REVIEW OF IRISH AID SUPPORT TO THE WATER SECTOR IN ZAMBIA

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By -:
Osward C. Mwansa
Sally E. Sutton

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EXECUTIVE SUMMARY

1. **General Support to the Sector** Irish Aid has been active in the water sector for fifteen years. It has supported sector reforms during the present phase through both national level funding to NWASHE/RSU and to district level in Northern Province and in Southern Province through UNICEF. In late 1997 it began the move from project-based activities in Northern Province to support of district WASHE initiatives, with a view to transferring almost all project functions to GRZ. The WASHE approach links water supply, sanitation and health education, within an intersectoral framework.

2. **Impact in terms of coverage.** Up to the end of 1997, the programme had led to the construction and rehabilitation of almost 700 wells, of which the majority were improved traditional wells (ITWs, concrete ring-lined hand-dug wells with bucket and windlass). In recent years expansion into more hydrogeologically complicated areas and the increase in number of ITWs going dry, led to the introduction of boreholes. Total costs per community average $10,000 (£IR 7,150) including 'software'. At present just over 500 sources are used and provide a reliable supply. They serve a total of some 100,000 people. If other reliable wells in the area are included, the proportion of the rural population with access to safe water now ranges from around 34% in Kasama to some 18% in Mbala.

3. **Community management and behavioural change.** Well construction has been combined with health and hygiene education, and training in community management, gender and development, and basic maintenance issues. This element of the programme has perhaps been less effective. Communities seem able to cope with small problems such as repairing and sometimes replacing buckets, but increasing numbers of wells are going out of use with age, often for quite minor reasons. There is a tendency to keep using more than one source of water, depending on its convenience rather than its quality.

4. **Support to District WASHE** Irish Aid support to district WASHE has effectively started with the integration of projects, although NWASHE training of committees preceded this by a year or so. The main achievements, so far, have been that -:

- district councils accept DWASHE as 'theirs' and as the most active sub-committee to DDCC,
- all committees have made intersectoral plans, and decided on their capacity to implement them
- committee members have taken on training and facilitation of sub-district support to communities, and developed their own programmes and workshops

5. **Adverse effects of change** Committees are concerned at the pace at which they are being asked to take on new responsibilities which were previously undertaken by a project with full-time staff and plentiful resources. Focus on new works both in terms of construction and participatory education has led to neglect in planning of support for existing water supplies. There is also an associated feeling that the primary aim of DWASHE is to solicit donor funding (almost solely from Irish Aid in Northern Province up to now), which may obscure its role in sharing and optimising the use of those (mainly human) resources which GRZ does have.

6. **UNICEF approach** Implementation through UNICEF in Southern Province retains more of a project (i.e. non-GRZ) structure. It has helped achieve high outputs at low costs (average per community of $3,200 or IR£ 2,300). DWASHE and sub-

district level support are both developing but are at present regarded as UNICEF tools, perhaps through early emphasis on getting results on the ground, with building up of institutional capacity requiring a longer time frame.

7.**Sector reform at national level** At national level, sector reform is still in turmoil. NWASHE is carrying out its mandate as trainer of DWASHEs effectively, but there is no reference point for DWASHE support in other ways except through donors who encouraged their formation. There is no representative body for RWSS with strong links to ministry lobbying, and GRZ commitment to RWSS remains weak (no capital funds released in three years)

8. **Technology options** Irish Aid has developed and employed various technologies to suit different conditions and to reduce maintenance costs. Despite valuable developments on hand-dug well construction, boreholes are likely to form an increasing proportion of new construction under DWASHE because -:

- they are easier to contract out and supervise (in logistical terms),
- they are less vulnerable to pollution,
- they can be sited more flexibly and in a wider variety of groundwater conditions than other well types, and
- they are less prone to drying out.

Drilling may also provide a cheaper way to deepen hand-dug wells which go dry.

9. **National level objectives.** In the next phase there is a need to push for greater clarity in the strategies of WASHE, the formation of a national body to represent WASHE interests, and to co-ordinate donors and a greater commitment from GRZ. Stronger links with Irish Aid at national level may help to achieve this. A provincial level representation of WASHE is also needed, including a full-time advisory unit (attached to PLGO, PPU or PWE offices) to provide some of the support the projects will no longer give, and co-ordinate other donors (eg DFID) who also plan to be active in the sector in Northern Province.

10. **Implications of total project integration.** If the primary aim of support to the sector is to change to a more institutional one of **"Each district is capable of planning, managing, monitoring, implementing and maintaining sustainable rural water supplies, sanitation and community support/ health education with the majority of local communities"**, this may lead to a temporary decline in coverage of rural water supply in order to build up stronger support in other aspects (eg. behavioural change). It should be decided whether this is acceptable or whether some project functions (especially in support of hand-dug well construction) need to continue during a longer transition period.

11. **DWASHE as partners.** Future Irish Aid advisory support to districts should be based on DWASHE perception of their objectives and needs in relation to their taking on more project functions, so that they feel more in control of the process of change in which they are partners.

ABBREVIATIONS

CDD	Co-operation for District Development (NORAD)
CMMU	Community Management and Monitoring Unit
CSO	Central Statistical Office
CU	Commercial Utility
DCD	Department of Community Development
DDCC	District Development Co-ordination Committee
DFID	(British) Department for International Development (previously ODA)
DHI	District Health Inspector (now Environmental Health Officer)
DHS	Demographic Health Survey , Zambia, 1997
DHMB	District Health Management Board
DISS	Department for Infrastructure and Support Services, MLGH
DPO	District Planning Officer
DWA	Department of Water Affairs
DWASHE	District WASHE committee
EHT	Environmental Health Technician
EHO	Environmental Health Officer (District Head, was District Health Inspector)
GRZ	Government of the Republic of Zambia
GTZ	German Agency for Technical Co-operation
HGV	Heavy goods vehicle
HMIS	Health Management Information System
IEC	Information, Education and Communication
IRDP	Integrated Rural Development Programme
IWSD	Institute for Water and Sanitation (Harare)
KAP	Knowledge, attitude and practice
LOGOSP	Local Government Support Programme
MCDSW	Ministry of Community Development and Social Welfare
MEWD	Ministry of Energy and Water Development
MLGH	Ministry of Local Government and Housing
MOH	Ministry of Health
MWS	Ministry of Works and Supply
NCDP	National Commission of Development Planning
NGO	Non-government organisation
NHMT	Neighbourhood Health Management Team
NORAD	Norwegian Agency for Development Cooperation
NWSCO	National Water Supply and Sanitation Council
NWASHE	National WASHE Training Team
ODA	See DFID
PWE	Provincial Water Engineer
OIC	Officer in charge (District officer, DWA)
PCU	Programme Co-ordination Unit (Water sector re-organisation)
PLGO	Provincial Local Government Officer
PPU	Provincial Planning Unit
PRA	Participatory rural appraisal
PWE	Provincial Water Engineer
RHC	Rural Health Centre
RSU	Reform Support Unit (Water Sector)
RWHP	Rural Water for Health Project (SNV/DWA 3 districts of N-Western).
RWS	Rural Water Supply
RWSS	Rural water supply and sanitation
UNICEF	United Nations Children's Fund
UNZA	University of Zambia
USP	User Support Programme
VIP	Ventilated Improved Pit Latrine
VWC	Village Water committee
WASHE	Water, Sanitation and Health Education
WDO	Water Development Officer

1. INTRODUCTION

1.1 Background to Irish Aid Support.

1.1.1 Irish Aid has supported initiatives in the water sector at national, provincial and district level over the past three years, but has a long history of association with the sector. Support has totalled more than five million Irish pounds (c.eight million US dollars[1]) since the start in Northern Province in 1983. The overall objective has been 'the provision to rural communities of a sustainable source of safe drinking water' which embraced the construction of supplies with community participation, health and hygiene education and support to community management for maintenance. Activities were initially confined to Kasama District, but in 1992 extended to Mbala District, followed by Nakonde in mid-1993 and Isoka and Nabwalya (Mpika District) in 1994. In 1995 Kaputa Integrated Development Team applied for (and received) funding of boreholes, resulting in support to six districts. The splitting of Kasama District into Kasama and Mungwi, and of Mbala into Mbala and Mpulungu at the end of 1997, means that Irish Aid at present supports implementation in the province throughout seven districts and in a small part of an eighth. It has also supported the formation and training of DWASHE committees throughout the province, and carried out pilot projects which include Needs Assessment Surveys, and cost saving exercises in hand-dug well construction.

1.1.2 In addition sanitation projects, which are primarily institutional, have been established separately, along with links between DWASHE committees, NWASHE and Irish Aid. These are mostly confined to the same districts.

1.1.3 Whilst 90% of funds have been focussed on Northern Province, there has also been Irish Aid support outside the province. Since 1997 funds (totalling $US 330,000 or more than IR£ 200,000) have been given, through UNICEF, for the construction of boreholes in Mazabuka and Choma Districts in Southern Province. The UNICEF WASHE programme has the same overall objectives, but different institutional structure and operational guidelines to the projects in Northern Province.

1.1.4 At national level, Irish Aid support (totalling $US 671,000, or around IR£450,000) has been given to NWASHE, the Lusaka-based training team which is, among other things, setting up WASHE committees and training of trainers, principally at district level but also with some sub-district inputs. It has been particularly instrumental in helping districts formulate their annual action plans. NWASHE is also at present, with RSU the institution formulating national policies.

1.2. Present situation.

1.2.1 Whilst the projects have evolved in the fifteen years since operations first began (See Table 1.1), development of approaches, relating to changing national policies and recognition of need for greater integration, did not take off until very recently. Until the beginning of 1998, the NPDP tended to operate autonomously

[1] Exchange rates are based on US$1.4/ IR£, in 1998, but previously averaging approximately 1.5. Zambian kwacha exchange rate in July 1998 is 2,000kw/US$. In 1996 it was 1,200.

within the districts. Acting as a parallel structure, it fed its own plans into DWASHE, rather than DWASHE being the decision-maker in terms of objectives and programmes. Selection of communities was done on a project basis, usually with little or no referral to local council or DWASHE priorities, and most works were carried out by project-employed staff (and those seconded to the project acting quite independently of their ministries) The high degree of project dependency was discussed in the review carried out in 1995[2], but few changes occurred until mid 1997 when concrete plans were made partly under the 'Integration Strategies for Irish Aid supported WASHE Initiatives', facilitated by D. Carty[3] towards the end of 1997.

Table 1.1 Phased development on Northern Province water supply project.

Phase	Approach
First phase 1983-88	Community participation in construction. Little emphasis on sustainability or long term commitment. Direct response to requests, no priority listing. Health education integral part.
Second phase 1988-1992	Inclusion of preventive maintenance education, payment for spare parts. Scoring system for prioritising, and survey forms for extension workers & councillors. Involvement of council.
Third phase 1992-1995	Little change in approach, project still largely parallel structure to GRZ. Proposed phasing out in Kasama and establishment of maintenance system delayed as more construction and well-deepening required. Introduction of initial contributions.
Present phase 1996-98	Little change in approach, apart from more emphasis on drilling, until mid-1997. No DWASHE plans funded in 1996/97 except Kaputa. Project then began re-structuring to integrate seconded staff to ministries, and to build DWASHE capacity to co-ordinate. 1998 began moves for DWASHE and associated ministries to take over most project functions. Maintenance system still delayed.

1.2.2 At present all districts are making efforts to develop more integrated approaches. These are detailed in Section 5.3. They are evolving slightly differently in the three projects which are at present still operating separately, but the overall move presents a more unified approach than that under which Irish Aid Projects in the three centres formerly worked. It is the pace rather than the direction which is varying. This may be regarded as helpful, since the lessons learnt by the most progressive can then be applied to the others.

1.2.3 The overall goal is to transfer all of the functions previously undertaken by the projects to DWASHE committees and their associated ministries. This is, at present, planned to be achieved almost completely in around twelve months. Northern Province is the only one to attempt this so completely, and particularly to do so in such a short time frame. Other rural water supply projects in Zambia which have undertaken or are undertaking such integration have taken a minimum of three years (and usually more) starting from a less project dependent base.

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[2] Background Paper for the Country Review of Northern Province Water and Sanitation. M. Kaluba and S. Sutton June 1995

[3] Integration Strategies for Irish Aid supported WASHE Initiatives. Proposed strategies for Improvement and Acceleration. D. Carty Dec `1997.

1.3 Terms of reference for the review.

1.3.1 This review is taking place approximately six months before the end of the current phase of funding. It is required to look at Irish Aid support to the sector in the light of the present sector reforms. So far the changes that have been brought about are mainly organisational. Most DWASHEs have yet to receive funding for implementation, agreements having been signed only just before, or during the review. Thus the effects of such changes on implementation and on the impact of planned interventions will be more readily assessed at the end of the year. The review will form the background for action planning of the next phase.

1.3.2 The Terms of Reference are given in full in Appendix 1. The main elements are as follows -:

- Concisely assess the effectiveness and value of Irish Aid's interventions in the rural water and sanitation sector to date. Issues such as impact, coverage, capacity building, sustainability, gender and value for money should be addressed.

- In view of the major structural changes currently underway in the water sector in Zambia, assess the effectiveness of Irish Aid's strategies in supporting these changes through assistance to NWASHE and DWASHE structures.

- Review principal technologies employed by Irish Aid for the provision of water supply to rural communities and comment on the utility of each in the light of prevailing conditions. Assess the relative benefits of irish Aid's focus on groundwater as a source of water supply with reference to other possible alternative sources, particularly in the light of Irish Aid's support to the DWASHE programme.

- In the light of the findings recommend the principles and guidelines for the most effective utilisation of Irish Aid's funds over the coming years.

1.4 Programme of review.

1.4.1 The review team consisted of -:

- O.C. Mwansa - PWE Northern Province
- S.E. Sutton - SWL Consultants, UK

1.4.2 The review took place between 13th June and 7th July 1998. At provincial level The Permanent Secretary, Chief Regional Planner, and Provincial Officer helped to put Irish Aid's activities and plans into a provincial context. The programme also included visits to eight districts in Northern Province (Kasama, Mungwi, Kaputa, Mporokoso, Mbala, Mpulungu, Isoka and Nakonde) including consultations with district councils and DWASHE committees in each. Some 40 communities were also visited and water point users and VWASHE members interviewed on their views and experiences in relation to management and maintenance of the facility, and their use of various sources. Several schools and rural health centres were also visited to consult with extension staff. Information was also collected from some 28 commuinties by D. Mwanza, laboratory technician DWA Kasama, whose help is gratefully acknowledged. During the long journeys between districts much discussion was also held with project and ex-project staff. The ideas and comments of -:

- V. Ngulube — Project manager Kasama/ Mungwi districts (now OIC DWA Kasama)
- M. Gondwe — OIC DWA Isoka
- J. Barrins — Project manager Mbala
- R. Kanene — APM, and OIC Mbala
- F. O'Brien — Project co-ordinator NPDP, Kasama
- K. Musonda — Assistant project co-ordinator, NPDP, Kasama
- P. O'Rourke — Project Manager, Isoka

are also gratefully acknowledged.

1.4.3 During the period of the review, Musonda Kaluba (rural water specialist RSU) and I.J. Mbewe (Head of NWASHE) visited Kasama to see how information from NWASHE training was filtering down to community level and whether any mis-understandings were arising. Their ideas and the thoughts of the many others who contributed to the many meetings and discussions are gratefully acknowledged.

1.4.4 In Southern Province, the district councils and some DWASHE committee members in Choma and Mazabuka Districts were also visited as were schools, rural health centres and nearby communities. With only two days for this exercise, conclusions on the activities in these two districts are likely to be somewhat superficial.

1.4.5 At national level D. Mwanza, the Project Co-ordinator of RSU, A. Hussen, Acting Director of DWA, and F. Lungu of UNICEF WASHE programme all freely gave their views of the present situation in the sector and their hopes for the future.

1.4.6 Preliminary conclusions were discussed with the Irish Embassy and NPDP Co-ordinator in Lusaka before departure.

1.4.7 The report attempts to set out the activities and effects of Irish Aid support followed by what the conclusions suggest in terms of guidelines and principles for the future. Background to the sector and Northern Province are given in Section 2 & 3. With reference to Northern Province the inputs, outputs and impact are covered in Section 4. Support to district level WASHE is discussed in Section 5 (Northern Province), 6 (Southern Province) and to national level in Section 7. Irish Aid policies and experience relating to technologies are reviewed in Section 8. Institutional guidelines require considerable discussion and development at national level, and with DWASHE committees to make sure that they are tailored to the varying situation found in each district. An outline of a possible approach is given in Section 9. At various stages gaps were identified in the knowledge available to improve the effectiveness of both technological and sociological aspects of the programme. Thus some research may be necessary to support any further phase. Potential topics are set out in Section 10, which also includes technological guidelines.

2. CONTEXT OF NATIONAL AND DISTRICT SECTOR SUPPORT

2.1 Government policies affecting the sector.

2.1.1 Government has, over the past five years, moved towards reform in many aspects of its policy and operation. These aspects have been covered previously in several reports to Irish Aid [4]and therefore only more relevant points and recent developments are outlined below. Certain government policies have led to a positive environment within which to establish demand-responsive systems. In particular it is now commonly accepted by communities and most politicians that government is not able to provide all required services to rural areas, and that if communities demand improved services, these must largely be provided through their own efforts. In this, therefore, government is moving towards becoming more a facilitator than an implementer. Thus community involvement and management are now factors included in both policy and planning nationally as well as within Irish Aid.

2.1.2 Moves to de-centralise have put considerably more emphasis on district-level decision-making. Both national and district level institutions have been strengthened, and provincial level powers been reduced. Many donors are putting efforts into capacity building at district level, and budgets are being set more and more at district and sub-district levels, where priorities can more relevantly be identified. In Northern Province LOGOSP(ODA) has been, and CDD (NORAD) is, active in building district council capacity in financial management and development planning. In Southern Province it has been LOGOSP and GTZ.

2.1.3 However other aspects of the present political climate offer a less positive, and often confusing context to support in most sectors. The changes that Irish Aid has set in motion are occurring at a time when almost all district level institutions are in a major state of flux.

- Ministry of Health reforms have reached a critical state, with de-linkage of extension staff halted by disputes, and considerable questioning of any positive impact of reforms on services at point of delivery.

- Water sector re-organisation still has not managed to resolve where responsibility for rural water and sanitation falls at present, most councils having to put all their energies into resolving urban water problems. Further funding of the re-organisation has also been put in jeopardy by the recent actions of the Lusaka Water Company stakeholders.

- Intersectoral planning and co-ordination bodies (Provincial and District Development Co-ordination committees) which form part of the de-centralisation policy and are specified in Cabinet memo 1 1995 are only just beginning to develop and have not been supported by MLGH. They have been constrained by having no legal status, no funds and in many cases little real support from associated councils, although this last is now improving.

[4] Review of National WASHE Co-ordination and Training Team. N.R. Mudege and E. Mutasa, IWSD, Harare. 1997
Integration Strategies for Irish Aid Supported WASHE initiatives. D. Carty Dec 1997

- Government moves to reduce the civil service and re-trench employees has led to a situation where no new posts can be created without Cabinet approval. In addition re-trenchments were based on age, leading to common situations where, for instance one ministry is left with vehicles and no drivers, and another with drivers, budgets for fuel and no vehicles.

- Ministry of Education are in the process of de-centralising, but with little funding to support the changes required

- Ministry of Agriculture are also doing the same, but with more donor support to the new move.

- Budgetary constraints have meant that monetary releases to districts or departments bear little relationship to the approved budgets detailed in the 'Yellow Book'. There have been almost no releases for capital projects in the past two years, especially in RWSS.

- Poor salaries and lack of resources mean that few graduates are entering government service and few high level staff have training in management

2.1.5 In such an uncertain environment it is commendable that major organisational changes have already been achieved by Irish Aid. **However it is important that those at national level and outside Zambia can be made aware that GRZ government structures are undergoing changes which do, at least temporarily and more than usually, constrain both the ability of some departments to make decisions and their capacity to implement them. Progress may therefore be slower than expected.**

2.2 Sector policies.

2.2.1 The Water and Sanitation Act was finally promulgated in Sept 1997, three years after it was first formulated. The setting up of Commercial Utilities is now being implemented, where donor funding is available for rehabilitation of urban systems. Elsewhere responsibility for urban supplies has been handed over to councils, usually accompanied by the secondment of DWA personnel to assist in their operation and maintenance.

