to disputes and problems when the water committees don't want to pay them. The latest problem to hit CBM in the district was when DDF decided in May 2002, to lay off the entire pump minder staff. These highly experienced individuals have day in, day out knowledge of the pumps and the communities. By laying them off, the safety net for the maintenance of village water supplies has effectively been cut away. It was suggested and agreed that the RDC retain the pump minders from their own coffers, though whether this will be accepted as a long term solution to this problem remains to be seen.

Further problems with the ability of the RDC itself to hold and replace its stocks of spare parts were noted and discussed. One problem was the quality of locally available nitrile rubber seals needed for the extractable version of the bush pump. In discussions the author had with the Swiss based organisation SKAT (Swiss Centre for Development Co-operation in Technology and Management) in 2002, it seems that India has also been facing similar problems with the India Mark 3 pumps. A reputable supplier has in the mean time been suggested to the RDC. Criticisms of using the handpumps in general and the Zimbabwe bush pump in particular, have been made for this application for watering gardens (Lovell 2000). In terms of the efficiency of using human labour to pump water, it has been said that handpumps can restrict the productive potentials of the water points they are fitted to, effectively plugging the productive capacity of high yielding boreholes and wells. However, the bush pump's main advantage is that it is made in Zimbabwe and does not require fuel to operate it. Spare parts should be thus more available and poor rural communities more able to operate it.

One of the implications of using existing domestic water points for providing water to PWP gardens is that with more use there will be more wear on the pumps, and thus the cost of maintenance will be greater. The question is whether this is a problem or not. If communities acknowledge the increased importance of their pumps because they are using them for their gardens as well as their domestic requirements, this may be no bad thing. The productive capacity of the PWP garden itself generates financial capital, which can be used to pay for repairs and maintenance. The acknowledgement by a community of the enhanced use of a water pump may lead to greater funds being made available for pump maintenance, to the benefit of all, garden member and non-member alike. However, if water points are not looked after, then because of their increased use at PWP gardens, they will be more likely to break down faster and more often. One effect of the drought, noticed at all the gardens visited, was that contributions to water point maintenance funds had been suspended because people felt they could no longer afford to pay them. A question remains as to whether once the drought is over, these payments will resume, or whether as Elizabeth Matanda, a member of Nzwisiso PWP garden, put it, "people will only realise the importance of the ownership of the water point when there is the next breakdown".

6.4 Conclusions

In conclusion, I would like to go back to the research objectives (6.2.3)

Evaluating how important the productive water point (PWP) gardens are to those who are working in them and their families, this research has shown that the PWP gardens are of great importance. Not only as a coping strategy during the current drought, but also as a newly established means of production within the communities, which seems likely to be perpetuated to the betterment of the lives of the members. Furthermore this intervention has been pro-poor, assisting the poorest members of the community more than the wealthy.

The processes that have allowed the gardens to be sustainable have been related to collective ownership and the development of a common purpose. Recognition within communities of the value of a social capital that materialises for those that are willing to work collectively, has itself been an incentive to work together and make the PWP gardens work. The unity amongst members, which is exhibited in joint working on plots, sharing of inputs and management duties, is inspiring and offers a ray of hope in an otherwise depressing political and economic environment.

The impact of the use of community water supplies for irrigation on the wear and tear of pumps is an issue. Communal use of the pumps for gardening as well as for domestic requirements is, however, likely to increase the perceived value of the installations in the eyes of the community, and this may lead to increased community contributions, especially from garden members, when the need arises. Increased focus on what communities can do for themselves should not, however, abrogate district authorities from their responsibility to provide a safety net in the form of trained personnel and a supply chain of spare parts, to help communities keep these installations working.

If we ask what lessons might be passed on to communities in other places, where rainfall is unreliable but existing communal water supplies can do more than provide for drinking, cooking and washing requirements, the answer is simple. Such water supplies can, if the conditions are right be used for productive water point gardens. And what are the conditions? Communities must be fully involved from the outset and empowered to take advantage of what is available, in a spirit of unity and equality. There must be full agreement of all parties prior to work commencing over the change in the use of the land, and all plots held by members within the garden should be of the same size. Taking conventional domestic water supplies and using them to supply water for gardens is already a reality, scaling up is the next thing to be done.
Ensuring Sustained Beneficial Outcomes for Water and Sanitation (WATSAN) Programmes in the Developing World.

The Concluding Chapters (7, 8 9 and 10)

In the following three concluding chapters the thesis is drawn together.

In Chapter 7 the topic of lesson learning is discussed, and management issues are investigated and used to suggest a way forward for promoting sustainable development.

In Chapter 8 guiding principles are crystallised into a charter, setting out how to ensure sustained beneficial outcomes for water, sanitation and health education (WATSAN).

In Chapter 9 consideration is given to scaling up WATSAN, including the global financial and staffing implications, as well as the issue of the need for a balance between urban and rural implementation. Lastly WATSAN is considered as a keystone of broader sustainable development.

In Chapter 10 a final section of reflections is included to give a personal standpoint on this most important of development sectors.

Chapter 7 Lesson learning, management and sustainable development

7. Introduction

This thesis attempts to address two main objectives:

- Firstly to suggest ways to achieve sustained beneficial outcomes from water, sanitation and health education programmes.
- Secondly how to scale up such approaches, so that they impact positively on the lives of the millions of people who live without safe water or adequate sanitation.

To do this a study of the literature on the sector has been made (chapter 2) and two case studies of successful water and sanitation programmes have been examined to find how they managed to achieve what they have, in both creating sustained beneficial outcomes in WATSAN and in scaling these up to reach their target populations.

This chapter now seeks to shed more light on what may be generic from these experiences and ask if new approaches to understanding management in the commercial world may have relevance to WATSAN implementation.

7.1 Lesson learning, common approaches, but different solutions?

Many approaches developed for WAMMA were adapted to BIRWSSP. These included surveying to find areas of greatest need, participatory planning methods, and a host of management techniques including transport management and financial accounting. Solutions were not adopted wholesale as blueprints, nor were they used in exactly the same ways. For one thing the situations were different. The formal governance structures and the nature of donor support were also dissimilar. Tanzania during the first four years of WAMMA remained fairly centralised, with government departments in the districts largely vertically controlled, with strong management links to regional and national structures. The WAMMA teams in each district were at the same time developing their own autonomy and ability to operate in a decentralised manner. This movement has since been followed by decentralisation through the national local government reform process, and is touched on at the end of chapter 3.

Zimbabwe had also been moving towards decentralisation of governance with district councils holding the reins of development and providing coordination at district level. Despite the economic and political chaos of the last few years this process has continued, albeit with slowed progress due to the withdrawal of outside financing.

As for donor support, during the implementation years 1996 -2001 the Zimbabwe model was part of a large national programme, with support from DFID programmed for a fixed length of time and related to fixed coverage targets. Whilst the WAMMA programme had grown “organically” with consistent support from WaterAid over a much longer period of

time (1983 to date), there had been less pressure to reach specific coverage targets and freedom given to allow the programme to grow as and when communities were ready to become involved and the institutions able to deliver.

Cultures (as well as historical context and social organisation) in the two countries were different as were their systems and economies, and so where techniques were borrowed from WAMMA to BIRWSSP they had to be honed or tailored to fit. There was no attempt, nor should there have been, to apply some sort of WATSAN blueprint.

So what were the most important lessons learned and can they really be applied elsewhere?

7.1.1 Understanding communities

First knowing the situation in the villages is important. Knowing village populations, where their water sources are and what they are, how far people have to walk at what times of the year, and what their sanitation situation is like, whether they have a school, or a clinic. All of this is vital information, and the job of collecting it in the two case studies became the first point of contact with the communities. Participatory methods such as village mapping, pocket chart voting and focus group discussions revealed much about the village to the fieldworkers, while the discussions held at this time revealed much to community members about the programme. The process helped people to start to ask questions and consider perhaps for the first time how change for the better might come to their community if they did something to initiate it (self-help), real action research at community level.

7.1.2 Facilitating changes in consciousness

For success in implementation of WATSAN, communities have to intellectually buy into the process. There often has to be a change of consciousness for this to happen, not just in the individuals involved, but in the community as a whole. Some people in a community, for example, may know something about the link between drinking water of poor quality and disease, but little may have happened to change the situation in the past, because for the power brokers in the community, usually the men, this is simply not an issue. They have hard enough lives as it is and they don't know what they can do to change it anyway. Discussions between fieldworkers and village men can go along the lines of, "The village women have always walked 7km to the spring in the dry season and used the nearby river bed in the wet season, that is always how it has been", "I drank that water and survived,…. but then there was my young sister…". Doubts start to arise and with them thoughts, which good facilitation can bring to the surface and use to help communities engage on a mental level as well as a physical one, with what is on offer. Likewise women, when meeting in focus groups, can become a force to be reckoned with. Once when the author had been having problems organising four communities to dig a trench 14km long down the eastern slopes of Mt. Kilimanjaro to bring water supplies to their villages, a single women only

meeting of the villages was enough to ensure all the men folk were present to dig the trench the following weekend![15]

Stress in households between men and women was one of the factors mentioned by the people of Songambele in the WAMMA case study (3.9.1). When one member of the family (usually the mother) has to get up early in the morning to walk miles for water, and there are many other jobs to do at the home, with possibly sick children or adults to look after, stress will be there and no one enjoys it.