2.2.2 Disappointingly the Act makes no reference to rural water and sanitation nor intersectoral co-ordination, since it is primarily concerned with the setting up of commercially viable utilities, into which neither element fits easily. This has led to an uncertain position of responsibility for rural water supply and sanitation. It may be argued (and is, by Ministry of Energy and Water Development) that since rural services cannot be commercially viable in the foreseeable future, they are not included in the Act which gives responsibility for supplies to Ministry of Local Government. However no transition phase has been defined, and the decision of February 1997 to pass responsibility for rural water supply and sanitation to MLGH, has not been legally ratified, nor led to any change in council or MLGH structures to accommodate such a responsibility. DISS, the national co-ordinating body for planning, donor funding and sector support in MLGH, has no positions in its Cabinet-approved establishment for rural water supply and sanitation. Thus there is at present no national level GRZ institution undertaking these functions. The same is true of district and municipal councils, where no new posts have been established.

2.2.3 Water supply and sanitation strategies are outlined for rural areas in the National Water Policy[5]. Some have received more attention at national level than others, but all are still regarded as relevant to the sector. They are -:

i) ensuring that RWSS programmes are community based

ii) developing a well-defined investment programme for sustainable RWSS

iii) promoting appropriate technology and research activities

(iv) developing an emergency and contingency plan to mitigate impacts of droughts and floods in rural areas)

v) developing a cost recovery approach as an integral part of RWSS which will ensure sustainability

vi) developing and implementing a well articulated training programme

2.2.4 In an effort to give greater prominence to rural water supply and sanitation, sub-committees to DDCC are being formed, in line with de-centralisation policy. According to the WASHE Concept paper[6], these WASHE committees are primary co-ordinating bodies for planning and management who promote integrated development in water supply, sanitation and health education. (see also Section 5). It is this structure which Irish Aid and UNICEF are both supporting. In the case of Irish Aid the support at district level has accelerated in the past few months, and is closely associated with moves to phase out a project based approach. This move seeks to result in adequate funding to support districts in the solving of problems related to water, sanitation and health education, through government structures which are in place, but which are inadequately funded at present by GRZ.

2.3 Capacity within government system.

2.3.1 The low salary scales within government, compared with the private sector mean that few graduates are attracted into government service, and few in management have any specific training for their administrative and managerial roles. Motivation is often low, and depends to some degree, even among the most enthusiastic, on allowances which do much to augment salaries and theoretically are at a relatively high level (five night allowances normally equalling a monthly salary). However few ministries and almost no councils can afford to pay allowances regularly.

2.3.2 The NRDC courses in water resources engineering are good, and prepare students well for work in the field. However there is a lack of advanced courses on hydrology, hydrogeology or in inter-disciplinary approaches to rural development, especially water supply and sanitation. This means that compared with most neighbouring countries, those in the civil service are often ill-equipped to undertake their responsibilities, and to carry out research or planning, even though they are committed and of good understanding of the issues involved.

2.3.3 At the same time, it is apparent that many people of high potential get de-motivated within a system which has few resources and an environment which does not encourage initiative and improvisation. They are brought alight by opportunity and are a resource which it is hard to quantify.

[5] National Water Policy. MEWD Nov 1994
[6] WASHE Concept. 1995 I.J. Mbewe CCMU

2.4 Conclusions.

STRENGTHS.

- Government policy now encourages involvement of communities at all stages
- Support to district level capacity building is in line with de-centralisation policy and is supported by donors in most sectors.

WEAKNESSES

- Almost all sectors are undergoing reforms which affect adversely affect their productivity in the short term
- Motivation, salaries and job security are low in GRZ
- It is a difficult time to load major new responsibilities on GRZ institutions, as they cannot take on new staff and have little chance to increase budgets
- Lack of clarity in where rural water supply and sanitation lie in sector reform, and lack of reference to them

3. BACKGROUND TO NORTHERN PROVINCE.

3.1 Provincial outline

3.1.1 Northern Province is the largest province in Zambia, and has the highest rural population. Until 1998 it consisted of ten districts . . Two of the original five districts with water projects in Northern Province have recently been split in two. The newly -formed councils of Mpulungu and Mungwi are only six months old, partly staffed and have no 'start-up' funding. They are having to establish new tax systems to raise income, and have no clear idea of what resources have been partitioned by the split. Despite these disadvantages the councils are acting positively and especially in the case of Mpulungu, have potential for reasonable income. Mungwi, with fewer opportunities to raise revenues is nevertheless proving dynamic in trying to solve its problems.

3.1.2 Unlike many parts of Zambia, Northern Province district councils generally do not have district planning officers. These have proved very instrumental in other provinces in strengthening DWASHE planning capacity. The contrasts in resources between Northern Province districts and the two districts in Southern province receiving Irish Aid funding, are marked. In the latter there is strong district planning capacity (in the case of Mazabuka, there are four planners in the department) and the municipal budgets and income are very much higher. For instance Choma had a budget for last year of 1.5 billion kwacha, compared with 159 million for Kaputa. In both cases MLGH only provided some 35-39 million, but Choma still managed an operating budget of 500 million, whilst Kaputa's was less than 50 million.

3.1.3 Within the health sector both provinces are very under-staffed at rural health centre level. Only just over half the centres have an environmental health technician (EHT) whose role is to promote preventive (primary) health care. In future the re-organisation will lead to one EHT having responsibility for as many as four catchments, which will severely reduce their ability to carry out health education on a systematic basis throughout the districts. The Mbala Needs Assessment Survey (NAS) found that approximately half the rural population walked for more than three hours to reach a health centre (compares with DHS national figure of 50% living more than 5km from a RHC and only 16% so far from a school).

3.1.4 Population and services in Northern Province are roughly as set out in Table 3.1. It should be noted that the split districts do not know exactly how many people are in each part, and that the population for Kaputa varies widely according to the source of information. MOH give it as approximately 88,000 while PPU district profile puts it at 54,000. Urban population is less than 2,000. Despite the number of schools, the Mbala NAS suggests that only about one quarter of children go to school (compared with a national average of around 45% in rural areas).

Table 3.1 Rural populations in districts with Irish Aid support to WASHE.

District	Area sq.km	Rural population	Population density	Schools	RHCs
Isoka/Nakonde	3 850	125 600	3	91	14
Kaputa	4 904	49 600	4	51	7
Kasama/Mungwi	26 554	179 000	5	63	15
Mbala/Mpulungu	10 632	150 500	4	70	11
Mporokoso	12 000	58 200	5	55	10
Nabwalya/Mpika		157 000	3		

3.1.5 Communities in Northern Province are usually well-nucleated compared with those in Southern province, where houses tend to be widely scattered. Communities along lake shores tend to be particularly large, acting as markets both for fish and goods brought in from Zaire and Tanzania. The high level of dependence on fish as a source of income in many communities means that the seasonality of cash flow is quite different from the rest of the country. During the closed season for fishing little cash is available.

3.1.6 The paucity of resources in Northern Province also extends to the number of NGOs working with communities. Compared with many other parts of the country there are very few (see Table 3.2).

Table 3.2 NGOs in Northern Province.

NGO	Area of operation	Activities
Red Cross	Kasama	Resettlement of refugees (Zaire and Ruanda)
Chinchili wa Babili	Mungwi	Rural Development (agric. Feeder roads, rural water supply
DOPE	Mpika	Women in Development Rural Water supply
World Vision International	Mbala and Nakonde	Rural development, schools, RHCs and associated RWS
Simavi	Mporokoso	Rural water supply at RHCs, with rehabilitation

3.2 Existing water sources

3.2.1 Northern Province has more surface water than any other province, other than perhaps Luapula. This includes three large lakes (Tanganyika, Mweru Antipa and Lake Bangweulu, into which the main river, the Chambeshi, flows. There are many fast flowing and rocky streams and small perennial rivers, which, according to the Mbala NAS form a source of water for over 70% of the rural population. Furrows have been constructed in some areas to divert stream water to irrigate crops. The Mbala well inventory lists rivers and streams as an alternative source for over 60% of communities which have protected sources.

3.2.2 The Mbala NAS gives an interesting picture of the way of life and priorities of communities on a systematic basis. Data has been collected per community rather than by household, based on the answers of representative people from up to three households. Preliminary analysis by the Mbala Irish Aid Office and DWA OIC suggests that 11% of communities use springs and 30% use self-dug wells, but it is not known to what extent this follows a pattern common in North-western, where springs are preferred for drinking water, and self-dug wells for other domestic purposes. 30% of communities mention taking water from more than one source. These figures are similar to those given in the annual well monitoring for 1997, where some 25% of communities with protected sources use more than two sources , and nearly 40% give self-dug wells as an alternative. However in that most people appear to bathe and wash clothes at points of surface water, rather than carrying water home, the number using water from other sources on an irregular basis may be even higher.

3.2.3 The high number of family (self-dug) wells is commonest in Luapula and Northern Provinces. In the latter the CMMU Inventory indicates nearly 3500 such wells, and there are quite likely to be more.

3.2.4 The problems with surface water relate to large and small health hazards. Surface water is more likely to be polluted, but a more immediate danger is that of crocodiles. Lake shores are particularly dangerous for drawers of water.

.3.2.5 The Mbala NAS indicates certain characteristics which are thought to be fairly typical throughout the province, except perhaps in Kaputa. These include -:

- about 2/3 of the rural population walks less than 15 minutes to reach a water source
- protected water sources comprise only about 16% of sources used

3.3 Groundwater conditions.

3.3.1 In order to provide safer and more easily accessible water, groundwater forms the main source for community water supplies constructed by Irish Aid and Microprojects Unit. The hydrogeology of Northern Province is varied, and offers several problems to well construction. The main ones relate to

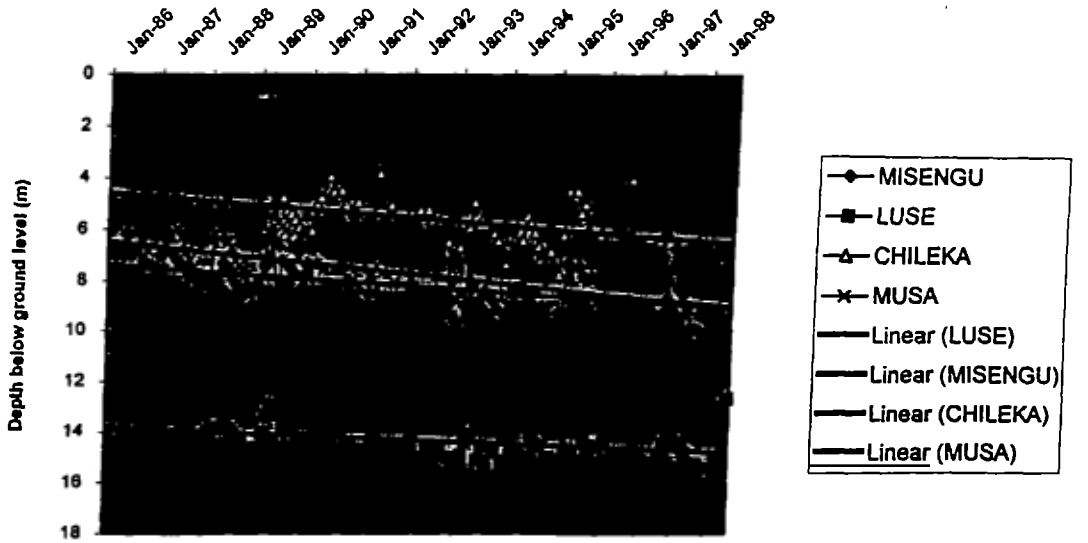
- salt pans
- soft/boiling sands
- falling water levels
- aggressive water

3.3.2 The hydrogeology of Kaputa district is complicated by quite poor aquifers and very saline water in lenses below freshwater in the vicinity of Kaputa itself. This is thought to be related to salt pans from which salt is harvested at present. Elsewhere brackish water is related by some to differing lake levels or geological formations, but there is no basis for prediction at present. As a result three boreholes are too salty to be used for most purposes most of the time. In addition, depth to water is often over 30m and 8 boreholes were regarded as dry. In such a complicated environment, hydrogeological research could improve water quality and yields.

3.3.3 Difficult conditions for well construction exist elsewhere especially where boiling sands cause problems to well construction in Nabwalya and Mbala East. In addition water is commonly of a low pH (except in Isoka and Nakonde). Water from about one in four wells has a pH of less than 5. As a result, where contractors have put in mild steel casing or handpumps have riser pipes of poor quality GI, iron content is often very high, especially for the first few buckets drawn each day. The need for mild steel casing could be removed by drilling with fluids which were sufficiently dense to stop sands collapsing. It suggests that drillers need to be appointed who have good experience of soft ground conditions, or DWA drillers be trained to cope with these particular conditions.

3.3.4 Groundwater conditions appear to be changing throughout large parts of Zambia. In Northern Province there are records of water levels over a longer period than for most parts of the country, as a result of Irish Aid monitoring. These suggest that water levels may be dropping not just seasonally but over long periods of time.

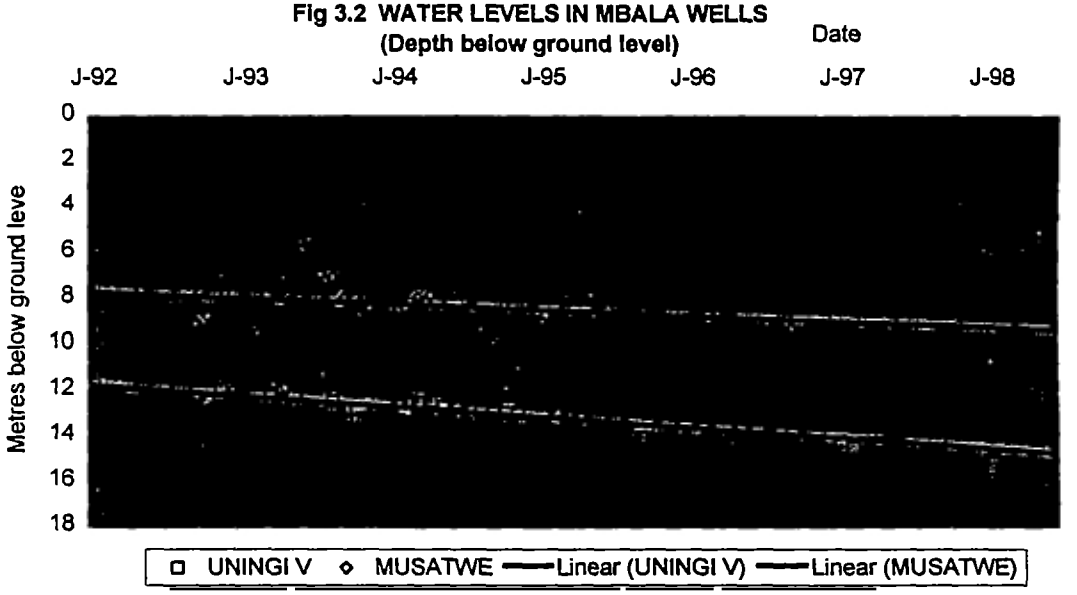
Fig 3.1 Water level trends in Kasama District



Monitoring for three wells in Kasama (See Fig 3.1) and two in Mbala (see Fig 3.2) indicate the following for the areas concerned -:

District	Probable trend over 10 years	Maximum seasonal variation (depending on well and year)
Kasama	-0.8 to -2.25m (measured over 12 years)	2.0-3.6m
Mbala	-3.0 to –4.7m (measured over six years)	2.0-6.0m

Fig 3.2 WATER LEVELS IN MBALA WELLS (Depth below ground level)



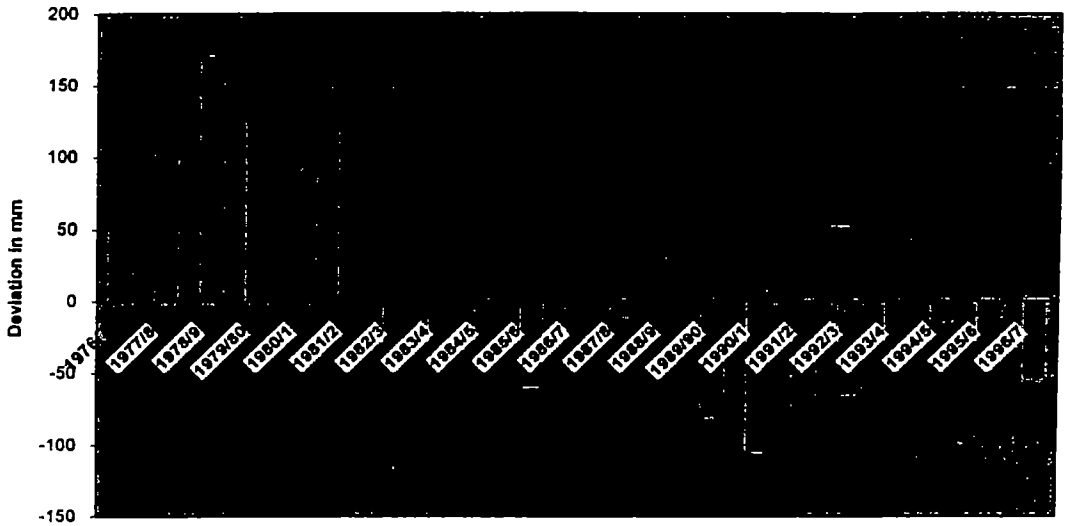
Considerable further data analysis is necessary to establish how widespread and consistent this trend is, especially where more recent data is available. 1997 dry

season saw particularly low water levels in Mbala and Kasama, but unfortunately this is the periods for which fewest records could be found.

3.3.5 The last fifteen years have been ones in which almost every year has seen average or below average rainfall (1350mm/pa). However the deviation rounded over four years to represent the buffering of groundwater systems has not exceeded 10% of the average rainfall (see Fig 3.3). This suggests therefore that declines in water level may also be due to other factors, for instance de-forestation.

3.3.6 These above physical conditions all affect the 'life expectancy' of wells and need to be considered both in the choice of technologies for the future (see Section 10) and in plans for major future investments in rural water supply.

Fig 3.3 Four year deviation from 20 year average rainfall, Kasama



3.4 Conclusions

Northern Province is characterised by-:
Large distance between communities and low population densities
Areas with difficult groundwater conditions, including falling water levels
Generally short distances to water and a variety of alternatives available (exceptions include Kaputa)
Few resources, poor district councils and poor rural population

4. INPUTS AND EFFECTIVENESS OF NPDP WATER SECTOR INTERVENTIONS

4.1 Physical outputs and costs.

4.1.1 The three project areas are run as separate entities with their own budgets and plans, and to some degree their individual ways of operating -:

Project	Areas covered
Kasama	Kasama. Mungwi, Kaputa, Nabwalya (Mpika).
Mbala	Mbala, Mpulungu
Isoka	Isoka, Nakonde

In addition there has been a separate sanitation project which will be incorporated in the water projects from 1998. The changes which have occurred in the past nine months are discussed in more detail in Sections 5, 9 and 10.

4.1.2 Progress in health education, community mobilisation and well construction or rehabilitation accelerated in 1997 (see Fig 4.1). This is mainly due to the incorporation of borehole drilling into the programme and its faster rate of construction (see Table 4.1), since well construction (particularly the construction of year-round reliable sources) had previously limited productivity more than had the capacity to mobilise communities.

Table 4.1 Wells (including boreholes) constructed in present phase.

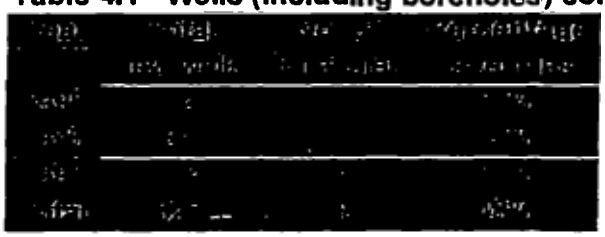
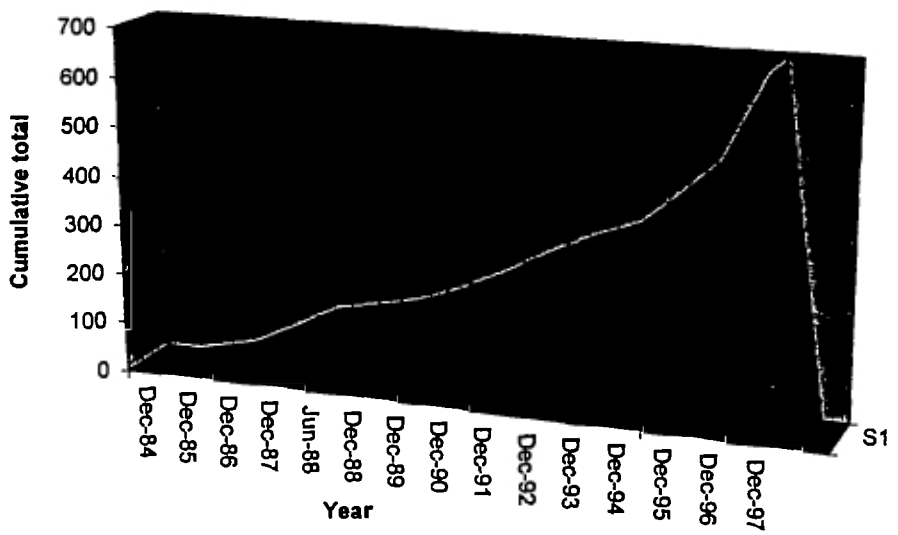


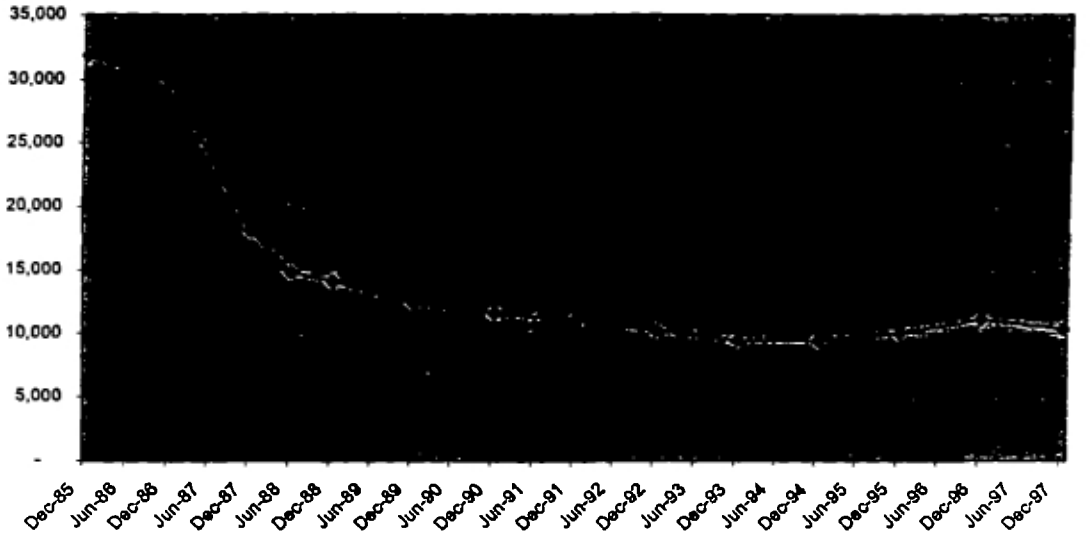
Fig 4.1 Progress in well construction Northern Province



This is coming from a situation where, prior to 1995 no boreholes had been drilled, only hand-augered cylinder wells (CWs) and improved traditional wells (ITWs) or rehabilitated World Bank wells. ITWs had been taking an average of three months to complete and CWs five weeks. Other increases in rate of progress mainly relate to opening of new project centres in 1992 (Mbala) and 1994 (Isoka, impact delayed till 1996), increasing capacity both for community education/facilitation and .well construction.

4.1.3 Whilst the increase in progress should reduce the cost per community by spreading the overheads among a greater number, the establishment of two more centres of operation means that costs have remained roughly constant. This is as a result of relatively low outputs in most districts until mid 1996 so that cumulative costs have remained around $10,000 per community, as they were in 1994 (see Fig 4.2). They have been higher in Isoka (average $17,000) and Mbala (around $13,000), because of slow progress in the early years, and the continued influence of high start-up costs. The overall cost per community compares favourably with other projects in Zambia, operating on a similar project basis. However since 'software' components were relatively low, factors such as high transport and staffing costs have had a greater influence.

Fig 4.2 Cumulative costs per community ($US)



4.1.4 In total the water supply construction this phase , up to the end of 1997 has been 255 wells and boreholes. Prior to 1995, annual average construction was 31 wells per year. Since the beginning of 1995 output has been as set out in Table 4.2.

4.1.5 It is not yet possible to compare the costs of the DWASHE-based system which is now evolving, with a lower project profile. It is expected to be cheaper, but will be difficult to define as more overheads will be borne by GRZ and progress may, initially, be slower.

4.2 Functioning and coverage.

4.2.1 Coverage is not just a question of how many wells have been constructed but also how successfully they are kept in operation, and how much people choose to use them. The latter is difficult to quantify at present, but there is sufficient information from project records and field visits during the review to assess the former numerically and qualitatively.

Table 4.2 Total output per district since 1995

Kasama and Mungwi	CW	ITW	BH	REH	
Pre 1995	100	193		83	* inc Mbala
1995	5	8	9	3	25
1996	11	5	5		21
1997	6	11	29	3	49
Totals	22	24	43	6	95
Mbala & Mpulungu 1995		17		5	22
1996		17		1	18
1997		14	15	5	34
Total		48	15	11	64
Kaputa .	CW	ITW	BH	REH	Total
1995			13		13
1996			17		17
1997			45		45
Total			75		75
Isoka/ Nakonde .					
1995		2	5		7
1996	4	12	4		20
1997	4	20	16		40
Total	8	34	25		67
Nabwalya .	CW	ITW	BH	REH	Totals
1995		5			5
1996		5			5
1997		6			6
Total		16			16
Grand total since 1995	30	122	158	17	327

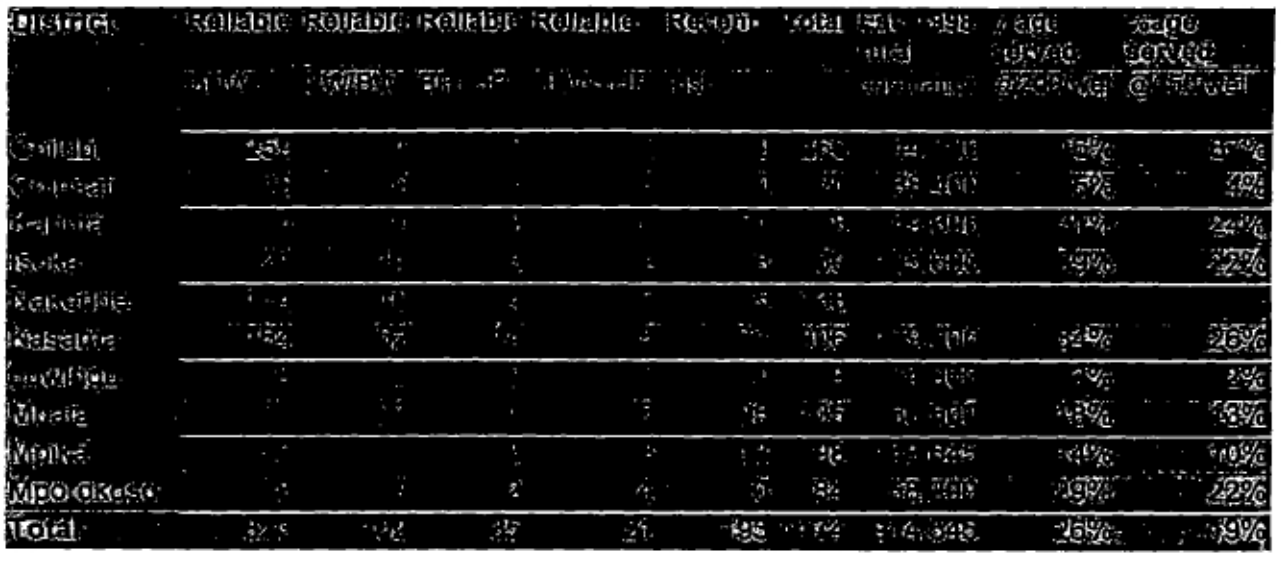
(NB Small variations in annual totals may be attributable to variable inclusion in annual or quarterly reports of wells completed or handed over)

4.2.2 Surveys show that a variable proportion of wells in each district are out of use, or go dry seasonally, and so do not provide a reliable supply at the most critical time of year. The proportion is highest where wells are oldest. Thus in Kasama district it is estimated that over 130 wells do not provide a year-round reliable supply (See Table 4.3) at present. This is partly because some have been abandoned, some go dry seasonally, and others are unused at the time of survey through lack of parts (bucket, chain or windlass) or because of perceived poor water quality. Overall it would appear that some 72% of wells are fully functioning, but slightly less (around two-thirds) for the districts where well construction has been going on for longest. Despite a continuous programme of well-deepening, 30% of wells went dry in Kasama district in 1997, at a time when alternative sources were most difficult to find.

Table 4.3 Estimated totals of Irish Aid funded wells providing reliable year-round supplies

4.2.3 When all wells which were operating in 1995 in each district are included, the coverage overall (see Table 4.4) is some 28 % for those districts with Irish Aid inputs, ranging from over 30% in Kasama and Kaputa to under 20% in Mbala/Mpulungu. Other districts have more varied coverage, depending on whether any agency has been operating there, as is the case of the IRDP in Chilubi, which appears to have achieved a quite high and reliable coverage with ITWs . In contrast, Luwingu and Chinsali have faired much worse having had few wells constructed by any agency in the past few years. These coverage figures assume that all wells which were operating at the time of the CMMU survey are still providing a reliable supply. This is an optimistic assumption, since many wells went dry during 1997, as a result of the below average rainfall in 1996/7 rainy season.

Table 4.4 Coverage estimates of reliable, used rural water supplies for Northern Province.



The coverage figures of 13-18% for Mbala/Mpulungu agree well with that indicated by the Needs Assessment Survey in 1997 which was 16% for protected sources. The number of people using each well in Kaputa appears to be much higher than elsewhere, and so coverage figures may be an under-estimate.

4.2.4 These coverage figures should be looked at over time in relation to population growth versus increases in number of reliable wells per district. The annual rural population growth for the seven district in which Irish Aid has been operating since 1995 was approximately 13,600 in 1997. This would need the construction of 68- 90 wells per year just to keep coverage constant. To increase access to safe reliable

water implies well construction programmes which exceed the following approximate annual rates of construction -:

Kaputa	**5-6 wells/p/a**
Isoka/Nakonde	**18-24 well/p/a**
Kasama/Mungwi	**26-35 wells/p/a**
Mbala/Mpulungu	**19-25 wellsp/a**

Thus it would appear from Table 4.2, that 1997 is the first year in which Irish Aid has significantly increased the **proportion** (as opposed to the numbers) of rural people with access to safe, reliable water since expanding into the seven districts. Kaputa district is the exception, however, since here significant increases had been made in previous years also.

4.3 Sanitation

4.3.1 Most emphasis has been on health education and institutional facilities in this sub-sector. School latrine building was incorporated into the school rehabilitation programme with the idea that neighbouring communities might take up the same technology. However the relatively high cost of facilities and the poor performance of those relying on water flushing [7] has meant that this programme has now changed its emphasis. In future sanitation will become integrated into the WASHE support programme, and most DWASHE committees have already incorporated a significant element of latrine construction (generally VIPs) into their plans. Activitities are still focussed on institutions, except in Mpulungu and Mbala where low cost family facilities are being encouraged. Sanitation is now receiving more attention, especially as a component of the overall strategy to promote environmental sanitation, addressing faecal and solid waste disposal, hygiene behaviour, and safe use and storage of water.

4.4 Impact.

4.4.1 The functioning and condition of supply facilities, the reasons for their non-use, and their water quality all provide indicators of certain aspects of the programme. In particular they show -:

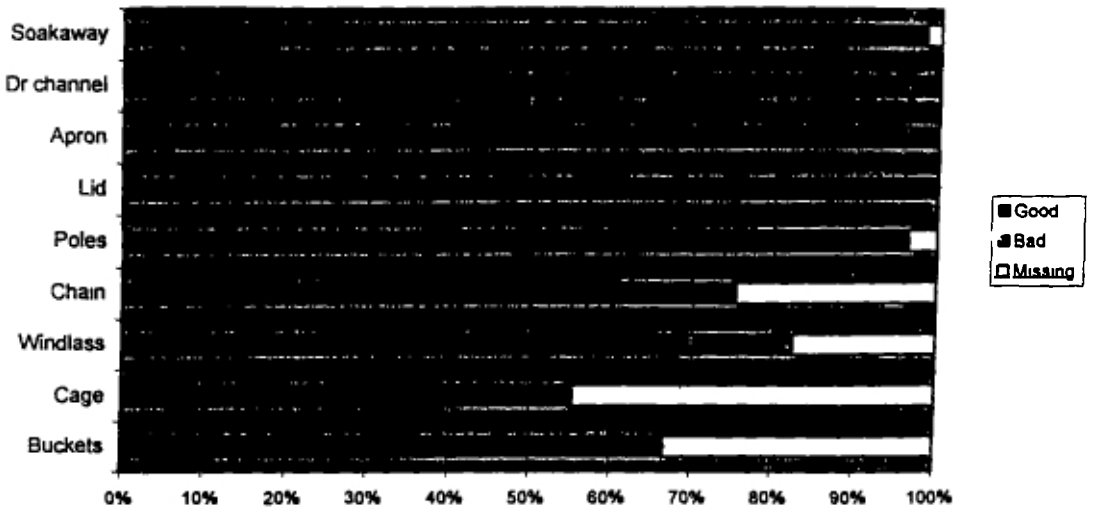
- the capacity of community management to solve problems
- the priority people give to safe water
- changes in behaviour which maintain the quality of supply, and lead to its (exclusive) use.

The first of these reflects the degree to which community mobilisation focussed on long-term issues, rather than simply motivation to be involved in construction and initial contributions. The other two reflect the impact of health education.

4.4.2 Kasama district is the area in which well construction and community education has been undertaken for the longest period of time. Here there are signs of wells beginning to age (see Fig 4.3). It is apparent that back-up is still needed to support communities in motivation to keep their supplies in operation. In surveys carried out in 1998, over half the buckets were found to be leaking badly or missing, and one third of chains missing or in such a bad state that there was a

[7] A review of Kasama Rural Water Sanitation Sept. 1997

Fig 4.3 Condition of well components, Kasama 1998



danger of buckets falling in. The general structure of the wells remains good, showing the quality of workmanship in construction, but the parts which require replacement by communities continue to cause problems. Over one quarter of communities had spare chains in 1997[8], but of the 5% of places from which chains had been stolen, none had replaced them and 25% of sample communities had suffered buckets falling into wells and mostly not being retrieved. The combination of low water levels in late 1997 and the start of project withdrawal from many field-level back-up activities in 1997/8 has meant that the number of wells going out of use seems to be accelerating. However almost two-thirds of the communities visited in the Kasama survey had received visits from Irish Aid during 1997 for discussions on fund-raising and well hygiene, but had mostly still not done anything to solve the problems they faced. It would seems that the form of community motivation employed was not highly effective and needs considerable development or cross-fertilisation with that of other programmes. Rather than a 'quick fix' system, community support is more likely to be effective through a more continuous process. using sub-district level resources as is now being developed with DWASHE committees. In Mbala of the 126 wells handed over, 37% of problems of non-use related to weak community management and 63% to technical difficulties (mainly wells drying out).

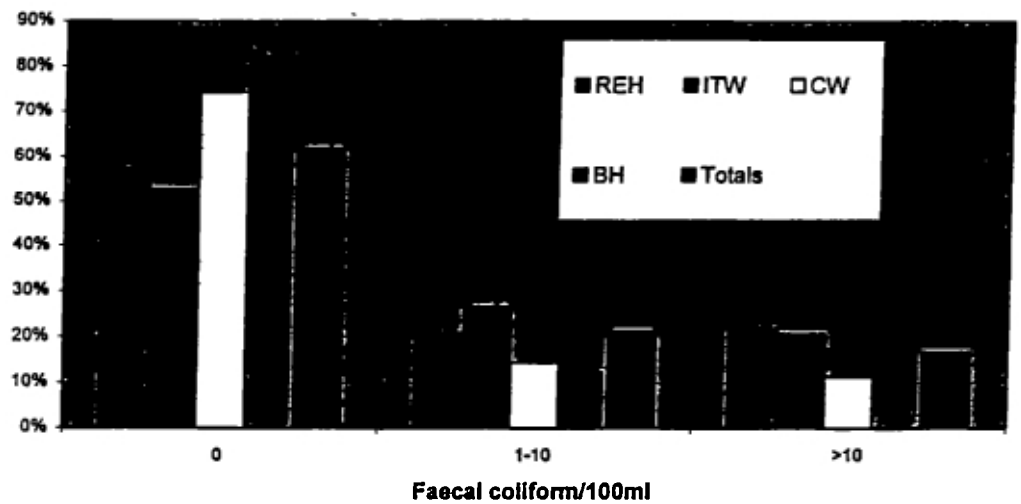
4.4.3 In contrast the situation in Kaputa was found to be very different. Here the demand for water is very much greater, and there appears to be a higher willingness to pay and wish to maintain supplies. Of fifteen communities visited, all had made efforts to keep supplies functioning. Those with bucket pumps had all, bar one, bought at least one new bucket, and most had bought an average of one per year since well construction. This is linked to the high demand for new supplies, and the number of communities already trying to raise money for initial contributions for boreholes (120,000 kwacha). The situation in Kaputa (high motivation and willingness to maintain supplies) reflects the advantages of a truly demand-driven approach, which requires a genuine identification by the community that for reasons of health and/or convenience they are prepared for long term financial and

[8] Kasama Rural Water and Sanitation Health Education Quarterly Report. June 1997

management commitments, not just short term contributions in money and labour, connected to construction.

4.4.4 Some wells have also gone out of operation because water quality has declined in the dry season, when there may be little water in the well. In Kasama 30% of sample communities remarked that they regarded water quality as poor, mainly in the dry season. Communities appear to be ill-prepared for maintenance of water quality perhaps partly because there has previously been a considerable dependence on the project to chlorinate and pump out wells when quality declined. Nevertheless water quality is generally good, with some 80% of IT and rehabilitated wells with less than 10FC/100 ml, and water from boreholes and cylinder wells of the highest quality. (see Fig 4.4)

Fig 4.4 Water Quality in different sources (1495 samples from all NP districts)

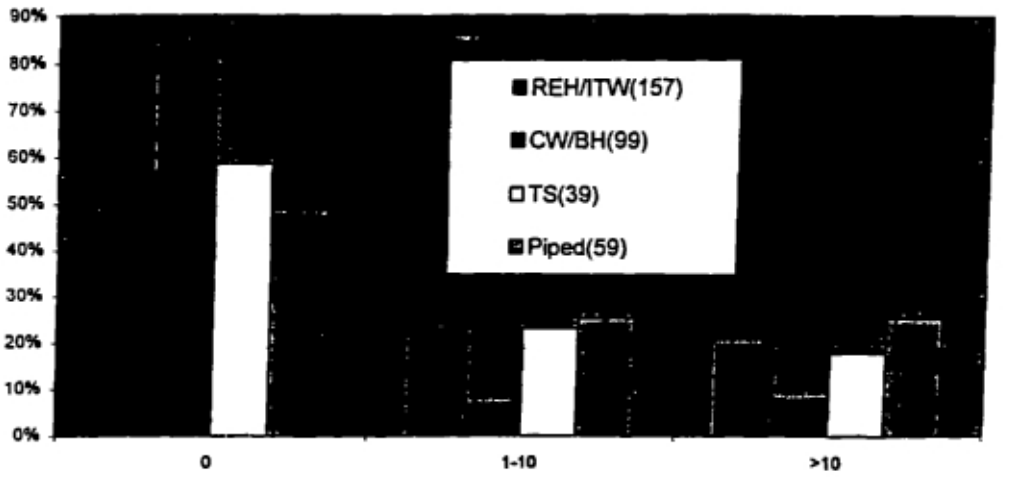


Within Kasama, where rehabilitated wells were mostly the first to be completed, initial improvements in quality were best maintained in wells constructed later on, when health education and construction quality may have been better. In all cases the number of sources with a moderate level of contamination has increased slightly since construction, but tends to have levelled off.