So to the fieldworker, who understands these pressures and is skilled in participation (the pressures will be different in every village), there is room for dialogue and a chance to awaken the sleeping giant that is the community. People will be interested, men and women will be interested, and once the community realise they are not powerless but can change their situation, then real demand can be manifested into action and empowerment takes place. With ownership of the problem comes ownership of the solution, but this takes time.

7.1.3 Building real demand

The importance of getting it right at the beginning, of spending time with people in their communities, and building community ownership and vision, is vital to the achievement of sustained beneficial outcomes.

It is simply not good enough to pretend that by demanding a 5% financial contribution to capital costs from a village (often the only element of DRA that remains in large World Bank and bilateral funded projects), all of the social issues around facilitating ownership and real demand (hinted at above) have been handled. They haven't.

The concept of ownership was described by one WAMMA staff member as "that extra inner thing" that made projects sustainable (chapter 4). WAMMA staff involved with facilitating this in the villages prided themselves in giving service and expressing solidarity with the communities in their districts. A point made by Carter (2004) is that the "giving of a service" fulfils a fundamental human need to be or do something of worth in society. It is worth considering whether such a service can operate in quite the same way when handled by the private sector. Can making a profit be compatible with public service? Some might argue it doesn't need to be; if a job is not done to standard, it is not paid for. However, others following the principles implicit in the Carter Paradigm (chapter 2) might argue it takes more than a fine attention to detail to inspire a community to develop; it needs the fieldworkers' heart and soul, and this is not something that can be bought or sold.

[15] New Keni spring and pipeline project, WaterAid, Tanzania.

7.1.4 So how to inspire this ability and commitment amongst the workers of WATSAN programmes?

Experience from both the WAMMA and BIRWSSP programmes indicate that setting up integrated teams of staff from related government departments is the way to do this successfully. The members of such a team bring expertise from their departments. Health workers bring health expertise, community development workers bring community development expertise, water workers bring water expertise and education workers bring expertise in education. The team members enjoy the experience on many levels. They not only learn from one another, they often experience a new freedom of responsibility as to how they are allowed to undertake their work. If seconded part time or full time to working with WATSAN, the time they spend doing this can be dedicated to the task in hand rather than being stuck in their own often rather boring offices, under pyramid command structures that allow for little individual responsibility or initiative to be taken.

WATSAN programmes need to be well funded and well equipped to do their work properly, and while it could be argued that any well-funded programme is going to succeed, this thesis would argue that the quality of facilitation and implementation work is vital.

WAMMA staff, when asked what motivated them, did not rank salary or allowances as their chief motivating factors (see chapter 4). Instead they ranked responsibility first with, achievement sharing more or less equal importance with job security and self-advancement, and job interest on the same level as salary. Self-status and field allowances were ranked of least importance. The interviews with the WAMMA team members revealed that the following factors helped to inspire them in their work (in no particular order):

- increasing knowledge
- being more effective
- experiencing and learning from people in other departments
- solidarity with communities

These things not only indicate a committed, dedicated and able workforce, they suggest what can be achieved elsewhere if integrated teams are formed and trained.

Achieving sustained beneficial outcomes from WATSAN is greatly dependent on the attitudes and actions of the staff that attempt to bring it about. If given appropriate management systems to operate within, these ordinary men and women (the unsung heroes and heroines of WATSAN) both enjoy their work and do it well at the same time. The flat, or plateau management of WAMMA is an example of such a fieldworker management system.

7.2 Community management in the longer term

Schouten and Moriarty in their book, Community Water, Community Management (2003) acknowledge the complexities and delicate nature of achieving long-term sustainable success with WATSAN. As they say,
“Communities often come close to achieving success for short periods, but there are also frequent failures, and systems often do not survive in the longer term. Success requires a complex series of factors to be favourable, while failure can be precipitated by just one factor going wrong.”

This implies that often learning is not happening, that systems set up are not robust and that they are not able to react because they lack something elemental, a sense of purpose from within.

The importance of mistakes, according to Cleese (1988), is being able to learn from them. For systems to be sustainable they have to be robust, autonomous living units, capable of taking the knocks and hard times, and able to use these as lesson learning exercises, for which they must find their own solutions. The capacity to manage a water scheme, like a successful business, takes time to develop and mature. Unlike a business, however, which can at some stage fail with implications limited to the workforce and shareholders, the importance of a community water supply is its essential link to the survivability of the community itself, at least as far as living life to an acceptable standard is concerned. For this reason long-term support in the form of advice and material backup, usually from local government, is vital.

The level of difficulty of keeping a system running also differs with time, as does the ability of a community to respond to this need. New machinery, for example, may require minimal input for the first few years, but will face total replacement costs at the end of the design life. If maintenance work is not carried out according to schedule then the life may be drastically shortened. But even when maintenance is carried out, replacement costs may be hard or impossible to bear, especially if, as happens all too often, the strength of the local economy fails. In such cases water funds or group savings may be reduced to zero through inflation and devaluation. Special targeted “Harambe” fund raising exercises may be the only way out if other sources of funding are not available. This will not be possible unless the community addresses the problem, and support from local government will often be crucial in mobilising this effort.

Where economies are buoyant, however, funds generated for maintenance and replacement costs will not be devalued, and here good financial management and transparency are important to ensure sustained progress and financial security. Local government in these situations is ideally situated to provide the long-term support needed, in terms of financial audit as well as trusted management and technical advice.

Schouten and Moriarty (2003) point out, “The community must be in charge of a host of factors to do with demand responsiveness, ownership, appropriateness and cost recovery. However, being in charge does not mean being left unsupported.”

Local and national government thus have a responsibility to monitor and promote effective community water supply management to the best of their ability, without creating a situation of dependence that they know from experience they cannot fill, as evidenced by the collapsed centrally managed water schemes of the past.

7.2.1 Lessons from business

Nicholson, in his book Managing the Human Animal, uses what he calls the “Tolstoy principle” after the opening sentences of the book Anna Karenina in which the author Tolstoy wrote, “All happy families are alike, but each unhappy family is unhappy after its own fashion”. Nicholson follows this by writing, “So it is in business. There are a million and one ways to run a company badly, but a common set of principles underpins excellence”. …“this amounts to a human vision of management that honours the essence of human nature” (Nicholson 2000).

So it is in achieving sustainable development of WATSAN. There are many ways in which programmes can fail, but simple truths apply to those that succeed. This is both true of the ways that communities become successfully involved and committed to their project, and in the heart of the management styles adopted by successful programmes. In the WAMMA interviews (chapter 4), the fact that staff members had not only knowledge, but also enthusiasm for their work over a prolonged length of time, indicates that the essence of their human nature is being honoured by the programme.
The proverb “where there is a will there is a way” has relevance here. The will to succeed must be there if success is to be the outcome. Motivated staff are of particular importance in water and sanitation programmes, as if they lack motivation and do not have the will, it is unlikely that any community they work with will have it either. Their purpose is to empower the communities they work with, and they and their organisations will fail in this if they are dysfunctional and lack this will. However, if they do have the motivation and the will, then given the right social and technical approaches and tools to work with, success is a possible, if not a probable outcome.

On issues of failure Nicholson refers to “seven deadly syndromes that recur in failing businesses”:

- suppressed emotions and stress
- disempowerment
- low trust politics
- discrimination
- ineffective teams
- bad decisions
- management by fear

The same is true for failing WATSAN programmes. Workers disempowered and disinterested, lacking drive, determination, vision and will, are not going to implement successful sustainable development programmes. The same can be said of the primary stakeholders, the community members, if they feel similarly alienated and marginalized.

Nicholson suggests “the alternative (to dysfunctional organisation) is to organise around something everyone cares about more than any individual characteristics. In a good jazz orchestra no one cares whether the players are white or black, young or old, male or female, educated or uneducated. There are only two criteria: Do you love the music, and can you play it? What is needed… is some overarching goal that is compelling and unites the interests of every member of the band in making a single uplifting glorious sound”.

This is the kind of mentality and approach to management that is present in the best of WATSAN programmes, and is needed throughout for scaling up to happen successfully.

Nicholson goes on to say, “The only conflicts these arrangements arouse (sic) are competition for inclusion and frustration over exclusion. These are healthy insofar as they underline the value and importance of the group. Conflict can be avoided if all members are fully engaged – stretched, even – by the requirement to perform all the activities needed for the community (company or organisation) to survive”.

So perhaps lessons from the commercial world can offer insights into how WATSAN can be better delivered. What is needed is openness to learning and flexibility of approaches to match. Strictly enforced blueprints or master plans are not useful in these circumstances as they are too restrictive. However, flexible guidelines and advice will help to show the way.

Approaches and methodologies can still be transferred successfully as long as there is flexibility in their adoption, and a learning approach is part of the philosophy. The importance is that sustained beneficial outcomes occur, not that a set of strict blueprints is followed.

For this reason the next short chapter is dedicated to a charter for sustained beneficial outcomes for WATSAN - ideas to be considered, and then applied or not as the programme or project manager thinks fit.

Chapter 8 A Charter for the Sustainable Development of WATSAN

8.1 Why a charter?

This chapter proposes a “charter” of principles for WATSAN. It is drawn from the processes and examples from the two detailed case studies (presented in chapters 3,4,5, and 6) and from the other programmes and publications (reviewed in chapter 2), to illustrate issues related to ensuring sustained beneficial outcomes from WATSAN, and scaling these up in the struggle for clean water and safe sanitation in the developing world.