4.4.5 Despite an enormous volume of data on water quality in protected sources, there has been little base-line monitoring of water quality before Irish Aid interventions. Limited sampling in 1997 suggests that in Kasama the difference in quality between traditional sources and new or rehabilitated improved traditional wells (ITWs= lined wells with bucket and windlass) is small (see Fig 4.5 with sample numbers in brackets). The proportion of more highly contaminated samples is similar in Traditional sources, ITWs and piped supplies, and only boreholes and cylinder wells seem to show significantly better quality. The main advantage of the Irish Aid funded wells (other than CWs/BHs) appears still to be proximity, convenience, and so the potential for using more water, as it was in previous surveys[9].

[9] Dr B. Mwape Kasama Rural Water Supply Project 1990.
NPDP Water and Sanitation Study, Background paper for Zambia Country Programme Review 1995. M. Kaluba and S. Sutton

Fig 4.5 Water quality in improved, traditional and piped supplies, Kasama 1997



4.4.6 Little work has been done on preferences for water sources and perceived benefits. During visits to communities in 1998 it seems that distance to water remains the main reason for using a particular source. In very few cases do households tend to use one source exclusively. Thus in seasons of high water levels, alternative sources are used more frequently, and protected sources may be depended on more when shallow groundwater and surface water are less accessible. Preference for washing clothes and bathing in surface water is combined with what appears to be an unfortunate interpretation of health education messages to mean that washing should not be undertaken near (undefined distance from) wells. In some cases this has discouraged people from using the protected sources for all purposes, for fear of being chastised or having to carry the large quantities of water needed for washing back to their homes which may be far away.

4.4.7 Whilst distance to water is usually the main reason for using a particular source, in Kaputa and Mbala/Mpulungu lakeside communities also appear to value protected sources highly both for their safety from crocodiles and the lesser risk of cholera transmission. In Kaputa lower salinity is also a reason in some areas, especially in the dry season. Such a combination of reasons means that demand in Kaputa appears to be significantly higher and more actively voiced than in other districts.

4.5 Gender

4.5.1 Both NWASHE and the project have put considerable effort into increasing gender awareness both within project staff and in associated committees. Discussion of the strengths of women's contribution to household management has led to the adoption of women in key roles within VWASHE committees. This is a positive step in changing the perception of women's capacity to contribute to society, without simply burdening them with yet more physical tasks. However in general their roles in relation to well construction and maintenance tend to remain those which are a

natural extension of their household roles of cleaning, carrying water, preparing food etc.

4.5.2 Most DWASHE committees, especially those in Mbala, Mpulungu, and Kaputa have made a positive effort to increase the influence of women by incorporating female teachers and community health workers, as well as one or two representative women from communities. This is to counteract the fact that most district level government officers are male and means that there are some concrete contributions to discussion by women, even when most continue to take ' back seat' during discussions. In Isoka and Mungwi women now take the chair in DWASHE committees.

4.5.3 Changing attitude to women's roles and capacities takes time to become effective. For men to acknowledge their value and to give them equal influence in decision-making does not happen instantaneously. For many people at district level in particular, gender awareness is still regarded as a donor-driven initiative, rather than its benefits being locally recognised and promoted. At district and sub-district level most motivators are men, and particular effort may be needed to build up women's understanding of technical matters in that this appears to be the main way in which they may gain the respect of the community as a whole. The difficulty partly arises since in Ministries of Health and Education most extension workers are men, and only in Community Development, with very limited resources (both human and other) are there many women to provide alternative role models for the rural population. However changes are taking place, and as far as possible, Irish Aid is acting as a catalyst in altering people's perceptions and accelerating such changes.

4.6 Capacity building.

4.6.1 Most capacity building, above community level, over the past few years has been through on-the-job training, courses for project staff and to some extent support to the Department of Water Affairs at provincial level. Involvement of DWA OICs in planning, management and supervision has built up capacity in this area to a considerable extent. In 1998, however, considerable effort has also been put into supporting the DWASHE committees to become the main decision-making bodies on water and sanitation within each district (see Section 5.3), and to take over this role from the various project structures.

4.6.2 In its autonomous form, the NPDP built up teams for well construction, health education and community motivation, using a mixture of staff seconded from GRZ and those employed directly by the project. Capacity building concentrated principally on individuals rather than institutions, which was necessary because of the state of flux within the sector. Of the five people previously seconded from DWA, four from MOH and one from Community Development, none now remain with the project.

4.6.3 During the past few years the building of capacity at individual level was justified by the view that people returning to the public sector would be available to use their acquired expertise even if they were no longer with the project. Among those in Department of Water Affairs this would appear to be true, partly because of the good relations with DWA. However in Ministry of Health three of those who were seconded to the project are not the representatives MOH has chosen for the DWASHE committees and it would seem that their previous experience is now not being employed in the health thrusts on water and sanitation.

4.6.4 Those seconded from DWA became so much integrated into the project that they were no longer recognised as being from DWA in the districts for which they are officers-in-charge. This has meant that at least for 1998 DWASHE plans have tended to ignore the capacity of DWA to supervise contracts and construction, and so not to include their activities in budgets and plans. As a result there will need to be a period of re-adjustment, advocacy from DWA at provincial and district levels, and guidelines from DWA at national level on the role that its officers will play over the next three years.

4.7 Sustainability

4.7.1 The number of wells going out of use suggests an inadequate maintenance system, mainly in terms of community support, but also in well-deepening and availability of spares. Little attention has so far been paid to building up the maintenance systems needed to keep existing wells in operation. Procurement of parts (bucket pumps parts, chain and conventional buckets), has been handled by Irish Aid in the past. Present cost of buckets bears little relation to amounts charged at district level. For instance 5 litre buckets are bought at 25,000 kwacha in Kaputa, but cost over 50,000 kwacha at the factory gate in Zimbabwe. The true cost is therefore likely to be at least 60,000 kwacha if a bucket from stores is to be replaced by a new one. Kaputa has an annual demand for around 60 buckets, and about 35 available, if this year's boreholes are to be supplied first. Systems of procurement need to be put in place soon.

4.7.2 Revolving funds were set up at district level, but were returned to Kasama, and seem to have become absorbed into the overall system. There is therefore no fund at district level or any system in place to account for pieces sold, price adjustments in relation to kwacha devaluation, links to manufacturers to monitor prices or negotiate discounts. There is also no call-out fee for DWA to help solve problems, such as fishing for riser pipe, or pumping wells clean, and communities are generally not aware of the real costs of such services.

4.7.3 The move of seconded staff back to their ministries had led initially to de-motivation. However in the evolution of a new approach there will need to be a period of re-adjustment for all involved. Irish Aid now regards its role as catalyst and facilitator in building up the GRZ-based intersectoral system. The concepts and practicalities of this system are examined in the next section.

4.8 Conclusions

STRENGTHS

- Over 500 reliable sources established, serving around 100,000 people
- Costs comparable to or less expensive than other project-based systems
- Responsive to local demand (eg. Kaputa initiative)
- Emphasis on gender and development in training and establishment of DWASHE to give opportunity for women to have more influence in decision-making
- Highly trained personnel returned to GRZ
- Technical innovations developed which are relevant to other areas (see also 8.2)

WEAKNESSES

- Relatively low output per production centre
- Vulnerability to falling water levels in many wells
- Generally not a demand driven approach, so low motivation to keep systems operating
- Capacity building has been mainly individual not institutional (but mainly as a result of the institutional uncertainties in the sector)
- Building up of community management and behavioural change appears to have had limited sustained effect.

5. SUPPORT TO SECTOR REFORM IN NORTHERN PROVINCE DISTRICTS.

5.1 Objectives and concepts.

5.1.1 Within the overall sector reform, rural water supply and sanitation tend to have received little attention , despite their relevance to over 50% of the population, or 90% in provinces such as Northern. The WASHE approach has therefore been developed to promote sustainable water supply and sanitation supported by health and hygiene education[10]. It is based on the formation of committees at community, sub-district, and district levels, whose members are those people with active interest in the improvement of health and well-being of rural communities. The concept -:

- promotes co-ordinated planning of water and sanitation programmes using participatory techniques
- involves and develops integrated capacities and resources of all sectors
- improves decision- making by encouraging WASHE committee members to regard themselves as a team (not just as representatives of their respective organisations)
- guides the executive authorities in the implementation of the programme by devolving management responsibilities to the lowest level
- develops long-term support in which communities take responsibility for operation and maintenance.

5.1.2 The overall aim of a district WASHE Committee (DWASHE) is to translate the main points of the National Water Policy (see 2.2.3) into a DWASHE development plan[11]. DWASHE should then manage, facilitate and monitor its implementation to suit district needs. According to the manuals used to set up DWASHE committees and assist them in planning, it is partly the combined powers of intersectoral decision-making which have given committees greater strength and enabled them to approach donors with well-formulated plans. At the same time the manuals point out that "WASHE succeeds when a district sees it as part of their overall development. The DWASHE is responsible for the planning, implementation and monitoring of all WASHE activities in the district. Therefore it should not meet just to placate an implementing agency as this may result in the failure to meet the expectations of everyone involved."

5.1.3 There is therefore something of a tightrope to be walked , trying to encourage DWASHE development and the full adoption of committees as part of local administrative structure, without becoming so identified with the process that a dependency is established. Irish Aid has adopted slightly different approaches in the different districts, all of which contrast with the model chosen by UNICEF for Southern and Eastern Provinces (see Section 6). There has been assistance to make plans in all districts, but funding for major implementation in only seven. Some, including Mporokoso which has limited funding for sanitation, have been de-motivated by false expectations that support to planning implied support also to implementation (see also Section 7)

5.1.4 Up to this year, Irish Aid activities promoted community level WASHE activities, but tended to retard development at district level by taking on functions that should belong to GRZ. The plan now is to integrate project activities into GRZ and

[10] The WASHE concept. I.J. Mbewe 1995.
[11] Introducing WASHE at District Level. Manual 3 CMMU 1996.

so build up district capacity to plan, monitor, maintain and implement WASHE activities. So far integration has led to -:

- return of all seconded staff to their respective departments/ministries
- laying off of most contract staff, especially those involved in well construction and community motivation
- handing over vehicles in some districts to support WASHE activities (eg. Isoka and Nakonde)
- adoption of DWASHE plans (in modified form) for 1998 funding

5.1.5 The transfer of responsibilities may be, to some degree, a trial and error process. It involves well-planned transfer of responsibilities from a full-time management structure, with generous resources in terms of transport, salaries, allowances, workshops and equipment, to a part-time committee each of whose members have several other functions to fulfil. In this, committees so far feel they have not been sufficiently consulted and several appeared to be under a misapprehension that 'phasing out of the project' meant withdrawal of both Irish Aid management and its funding.

5.1.6 Even in the short time in which integration has been being put into practice, DWASHE committees have begun to take on responsibilities successfully(see Table 5.1).

Table 5.1 Summary of existing situation of DWASHE responsibilities

Present DWASHE responsibilities	Existing situation
Planning	All districts produced plans on which funding for 1998 is based (in modified form, see Table 5.2)
Needs Assessment	Mbala/Mpulungu developed and completed district-wide survey, & discussing selection criteria where demand exceeds supply. Kaputa DWASHE has carried out NAS for communities applying, since 1995. Others with similar approach to Kaputa (ie. Assess communities as they apply). Isoka use selection criteria
Training and facilitation	All DWASHEs active in holding workshops for sub-district, but sub-districts still mainly geared to communities where new works are scheduled.
Management of community mobilisation	Only since late 1997/ early 1998 except Kaputa. Some funding from NWASHE/CDD allowed activity in Nakonde and Isoka and Kasama especially.
Management and co-ordination of health education/ behavioural change/ environmental sanitation programmes	Funding only just beginning. Lack of IEC materials a constraint in most districts except Mbala. Mpulungu strong inputs from teachers/MOE
Co-ordination of construction of sanitary facilities	Mainly by Irish Aid. Mbala/Mpulungu pilot project of low cost improvements. High demand (Pits dug and bricks made in Isoka, and high priority to most DWASHEs) but funding only just being released.
Management of construction of water points	Kaputa DWASHE now selecting drilling contractors. Most works in 1998 have so far been labour-only contracts, under Irish Aid management
Monitoring of progress	All DWASHEs active, assisted by provision of allowances.
Maintenance of existing facilities (mainly water points)	Almost no consideration given to this and generally not included in plans.

Districts have reached different stages, depending on previous history, the capacity of the committee and the policy of the project office involved. For instance Kaputa

has had an intersectoral development committee for water and sanitation since 1994, and so has taken responsibility for aspects such as planning, training and needs assessment for several years.

5.1.7 While expressing enthusiasm for their greater involvement in decision-making, committee members were generally feeling that they were already near capacity with the work they had had to do in planning, training, and needs assessment. The frequency of meetings had led to several departmental heads passing the WASHE responsibilities to a more junior member of staff. Yet people are keen to move on from endless planning and training workshops, to seeing progress on the ground. There was real concern that if management and monitoring of implementation took as much of their time, and would this year also be simultaneous with planning next year's activities, they would not be able to fulfil their roles adequately. However this view partly arises from moving from a position of almost no involvement to an active and productive (in most cases) contribution to district development, and many have been surprised at what they have managed to achieve from such a low base line in a relatively short time,

5.1.7 It is not just the capacity of the committees which may be a limiting factor in the pace at which responsibilities can be transferred, and implementation be totally by GRZ or contract. The departments themselves have seldom in the recent past, been able to implement many of their plans, through retrenchment, and limitations of staff capacity as well as shortage of other resources, such as transport and allowances. These limitations to a degree, remain. District level administration has not had opportunity or experience in running and implementing major programmes and must be given time to grow into the role, and must also be expected to have some failures along with the successes. The constraints outlined in Section 2.1.3 and 2.3 must also be borne in mind.

5.2 Achievements in district planning in Northern Province

5.2.1 Some DWASHE committees have been making district plans since 1996, but this is the first year in which Irish Aid are using these plans as a basis for funding implementation. The plans made indicate a major step forward at district level and one which is particularly valuable in Northern Province. For the first time different ministries have worked together to pool knowledge and resources, and are aware of each other's plans. Considerable efforts have been made to collect relevant data, present it in a clear form, and formulate district objectives towards which all can work. With a lack of any planning officers[12], this approach has helped districts gain a clearer picture of where they stand and what they want to move towards.

5.2.2 By mid-1998 it would appear that most councils now identify DWASHE committees as being part of government rather than as an NGO, tacked on to them. They are identified with DDCCs, are answerable to them and so to council, in contrast to the previous view where councils such as Mbala used to list DWASHE along with the Red Cross as an NGO active in the area. Most councils expressed a relief that DWASHE was taking some of the burden off them by coping with rural water supply and sanitation. They acknowledged the fact that they themselves had no capacity to cover this, and that through the WASHE activities, GRZ were seen by people at community level to be being active.

[12] The districts are not without planning officers by choice, but because, despite advertising, they have failed recruit any at the salaries they can afford to pay at present.

5.2.3 Ministry of Health also voiced the same sentiments, that they were pleased to be able to share some of the burden of one of the six health thrusts. This did, however, have a down side, as several districts pointed out that this meant they were actually reducing their budget for this thrust, on the basis that it was now covered by others. However they remain active participants, and the ones with most sub-district level resources. They have had a budget in most districts for water and sanitation, which has paid allowances and for a small amount of materials for sanitation facilities. IEC materials have been budgeted for, but not funded so far.

5.2.4 Table 5.2 outlines the present situation with respect to district plans, and the new works which are approved for funding in 1998. Mainly through Irish Aid.. The fact that no implementation using DWASHE plans and management had started by this time appears to have been a result of various mis-understandings with committees, and of lack of clarity from Irish Aid on exactly what modifications were necessary for acceptance. This has led to some frustrations on both sides, which will, through experience, be able to be avoided next year. If all plans were to be completed , productivity would not be much less than achieved in 1995 and 1996, but with the delays already experienced, outputs are likely to be lower.

5.2.5 One general omission from plans is any consideration of the role of DWASHE in maintenance. This is both in technical terms (eg stocking of spare parts) and in social terms (encouraging sub-district extension staff to support communities with existing water supplies, and conducting awareness campaigns that such a support system exists if needed). Such support would be in aspects for which communities indicate a demand, such as facilitation in environmental sanitation strategies, health education etc. but at present no communities were found to be aware of the DWASHE or sub-DWASHE committees and their roles. The result has been an acceleration in the rate at which wells are going out of use, especially among the older wells in Kasama.

5.2.6 At the planning stage several departments made promises of what they could do and what resources they could mobilise which they now realise were optimistic. However, others, such as Mpulungu have expanded their plans and developed their education programme with schools further than they had expected. For every example of constraints there is probably one which indicates people's ability to overcome them. However it underlines that at present, much of what DWASHEs are achieving is through the goodwill and enthusiasm of a few, rather than through the operation of an appropriate and enabling government system for a intersectoral activities.

5.2.7 In those districts where Irish Aid is not funding implementation DWASHE committees appear to have been de-motivated by a combination of mis-understandings in NWASHE facilitation of planning and Irish Aid consideration of DWASHE plans. The result is that DWASHE committees felt they were making plans specifically to apply for donor funding, and no plans were made first aiming to make best use of what resources were already available. The result is that the WASHE initiative in many of these districts has foundered, and committees feel they were misled. This is unfortunate, bearing in mind that the WASHE concept was first designed to make best use of limited shared resources (iie. without major donors) to try and improve health in rural communities through an intersectoral approach especially to behavioural change and environmental sanitation.

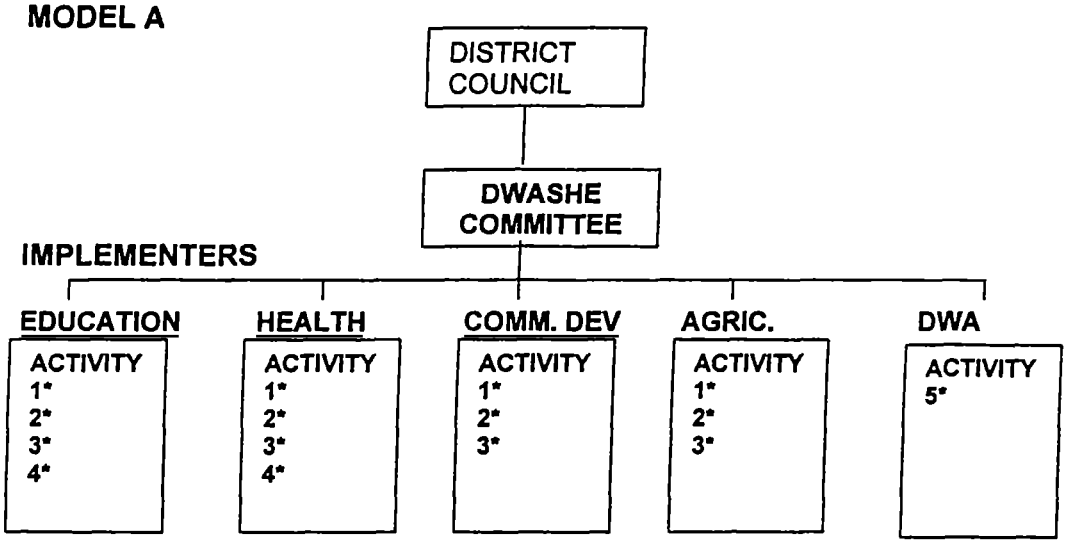
Table 5.2 DWASHE plans, situation in early July 1998.

District	Date of NWASHE training	No of functioning/ non-functioning wells (indicator of scope for maintenance)	DWASHE plans for 1998	Plans for 1998Approved by Irish Aid by June 30th 1998	Other support to DWASHE	Present situation
Isoka	1996	50/89	22 wells/BH 56 Blair latrines	16 wells/BH (+2 MPU) 36 VIPs (+12 MPU) (	Verbal but no financial support from council to DDC. MOH have DWASHE vehicle	Pits dig and bricks ready for latrines. 3 wells done, 4th under const with DWASHE. 7 sub-district DWASHE catchments formed Schools sanitation programme
Nakonde	1996	133/149	12 BH 24 ITW 48 latrines	12 ITW/BH	As above, but DWA have DWASHE vehicle	Well under construction thro' DWASHE. NWASHE funds for health education. Schools sanitation prog
Kaputa	1996	78/60	50 BH 150 latrines	30 BH	MOH with own plan and budget for RWSS within DWASHE plan.	DWASHE vetting drilling contractors, communities mobilised and mostly raised funds. Sub-district DWASHEs being formed
Kasama	1996	306/238	8BH, 20 ITW, 5REH, 70 VIPs	8BH	A little council support for materials. MOH some transport	Contracts signed with Irish Aid at end of June.
Mungwi	1998	(with Kasama)	10 BH,204 VIPs	10BH	MAFF provide transport. Council and chiefs active support	Contracts signed with Irish Aid at end of June.
Mbala	1996	135/127	49 ITW, 10 REH 45 VIPs 4 furrows	9 ITW +2REH 21 VIPs &demo	No funds for DDCC or DWASHE from council, but MOH has funds released	Contracts signed with Irish Aid at end of June Received funds early July.
Mpulungu	1998	As above	As above	12HDW, 3BH, 72 VIPs 17 WBT	Council supporting DDCC/ CDFC. Technical committee to supervise contracts	Contracts signed with Irish Aid at end of June. Received funds early July Also from MOH and CDD
Mporokoso	1997	84/128	10BH, 30HDW 40VIPs +42 demos	18 VIPs	Not yet	Contract about to be signed with Irish Aid.

5.3 Organisational models and roles of DWASHE.

5.3.1 At present there are two models for implementation developing in Northern Province[13]. Both of these have their own advantages.

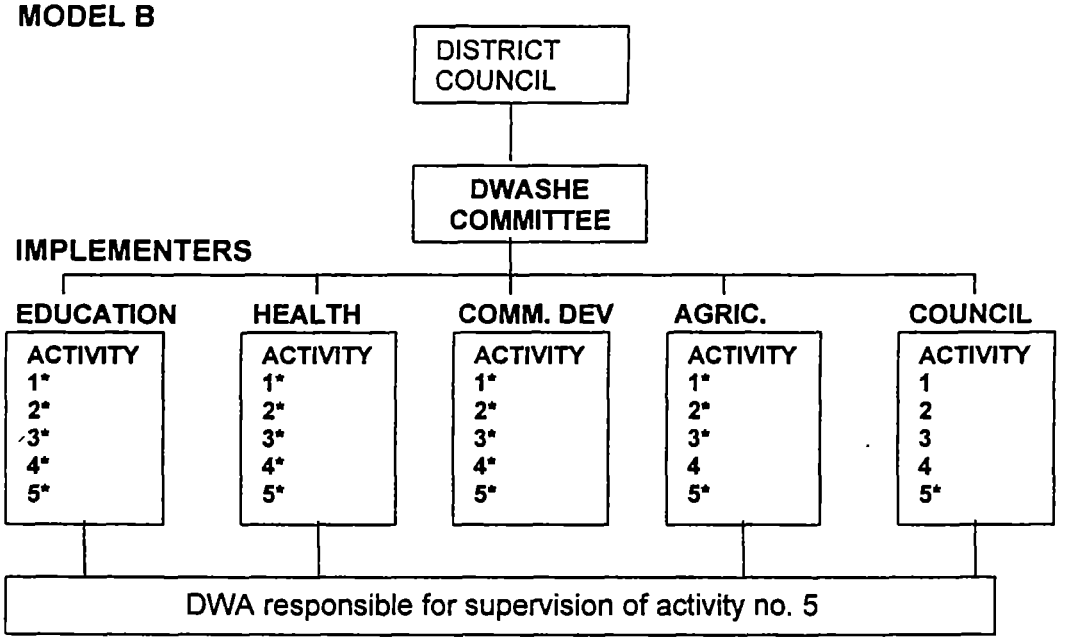
MODEL A



KEY to Activities.

1 Community empowerment
2. Promotion of behavioural change
3. Facilitation for improved environmental sanitation (inc. traditional sources) in communities
4. Construction of sanitation facilities at institutions
5. Well construction /rehabilitation specification, contract supervision, and ITW equipment/ materials provision

MODEL B



Model B has all activities (including water point construction) being implemented by Ministries/departments according to their capacities, but co-ordinated by DWASHE committees. Thus Ministry of Health organises construction of wells at rural health centres, district council in communities and MOE at schools, and each organisation

[13] Modified from Discussion Paper by J. Barrins July 1998

arranges its own programme for mobilisation, behavioural change and promotion of environmental sanitation. Funds which go via the district secretary to the DWASHE are split according to the detailed work-plan of each department, which are generally first drafted within DWASHE, and then discussed in district offices.

5.3.2 Model A is being used in some form in most districts, and Model B in Mbala and Mpulungu and to a lesser extent in Kaputa. In Model A the role of DWASHE tends, so far, to be less well-developed, since well construction contracts are drawn up by the Irish Aid office which also organises and provides most transport and materials for all activities. Budgets are not drawn up in such detail on departmental inputs and departments have no budgets for community mobilisation and behavioural change programmes, since they are expected to pay their own allowances, and fuel and transport will come from Irish Aid at present.

5.3.3 To some degree the model to be adopted should depend on the capacities of each district, particularly that of DWA. During a transition phase to full integration, Model B is more difficult to implement because it requires more capacity and resources in each ministry at district level. This is particularly so for items such as de-watering pumps for hand-dug well construction. It also means that if funds or management capacity only allow work in a few communities, there is a wastage in each department organising resource mobilisation, and monitoring day to day progress. However in the long-term, Model B has the potential to increase district capacity more. A framework for discussing with DWASHE to define how they would like to operate and at what pace they wish to take over responsibilities is outlined in Section 9. At present the feeling of most DWASHE committees is that the whole process is being driven by Irish Aid with insufficient consideration of the capacity and other work commitments of GRZ employees.

5.3.4 In considering the path which Irish Aid is taking in its sector support fundamental questions arise as to the role which DWASHEs are to play. At present DWASHE responsibilities appear to depend on the vision of individual committees and the policies of donors rather than being set as a national policy. The CMMU Manuals for the establishment of DWASHE envisage the role of DWASHE to "manage, facilitate, and monitor its (WASHE district development plan) implementation to suit district needs" (5.1.2). What is not clear is whether implementation was to be without other assistance, and where implementation ends and management begins. The original view of DWASHE was more as the identifier of needs and monitor of progress. This is the role that it is being asked to take in most districts, on the assumption that district capacity is not sufficient for major implementation programmes[14].. The approach now being taken in Northern Province is calling this assumption into question, which is worth doing. However if insufficient time is given for the DWASHE concept to grow and take on more responsibilities and for the associated ministries to do likewise, the strategy may fail, even if the concept is appropriate. The baby may get thrown out with the bath water.

5.3.5 In viewing DWASHE as a manager of donor funded activities, and building up DWASHE committees in this role, WASHE activities at district level have become very donor-orientated. This is unfortunate as the original strength of the concept was that it made most effective use of the very limited and mainly human resources within GRZ. What is appearing from a combination of donor influence and NWASHE

[14] Attempts in North-western Province to give more responsibility to DWASHE committees have indicated that capacity is not sufficient, after two years of full-time institutional capacity building, to encourage the complete removal of a supporting project structure.

training is that DWASHE committees in Northern, and especially in Southern Provinces now -:

- regard their prime role as that of making plans to solicit funds from donors
- focus on new works rather than looking after what already exists
- plan on the basis of what resources they would like to have to reach certain objectives, rather than starting off by making maximum use of what they have.

As a result there is a grave danger of de-motivation and of the system falling apart if/ when donor inputs are not available. This is apparent in those districts where NWASHE training has been undertaken but Irish Aid has not funded any (or a significant part of) planned activities. It means that in the future, phasing out of support will need to be extra carefully designed in discussion with committees, and carried out gradually.

5.4 DWASHE funding, allowances and resources.

5.4.1 Funding of plans generally follows the "Irish Aid Guidelines for distribution of funds to DWASHE committees in Northern Province". These clearly set out alternative structures and acceptable procedures for the release of funds. District and provincial bodies were happy with the routing of funds via DWASHE, with the Council Secretary as the individual responsible for funds being used as per the itemised contracts signed. These are more detailed for Mbala and Mpulungu which offers more easy monitoring of progress against expenditure. Systems for signatories to accounts are well set up. However it is not clear what authority the council would have over, for instance the Ministry of Health, if it found malpractice, or Community Development if lack of progress in community motivation caused contractual liabilities over borehole drilling. Experience over the next six months will show whether contractual obligations of DWASHE and councils may need further definition in agreements with Irish Aid. Experience of UNICEF shows that it is difficult to pin down responsibilities, and the WASHE budgets are relatively large often almost equal to the total council budget for the year.

5.4.2 All councils are short of funds and some tend to retain any substantial amounts received for a period in order to benefit from the interest. This can slow down progress considerably. Some DWASHE committees would like the money to carry out extra works, others to use it for allowances, but while it remains in council coffers they may at present have no control over it at all.

5.4.3 Many DWASHEs voiced some reservations over Irish Aid funding guidelines, in that there was no consultation on how this fitted with their own procedures and accountability. However their main concern was the requirement for allowances to be from within GRZ (except for monitoring) which they found to be a de-motivating factor, and one which causes delays. Ministry of Health have a system for allowances , where they have to remain within a fixed percentage of the total budget (in their case 20%). Since some departments can get no allowances (eg Community Development and MOE) they are often reluctant to carry out tasks which much increase their workload, even when they have been involved in planning them. It also may lead to district officers wanting to solve community level problems, rather than encouraging the sub-district level to do this, in order to obtain allowances for monitoring. This is a thorny subject but one which is of real concern to people whose salaries are very low and who rely on other income to help them and their families to survive. It may need further discussion or at least clear explanation of Irish Aid/ WASHE policies, before people will commit themselves wholeheartedly to new activities.

5.4.4 Most DWASHE committees brought up the fact that they would like to be able to have some central facilities such as Irish Aid itself has to call on. The main needs were for a computer and a reference section, and all wanted transport. Whilst there is still some doubt as to where responsibility lies for rural water and sanitation, each DWASHE could make its own decision where any such resources should be placed, and rules for how such facilities are shared and controlled. The same applies to a vehicle, since WASHE activities alone are not yet sufficient to occupy a vehicle full time. Problems arise for maintenance, and for control of usage since it is still difficult for some ministries to put fuel or spare parts in the equipment of another. The WASHE vehicle in Isoka was broken down in July. How transport can be supported in the integrated system remains one of the most difficult problems to resolve.

5.5 Irish Aid support to DWA

5.5.1 During the present phase, one objective of Irish Aid support was the building up of capacity in DWA which followed on logically from the early inter-country agreements which were with DWA, and the provision by DWA of sites for project offices in some districts (eg. Mbala). Support to DWA was seen by the projects to be mainly in training of seconded staff, and also in some support to the provincial level operations of DWA. The change of emphasis to support of DWASHE and the return of DWA personnel to their parent department was not discussed with DWA at national level, although the good relations between Irish Aid and the Provincial Water Engineer avoided mis-understandings at this level.

5.5.2 DWA will be likely to play a major role in logistical support and supervision of well construction, at least in the early stages of integration. Most technical expertise that is available is within this department, and much of the transport and equipment. However it was apparent that, especially in Mbala, Mpulungu, Isoka and Nakonde the identity of DWA had become obscured by that of Irish Aid. With all vehicles and all offices prominently marked as Irish Aid, the identity of DWA has almost disappeared. Most members of DWASHE committees were not aware that there was a DWA office in the district, and that the Irish Aid technical staff were in fact seconded from DWA and had moved back to their post. As a result DWA does not appear as a stakeholder in district plans, nor is there any budget for their technical advice and supervision. A first step in integration might be to give more prominence to DWA in each district, even where there are Irish Aid offices.

5.5 Main conclusions.

STRENGTHS

- Different approaches in different districts, which helps to show the range of what is practicable
- Increasingly well-developed district plans
- Real empowerment of DWASHE in three districts, & increasing integration in another four
- Acceptance of DWASHE by DDCC and council, as being part of them
- Encouragement of those in GRZ to use initiative and improvisation to achieve objectives
- Giving opportunity to councils for GRZ to be seen to respond to rural demands for the first time for many years

WEAKNESSES.

- Fundamental changes being undertaken in short time frame with insufficient consultation with those affected
- Limited capacity of part-time committees to take over what was full time (project) management role.
- Lack of attention to keeping existing systems in operation and in some districts using resources available within GRZ
- Danger of DWASHE being 'groomed into donor dependence'

6. SUPPORT TO WASHE IN SOUTHERN PROVINCE DISTRICTS.

6.1 Background.

6.1.1 Irish Aid funds have also covered borehole construction in Mazabuka and Choma districts of Southern Province through UNICEF's part of the WASHE initiative. The environment in these districts, relevant to WASHE is significantly different from that in Northern Province. Some of these differences relate to local conditions and others to the way in which UNICEF has built up WASHE activities in the ten districts it is supporting at present (see Table 6.1). The approach has been one which does as much as possible to increase coverage with a minimum of full-time UNICEF structure. Capacity building is also a significant element, but is expected to take longer than the time-frame of well construction.

6.1.2 In 1997 some $208,000 was pledged by Irish Aid, and a further $122,859 was paid to UNICEF on March 1st 1998. The latter is still, at the time of writing (mid-July 1998), awaiting a PBA to make it possible for the funds to be used. The 1997 funds were used as per the proposal made by UNICEF in April 1997, and augmented by $128,400 of UNICEF's own funds, particularly for software and sanitation components. The 1998 funds are not linked to any proposed plans at present.

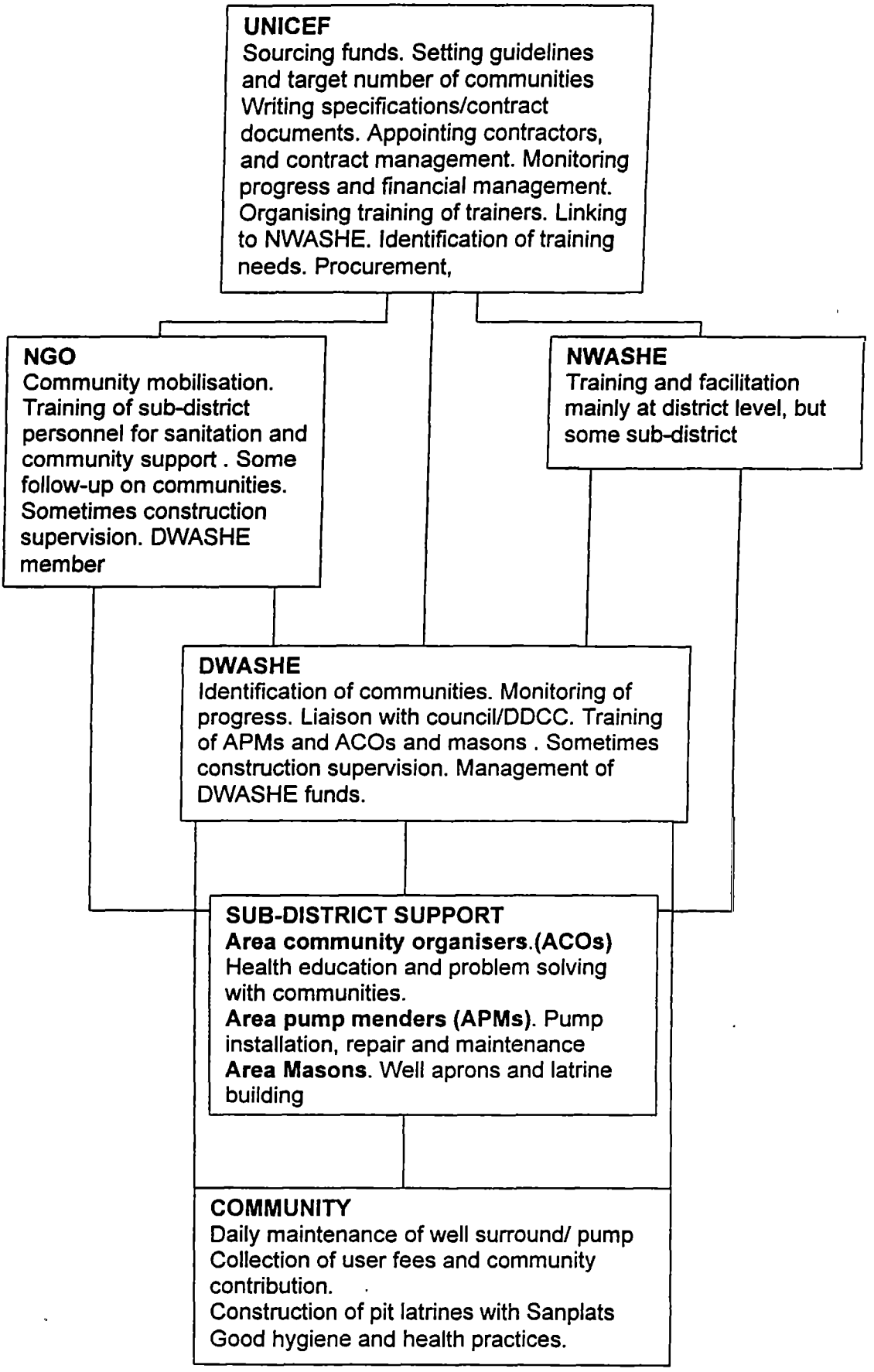
Table 6.1 Some relevant differences between Northern and Southern provinces

Aspect	Northern	Southern
Settlement patterns	Generally well-nucleated	Individual households widely scattered. Urban and peri-urban along line of rail
District council resources	Very poor. No district planners, new districts just developing	Relatively rich municipal councils, good council support, good planning capacity
Active NGOs	Very few and in limited areas	Large ones include Africare, World Vision, Plan International. Hope Foundation, working on WASHE
Other donors in the sector	EU (MPU) fund two or three institutional wells/year/district	JICA around 40 wells per district this/next year
Training inputs to DWASHE	Four introductory sessions with NWASHE. On-the-job training by Insh Aid technical support	NWASHE regular visits and UNICEF-planned training programme, including chiefs
Sanitation	Institutional and local up-grading, more inputs to hygiene education than sanitation to date	Much emphasised, especially promotion of Sanplats.

6.2 UNICEF organisational strategy.

6.2.1 UNICEF manage WASHE activities in ten districts, plus their development of a national environmental sanitation strategy, and several other national level co-ordinating activities with only three full-time staff in Lusaka. Rather than have a project-level presence in districts, they contract NGOs to carry out much of this function (see Fig 6.2).

Fig 6.2 SOUTHERN PROVINCE WASHE ORGANISATION AND RESPONSIBILITIES



6.2.2 At present the contracted NGO is World Vision, who have had one full-time person in each district and one co-ordinator dealing with three districts. World Vision provide their own transport. Their main role is to get the process started at community and sub-district level, providing facilitation to communities and training to sub-district support personnel. When construction is in areas where ACOs are already trained and active their main role is as liaison with them, providing allowances and monitoring progress.

6.2.3 At district level DWASHE committees are active, but are focussed mainly on the UNICEF programme. Plans go to UNICEF for approval in Mazabuka and to the DDCC only for information. At present the DDCCs in Mazabuka and Choma are only just getting going, and councils do not feel that they have much control over DWASHE. However they are interested in its activities and have put small funds for fuel and allowances for council inputs. In Mazabuka there is a monitoring officer in the planning department who will have some responsibility to monitor how wells are functioning. DWASHE committees are aware of all activities in their district, but neither they nor councils are active in co-ordination. JICA have given DWA in all districts a vehicle for WASHE activities which is controlled by DWA, and both JICA and UNICEF have given computers for DWASHE use in Mazabuka.