The issues raised are those encountered at “the coalface” at village, district and provincial levels. They are of use because as they are the product of successful interventions they shed practical light on issues that will continue to be faced in the design and implementation of projects and programmes elsewhere in the developing world. They are especially important to those involved in implementation, from planners to managers, as countries struggle to come to terms with what they need to do to reach the UN Millennium Development Goals. Different circumstances require different solutions and different emphasis, even when similar methods are used. Thus while a common set of principles may be applied, flexible approaches are required to fit each situation.

Adopting the approaches revealed in the Carter Paradigm (Carter 2004) the Charter for the Sustainable Development of WATSAN seeks to propose strategies to various elements of WATSAN development: from start up through to long term support; from the broader environment to health and hygiene; from the transfer of need into the expression of actionable demand by empowered communities; from team building and staff development to decentralisation; from policy and the role of advisors to the need for a reflective learning approach in each situation; and finally for scaling up whilst retaining sustainability.
For scaling up WATSAN, whether from village to district, or from provincial to national level, the foundations have to be right, so this charter takes the reader through various angles on programme implementation (A to I) and suggests what is important to look for and consider, to ensure sustained beneficial outcomes.

The Charter for the Sustainable Development of WATSAN

A) Understanding the needs

> Understand the needs of the local population, with the local population. Use robust participatory tools to develop a shared and sound information database. So start the process of developing links between the programme and the people, actively understanding the needs of the poor and women in particular. In doing so be gender aware, be culture aware, be youth aware and be age aware. Society and communities are not homogenous; it is important for the planner and manager of WATSAN programmes to be aware of the separate groups that exist in society,

and how their needs differ and at times conflict. With ownership of the problem by the people, including its causes and implications, comes ownership of the solution by the people, and this is vital for sustainability if the whole community is to have a role in owning and managing the solution and not just a part of it.

B) Evolution of approaches, needs-based to DRA

Take a needs-based approach to start with, ensuring that the poorest communities are reached first, and temper it with a strong dose of self-help. At all times avoid creating dependency. Allow this needs-based approach to evolve into a demand-responsive approach, retaining self-help as the guiding ethos. Going directly to demand-responsive approaches in the first place and working only with those that are ready and willing risks ignoring and excluding the poor. For this reason, initially allow the process to evolve from a needs-based bias, as this will help ensure the programme is inclusive to poor communities while at the same time cultivating the self-help ethos. Self-help is in its essence a combination of factors resulting from empowerment. It includes demand, self-respect and self-dependence in the growing ability of an empowered community to express actionable demand[16]. For this to come about, community building and capacity building is needed within poor, badly served communities, to help bring the people in them to the point where they truly can act and work together for the collective good, managing their schemes for themselves.

C) Environmental concerns, ecosan, productive water and livelihoods approaches

Take into account the environment and the way it is changing, emphasising integrated water resource management principles. This is important to ensure sustained beneficial outcomes, for example by making sure that water abstraction is sustainable, and that catchments are protected and not allowed to degrade. WATSAN does not exist in a void and WATSAN improvements must be seen as a part of achieving sustainable livelihoods. Access to safe sanitation, vital to keeping the dangerous pathogens in excreta away from people, can be taken one step further and used as a resource through effective use of ecosan (use of the products of sanitation at the household level in the safe manufacture of compost), to improve soil fertility and structure and in doing so reverse soil degradation. Likewise, productive uses of water in communal gardens can be considered as a new way for poor people to generate sustainable financial and social capital. This, if combined with ecosan on intensively farmed plots, can help secure household economies and free people from soil nutrient exhaustion and structure degradation, as well as dependence on rain-fed agriculture, providing increased livelihood security and sustainability during both drought and normal rainfall years.

[16] 'Actionable demand', a demand expressed by a community that they will back up with collective action to achieve.

D) Health and hygiene

Health and hygiene issues need more than airing to recipient communities, they need full comprehension and understanding, so that people can be empowered to make rational choices about their way of living. If there is no knowledge of a problem it cannot be dealt with, and this is especially so with health and hygiene. If people are to take the first step in changing their lives for the better, structured health and hygiene education for adults and children is the only sure way for health and hygiene knowledge to be passed on, understood and internalised so that beneficial behaviour change can have a chance of becoming reality. Participatory methods are the best way to do this, as they offer the chance for active involvement of adults and children in learning and applying this knowledge. The depth and breadth of health education needs to go beyond water and sanitation-related diseases and include the scourge of sexually transmitted infections including HIV/AIDS, as well as family planning issues and the benefits of smaller families. WATSAN health education is ideally situated to act as a springboard for other related development activities, leading to more informed adults and children living happier, more fulfilling lives.

E) Team and capacity building, staff development and management

Spend time piloting participative approaches in the areas targeted, building up confidence and ability in the use of working techniques with the staff. Encourage a team spirit dedicated to the importance and relevance of the job in hand. Support the development of simple, appropriate, inclusive, integrated and transparent management systems. Build the ability and capacity of staff, operating in integrated teams, free from pyramid (hierarchical) management structures, working instead as much as possible on a plateau with a shared vision and ethos. Within teams, promote enthusiasm and commitment, ownership and pride in their work, security in their work place, and provide material support to allow them to undertake their roles successfully. Encourage staff to develop new skills through targeted training as well as a general appreciation of broader processes and issues.

F) Decentralisation, long-term support and supply chains

Work with local government from the beginning, bringing local knowledge, accountability, vision and dedication into representative bodies. Empower local government to take responsibility for the programme, and help to manifest pride in the improvements their work brings to local communities. In doing so a WATSAN programme can influence governance, promoting at least within the bounds of the sector, “government of the people, by the people, for the people” (Lincoln 1863), ensuring that this starts to become reality and moves beyond empty rhetoric. Generate ownership and commitment at all levels. Have and instil a view to the long term with local government and primary stakeholders at an early stage, so that policies pertinent and useful for the future can have firm roots from the start. Promote discussion and thought about where spare parts will be available from,

who will be trained to install them, to what level, and how this will be financed. Encourage the early piloting and lesson learning so that support systems are tested and functioning as a part of programme development and not left until last.

G) Policy and the role of advisors

If there is a national water policy that emphasises community ownership, then use it to shape local programme policy, feeding back to national policy makers the pros and cons, with a view to influencing the evolution of policy. If policy is not formed, work with national government to develop it. In the early days of a programme an advisor should be prepared to assume an initiation role, and take the risk of proactively promoting new approaches. With their temporary and external status, advisors need to be dynamic in promoting change, while adopting a “Lao Tzu” (Trans. Stephen Mitchell 1988) style, knowing when to pull back and let the local staff and local people take over and take the credit, and say “we did it for ourselves”.

H) Maintaining a flexible process with a learning approach

Remain process orientated and promote reflective learning (Brockbank 2002), and action in constant feedback, maintaining flexibility of response to the moving situation on the ground, avoiding blueprints or master plans with rigid objectives. All the while keep a firm eye on the overall programme goals and objectives of improved and sustained access to safe water supply and sanitation with improved health and hygiene knowledge, attitudes and practices, leading to sustained beneficial outcomes, with improved livelihoods for communities.

I) Working at community speed and at meaningful scale

Once robust and sound, socially and technically appropriate approaches have been identified and confidence in them secured, these should be applied with enough time given for communities to work at their own speed, but at a large enough scale to make a meaningful impact. If it takes ten years to reach 75% coverage in a single district, it can also take ten years to reach the same level of coverage across a nation. It just takes faith, finance and personnel to start the process in all the districts at the same time.

Working in WATSAN means working in an incredibly important area for mankind, so to those of us lucky enough to be involved, enjoy it! It must be one of the most fulfilling jobs that we can do!

Chapter 9 Scaling up

9 Introduction

This chapter examines scaling up issues, including estimates of the finances and staff required to meet the MDGs, issues around demands for higher service levels from urban areas, the impact of budget support and Poverty Reduction Strategies or PRSs, and finally in drawing together these issues presents WATSAN as the keystone of sustainable development.

9.1 Scaling up

The Charter for the Sustainable Development of WATSAN in chapter 8 is relevant at whatever scale it is used. It forms a set of basic principles for the implementation of successful and sustainable water and sanitation services. Their adoption at a national level will require a considerable degree of flexibility, trust and commitment to decentralisation, to actively encourage development appropriate to each district. Scaling up will thus require inspired national leadership, with appropriately placed support structures for community water supplies at a local level a near permanent feature.

A nation may be considered as a collection of districts, but issues such as national programme coordination will have to be addressed for information sharing, maintaining institutional memory of what has gone before, ensuring that lessons from both good and bad experiences are not forgotten. The Zimbabwean case study noted a national coordination body, set up to provide an overall approach to standards, as well as monitoring and reporting on water and sanitation. In this case, the undoubted achievement has been crippled by the current economic and political conditions. The lessons to learn, beyond the need for economic and political stability, are in terms of allowing flexibility and the need to support and encourage innovation from the districts, rather than concentrating on a one-way process of top-down control to meet national level requirements.

9.2 The level of finances required to reach the MDGs

The costs for provision of sustainable water supplies, sanitation and hygiene education, including capacity building, were around US$24 per beneficiary in the Zimbabwean case study, and US$20 in the Tanzanian programme (Cocker 2002). Estimating the cost of scaling up the sector as a whole to meet the MDGs, is thus a matter of using the higher of these two figures as a rough per capita estimate and multiplying it by the population involved. There will be1.4 billion people without safe water and 3 billion people without adequate sanitation by 2015, using the current population growth rate for less developed nations of 1.6% (UN 2000). Assuming those assisted with safe water are also assisted with sanitation (as in the case studies in this thesis), the MDG target to halve the proportion of

people living without safe water and sanitation[17] will require around US$30 billion additional funding between now and 2015, provided the approaches proposed in the charter in chapter 8 are applied and with a similar per capita cost (see table 9.1).

This is a large, but not impossible figure to meet. Current external aid spending on water and sanitation is estimated as being US$5 billion annually (Terry et al. 2003). With ten years remaining to 2015, this would provide the sector with US$50 billion in investment to reach the Millennium Development Goals for water and sanitation. That is US$20 billion more than required if the estimates in the previous paragraph are to be believed.

Some experts in the sector have, however, estimated that only between 5 and 10% of current expenditure is actually directed at community water supply and sanitation, as opposed to the sector as a whole (Jolly 2004). The bulk of current expenditure is spent on large expensive urban programmes, which while they may improve the lives of those living in the targeted areas, will not on their own address the bigger picture of the unserved. This being the case, only US$2.5 to 5 billion will be available to meet the MDGs, representing a considerable financial shortfall on what is required. The UK Department for International Development (DFID) spent £73 million on water projects in developing countries (or around $100 million) during the 2001/02 financial year (CPA 2003). This if continued at its current rate it would amount to just 4.8% of the total required to fund the MDGs, given appropriately designed programmes to spend it on. Ironically with the UK aid budget set to increase to £4.5 billion per year by 2005/06 (DFID 2004b), the UK could provide all the financial resources required to meet the MDGs for water and sanitation and still have change left over from its current aid budget, though it would obviously have to do this to the exclusion of other development commitments.

Higher estimates also exist, however, for the financial requirements to reach the MDG water and sanitation targets. The report on the World Panel on Financing Water Infrastructure estimates for the MDGs, for example, considers an extra annual investment of about US$10 billion is required (Winpenny 2003), which would bring the total to US$15 billion a year, or around US$165 billion overall, approximately US$165 per person. Chief among the factors that will influence the actual cost of implementation is the level of service that will be reached. Household connections, for example, are desirable as they reduce the distance walked to virtually zero, eliminate queuing, and can be a major factor in improving health (Cairncross and Valdmanis 2005). They are, however, much more expensive to install than community water points and result in much higher consumption of water (White et al. 1972). This in turn requires higher quantities to be pumped into the system and takes us back to the argument over where limited quantities of funds should be directed.

[17] The cost of promoting and subsidizing sanitation alone is calculated at US$7 per capita or around $42 per household, based on experience from BIRWSSP & WAMMMA.

9.3 Urban WATSAN increased demands and falling levels of service

The result of demands for higher levels of service in urban areas, without corresponding investments in supply, is that while the number of house connections are increasing, the falling state of repair of networks (from pumping stations to pipes) is leading to reduced levels of service.
This is noticeable in the amount of time water is available from taps, the quantity of water being used by customers, and in the quality of the water delivered. The Drawers of Water 2 study from east Africa verified this, showing that both the hours of operation and corresponding consumption of water have fallen over the past 30 years for those with domestic connections. Hours of operation have dropped from near 100% of households receiving water 24 hours a day in the late 1960s, to 56% receiving the same level of service today, with 40% receiving less than 12 hours of service and roughly 20% getting between one and five hours of service per day. Consumption over the same period has dropped from 128 litres per person per day (l/p/d) to 66 l/p/d (Thompson et al. 2003).

While an undeniable need for improvements in urban areas exists, a balance needs to be struck over how this is financed, as levels of coverage in urban areas exceed many peri-urban and rural areas where the majority of those without safe water and sanitation live.

9.4 Using the private sector in urban areas

Millennium Development Goal 7, as well as tackling access to safe drinking water, targets “significant improvement in the lives of 100 million slum dwellers” (UN 2004). The WATSAN situation in these urban slum scenarios where population density is high and people derive their livelihoods from cash incomes, may in part lend itself to self-financing solutions, with long-term loans used to finance municipal solutions. Funds exist within these communities and people are often already paying a great deal for water, which if better directed, could be used to pay for improved service at a reduced cost. Partnerships involving the local and international private sectors may well play a major role in solving this aspect of the global water and sanitation problem. However, the extent to which the private sector becomes involved will still depend on the level of funding to be made available and the risk they and their shareholders perceive of getting involved.

9.5 Targeting marginalized peri-urban and rural areas

The issue of targeting marginalized peri-urban and rural areas, where the majority of the unserved live, remains to be worked out. For this to happen, a shift in approach is required to direct sufficient investment in their direction. Even with private sector involvement and sufficient funding, a gap will continue to exist between provision and need because of an absence of effective delivery mechanisms. For this gap to be closed governments and their existing institutions will be have to be mobilised. Watts and Kumaranayake (1999) in their work on scaling up interventions to fight the HIV/AIDS epidemic in Africa state, “for rapid scaling up, the potential to use existing infrastructure must be maximised”, and this is also

true for WATSAN. The WAMMA and BIRWSSP case studies in this thesis are examples of how this could be achieved, and the charter in chapter 8 is designed to facilitate this.

9.6 Staffing and management requirement for the MDGs

The staffing and management requirement in the developing world to achieve the MDGs is largely one of training, capacity building and motivation. Manpower exists in profusion. Government departments often brim with staff who, because of poor management, are seldom put to work as efficiently as they might, though they often long to be.

For the MDGs to be reached, a rapid uptake of new ideas and good management is needed in local government across the developing world. This will require training, capacity building, vision, enthusiasm and commitment along the lines indicated in the Charter for the Sustainable Development of WATSAN (chapter 8). Based on the experience of WAMMA and BIRWSSP, the estimated number of staff required to meet the MDGs are presented along with the estimated financial requirement in table 9.1 below.

9.7 Poverty reduction strategies

Many developing nations in the highly indebted poor countries initiative (HIPC) have initiated Poverty Reduction Strategies (PRS). These provide an analysis of the factors contributing to poverty and action plans to work towards achieving the country related MDGs. They also provide the basis for government budget allocation, which is increasingly important as donors move towards budget support rather than supporting sectors or projects.

	Staff numbers		Costs over 10 years
Advisors (capacity building) 5 yrs	3,750		$562,500,000
Integrated team staff (software)	37,500		$3,750,000,000
Hardware technicians	45,000		$2,700,000,000
Maintenance staff	75,000		$750,000,000
Hardware and support costs (materials, transport, allowances at $24 per person)			$22,400,000,000
Grand Total for the MDGs			$30,162,500,000

Table 9.1 Estimated human and financial resources required to meet the MDGs[18] by 2005.

will requireoing study “Watsan and PRSPs in sub-Saharan Africa” by ODI and WaterAid (2004), identifies a number of key issues regarding the priority and hence financing allocated to water. It notes that although water, and to a lesser degree sanitation, are

[18] These figures are derived from staffing levels and costs involved in the WAMMA and BIRWSSP programmes. They are extrapolated from the premise that to implement a WATSAN programme in a district of 200,000 people the following staff numbers are needed: 10 maintenance staff, 6 technicians, 5 integrated team members (for a period of 10 years), with 1 programme advisor (required for 5 years).

identified as contributing to poverty and are flagged as priority areas, the funds actually allocated to the sector do not match their importance. This is worrying if the sector is to be able to meet the needs of the people in the countries concerned and underlines the need for targeted influence or encouragement, to help these countries address the needs of their people.

In the context of PRSPs, the following steps are considered necessary to support the achievement of the water and sanitation goals:

- All countries need to prepare National Plans of Action, developing their own targets to match the specifics of their country.
- Government budgets need to make provision for catalytic support to get action underway, to sustain the action for the next decade and to provide effective systems of maintenance.
- Donors need to commit adequate resources for long-term support and encouragement.

(Adapted from Jolly 2003)

In Tanzania the PRSP identifies targets for rural and urban water and sanitation services, stating the expected change in coverage and the required timescale. From the annual PRSP monitoring reports (URT 2000 and URT 2001) the resources allocated to the sector shows an increase of nearly double in relation to the preceding year, with projections of increasing relative share of resources. This shows movement in the right direction, though a progressive series of doubling the funding for WATSAN will be required if the MDGs are to be reached for Tanzania.

DFID, in its latest strategy paper the “Water Action Plan”, also notes that HIPC Nations have failed to prioritise the WATSAN sector in the first generation of PRSPs, “despite the fact that water and sanitation are among the top three or four priorities of poor people in most countries” (DFID 2004). Despite the British government’s conclusion that this has been because responsibility for water resource management, water supplies and sanitation tend to be spread across different parts of the governments of developing countries, the responsibility must also be put at the door of the donors themselves for failing to prioritise WATSAN. DFID’s own in-country staff, for example, are predominantly economists, health and social development advisors with little grasp of how to implement, let alone influence WATSAN development. The World Bank is also guilty of imposing its own agenda ahead of finding solutions for WATSAN, by, for example, insisting that the private sector have the principal role in implementation. This can have negative consequences of holding back development when capacity exists within government departments, but their participation is ruled out because of donor policy, while at the same time the local private sector has little or no capacity to implement on their own.

The PRSs provide an avenue for clearly targeted and prioritised support. Implementation needs to follow in an appropriate and robust manner, using the mechanisms that already

exist, utilising best possible practice, learning from what has come before, and with open eyes to the potential opportunities and pitfalls that exist on the road ahead.