6.2.4 UNICEF, partly through World Vision, are building up a sub-district structure which is specifically for WASHE activities and is to be funded by community payments for services. The number of communities covered by each person varies, with pump-menders target number of pumps being around ten to fifteen but sometimes only starting off with two or three. This year, pump-menders are being paid only by communities, while ACOs will receive a small allowance (5,000 kwacha) from UNICEF, with communities supposed to pay the other 10,000 of the proposed daily rate. In the four areas visited all pumps were said to be working, and pump menders had successfully solved problems so far, and had also repaired some private handpumps.

6.2.5 At community level caretakers receive training in pump maintenance, committees in management and responsibilities, and treasurers in fund collection and management. This is mainly through ACOs and pump menders, who will receive further training in 1998.

6.3 Outputs and costs.

6.3.1 The total of communities covered in 1997[15] was as follows -:

Table 6.1 **UNICEF WASHE Outputs 1997**

Well type	Mazabuka	Choma	Total
New boreholes	21	36*	57
Drilled-in-wells	8	15	23
Pump replacement/repair	10	13	23
Totals	39	64	103

*10 funded by FDF/EU

6.3.2 The total costs for these communities was some $336,400 or $3,266 per community, which compares with the $10,000 per community for Northern Province.

[15] Final Progress Report to Government of Ireland (PBA SC/97/0314-1) Period Jan 1997-March 1998

If those in which technical inputs were limited to handpump repair or replacement are only rated at 20% of the costs of those with new sources, costs per community are still less than $4,000. This is partly achieved by[16] -:

- shifting installation costs to the community
- concentrating activities in one area at a time
- reducing number of dry wells by better siting
- using only one technology.

However it also is linked to the need for considerable further software support in the next couple of years to ensure the system becomes sustainable.

6.3.3 For this amount community support mechanisms have begun to be set in place, and reliable sources are available for use in drought periods which hit Southern Province especially badly. The present coverage in the two districts is calculated by UNICEF to be around 50% in Mazabuka and 54% in Choma, not allowing for any population growth in each over the past two years. If growth is included at around 2.6%pa, coverage is still some 47 and 51% respectively. There are a further 97 wells scheduled for construction in Choma district in 1998, by JICA, Hope Foundation, UNICEF (FDF funding) and World Vision (which are neither co-ordinated nor planned by DWASHE and all of which have their own strategies). These new works would bring coverage to over 62% for reliable water points, which compares with a maximum of 34% in Kasama (see Table 4.4).

6.3.4 The drilled-in-well programme which was something of a pilot project (see Section 8.5.1) has resulted in 100% of wells deepened by drilling in Mazabuka district, and 33% of those in Choma, providing a year round supply using bucket and windlass. All have water in the borehole part of the well and so have a reliable supply using the handpump which is also mounted on the well.

6.4 Impact and sustainability.

6.4.1 **Sources of information.** The time spent in Southern Province was short to form a district-wide picture of the impact of the capacity-building and effectiveness of the organisational structure being established. However a workshop was also attended in December 1997 which evaluated the programme so far, and was carried out by NWASHE and UNICEF with the participation of many of the DWASHE committee members from the ten districts.

6.4.2 **Basic needs package.** It would appear that, to date, most efforts have gone into the well construction programme, and the build up of ACOs and pump-menders. The five basic needs facilities which form part of the UNICEF package are - : latrines, handwashing, safe storage of food and drinking water, garbage pits and means of managing waste water and these are planned to be addressed more fully in 1998, along with further training and support to community organisers, pump menders and DWASHE committees. So far sanitation in terms of Sanplat and latrine construction has lagged behind in the two districts although masons have been trained, and a few Sanplats constructed. Up-take of Sanplats is slow, but gaining momentum in some areas.

6.4.3 **Use of protected sources** The province was visited at a time when water levels were high. Few people met were using only the protected source, and there were signs that many were not using it at all, or only for drinking water while convenient alternatives were available. This occurs partly because health education

[16] Increasing cost effectiveness in UNICEF Supported WASHE programme in Zambia. UNICEF 1997(?)

impact takes time to develop, and partly because as coverage becomes higher, those places where demand is highest, are likely already to be covered. The dispersed nature of communities means that at most times many houses may be nearer an alternative source than to the new one. Identification of communities is left to DWASHE committees but their targeting is not always good, and the time to identify new communities is not always adequate. There seems to be a tendency to replace hand-dug wells even if their supply has been reliable.

6.4.4 **Linking behaviour change and disease incidence.** The areas visited (especially Mbabala) mentioned a high incidence of bilharzia, but people still tend to go to surface water for washing clothes. Health education does not tend to cover bilharzia, and there is no discussion of communities helping to build washing slabs to make washing near the well more convenient, so that the new facility does not, at present, reduce this health risk.

6.4.5 **Sustainability of sub-district support** The establishment of a sub-district level support system is a necessary development. However, where it is mainly outside the GRZ system, it assumes that communities will support it. The role of ACOs and tangible benefits from their work are not clear in many communities, and ACOs tend not to be being paid (except for a daily allowance, now reduced to 5,000 kwacha, paid by UNICEF but due to be phased out). Pump menders have a skill that people are prepared to pay for and so are likely to continue to offer their services. At present most pumps are new but even so menders have successfully carried out a number of repairs. It is not clear whether communities will pay the rate previously paid by UNICEF of 15,000 kwacha per repair, as menders were finding that even private owners would not pay more than 5,000. Menders may then lose interest, as wells are often a long way apart, tool kits are heavy and they have no means of transport. One or two communities voiced their frustration at having been trained to install the pump and then not been given adequate tools for maintenance, as they would like to avoid having to call on the pump mender.

6.4.6 **Definition of roles.** Lack of clarity in the involvement of GRZ sub-district level systems is causing some problems, which are combined with ones resulting from confusion over the roles of ACOs. EHTs are involved to some degree and some are very active, despite having a large area to cover. Ministry of Health have set up Neighbourhood Health Management Teams which are responsible to bring some health messages to community level, and to co-ordinate activities in their areas, using MOH budgets. There is confusion as to their role in the WASHE programme, and that of EHTs and ACOs. Many ACOs are retired civil servants or those returning from urban areas who have a real desire to see the area develop more, and so wish to help. However such motivation is being tested by the workload, distances, lack of remuneration and lack of clarity as to how long their services will be needed. It may be that ACOs will be able to provide less long-term support in hygiene, health education and problem solving, which would need to be provided by GRZ personnel who would then need to be more involved from the start. ACOs and pump menders also face some confusion of roles.

6.4.7 **Spare parts subsidy** Southern Province has been the recipient of much NGO activity and drought relief funding, and there is a degree of dependency syndrome which may take time to disappear. Reluctance to pay for anything that people feel they might be able to get for nothing, if they wait long enough, is still common. There is also a real pressure on resources. One school mentioned how enrolment had dropped by 25% since charges were introduced as people felt unable to pay. However the present subsidy on spare parts is very high, kits which cost $90 in Lusaka are being sold for 10,000 kwacha ($5), so that affordability of the system to

communities is not really yet being tested. DWASHE are not aware of the true price and have so far not been involved in setting prices, this being done centrally from UNICEF.

6.4.8 **Co-ordination of activities.** The DWASHE system is at present orientated almost totally to the UNICEF programme, and in this role it is operating satisfactorily. Some delays are occurring through problems of funding. These relate partly to UNICEF headquarters delay in processing funds when received, but also at local level from relatively minor accounting problems. Funding then comes late in the year for activities which need to be well advanced before the wet season. ACOs cannot be mobilised until funds are available, drilling contractors may then be in action before communities can collect funds, and a large number of activities have to be co-ordinated and carried out in a very short period. As a result people tend to feel they are working on an emergency programme not a development one, and decisions have to be taken in a hurry that have long term consequences and may reduce impact. As with Northern Province, the planning calendar of UNICEF does not fit with GRZ for budgets by September so that WASHE activities are very dependent on donors.

6.4.9. **RWS Maintenance.** Many of the wells in the two districts are not at present covered by any maintenance system. DWASHE plans still need to spread to cover all types of well and to encourage spare parts provision through the private sector. UNICEF could assist in the latter by starting up negotiations and ordering bulk spare parts in country and even within districts, so that local prices would fall and routes be established where communities could purchase spares at district and even sub-district level.

6.4.10 **Continued capacity building** In the eyes of councils, DWASHE, NGOs and area organisers, the rate of implementation has been at a forced pace which leaves the system vulnerable if UNICEF support is terminated. Plans are not district-wide, and policies are UNICEF ones rather than DWASHE ones, so are not applied to all sector activities in the district. However, if support continues but with a more demand-driven approach (ie with DWASHE taking an increasing proportion of decisions now taken centrally) the present lack of sustainability will diminish and will complement the high rate of progress so far achieved in well construction, and in capacity building at district and sub-district level.

6.5 Conclusions

STRENGTHS.

- Achievement of high coverage in a drought-prone area
- Almost 20,000 people have benefited from just one year's output
- Cost effective systems through research in cost reduction, and well-defined policies
- Well-formulated training programmes for district and sub-district level.

WEAKNESSES

- DWASHE seen as a tool of UNICEF
- Not yet fully demand-driven approach
- Not clear definitions of responsibilities at different levels
- Sub-district support to communities largely not using GRZ resources but may not be affordable to communities at present.

COMPARISON WITH NORTHERN PROVINCE

- Both are at the start of major institutional capacity building, and in a transition stage.
- In Southern Province many of the management roles of a project are taken by UNICEF and NGO. Northern seeks to put these functions in GRZ with DWASHE.
- Both have started off concentrating on new works rather than maintenance of existing ones and DWASHEs have therefore developed with strong donor orientation
- Northern is using GRZ extension staff as backbone at sub-district level, Southern putting more onus on community financed system
- Southern Province systems are geared to a single water point technology

7. SUPPORT TO REFORM AT NATIONAL LEVEL.

7.1 WASHE at national level.

7.1.1 Whilst co-ordinating body for water sector reform in GRZ is an intersectoral committee at Permanent Secretary level (the PCU), there is still relatively little government recognition of the advantages of the intersectoral approach. The WASHE concept is, therefore, to a large degree still donor-driven. Apart from providing NWASHE with office accommodation, and a statement of support by the then Minister for EWD in February 1995, there has been little recognition of the concept at national level by ministries. Indications of this include -:

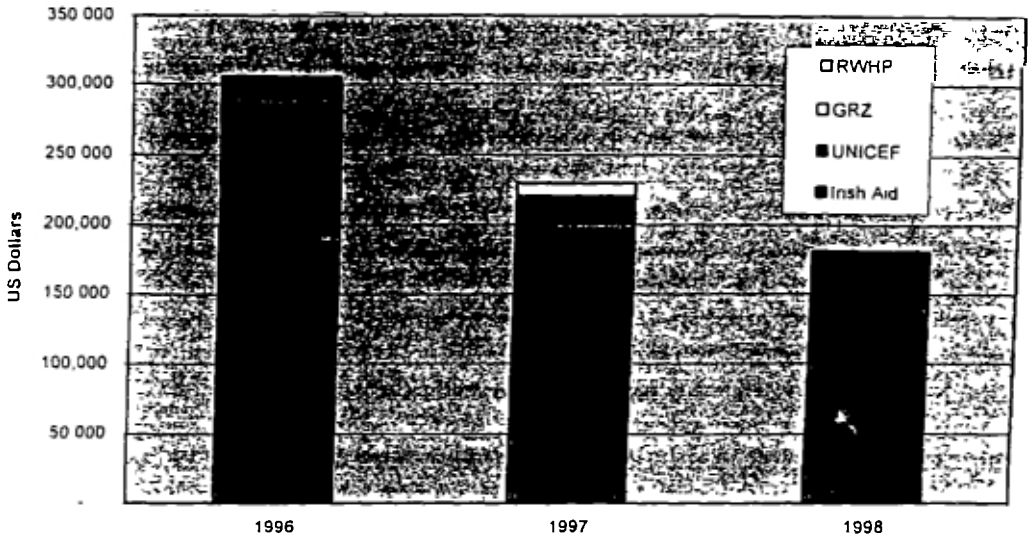
- district budgets which include WASHE activities do not get approved
- there has been no provision made within GRZ establishment for a national body to represent DWASHEs within either MLGH or DWA
- extension staff job descriptions do not include an intersectoral role.

This situation mainly results from the WASHE concept being a 'bottom-up' approach, which started from the formation of community level management and its involvement in decision-making for well construction, and long-term maintenance. In most provinces this preceded the formation of DWASHE committees, as it did in Northern Province. Thus for several years the VWASHE committees had no real support structure except the projects which founded them.

7.1.2 DWASHE committees (and the DDCCS and councils to which they are answerable) now find themselves in a similar position, with nowhere to go for rulings on policy or submission of plans at provincial or national level, other than to their associated bi- or multi-lateral donors. However this is partly because the WASHE approach is evolving and has not reached its final form. However it does underline the lack of a strategy and of an analysis of transition stages, and possibly also a definition of how WASHE will fit into the re-organised sector when MLGH takes full responsibility for rural services. The ease with which WASHE principles have been accepted is inversely proportional to the level at which they are considered. Progression up from community to national levels necessarily encounters increasing politicisation of decision-making, requiring more time for the development of well-functioning organisational structures. A very clear view of what is wanted must be defined and strongly promoted by RSU/NWASHE and donors, if WASHE is to fit in as well at national level as it now does at community level, and is beginning to develop at district level.

7.2 Support to National WASHE.

7.2.1 The National WASHE Team have developed from CMMU, with a view to establishing district WASHE committees throughout Zambia. With the demise of CMMU, while much still remained to be done in terms of developing guidelines, research and donor co-ordination, NWASHE along with the rural water supply specialist in RSU now have several additional roles to fulfil. The NWASHE field team consists of two technical specialists, two sociologists/health educators and one data processor. In organisational terms, NWASHE falls under the RSU, which is, in turn, answerable to Ministry of Energy and Water Development (MEWD). Both NWASHE and RSU are regarded as temporary organisations which will be phased out as reform structures become operational.



7 2.2 To date, Irish Aid have funded NWASHE to the tune of US$ 671,600 (ca. IR£480,000) since the beginning of 1996. In this they are the main supporter of NWASHE (see Fig 7 1), covering all overheads. This has enabled other organisations (such as UNICEF and RWHP) to call upon NWASHE capacity to support their own programmes at minimal cost. GRZ has also commissioned NWASHE for the setting up of DWASHE committees in two districts of Eastern Province

7 2 3 Apart from training and facilitation, NWASHE is assisting the development of a rural water supply strategy to accompany the environmental sanitation strategy which has been being developed with UNICEF support. The team are also much involved in activities such as the National Water Day, and now maintain the national well inventory, which they are up-dating.

7.3 NWASHE support to DWASHE committees.

7 3 1 Development of DWASHE committees is the main responsibility of NWASHE and involves several stages

Firstly there is -.

- the introduction of the idea and identification by the district of the need for an intersectoral approach This is followed by
- formation of a DWASHE committee
- the building of understanding of aspects of water supply and sanitation,
- the undertaking of a situation analysis for the district,
- training in participatory methods including PRA, which district level personnel will pass on to sub-district level extension staff
- identification of objectives and making short and longer-term plans

These aspects, along with a module on WASHE and Gender form the main areas in which NWASHE at present provide training and facilitation

7 3 2 In its role as facilitator and trainer NWASHE is very active and carries out a very full programme Most of the DWASHE committees visited were appreciative of the manner in which training was carried out, and some (eg Mungwi) felt that the planning module was especially helpful and would like it repeated for the whole council so that they became more aware of the implications of their decision-making. Most felt that the planning exercise would benefit from NWASHE inputs for at least

another year, even though there had generally been major inputs from Irish Aid personnel as well, in the formulation of district plans.

7.3.3 The NWASHE trainers have had to cover more than 25 districts over the past three years. The UNICEF programme in ten districts of Southern and Eastern Provinces have included a high level of NWASHE support and follow-up, partly as a result of there being no project staff in place to provide back-up and on-the-job-training. For a single district in 1998, UNICEF /district plans call for inputs from NWASHE to seven workshops, varying from one day to a week. These are usually defined by UNICEF who co-ordinate directly with NWASHE, rather than contact being between DWASHE and NWASHE.

7.3.4 It appears that requirements for NWASHE inputs (after the four basic modules leading up to the forming of district plans) in Northern Province have been less well-defined, and the lines of communication are less well-developed. Districts felt that they had no easy link with NWASHE, and in return, NWASHE, with a very full programme, did not build in follow-up visits where they were not specifically requested. Thus Northern Province has had less support from NWASHE than other provinces, and the impact of training may have been less well assessed, and reacted to.

7.3.5 DWASHE members identified particular areas in which they would like training, and suggested the formulation of additional modules. These particularly relate to systems for sustainability such as procurement of spares, accounting, running revolving funds, and low technology water quality maintenance. Contract management, both for DWASHE and contractors was also identified as a training need.

7.4 National and provincial co-ordination of rural water supply and sanitation.

7.4.1 At present NWASHE acts as unofficial focal point on rural water supply and sanitation, with donors fulfilling some of the roles which would normally be taken by government. Within provinces, projects are setting what contributions communities should make, how much subsidy to give spare parts, what choice in technology to give communities and many other aspects for which guidelines should be being formulated by GRZ. In addition both UNICEF and Irish Aid are acting as contact points and standard-setters for district plans and donor funding, among many other roles which are pro-active rather than catalytic. This they are doing in the absence of any national body with the mandate to undertake these roles, but by doing so are perhaps retarding the development of any such body which should be an integral part of reform. The degree to which NWASHE should grow to fulfil these roles needs discussion with PCU, RSU/NWASHE and donors.

7.4.2 At present there is a considerable difference in how different organisations operate in the sector and promote WASHE ideals (see also Sections 5&6). Thus

- Irish Aid have envisaged DWASHE as fulfilling all management roles that the projects have previously undertaken within 12 months, and implementing through member (GRZ) organisations
- UNICEF put management largely in their own hands and those of contractors (NGOs and drilling companies), with DWASHEs mainly as planners and monitors of progress
- RWHP see a need to retain some project structure to implement, alongside DWASHE activities

- JBG are operating in co-operation with DWASHE but with some different policies to UNICEF and LWF who are implementing in the same districts
- JICA are giving transport and equipment to DWA for WASHE activities and are contracting NGOs for community motivation, but not consulting WASHE

These different views of what DWASHE should be, and the support required , need careful analysis and a national forum to ensure that consensus is achieved on systems which do not end up with large differences throughout the country, nor with conflict within districts. This would seem to be a role which donors should encourage NWASHE to take.

7.4.3 The lack of ministerial support to WASHE reduces its effectiveness. If head office planners do not acknowledge WASHE activities in budgets, district level implementation will remain donor dependent. Similarly if the Ministry of Finance is not aware of intersectoral developments it will not give them any priority, and legislation will continue to make WASHE operations difficult to undertake under government regulations. If WASHE is to be a part of the reform, advocacy on what it entails at all levels will need to be performed, and politicians be made well aware of the benefits to communities and to government of this approach in order that they may give it their support. Here again there would seem to be a major role for NWASHE.

7.4.4 The lack of a national policy-making body allows donors to set up their own strategies. This can cause problems especially where they are working in the same districts. Stronger directives from NWASHE might help, especially if they are agreed with DWA who are the 'mother department' to RSU still, and who can also promote them at provincial and district level, being also the 'Client' for several donor projects. At present links to DWA are weak, partly as a result of the assumption that MLGH would be fully responsible for rural water supply by now. However MLGH still have no establishment at national or district level for this role, and so DWA continue to fulfil this function and are keen to remain involved.