9.8 WATSAN: The keystone of sustainable development

The part WATSAN development can play in helping to bring about broader sustainable development makes it a crucial crosscutting issue across development as a whole. With an expanding world population expected to reach seven billion by 2015 (UN 2002), there is a huge need for the peoples of all nations to live happy, healthy, fulfilling and secure lives, so that demographic transition (McKinney and Schoch 2003) can take its course and populations can stabilise peacefully. Provision of safe water and adequate sanitation for the people of the developing nations are not only two basic and vital elements for building a secure future, their provision can also have a liberating effect on other aspects of people's lives. Access to WATSAN can free up time for other activities, improve health, and in the process create venues for social action, a place for empowerment and broader social development to start from. Water and sanitation are keystones for development in general and if seen in this light, a new crosscutting focus on WATSAN development will lead to a more sustainable future for all. To use a sporting analogy, the WATSAN sector can punch well above its weight.

9.9 Conclusion - meeting the MDGs

The commitments given to the World Summit on Sustainable Development in Johannesburg in 2002, to reduce the numbers of people living without safe water and sanitation by half, are theoretically achievable. The funds would appear to be available, but will the MDGs be achieved?

To answer this question, three questions must be answered first.

1. Will developing country governments promote the conditions for this to happen as suggested in the charter in chapter 8?
2. Will they put WATSAN in the forefront of their PRSPs?
3. Will international donors and finance institutions remove their hoops of conditionality and place the required funds on the table?

Sustainable development in the WATSAN sector demands a yes to all three of these questions, and the next ten years will show if governments and institutions from both the South and the North have the courage, responsibility and willingness to do this.

Meeting the water and sanitation MDGs is possible in sustainable manner, but only if there is a massive shift in the resources allocated towards those really in need and a change in the attitudes of the political power brokers to allow this, promoting quality work, implemented by integrated teams, in a process orientated, ethos-driven way, with WATSAN set as a keystone of wider human development.

Chapter 10

Final reflections

In writing this thesis I have found myself on a personal journey, concerned that lessons learned from colleagues and from personal research and experience about achieving sustained beneficial outcomes for WATSAN, be captured and passed on to others working in this most important of development sectors.

I struggled to put a name to the nugget, the essential “thing” that made WATSAN programmes “alive” to those in them, both beneficiaries and staff, and made sustained beneficial outcomes a reality. Thinking first that this thing was ownership, I dug deeper and found that in part it was, but it was also many other things as well.

I was also challenged by the fact that for any of this work to be of use to the masses that struggle every day to live without safe water and adequate sanitation, the approaches have to be “scale up-able”.

In chapter 2, I talk of a timeline of advancement in knowledge and an application of factors, as varied as technology and gender approaches in the WATSAN sector. This timeline progresses still and will continue to do so, as we still are missing pieces to the jigsaw. Human innovation and invention means that until the sector’s problems have been solved, new pieces of this jigsaw will continue to be not only found, but invented as the jigsaw itself evolves. Evidence for the next stage of this evolution may be found in the development of productive water and of ecosan mentioned in chapters 2, 5 and 6, and in SODIS in chapter 2; which has the possibility to revolutionise access to safe drinking water through home purification using the power of the sun.

There has been much discovered and much no doubt remains to be discovered about ways to make WATSAN programmes deliver sustained beneficial outcomes. So how does this thesis take knowledge further?

A number of well known factors are vital to ensure sustained beneficial outcomes in WATSAN. These include participation, demand, understanding of gender issues, appropriate technology, long-term support, availability of supply chains. Much has already been written on these, and chapter 2 also sought to draw this out, along with conceptual models and the Carter Paradigm. The case studies in chapters 3 through to 6 lend weight to the importance of these factors by adding further evidence from research and experience. They also raise other issues such as staff motivation, vision and commitment and the way that management structures and systems can have a profound influence on the ways in which staff can be liberated to get on with their work, and find fulfilment in it. Elements of all these I have sought to include in chapter 8’s Charter for the Sustainable Development of WATSAN, as a guide to planner managers.

I have also attempted to illuminate national level programme coordination and international financing with simple but illustrative “ball park” calculations, which may help to show what is required globally. These are important because of their direct connection to scaling up appropriate strategies to solve the WATSAN problem and ensure sustained beneficial outcomes for all become a reality.

Appendix 1

Approximating water turbidity for SODIS water treatment

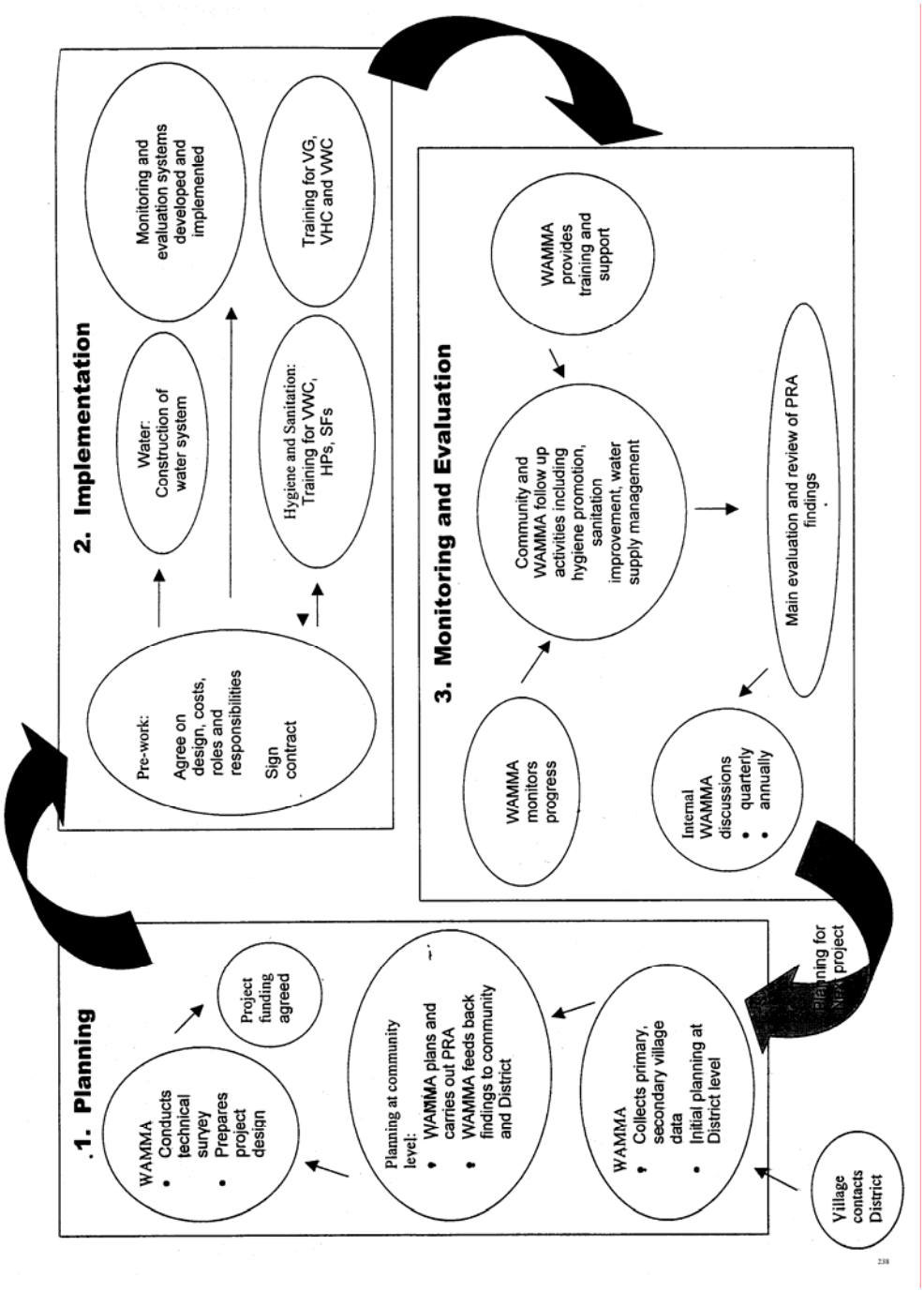
This is an approximate method for estimating if water turbidity is less than 30 NTU in a standard 1.5 litre mineral water bottle and therefore suitable for SODIS treatment.

If the word SODIS printed at this size can be read by looking lengthways through a filled bottle standing in the shade, then it is considered to have an NTU of less than 30 and is suitable for SODIS treatment.

If the water is more turbid than this, pre-treatment by straining the water through a cloth is suggested.

Appendix 2

WAMMA PROJECT CYCLE



Appendix 3

Sheets used for data collection during village mapping (actual forms used for village mapping printed in the vernacular Shona)

BIKITA DISTRICT IRWSSP WATER AND SANITATION PLANNING - KRAAL INVENTORY - from village mapping exercise							
NAME OF WARD							
NAME OF VIDCO							
NAME OF KRAAL							
GPS REF. OF KRAAL			NO. OF LATRINES WITH VENTPIPE/FLY SCREEN				
NO. OF HOUSEHOLDS			NO. OF LATRINES WITHOUT VENTPIPE/FLYSCREEN				
POPULATION OF KRAAL			TOTAL NO. OF SQUAT HOLES				
			RATIO OF PEOPLE TO VIPS				
TYPE OF WATER SUPPLY	NUMBER	NAME	DDF#	GPS	SERVICE G/B/NF	NO. OF USERS	SEASONAL S PERENNIAL P
BOREHOLES WITH BUSH PUMP		a					
		b					
		c					
DEEP WELLS WITH BUSH PUMP		a					
		b					
		c					
UPGRADED FAMILY WELLS							
		a					
		b					
		c					
		d					
		e					
FAMILY WELLS IN NEED OF UPGRADING							
		a					
		b					
		c					
		d					
		e					
		f					
		g					

TRADITIONAL WELLS							
DAMS / VLEIS							
RIVERS / STREAMS							
PROTECTED SPRINGS							
UNPROTECTED SPRINGS							
SCHOOLS, CLINICS & BUSINESS CENTRES							
NAME		WATER SOURCE	DDF#	GPS	NO. OF PUPILS	NO. OF STAFF	NO. OF SQ. HOLES
		TYPE					
REPORTED BY _____							
		DESIGNATION _____					
(PLEASE RECORD ADDITIONAL INFORMATION ON THE BACK OF THE PAGE)							

Appendix 3 Continued

WATERPOINT STATUS CHECKLIST							
WATER POINT NAME					DDF NO.		
VIDCO NAME/NO.					WARD NO.		
GRID REF					YEAR CONSTRUCTED		
IS PUMP FITTED?					MODEL OF PUMP		
IF NOT, WHY NOT?							
DOES WATER POINT YIELD ENOUGH WATER?							
ESTIMATED NO. OF USERS							
DO PEOPLE QUEUE FOR A LONG TIME?							
QUALITY OF WATER (TICK)		CLEAR	RUSTY	MUDDY	SMELL		
TASTE OF WATER (TICK)		FRESH	IRON	SALT			
STATUS OF PUMP							
FUNCTIONAL? (TICK)		YES	NO				
NO. OF STROKES FOR WATER							
IS PUMP BROKEN? (TICK)							
HOW LONG HAS IT BEEN BROKEN?							
HEADWORKS		IN NEED OF REHABILITATION?					
APRON & RUNOFF CHANNEL							
SOAK AWAY							
WASHING BASIN SET							
CATTLE TROUGH							
WASHING LINE							
FENCE							
STONE PAVING SURROUND							
WATERPOINT MANAGEMENT							
IS THERE A COMMITTEE?							
IS IT FUNCTIONAL?							
IS THE COMMITTEE TRAINED?							
IS DUTY ROSTER IN PLACE?							
DOES PUMP MINDER VISIT OFTEN?							
ENVIRONMENTAL CHECK LIST							
WHAT IS WASTEWATER USED FOR?							
GARDENS?		TREE PLANTATION?					
NURSERYS?		FISH PONDS?					
EXISTANCE OF GULLIES NEAR WATER							

POINT?						
SITE OF BOREHOLE/WELL						
NEXT TO WATERWAY? IN WATERWAY? IN A SWAMP?						
ARE THERE ANY SOIL PROTECTION WORKS, CONTOUR RIDGES, ETC.?						
IS THE ENTIRE WATERPOINT YARD STONE PAVED?						

Appendix 4

Examples of VBCI data for both water and sanitation from BIRWSSP

The following examples of pages taken from the VBCI for Ward 5 in Bikita District, illustrate how the data was stored and how this form of presentation can be used directly for planning purposes.

Key to abbreviations for village-based consultative inventory water report:
Village Map Pop = village population, SPWP = safe perennial water point, pop SPWP = population using safe perennial water point, IFW = improved or upgraded family well, pop using IFWs = population using the improved family wells, UIFW = unimproved family well, pop using UIFW = population using the unimproved family wells, trad. wells TWs = traditional shallow wells, pop using TWs = population using traditional shallow wells, river extr. points = river extraction points for water collection, pop using rivers = population using rivers, SPR = springs, pop using springs = population using springs.

BIKITA IRWSSP – VILLAGE-BASED CONSULTATIVE INVENTORY REPORT ZONE 4														
WATER SUPPLY			S											
WARD 5		Village	P	Pop	IFW	Pop.	UIFW	Pop.	Trad.	Pop.	River	Pop.	S	Pop.
Mar-98	GPS REF.	map	W	SP		using		using	wells	using	extr.	using	P	using
		pop	P	WP		IFWs		UFWs	TWs	TWs	points	rivers	R	springs
WARD TOTALS		10593	15		18	493	79	2927	22	1925	23	3216	9	605
VIDCO MUNANGA														
Mapurisa	361244 E 7772080N	685	1	365			1	30	1	114	1	100	1	91
Chimurudze	359321 E 7771279N	242	1	134	1	11	2	27	1	47	1	93		
Maundu	361069 E 7772910N	549		184			2	27			1	324		
VIDCO CHISUNGO														
Nhodovari/ Machona	360058 E 7770240N	543		233	1	50	1	29	2	290	2	175	1	25
Mbengo	361565 E 7766948N	613			2	101	2	101	2	82	2	613		
Masasa	359915 E 7767963N	154		54					1	50	1	100		
Chinouswa/ Nhodovari B	362216 E 7766029N	368					1	54	1	204	2	266		

VIDCO BERE														
Zvemisha	357011 E 7771992N	480	1	155	1	3	1	176			1	40	1	62
Musiwedzingo	360274 E 7775131N	154		130							1	28	1	47
Machaya	357555 E 7771501N	290		88	1	36	1	10	1	50	1	38	1	78
Chirume	360474 E 7776169N	141	1	45	1	15	1	24	1	19	1	33		
Pasi	357752 E 7773565N	404		138					1	139	1	127	2	134
Beny	357917 E 7773191N	124							1	117	1	7		
Murakata	355261 E 7771835N	247	1	75					1	158	1	24		
Shuro	358608 E 7774984N	341	1	120					1	15	1	121	1	100
Fashu	359880 E 7777101N	355		31	1	31			1	89	1	177	1	68
VIDCO MUCHAKATA														
Nyasha/ Tongonya	358758 E 7769298N	576		20			17	530	1	53				
Gwekwe/ Kwangwa	356589 E 7769592N	513	2	269	4	110	6	165	3	93				
VIDCO MUSHANDIRAPAMWE														
Maipisi/ Mudzama	355966 E 7765802N	536	2	536	1	61	11	536						
Muziri	358701 E 7767130N	666		592	1	7	3	96	1	148				
Munesi	357464 E 7766329N	497		497			2	71			1	497		
VIDCO MANDARA														
Mudengu	354260 E 7768235N	244	1	244	1	7	4	129			1	22		
Makuvaza	355044 E 7769448N	379		122			6	277	1	175	1	200		
Mandiki/Magofa/Chipengo	354566 E 7769741N	491	1	365			3	38			1	231		
Rutsate	355265 E	531	3	531			6	331						

	7767239N													
Machiva/Mangoro /Vhunga	356958 E 7768938N	470		470	3	61	9	276	1	82				

The data listed in columns (above) showed first the population of each kraal, along with the presence of safe perennial water points (SPWPs) and the presence of improved family wells and the population using them. The presence of unimproved family wells, traditional wells, rivers and springs was also recorded. This information, when analysed along with the community maps, the positions and service delivery of the water points themselves and the OS maps or GIS, allowed accurate assessments of need to be determined. These were then presented back to the community at the ward planning meetings, where the data could be discussed, disputed if need be and eventually used to make a ward action plan.

The table below shows the water point data for the same ward. This was collected by RDC project technicians and used in combination with what the communities had told the community mapping teams. Apart from providing a useful assessment of current service levels, it indicated the repair work required for existing water points.

Key to water point data table
B/H = Borehole, D/W = deep well, DDF = District Development Fund Number, East/ North = GPS coordinates, S = seasonal, P = perennial, APRON = state of water point protective concrete apron, L-slab = state of laundry slab, Fence = state of water point fence, tA = type A bush pump, tB = type B bush pump, YR = Year of installation of borehole, Qual = indication of quality of water

Appendix 4 continued

Ward 5 water point data			B	D												
VIDCO	VILLAGE/ Kraal	WPNAME	H	W	DDF	East	North	S	P	APRON	L-slab	Fence	tA	tB	YR	Qual
MUSHANDIR APAMWE	Maipisi	Maraira 2	1			356807	7766260		1	nil	broken	nil	1		1986	clear
MUSHANDIR APAMWE	Muziri	Muziri		1	94	358811	7767299	1		nil	cracked	fair	1		1993	clear
MANDARA	Makuvaza	Makuvaza	1		85	355367	7770243	1		broken	Ok	good		1		clear
MANDARA	Magofa	Magofa		1	89	354645	7769962		1	ok	Ok	ok		1	1993	clear
MANDARA	Madhuku	Mandara	1		87	354639	7768755		1	nil	Nil	nil		1	1966	clear
MANDARA	Mangoro	Mangoro		1	90	356837	7769266	1		ok	Ok	ok		1	1993	clear
BERE	Zvemisha	Chikwengwe ru		1	93	357110	7772199		1	ok	Ok	ok		1	1993	clear
BERE	Murakata	Murakata		1	93	354987	7772065		1	ok	Ok	ok		1	1993	clear
BERE	Musiwedzi ngo	Nezvipotwi	1		253	360420	7774810		1	ok	Ok	ok		1	1992	clear
BERE	Zvemisha	Mamwara		1	104	357462	7771095	1		ok	Ok	ok		1	1993	clear
BERE	Zvemisha	Zvemisha		1	412	357201	7772192	1		broken	broken	broken	1		1987	clear
MUNANGA	Chimurud ze	Marecha	1		98	360278	7770981	1		broken	broken	broken		1	1984	clear
MUNANGA	Mapurisa	Marecha 2	1		101	361190	7771801	1		fair	cracked	stolen	1			clear
MUNANGA	Mapurisa	Marecha 1		1	257	360155	7771182		1	broken	Ok	broken		1	1993	clear
CHISUNGO	Nhodovari	Nhodovari		1	416	360076	7770054	1		bad	bad	bad	1		1987	clear
CHISUNGO	Mbengo	Mbengo		1	91	360353	7767812		1	bad	Ok	bad	1		1993	clear
MUCHAKATA	Gwekwe	Gwekwe		1	413	357242	7769784		1	ok	Ok	ok		1	1993	clear

Similarly the sanitation information for the wards was fed into a database. As latrine construction was to be linked to health education, the figures were discussed at the meetings and the baseline need expressed. This would later be useful for ward by ward planning and evaluation of progress.