7.4.5 A provincial level of WASHE is missing in most provinces. This weakens district level decision-making and also links to NWASHE. A provincial level support to DWASHE could help to reduce the burden on NWASHE by offering some complementary training expertise and identifying local institutions which have the capacity to assist. It could also -:

- encourage district officers to play an active role in WASHE
- expedite budgets for WASHE activities
- promote good links between donors and districts, and common approaches
- prioritise districts

7.5 Conclusions.

STRENGTHS

- Multi-disciplinary team established to provide training to DWASHEs and continue development of national guidelines.
- Strong support available particularly for DWASHE district planning
- WASHE developing from community level upwards
- NWASHE/RSU promotes higher profile of rural water and sanitation

WEAKNESSES

- No national focal point for DWASHE nor donor co-ordination in sector
- Weak links between Irish Aid and NWASHE/RSU
- Lack of GRZ recognition of WASHE at national level and member ministries of PCU
- Lack of GRZ financial commitment to rural water supply and sanitation.
- Lack of strategy on future roles for NWASHE, and responsibility for RWSS

8. TECHNOLOGY OPTIONS

8.1 Traditional solutions.

8.1.1 **Ring-lined hand-dug wells** Until 1995 hand-dug wells with bucket and windlass (called Improved Traditional wells, or ITW) and cylinder wells formed the main focus of efforts in Irish-funded rural water supply. The former were constructed up to a maximum of around 20m deep using rings cast centrally in the district yards and carried to site by lorries. Communities were required to dig to water and then were assisted by a specialist team with de-watering equipment to finish the well off. Initially depths of water were only around 4m but after 1995 this increased to 5-6m.

8.1.3 **Cylinder wells** Hand-drilling/augering to construct cylinder wells uses a Vonder rig, which has allowed greater depths of water and shorter completion times for depths up to around 25m. This form of well construction needs no de-watering equipment during excavation, and averaged five weeks per well[17]. 50% of cylinder wells took less than four weeks to complete, while 60% of hand-dug wells took more than eight weeks, averaging 13 weeks in total.

8.1.4 **Boreholes** In 1995 the recognition of the unsuitability of hand-dug wells in some areas, led to the acceptance of boreholes as an alternative. This was especially in Kaputa and Isoka/Nakonde, where DWA and contractors both drilled boreholes up to around 75m deep. The DWA rigs are small and limited in the areas in which they can be effective, but proved more successful in Isoka than had the previous contractor. Completion time depends on the ground and rig type, but contracts seldom require more than 3 days/ well, with apron construction and pump installation as separate operations. Comparative advantages of different systems were given in the 1995 Review.

8.1.5 **Self-dug family wells.** These are up to around 12m deep, and most have less than a metre of water in them at the time of construction. However not many more are unusable in the dry season than for communal ITWs partly because of the greater ease with which decisions can be taken on a family basis than on a communal one. Also the ability to go down the well and dig using available equipment is more common where the original digging was done using only local resources, both human and technical. In this case, respondents saying that a well dries does not necessarily mean that it continued to have no water, but that they had to deepen it.

8.1.5 **Vulnerability of sources** Seasonality of supply is a major problem in Northern Province. Gradually falling water levels in some areas, when combined with quite large seasonal fluctuations (see Section 3.3.4) mean that a significant proportion of sources were not useable all the year round in 1995/6 (see Table 8.1) and indications are that even more wells dried during 1996/7. If a source is dry or with only shallow dirty water in September-November, it is of limited value since this is the time when most other sources are dry

Table 8.1 Seasonal drying out of sources in Northern Province

Source type	Number in use	Percentage which go dry
ITW	1235	32%
CW	111	8%
BH	35	0%
Self-dug well	2715	42%

[17] NPDP. Water and Sanitation Study. July 1995 M. Kaluba and S.Sutton

8.2 Recent developments.

8.2.1 In 1997 in Mbala various new well-digging techniques have been developed. These include a) casting rings on site and b) using blocks instead of rings for well linings. Both have led to significant reductions in cost. The block method and other associated changes have advantages in several aspects of construction[18] including –

Safety	- Descent using steps not windlass
Equipment	- No need for heavy tripod to lower blocks as opposed to rings
Permeability	- Blocks can be made both permeable and impermeable, as can joints

Community participation – This can be greater at all stages
Reduced transport requirements - Crushed stone and sand provided by the community, and no rings to be brought to site

8.2.2 Some of these aspects can also be incorporated when rings are cast on site (with steps) and sunk by the caisson method, but in general there seem to be real advantages to this method over the previous one for ITWs. Certainly it allows full community participation and the sense of achievement in those communities which had completed a well was plain to see, and their enthusiasm had infected neighbouring communities.

8.2.3 Any reservations relate to -:

- Amount of inputs required by communities when they have many other tasks.
- Difficulty of getting lining to move down if re-deepening is required
- Local risk of seasonal drying out in medium term

8.2.4 In terms of cost it is estimated that comparative costs are -:

- Boreholes US$ 2,200-5,000
- Ring-lined wells US$ 2,400*[19]
- Block lined wells US$ 2,100*
- Cylinder wells US$ c, 2,000*

*These are direct costs not including different levels of community mobilisation, liability for dry holes, cost of delays which a contractor would have to cover. In the case of block-lined wells the community contribute a higher proportion of cost (20%) than for other types. It suggests that the difference in costs are small.

8.3 Water lifting systems.

8.3.1 **Conventional well systems** Most large diameter wells have windlasses mounted on them and a communal bucket with a chain. A development specific to Northern Province is the introduction of a cage to protect buckets and lengthen their lives. This makes the assembly heavier but was generally kept operating by communities who appreciated the lesser frequency of payment for new buckets. The bucket holds ten litres and costs around 12,500 kwacha from traders or DWA, which represents the cost at the factory gate in Kitwe. Recently quality of Monarch buckets has fallen and they are now of even poorer quality than before. In addition many wells are getting to an age where chains need replacement , and this is proving more of a burden to communities. (see Fig 4.3).

8.3.2 **Bucket pumps** Irish Aid has promoted the use of similar systems on cylinder wells and boreholes. To a large extent these 'bucket pumps' have been well received and well-maintained (see Section 4). Communities which have needed to

[18] Mbala Rural Water Supply Annual Report 1997
[19] Guidelines for Construction of hand-dug ring-lined wells and block wells. R. Kanene 1998

replace chains have tended to use nylon rope instead, and buckets, imported from Zimbabwe, tend to be of low quality (see frontispiece). This is combined with windlasses often being aligned poorly on installation. Many had lost their footvalve, or simply worn away, especially in steel-cased boreholes. Communities have needed to buy a new bucket at least once a year. The only exception was one very heavily used well in Kaputa, where abstraction was supervised at all times, and the original bucket was still working.

8.3.3 Buckets hold five litres when the footvalve is working, and cost 25,000 kwacha from DWA. However the real cost is over 60,000 kwacha at present, so these are quite highly subsidised. The fact that they need to be imported is perhaps of less concern in that almost all items in shops at present originate outside Zambia, and so mechanisms for importing goods are much better developed than previously. However if local manufacture could be initiated this could reduce costs and might improve quality control. **A local unit to manufacture good quality buckets for both types of well is sorely needed.**

8.3.4 Bucket pumps are generally fitted to wells with lifts of less than 25 metres. Abstraction using this method is slow. In Kaputa it was found that it could take five minutes to fill a 20 litre container. Where people had an alternative they did prefer to use a handpump.... as long as it was working. However the real benefit of ease of maintenance means that in smaller communities and with lower lifts, this method is well liked and appropriate. Two handpumps have been replaced by bucket pumps, at the request of communities. On the other hand, several larger communities in Kaputa are raising funds for one or more new boreholes, to reduce the day-long queues at bucket pumps. **The existing borehole could usually produce about three times more water, at a cost of some $700 for a handpump, while a new borehole would cost more than five times this amount.**

8.3.5 **Handpumps** Handpumps are in use throughout the province , there being over 200, mainly installed by other programmes, such as drought relief, MPU, and DWA. The commonest type is India MkII, or more rarely MkIII. However so far no maintenance system has been put in place, and few spares are available. Some pumps have been installed with Irish Aid funding, and perhaps this issue needs discussion with DWASHE committees. If there are only a few pumps, the demand for spare parts is too low to interest traders, and DWASHE should be assisted to set up a revolving fund and spares, and DWA or council receive training in installation and maintenance, for which they express a need. **Where there is high pressure of usage on water points, and scarce resources for construction of additional ones, DWASHE should have all the facts at their finger-tips to decide on policies between greater yields from existing sources, and construction of new ones.**

8.3.6 Examination of wells with bucket pumps gives rise to two questions relating to the life of the well.

Firstly several plastic-cased boreholes showed high wear on the plastic especially round the top, when, as was often the case, windlasses were poorly positioned. Similar wear may be expected in boreholes which are not properly vertical, a situation which often occurs especially where there are boulder-rich formations. (However below water level, water should act as a lubricant and so reduce wear). In one well at Nsumbu a groove more than 30cm long had been cut (see frontispiece), and went through the casing throughout the length of the surface grouting. This was in a well that was less then three years old. The observed need for replacement of

buckets suggests that **wear is common on most wells, and plastic may be expected to wear more than the GI buckets themselves.**

Secondly several bucket pump users complained of turbid water. The lifting out of the bucket causes considerable rapid suction on the well screen, and is likely to draw in fines (especially as most screens are very coarsely slotted). This is in contrast to a handpump which draws in water more gradually and so causes less instability near the screen.
Thus the ease of maintenance of the lifting device may be at the expense of the life expectancy of the well itself. Further information is needed on this and some well monitoring undertaken.

8.4 Sanitation

8.4.1 There are several schools of thought over technologies for sanitation. Until recently Irish Aid has focussed mainly on institutional facilities which are relatively high cost. In this the water closet systems have proved unsuccessful, but the 'dry' ones (mostly standard VIP design) were operating satisfactorily. These were both too expensive to be adopted at household level in the form used for schools.

8.4.2 Most DWASHE committees have tended to plan for VIPs and even water flush toilets, and also confined themselves more to institutions. In Mbala a pilot project is being carried out encouraging use of local materials as far as possible, and building on what people are already doing themselves. Plans are to expand this and to integrate sanitation into the DWASHE programmes rather than run it as an isolated element. Sanplats have not been used except in Southern Province.

8.5 Other technology options

8.5.1 Drilled-in wells A development pioneered by UNICEF is the drilling in the bottom of dry ITWs. This reduces the cost of the borehole, especially where depth to bottom of the well is more than 15m. Quite frequently a second aquifer is reached, which is artesian and allows water to flow back into the larger diameter well and so be abstracted by bucket and windlass. A handpump then provides a stand-by capacity if water levels fall below the base of the old well. The cost of a 'drilled-in well' is 20-30% cheaper than a new replacement borehole, and similar in cost to conventional re-deepening (average $1,700 in Mazabuka and 2,500 in Choma).
This is a type of work which DWA could carry out as a pilot project to see whether it would provide a widespread solution to the increasingly unreliable supplies in many hand-dug wells.

8.5.2 Unprotected sources The NAS and also information collected in Mbala with well monitoring suggests that the technologies to be considered may need to be broadened and health education take more notice of existing patterns of water use (see Section 3.2.2). In particular the high use of surface water, springs and self-dug wells, combined with low coverage by so-called protected supplies, suggests that **there needs to be more investigation of these sources, and how to minimise the risks of their use.** This would combine looking at ways to improve them and also to see if there are ways protected sources can be modified to encourage people to use them more.

8.5.3 Improving traditional sources. Methods for spring captation, low cost improvements to family wells and points for drawing surface water need to be developed, using local materials and skills as far as possible. This could tie up with the national initiative which is just beginning and is designed to look at low cost solutions which can be incorporated into health education for the large

number of smaller communities which are unlikely to benefit from high cost protected sources in the foreseeable future. This is the TSI Research Project being run by RSU/NWASHE and funded by DFID. It would adopt much the same approach, encouraging use of local materials and developing household level, rather than community level, solutions wherever appropriate.

8.5.4 Washing slabs **For greater use of protected sources, the building of washing slabs, and even possibly bath-houses in some places, could be discussed with users.** Many users mentioned going to rivers to wash clothes and themselves and children, leaving them just as vulnerable to many water-borne diseases as before (eg, bilharzia). Rules tended to have been put in place to discourage such activities near the water point, for fear of bringing dirt near the well, and because no properly designed facility existed. The construction of a washing slabs with soak-away, at a suitable distance from the well, may encourage greater use of the well, but is unlikely to compete with the convenience of (crocodile-free) surface water if that is available within a couple of kilometres.

8.5.5 Water harvesting systems. Rainwater harvesting is being tried out in Southern Province, and are common in South Africa and Moçambique. However, being for individual households they are an expensive option. In Northern Province rainfall is more than adequate for such systems, but this also makes water relatively easily available. For people to be prepared to pay a significant proportion of the cost, (as they do for household sanitation), dry season distance to water needs to be high and communal alternatives impossible because of poor aquifers. This situation may exist in parts of Kaputa where groundwater is saline and other sources far or dangerous, but is rare elsewhere. The Mbala NAS suggests that in this area 5% of communities are further than 90 minutes from a water source in October, with the highest proportion in Senga catchment area. Roof catchments might be used for institutions in these areas, but ground catchments are expensive and difficult to maintain[20]. In Moçambique, costs per household were some $100-240 just to rehabilitate existing systems[21], which compares with some $90-140 for a borehole supply. Families chose to walk up to 5 km rather than renovate existing systems, unless subsidies were 100%. **In general communal groundwater systems should therefore be regarded as the first option to try.**

8.6 Technology options and non-project-based construction.

8.6.1 The technologies outlined in 8.1 have mostly been employed up to now in a project environment. Only drilling has become well-developed in the private sector in Zambia. This is because boreholes are completed quite quickly and the associated overheads can therefore be spread over a large number of wells. The average cost per borehole is therefore usually less than $5,000 and the number of contractors has increased markedly over the past five years, bringing prices down.

8.6.2 In terms of well construction, boreholes are likely to be preferred to hand-dug wells, unless some project structure remains (see also Section 9.4.5-6)). For the latter, at present, only the labour element is contracted out, which provides a major logistical and supervisory burden over a long period of time, compared with drilling. In this case the contractor is very dependent on materials being delivered on time, de-watering equipment being kept operational etc. In Isoka it became clear that the

[20] Progress report on rainfall harvesting pilot project implementation. CARE Moçambique
[21] Final Project Evaluation for CARE International Moçambique. SJ.F. Afonso, B. Nhassango & S. Sutton Jan 1998.

contractor had faced many delays relating to breakdown of the de-watering pump (a common problem) and lack of cement. These meant that, since

- he was being paid per metre and per ring and
- there was no contractual obligation on the part of the provider of support services (Irish Aid)

he had lost much money by being kept unnecessarily long at one site. No truly commercial contractor would take this risk, and in fairness, any not-very-commercial contractor should be given some training in his rights.

8.6.3 There is some difficulty to see how hand-dug well construction may fit into a non-project-based structure. The average output per year per sub-provincial centre has so far has been a maximum of twenty ITWs. The costs of all the overheads associated with equipment and vehicle depreciation and maintenance, and a fair proportion of the costs of administration must then be spread over these twenty wells. For a contractor to take on such a risk he must have either a higher base-load of work, or some other uses for his vehicles or opportunity to hire vehicles as he needs them. Combining this risk with that of trying to maximise community participation may deter contractors from wishing to become involved in hand-dug well construction, except at rates which are uncompetitive with boreholes. At present this problem has been circumvented by only contracting out the labour element, with Irish Aid continuing to provide equipment and transport and be responsible for its maintenance. In Mbala communities provide sand and aggregate, which reduces transport needs but dependence on de-watering pumps and deliveries of cement remain. To develop a commercial unit for hand-dug wells would require more time than the present transition period allows.

8.6.4 Although cylinder wells have proved successful only in specific ground conditions, the speed of completion, avoidance of need for mechanical equipment and short-term involvement of community participation does make it more suitable for development within the private sector.

8.6.5 So far the technologies used have depended mainly on ground conditions, and number of users, with some emphasis on systems which involve the community as much as possible. When a non-project based system is in operation it may be more difficult to give these considerations the same emphasis.

8.7 Conclusions

STRENGTHS.

- Flexibility in and employment of different technologies to suit different social and physical environments
- Trial of different techniques for construction and different levels of community involvement
- Promotion of low maintenance elements eg. bucket cage and (possibly)bucket pump.

WEAKNESSES.

- Lack of systematic hydrogeological information for technology selection and well design for reliable year-round supplies
- Lack of training on handpump installation and maintenance
- Lack of consideration of low cost improvements to unprotected sources.
- No comparative information on recurrent costs/life expectancy of bucket pump and handpump systems in steel and plastic-cased boreholes
- Lack of experience in and systems for spare parts procurement and sale in private or public sector

9. DISCUSSION POINTS AND GUIDELINES FOR THE NEXT PHASE.

9.1 Introduction

9.1.1 The following sections on guidelines/ principles are intended as discussion points to be taken up at various levels. They are suggested as a way forward in which Irish Aid takes on a more consultative/ facilitative role, especially in helping

- GRZ at national level to resolve organisational dilemmas, and co-ordinate donor inputs more actively
- district level committees to have more say in the integration process and the pace at which it is undertaken.
- The evolution of the roles of DWASHE

9.1.2 As a first step, Irish Aid must decide what its objectives should be for the next three years. In the past the objective has been primarily **'the provision to rural communities of a sustainable source of safe drinking water'.**

If the main overall objective were now to be that ' **Each district is capable of planning, managing, monitoring, implementing and maintaining sustainable rural water supplies, sanitation and community support/ health education with the majority of local communities'** then there are different objectives at each level to allow this main objective to be fulfilled.

9.2 National level.

9.2.1 As pointed out in 7.1.4 the degree to which Irish Aid can influence a situation to ensure an objective in fulfilled in probably inverse to the level at which decisions are being taken. Ie. It is easier to be influential at community or district level than at national level. The following sub-objectives are put forward as discussion points, and to emphasise that without changes at national level, the main objective at district and community levels cannot be achieved.

9.2.2 Proposed national level objectives.
The main objectives which Irish Aid might work towards at national level, through funding and advocacy would be -:

- **GRZ give greater prominence to RWSS and Ministries of Local Government and Housing, Education, Health and Energy and Water Development recognise WASHE in budgets and job descriptions (9.2.3)**

- **Creation of RW[redacted] body to represent DWASHE interests at national level and to co-ordinate donors (9.2.4)**

9.2.3 GRZ give greater prominence to RWSS and Ministries of Local Government and Housing, Education, Health and Energy and Water Development recognise WASHE in budgets and job descriptions

Despite the National Water Policy's aim of increasing GRZ investment in the sector, this has not yet occurred. **Irish Aid should consider whether requiring a level of counterpart funding, (as most other donors in the sector do) would help to**

integrate DWASHE committees more into GRZ systems for finance and resource mobilisation. Counterpart funding has led to releases for all other provinces where donors have made this a condition, and has been a mechanism for enabling GRZ activities in the sector to continue for a period after the donor withdraws.

9.2.4 Creation of RWSS body to represent DWASHE interests at national level and to co-ordinate donors

NWASHE is at present largely financed by Irish Aid, but has a Terms of Reference which sets it as a reform body with a limited life expectancy and principally a training/advocacy role. The expertise available within NWASHE makes it a valuable body to continue in one of two roles.

- It could either continue life as an NGO with advisory and research services to offer to GRZ and funding agencies or
- It could be adopted as the GRZ secretariat for rural water supply, more closely integrated into MEWD or MLGH depending on whether there is an agreed transition period in the transfer of responsibilities for rural water supply and sanitation.

In the latter situation it will be able to be much more effective in national level advocacy. However at present the poorly developed links to MEWD mean that ministerial/departmental support to NWASHE is weak.

If the first option is chosen there will still need to be a RWSS body at national level to support DWASHE initiatives, but this could perhaps then be a smaller unit as part of DISS.

If NWASHE is to remain within GRZ, there would be a need to define Irish Aid support in terms of -:

- a transition phase of support to NWASHE within one ministry (probably MEWD in the short term) and with stronger links to that ministry
- agreed indicators for completion of transition phase (ie. Phasing out of Irish Aid support and integration into GRZ establishment, probably MLGH).

This requires RSU to define transition phases, indicators of readiness to move to the next phase, and the final form of rural water supply organisation, for consideration by MDD.