Key for VBCI sanitation table
POP = kraal population, H/H / Kitch = household numbers counted as numbers of kitchens,
VIP = ventilated improved pit latrines, ord/lat = ordinary latrines without vent pipes.

BIKITA IRWSSP – VILLAGE-BASED CONSULTATIVE INVENTORY REPORT ZONE 4									
SANITATION									
WARD 5 Mar-98	POP	H/H Kitch	VIP	Ord Lat	people to VIP ratio	people to total latrine Ratio	% coverage VIPs	% coverage total latrine	potential No. VIPs to build
WARD TOTALS	10593	1639	150	66	71	49	9	13	1489
VIDCO MUNANGA									
Mapurisa	685	123	12	6	57	38	10	15	111
Maundu	549	78	7		78	78	9	9	71
Chimurudze	242	39	7	2	35	27	18	23	32
VIDCO CHISUNGO									
Nhodovari/ Machona	543	88		3	0	181	0	3	88
Mbengo	613	94	6	3	102	68	6	10	88
Masasa	154	29		5	0	31	0	17	29
Chinouswa/NhodovariB	368	64	1	2	368	123	2	5	63
VIDCO BERE									
Zvemisha	480	86	8		60	60	9	9	78
Musiwedzingo	154	21		1	0	154	0	5	21
Machaya	290	39	4		73	73	10	10	35
Chirume	141	22	1		141	141	5	5	21
Pasi	404	64	1		404	404	2	2	63
Beny	124	26	1	1	124	62	4	8	25
Murakata	247	38	6	6	41	21	16	32	32
Shuro	341	59	2		171	171	3	3	57
Fashu	355	54	2		178	178	4	4	52
VIDCO MUCHAKATA									
Nyasha/ Tongonya	576	88	10	1	58	52	11	13	78
Gwekwe/ Kwangwa	513	76	5	10	103	34	7	20	71
VIDCO MUSHANDIRAPAMWE									
Maipisi/Mudzama	536	81	20	6	27	21	25	32	61
Muziri	666	100	5	5	133	67	5	10	95
Munesi	497	80	11	8	45	26	14	24	69
VIDCO MANDARA									
Mudengu	244	23	7		35	35	30	30	16
Makuvaza	379	54	8	5	47	29	15	24	46
Mandiki/Magofa/Chipengo	491	79	9	1	55	49	11	13	70
Rutsate	531	71	11		48	48	15	15	60
Machiva/Mangoro/Vhunga	470	63	6	1	78	67	10	11	57

Appendix 5

Three participatory exercises

CROSSING THE RIVER EXERCISE

How to do the role-play

- Wo/Man 1 reaches a river that s/he does not know how to cross.
- Wo/Man 2 comes along, who knows how to cross the river using stepping stones. S/He carries Wo/Man 1 across to the island in the middle of the river.
- Wo/Man 3 comes along, who also does not know how to cross the river. S/He shouts to the two on the island for help.
- Wo/Man 2 crosses back, but is too tired to carry Wo/Man 3, so instead s/he shows him/her how to cross the river using the stepping stones (need to exaggerate the teaching).
- All three are now on the island.
- Wo/Man 2 and Wo/man 3 then continue to cross to the other riverbank using the stepping stones on the other side of the island and walk off happily talking to each other about how easy it is to cross the river once you know how to.
- Wo/Man 1 is left on the island shouting after them for help but is unheard. S/He is stuck as S/He does not know how to cross using the stepping stones.
- All come together to discuss the meaning of the play.

What does it mean?

Open a discussion to find out. Someone should come up with something like this: It is better to teach someone so that they can learn how to do something for themselves, than to do it for someone, likewise it is better to learn oneself. The story of “give a man a fish and you feed him for a day, teach him to fish and you feed him for life” is a good follow-up to this exercise.

How can it be used?

The play can be used to show the staff, the community or WPUC the importance of people learning to do things by themselves, and not relying on other people to do it for them.

Who should you involve?

You can involve three people from the training group to practise the play first until they are confident and then everyone in the group afterwards as the audience and the discussion group. The outline of the river, the stepping stones and the island can be made using whatever is available, or even chalked on the floor. The narrator can set the scene at the beginning by explaining the “stage set”.

Appendix 5 continued

THE ANT AND THE ELEPHANT EXERCISE

One person in the group becomes the storyteller, one large member of the group becomes the elephant, two people in the group become the two ants, and everyone else in the group is then encouraged to become the rest of the ants at the end and join in the shout, “get out of the way!!!” Some rehearsal for the four actors from the group will be required perhaps during a lunch break on their own.

The story

One ant is walking along and finds a big elephant sitting in its path (elephant team member sits down first and is pointed to by the storyteller). The first ant asks the elephant to let him/her pass, but it only has a little voice and the elephant does not hear, so it does not move, (first ant squeaks, “Excuse me”).

Another ant comes along, and together discuss the situation and say, ”Excuse me” together, but still their voices are too quiet. The elephant does not hear, and is still sat in their path.

The ants decide to get lots more ants, and hundreds to them come together (every one is asked to join in now) and shout together at the top of their voices ”GET OUT OF THE WAY!!!” The elephant hears them and jumps up out of the path of the ants, trumpeting and running away. The ants continue on their way.

Who are the ants?

The group is asked and the answer from someone should be, “All the people in the community, including ourselves we are all the ants.”

Who or what is the elephant?

The group is asked and the answer from someone should be, “The elephant is any problem that must be solved.”

What does it mean?

The group is asked and the answer from someone should be, “The story means that when we work alone, we sometimes cannot solve our problems. However, when we work together we can solve any problem.” UNITY IS STRENGTH!

Appendix 5 continued

How can it be used?
The story can be used to show that the community, the WPUC or the health club that they can work together to solve problems that they cannot solve on their own. Discuss with the group what these big problems might be, and how by working together they might solve them.

Who should you involve?
First involve the three actors and the storyteller for the training on their own, then the whole group for the exercise.

THE TWO DONKEYS EXERCISE

Two senior members of the group are asked to volunteer (They need to have a bit of a sense of humour as they will get laughed at!). Another member of the group acts as the narrator. The two senior members are to play the two donkeys; they need to be tied together with a piece of rope and then two piles of grass or straw are put in front of each of them. The rope has to be just short enough so that neither can reach the grass. They then make a play of pulling against each other, but not so hard that either of them reaches the grass (two hands held up over the head make excellent donkey ears). The narrator explains to the group what is going on and as the two donkeys are both senior members of the group, there is usually quite a bit of laughter! The narrator then asks the group as a whole what advice the group can give the two donkeys about how they can get their dinner. The answer that someone from the group should come up with is that the two donkeys should go together to one pile of grass to eat it together and then go to the other pile of grass and eat it together. The actors then do this and then join the group amongst applause.

What does it mean?
The group gets together to discuss what the exercise means. Someone should say, “The play is about conflict resolution. If we have a conflict we can resolve it by working together rather than against one another.” Some discussion can then be had on occasions where working together has resolved conflict

Appendix 6

The Health Club Membership Card

Front of card

BIRWSSP
BIKITA HEALTH CLUBS FOR A BETTER LIFE
MEMBERSHIP CARD
NAME:_____
NAME OF CLUB:_____
SABUKU:_____
VIDCO:_____
WARD:_____
EHT:_____
Date of Issue:_____
Date of Completed Course:_____
Date of Completed Practical:_____

Inside of card with 15 health topics listed

No.	TOPIC	DATE	EHT SIGNATURE
1	KAP Water Sources/Sanitation		
2	KAP Drinking Water Storage		
3	KAP Disease Identification		
4	General Hygiene/Germ Theory		
5	Oral Faecal/Diarrhoea/ORS		
6	Water Usage		
7	Sanitation/CBM		
8	Environmental Protection		
9	Malaria		
10	Bilharzia		

11	Worms		
12	Skin Diseases/Eye Infections		
13	AIDS/STI/TB		
14	Immunization		
15	Nutrition/Gardening		

Back of card with activities to be completed

Date:	Practical Steps to a Better Life	Signature
	Health song	
	Health drama	
	Pot rack	
	Clean home	
	Water ladle	
	Safe covered water	
	Family cups	
	Hand washing facility	
	Nutrition garden planted	
	Orchard	
	CBM in operation	
	Knowledge of how to prepare ORS	
	Bricks, pit sand, ant soil ready for latrine	
	Money raised for latrine builder	
	Wood lot nursery fee raised	
	Wood lot established	

Appendix 7

Bikita IRWSSP Knowledge, Attitudes, Behaviours & Practices (KABP) Survey
Check list / report form & Questionnaire

Name of interviewer…… Date……..

Ward:…….. VIDCO…….. Kraal……

Target Group…… Sex of individual/s …..……..

Age/s……. School Level attained (circle)……. P S C

THE QUESTION

The general question asked of the INDIVIDUAL will be: "Can you tell me what you think are the risky behaviours that you know of concerning ……..." EACH OF THE FOLLOWING SECTIONS. All risks identified by the respondents themselves without prompting should be circled A. After the respondents have run out of ideas then prompt them with the remaining suggested risks, if they agree with the risk then ask for an explanation of why it is a risk, if the answer is correct then circle B if not or if the risk is not identified circle C. ALL THE QUESTIONS MUST BE ANSWERED PLEASE.

A) PERSONAL HYGIENE SECTION:

A1) Not hand washing after visiting the toilet **A B C**

A2) Not hand washing before handling food **A B C**

A3) Not hand washing before eating **A B C**

A4) Not hand washing after cleaning a child after defecation **A B C**

A5) Using communal bowl for hand washing **A B C**

A6) Not using running to waste method for hand washing **A B C**

A7) Not using soap for hand washing **A B C**

A8) Sharing towels for drying hands **A B C**

A9) Not hand washing first thing in the morning before leaving the bedroom **A B C**

A10) Washing in the same basin in the morning **A B C**

A11) Not bathing the body once a day **A B C**

A12) Sharing dirty towels for bathing **A B C**

A13) Spiting sputum all around **A B C**

A14) Sharing dirty clothes **A B C**

A14) Sharing blankets **A B C**

A15) Not ironing clothes **A B C**

B) WATER STORAGE & COLLECTION SECTION

B1) Not covering water storage pots **A B C**

B2) Not having ladle for water storage pots **A B C**

B3) Not having separate drinking cups **A B C**

B4) Not using safe protected water point **A B C**

B5) Using streams or open water for drinking water (open wells, pools, dams etc) **A B C**

C) MALARIA SECTION

C1) Not cutting tall grass & bushes around the home **A B C**

C2) Allowing standing water around the home in old containers, puddles etc **A B C**

C3) Not sleeping under a mosquito net **A B C**

D) FOOD STORAGE SECTION

D1) Not storing food under covers **A B C**

D2) Not re-heating food before eating the following day **A B C**

D3) Using a communal dish for eating food **A B C**

D4) Not using individual plates for eating food in the household **A B C**

D5) Not having a pot rack **A B C**

D6) leaving dirty pots, plates and cups for animals to lick & peck **A B C**

E) BEER PARTIES AND GATHERINGS

E1) People sharing beer mugs at beer parties **A B C**

E2) Not washing beer mugs **A B C**

E3) Urinating behind kitchens at beer parties **A B C**

E4) Defecating in the area behind bushes etc at beer parties **A B C**

E5) Handling beer mugs with dirty hands **A B C**

F) SANITATION SECTION

F1) Not having a refuse pit **A B C**

F2) Using the bush as a toilet **A B C**

F3) Not covering faeces in the fields **A B C**

F4) Leaving children's faeces on the ground in the yard **A B C**

F5) Not having a latrine at home **A B C**

F6) Children not using the latrine **A B C**

F7) Latrine not being cleaned **A B C**

G) BILHARZIA SECTION

G1) Urinating in open water, streams, pools etc **A B C**

G2) defecating in open water **A B C**

G3) allowing children to swim/bath in stagnant water **A B C**
G4) Adults using stagnant water for bathing and washing clothes **A B C**

H) DISEASE IDENTIFICATION SECTION 1:

GENERAL QUESTION: From the risky behaviour discussed, which diseases are likely to occur? And give an explanation of how they are spread.
(Circle A for un-prompted knowledge, B for prompted knowledge with explanation and C for no knowledge or confused information.)

H1) Cholera **A B C**

H2) Diarrhoea **A B C**

H3) Typhoid **A B C**

H4) Dysentery **A B C**

H5) Malaria **A B C**

H6) Bilharzia **A B C**

H7) Scabies **A B C**

H8) Hook worm **A B C**

H9) Eye problems trachoma/ conjunctivitis **A B C**

I) SEXUALLY TRANSMITTED INFECTIONS SECTION:

I1) having unprotected sexual intercourse with many partners **A B C**

I2) having unprotected sexual intercourse outside marriage **A B C**

I3) having sexual intercourse with children **A B C**

I4) having sexual intercourse with a partner who also has other partners **A B C**

I5) Not using a condom when having sexual intercourse with a casual partner **A B C**

I6) not using a condom with a partner who you know has other sexual partners **A B C**

I7) using shared razor blades for cutting hair or shaving **A B C**

I8) using shared razor blades for cutting finger nails **A B C**

I9) using shared razor blades for cutting umbilical cords **A B C**

I10) using shared razor blades for scarification during traditional healing **A B C**

I11) not discussing HIV issues with your children **A B C**

I12) not telling other family members about your HIV status after testing **A B C**

I13) having sexual intercourse with prostitutes **A B C**

J) DISEASE IDENTIFICATION SECTION 2:

QUESTION: From the risky sexual behaviour discussed, which diseases are likely to occur? And give an explanation of how they are spread
(Circle A for un-prompted knowledge, B for prompted knowledge with positive explanation and C for no knowledge or confused information)

J1) HIV **A B C**

J2) Gonorrhoea **A B C**

J3) Syphilis **A B C**

J4) Chanchroid **A B C**

J5) Genital Warts **A B C**

K) ACCESS TO HEALTH & HYGIENE EDUCATION SECTION:

K1) List current sources of hygiene education……..

…….

K2) How would you like to receive more hygiene education?…….

…….

K3) Are you a member of a health club answer Yes or No……..

if yes ask the following:

K5) how long have you been a member of the health club?…….

K6) ask to see card and record number of sessions attended……..

K7) write down the topics that they enjoyed the most……..

……
.
K7) Ask if they are happy with the health club and is there anything they would like to change

or do in the club? Write down replies
……

……

……
…

<u>If not a member of a health club ask the following</u>

K8) Is there a health club in the area?……..

<u>If yes ask:</u>

K9) What are the reasons or problems that prevent you from attending?

……..

K10) Is anyone in your household a member of a health club? Yes or no?…….

K11) and if so do they share information about health education with

you?……

THANK THE RESPONDENT FOR TAKING PART IN A VALUABLE EXERCISE TO HELP IMPROVE HEALTH KNOWLEDGE IN THE DISTRICT - TATENDA CHAIZVO

Acronyms

AGRITEX*	Department Of Agricultural, Technical And Extension Services (Zimbabwe)
BIRWSSP	Bikita Integrated Rural Water Supply and Sanitation Project
CBM	Community-Based Management
CEO	Chief Executive Officer (Zimbabwe)
DA	District Administrator (Zimbabwe)
DDF	District Development Fund
DFID	Department for International Development
DRA	Demand-Responsive Approaches
DWSSC	District Water and Sanitation Subcommittee (Zimbabwe)
ECOSAN	Ecological Sanitation
EHT	Environmental Health Technician (Zimbabwe)
GMB	Grain Marketing Board (Zimbabwe)
GOZ	Government of Zimbabwe
HIPC	Highly Indebted Poor Countries Initiative
IDWSSD	International Decade for Water Supply and Sanitation Development
INGO	International Non-Government Organisation
IWRM	Integrated Water Resource Management
IWSD	Institute of Water and Sanitation Development (Zimbabwe)
KABP	Knowledge, Attitudes, Behaviour and Practices Survey
KDWD	Kigezi Diocese Water Department
LEAD	Leadership for Environment and Development (India)
MDGs	Millennium Development Goal (s)
MLGNH	Ministry of Local Government and National Housing (Zimbabwe)
MNAECC	Ministry of National Affairs Employment Creation and Cooperatives (Zimbabwe)
MOHCW	Ministry of Health and Child Welfare (Zimbabwe)
NAC	National Action Committee for Water Supply and Sanitation (Zimbabwe)
NCU	National Coordination Unit (Zimbabwe)
NGO	Non-Government Organisation
O&M	Operation and Maintenance
ORAP	Organization of Rural Associations for Progress (Ghana)
ORS	Oral Rehydration Solution
PEMS	Pump and Engine Maintenance Service
PHAST	Participatory Hygiene and Sanitation Transformation
PRA	Participatory Rural Assessment
PROWWESS	Promotion of the Role of Women in Water and Environmental Sanitation
PRSP	Poverty Reduction Strategy Paper/ Poverty Reduction Strategy Process

PWP	Productive Water Point
RDC	Rural District Council (Zimbabwe)
SARAR	Self-esteem, Associative strength, Resourcefulness, Action planning and Responsibility
SANAA	National Water Supply and Sewerage Company (Honduras)
SODIS	Solar Disinfection of Water
SWU	Shallow Well Units (Zimbabwe)
TC	Technical Cooperation
TSC	Total Sanitation Campaign (India)
TOM	Technician in Operation and Maintenance (Honduras)
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VBCI	Village-Based Consultative Inventory (Zimbabwe)
VCW	Village Community Worker (Zimbabwe)
VG	Village Government (Tanzania)
VIDCO	Village Development Committee (Zimbabwe)
VIP	Ventilated Improved Pit Latrine
VLOM	Village Level Operation and Maintenance
VWC	Village Water Committee (Tanzania)
WADCO	Ward Development Committee (Zimbabwe)
WAMMA	The partnership comprising staff from the British NGO WaterAid, and the Tanzanian government departments of Maji (Water), Maendeleo (Community development) & Afya (Health)
WATSAN	The domestic water, sanitation and health education sector
WHO	World Health Organization
WPUC	Water Point User Committee
WSSCC	Water Supply and Sanitation Collaborative Council

*AGRITEX has since changed its name to AREX - Agriculture Research and Extension Services

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