9.2.5 Irish Aid inputs at national level.

It is understood that from September, there will be a programme officer in Irish Aid at national level with particular responsibility for water supply, and sanitation. This will allow greater and more continuous liaison with GRZ at national level, and stronger links between Northern Province and the national level. This should offer the opportunity to assist some of the operational dilemmas which support to WASHE and the districts are encountering at present, through discussion with GRZ, RSU/NWASHE and donors at national level -:

1. **institutional needs for RWSS at national level (probably in more than one unit) and definition of human resources and training needs in RWSS, to fulfil all those needs**
2. **a subsequent re-definition of NWASHE Terms of Reference, which might mean a move from being attached to RSU**

3. **a strategy for DWASHE committees and development of their roles and responsibilities to be supported in a similar fashion throughout the country**
4. **an advocacy programme to get GRZ support for intersectoral initiatives (especially WASHE and Capital and Training) so that government regulations and flow of funds enable this approach to be less donor dependent.**
5. **a policy on what 'WASHE' entails and to what degree donors and DWASHE committees should be free to interpret the concept to suit their own ideals.**

9.3 Provincial level.

9.3.1 The objective at this level might be " **Establishment of an advisory body to provide support to DWASHE committees/DDCCs.**

This body (PWASHE) would provide complementary support to NWASHE in donor co-ordination, policy, technical advice, research and monitoring, making maximum use of provincial level resources. It would also push for funding within budgets wherever provincial offices still have control over this, and identify human resources within the province to augment and follow up on NWASHE training . Provincial authorities were found to be keen for such a body to be established, and a similar committee is already in place for Capital and Training Projects. Such a body is particularly necessary where several large donors are operating in the same province, as experience in Southern and Eastern provinces has already shown.

9.3.2 Provincial support unit (PSU) To assist PWASHE and to provide advice to DWASHE as sub-provincial project centres phase out, some full-time advisory support, particularly in research aspects, monitoring and training will be needed for some time to come. It is suggested that **Irish Aid might support the formation of a provincial secretariat for WASHE** if PWASHE felt this would be of assistance. This support unit could be attached to PLGO, PPU or PWE as thought most appropriate at the time by PWASHE. The unit would not be large, but should incorporate sociological, accounting, planning and technical expertise. Just as project support to district level will phase out, the provincial support unit should be regarded as temporary, say for four years. Its members could be funded by GRZ and more than one donor. (DFID are proposing something similar to be set up initially either for Luapula or Northern).

9.3.3 Roles of PSU. Its roles could include -:

- Provincial co-ordination of donors
- Up-dating DWASHE on new developments, and providing training according to DWASHE expressed needs
- Research into key aspects of behaviour change, and impact of health/hygiene education on them
- Research into cost-effectiveness of different technical options
- Keeping the district inventories up-to-date, as far as possible through indirect means (ie ensuring all contractors give records of new wells and rehabilitations).
- co-ordinating DWASHE activities in aspects such as annual monitoring of water point condition by indirect means (eg. through schools or RHCs), and standardisation of Needs assessment systems and selection criteria.

9.3.4 Irish Aid Provincial Office. Irish Aid will need to keep a provincial level office to co-ordinate activities in all districts and monitor progress, especially

as the sub-provincial offices reduce in size and scope of operation. It may also provide some back-up to the provincial support unit, especially in identifying research needs, monitoring impact and providing back-up on institutional development. This office would be staffed to cover all Irish Aid projects not just those relating to WASHE, and so staffing would depend on the overall commitment of Irish Aid to the province. At present the deputy Project Manager is responsible for WASHE co-ordination and a similar level of staffing is likely to be all that is necessary in the future, as long as accounting and administrative back-up remains.

9.3.5 Level of provincial support. The training, advisory and research roles undertaken through PWASHE and the PSU would be available to all districts. At present Irish Aid is the major donor in the sector for seven districts. The question of whether Irish Aid should expand the number of districts to which it provides support to implementation is one which PWASHE should help to resolve, partly in the light of the possibility of sizeable DFID funding in the province. Experience in other provinces so far is that unless very strong guidelines are set at national or provincial level, it may create less confusion for donors to operate in different districts initially. Otherwise there are dangers of overloading DWASHE and ministry capacities, or exceeding the rate of real demand in the early stages of this change of approach. On logistical grounds, Kaputa would be more easily linked with Luapula, and Mporokoso, Luwingu , Chilubi and possibly Mpika be put in the same group. Looking at the rate at which Irish Aid have increased coverage in the past, **it might be better to concentrate on six districts and seek to make a significant impact, rather than implement programmes in a larger number. Present levels of coverage, despite the period of inputs, do not merit the withdrawal of implementation in any district.**

9.4 District level support from Irish Aid.

9.4.1 Objectives and principles Irish Aid has a provincial and sub-provincial project structure. How this should change depends to a large extent on what the province and districts identify as the level of support they would like. Such support will partly also depend on the funding now being planned by DFID, and the degree of co-ordination at national level. It also depends on the objectives which are decided upon for the next three year phase. The institution building objective in 9.1.2 gives rise to certain questions. These include -:

- Is it acceptable/ inevitable that coverage with safe reliable water supplies should fall for several years during transition to districts having their own capacity for all functions?
- Should the build up of GRZ district and provincial capacity therefore be accompanied simultaneously by the phasing out of most project activities?
- Should there be separate policies for different components of WASHE (eg community facilitation, behaviour change, sanitation, hand-dug well construction, boreholes),
- Could the different elements of DWASHE responsibility (training, planning, managing, monitoring, implementing and maintaining) be treated separately in terms of how rapidly each committee takes on each task?
- Is it possible to define district capacity of committees in a management role, and of ministries in an implementing one?
- If so, is that capacity going to be sufficient on its own, to increase significantly the rural population's access to safe water and safe faecal disposal, and stimulate demand and behavioural change which lead to improved health and quality of life?
- Or is additional capacity still going to be needed for at least the next six years?

9.4.2 Further integration of functions into GRZ. Answers to some of these questions may emerge from discussions of the various functions which the project has undertaken in the past. This may be assisted by providing some framework within which such functions can be more easily defined. A possible framework is set out in Table 9.1. It shows that -:

a) there are very many functions that a project undertakes, and which may require greater capacity than is immediately available within GRZ especially while it is not possible to establish new posts.

b) Some of these functions may take much more time than others to become assimilated into GRZ or to build up within the private sector (eg. hand-dug well construction)

c) an annual analysis with DWASHE committees may help to show where progress is not being achieved and why, whether there are more relevant indicators , and to identify targets for the coming year in terms of both organisational changes and implementation.

The degree to which coverage in all aspects of WASHE are constrained by district capacity can then be identified and a strategy be agreed between DWASHE and donor in terms of type of support required, and period over which it is thought to be necessary. In this way DWASHE committees can feel more in control of the process of change in which they are willing partners.

9.4.3 Institutional structure for implementation. With respect to implementation (Responsibilities 8.4-8.7 in Table 9.1 pt2) there also needs to be discussion at district and national level of what organisational structure best fits GRZ systems and the capacities of each district. This may mean that no one model (see Figure in 5.2.1) is selected during a transition phase, but a strategy worked out according to each district's strengths and weaknesses. The Mbala model which gives each ministry responsibility for implementation has advantages in most activities except for well construction. This requires more expertise in site supervision and greater logistical planning and provision for hand-dug wells than most plans at present allow for. **It is suggested that Model A would form a transition model and Model B the ideal to which, if resources are no constraint, districts would work towards.**

9.4.4 Continuation of district level advisory support DWASHE committees all felt that they still required considerable advisory support from Irish Aid at sub-provincial level for at least another 18 months. A target of 'Independence by the year 2000' was discussed and thought to be a realistic goal by most committees. Support was particular requested in accountancy, where the DWASHE committees felt the burden of what they are being asked to do was more than they had the capacity for, and where they also felt they needed most training.

9.4.5 Continuation of logistical support. The greater issue is the degree to which the project provides logistical support, and continues to supply transport, repair equipment etc, and how these functions can be moved into GRZ or private sector. This may require district level support to continue for at least 18 months, and possibly longer, where there are no suitable workshops.

TABLE 9.1 Elements of responsibility for discussions with DWASHE committees and NWASHE/RSU

Function	Responsibility	Existing situation	1999 target	Some possible Indicators of successful integration/evolution of DWASHE/NWASHE
1 Planning	A1 1 Needs assessment A1.2 Resource analysis A1.3 Co-ordinating sector activities			I1.a) PWASHE decides on balance of funds between districts. I1 b) Districts identify priority areas from NAS I1 c) Council approved selection criteria applied by DWASHE with sub-DWASHE providing all info I1 2 DWASHE Plans for low level (maintenance of status quo) activities using GRZ resources I1 3 All sector activities in district apply same principles
2 Providing funds	A2 1 Budgeting activities with known GRZ resources A2.2Sourcing new funds A2 3 DWASHE generates some income			I2 1 Ministries a) include DWASHE activities in their own budgets and b) receive funding. Allowances covered by GRZ budgets. I2 2 DWASHE has well-defined route to seek alternative funding, and at least 50% receive some funding for plans (over and above I1.2) I1.3 Revolving fund grows faster than inflation
3 Managing implementation	A3.1 Logistics A3 2 Salaries/contracts A3 3 Maintenance of equipment A3.4 Procurement a) in Zambia b) Foreign A3.5 Employment A3.6 Co-ordination of inputs			I3.1a Vehicles with GRZ licences, fuel and running costs budgeted for by DWASHE/ministries. I3.1b Materials and personnel to site through contractor/ministry or DWASHE plans, in timely fashion and at their expense I3 2 a)All contracts for works with DWASHE or line ministries. b) All salaries for management and implementation from GRZ. I3.3 Budgets include for maintenance which is undertaken at full cost under contract with tendering workshops selected by DWASHE. I3.4a/b Procurement by line ministries or council. Links established with suppliers, stores systems in place and approved by DWASHE/council I3 5 New staff employed by GRZ, council or contractor I3 6 Schools/communities/ rural health centres targeted systematically, without duplication of resources, and with similar messages to all
4 Monitoring progress	A4 1 Cost effectiveness analysis A4.2 Impact assessments A4 3 Contract supervision			I4.1 Inputs and outputs known for all contributing organisations I4 2a) Impact assessed and strategies then modified (if nec) by DWASHE I4.2b) Training needs identified and programme arranged by DWASHE
5 Technical assistance	A5.1 Definition of needs A5.2 Source identification A5.3 Funding A5 4 Terms of Reference/ contract			I5.1-2 District or provincial identification of needs, and sources found at most accessible level (within district or province). National or international inputs minimised. I5.2 Most TA from within GRZ / NGOs or training institutions I5.3 TA funding from donors decreases to point where GRZ agrees to take over, or it is all done through local institutions I5 4 DWASHE produce TOR and monitor contracts

Function	Responsibility	Existing situation	1999 target	Some possible indicators of successful integration/evolution of DWASHE/NWASHE
6 Linking to national bodies	A6.1 National focal point for DWASHEs A6.2 Provincial WASHE A6.3 Partner ministries in WASHE A6.4 Donors			I6.1 NWASHE or similar body responds to DWASHE queries, solicits funds, sources expertise nationally or internationally when needed, collates national data, sets WASHE guidelines, may negotiate spare parts prices with national suppliers. I6.2 PWASHE sets provincial policies, sources expertise within province. I6.3 Ministries include DWASHE activities and planned implementation in budgets, & modify regulations to facilitate intersectoral resource sharing I6.4 Donors work through co-ordinating body at all levels, and adopt similar policies and practices.
7. Setting strategies and guidelines	A7.1 DWASHE approach A7.2 Donor co-ordination A7 3 Ministries as implementers			I7.1 Basic Terms of Reference for DWASHE committees agreed by GRZ and donors I7.2 Donor planned inputs follow similar strategies, D or PWASHE committees have power of veto over variations on well –informed basis I7.3 DWASHE committees decide whether plans are within capacity of ministries as implementers or whether assistance is needed.
8 Implementation	A8.1 Community mobilisation A8 2 Building community management capacity A8.3 Health education A8 4 Latrine construction A8.5 Borehole construction A8 6 Hand-dug well construction A8.7 Traditional source improvement			See next table
9. Maintenance/ sustainability	A9 1 Procurement of spare parts A9.2 Administration of revolving fund A 9.3 Centralised backup for major works			I9.1 All procurement through private sector or GRZ. Links to national/international suppliers established, discounts negotiated, and quality guarantees honoured. I9.2 Organisation to administer revolving fund and/or procurement agreed by DWASHE. Prices set to cover replacement costs and policy on cross subsidies agreed with DWASHE. I9.3 Policy on community payments set by DWASHE and individual communities. WASHE budgets include some support for major repair works.

Table 9.1 Part 2. IMPLEMENTATION

Element	Activity	Agency 1998	Plan for 1999	Some indicators of successful integration /evolution of DWASHE
A8 1 Community mobilisation	8.1.1 Development of participatory approaches 8 1.2 Provision of adequate IEC materials for 8.1-8 7 8 1 3 Initial awareness programme 8 1 4 Establishment of community priorities 8.1.5 Fitting demand to supply 8 1.6 Obtaining and managing initial contributions			I8 1.1 Extension staff trained in PE techniques and appreciate when and why to use them I8 1 2 DWASHE and sub-district have sufficient IEC materials and use them I8 1 3 Community leaders are aware of procedures to apply for assistance. I8 1 4 Communities are facilitated to establish their priorities and how they want to solve them I8.1 5 Both communities and extension staff are aware of constraints, and criteria for prioritising, and receive feedback on communities to be included in year plan I8.1 6 System is established for initial contributions to reach DWASHE.
A8 2 Building community management capacity	8 2 1 Establishment and training of committee 8.2 2 Support of traditional leaders and extension staff			I8.2.1a Committees active and solve problems as they arise I8 2.2 Traditional leaders and sub-district WASHE assist communities to solve problems when they have failed to do so
A8 3 Health education	8.3 1 Knowledge 8 3.2 Behaviour change			I8.3.1 Adult members of community know conditions which lead to high health risk from water-borne diseases I8 3 2 Community and individuals follow practices to minimise health risks
A8.4 Environmental Sanitation	8.4.1 Community strategies and selection of technologies 8 4.2 Construction at institutions 8 4.3 Replicability			I8.4.1 Sub district DWASHE facilitate communities to decide on preferred and affordable technologies. I8.4.2 DWASHE source funds and DHS/MOE employ building contractors. I8 4.3 Other communities enabled to follow same strategy as 8 4.1 using their own resources
A8 5/6 Protected supply construction	8.5 1 Contract specification 8 5 2 Source siting 8 5 3 Contract management 8 5 4 Contract supervision 8 5.5 Bucket pump/ handpump /bucket and windlass installation			I8 5.1 DWASHE able to draw up and manage contracts for well/borehole construction (or for consultancy management and supervision of construction contract). I8 5 2 Siting carried out by contractor with consideration of social and technical factors to the satisfaction of client communities I8 5.3 Contracts carried out within budget and to time. I8 5.4 /5 Outputs of specified quality, activities using specified procedures
A8.7 Traditional source improvement	8.7.1 Community strategy 8 7.2 Replicability			As for I8 4
A8 8 IMPACT	8 8.1 Reliable wells in use 8 8 2 Safe faecal and other solid waste disposal 8.8.3 Increase well-being, reduced (diarrhoeal) disease			I8 8.1 Wells functioning, communities use them for all purposes, and use more water I8.8.2 No faecal matter or rotting rubbish lying around communities I8.8.3 Reduced distance for water collection Diarrhoea disease incidence shows downward trend

9.4.6 Hand-dug well construction. For this to become fully commercialised may require several years, if it is possible at all. **Consideration should be given as to whether project support may be necessary for this activity for some time to come, if DWASHE are to continue to support it, and communities to have the opportunity for a high level of participation.**

9.4.7 Irish Aid sub-district level presence. It appears likely that there will be a need from DWASHE committees for Irish Aid sub-district level presence for at least 18 months. This refers to

a) advisory support to DWASHE committees
b) logistical support, particularly for hand-dug well construction
c) monitoring of progress
d) accountancy and accounting support to DWASHE

During this period, strategies for commercialising hand-dug well construction, or setting up an NGO, and for ensuring that DWASHEs will be able to hire or maintain vehicles and equipment should be put in place. Commercialising of hand-drilling should also be explored. A higher level of support will need to be retained if it is decided that levels of coverage for rural water supply should not fall during the next phase.

9.5 Support to UNICEF.

9.5.1 The UNICEF method of operation in Southern province contrasts in many ways with that being tested in Northern Province. The former has been very effective in getting things on the ground, but is even more donor dependent in its present form. It assumes a different level of capacity in districts and a different role for DWASHE. In that each approach may learn something from the other, and the works have been cost effective to date, a continuation of funding would seem justified, to provide sector support under a different organisational structure.

9.6 Roles of, and support to, DWA.

9.6.1 DWA in rural water supply. At present, within GRZ, DWA has almost all the expertise in technical aspects of rural water supply. Thus unless councils want to pay salaries for private consultants (probably ex-project employees) DWA offers the main source of skills in construction supervision and contract management for wells and boreholes. However there needs to be some discussion at national and provincial levels as to the degree DWA sees itself as an implementer (well construction) or as a consultant for contract management and/or site supervision. In that it is unable to offer bank guarantees it cannot operate on the same basis as commercial contractors and there would be a conflict of interest if it acted both as contract supervisor as well as contractor. In discussions with the Acting Director of DWA it would seem that DWA would prefer to be looked to for purposes of research, training and contract supervision, rather than implementation. This situation is likely to remain until DWA are seconded to local councils, or employed by them[22]. The other roles of DWA, in resource assessment and development and in research are due to remain with the department.

[22] Some district officers are already seconded to local councils on a full-time or part time basis to run township water supplies.

9.6.2 Training support for DWA. DWA note certain gaps in knowledge which hinder the proper carrying out of their duties and in which they would like refresher courses for district and provincial staff. These relate especially to -:

- contract supervision
- drilling methods especially in soft ground
- well design and specification (see also Section 10/11)
- TOT for pump menders of India Mk II and III
- Financial management

9.6.3 Support to laboratories.
Reagents and equipment
Computer systems and software

9.6.4 Support for revolving fund This depends on the role agreed for DWA in relation to transport and back-up to DWASHEs. DWA has a revolving fund at provincial level which is moribund. This is supposed to be for spare parts, consolidating the requirements of the districts, ordering and distributing spares to each. It is also supposed to cover transport and vehicle spares. If DWA were to take on the role of maintainer and hirer of lorries to DWASHE in the province, this fund could be brought back into action. DWA have a good record for vehicle maintenance (which cannot be said for many GRZ departments) and good facilities for repairs. It is a valuable asset which should be incorporated into future plans if at all possible, with contracts made for maintenance of WASHE vehicles where local workshops are not adequate. Irish Aid at provincial level should discuss with DWA and DWASHEs how provincial DWA capacity could best be used.

9.7 Some institutional guidelines for Irish Aid Sector Support in the next phase.

Most guidelines need to be formulated with DWASHE committees, and may stem from some of the discussion points above. The following are a few which directly involve Irish Aid or that they may want to see included -.

9.7.1 Relationship to GRZ

1. Irish Aid should act in a facilitatory/ consultative role and therefore not make decisions in isolation except where they relate to specific Irish Aid policies. In this case the situation should be clearly explained to all affected bodies.

9.7.2 Funding

1. Counterpart funding should be required from GRZ.
2. Procedures should ensure release of funds as near the beginning of the year as possible.
3. Irish Aid offices should strive to help DWASHE present plans and accounts in time and in a form which will avoid delays in release of funds
4. A small proportion of funds for DWASHEs should be set aside for maintenance until sustainable systems are established. This would allow for solving of one or two emergencies (such as fallen riser pipes) each year.
5. A set proportion of DWASHE funds be set aside for allowances rather than fixing what activities are eligible. (?)

9.7.3 District planning

1. Plans which seek Irish Aid funding should be made in time to allow inputs from GRZ. This means preparations need to be made in June/July and plans completed by August so that some elements can be included in GRZ ministry budgets in September.
2. Where Irish Aid have assisted in the establishment of DWASHE committees but no significant additional funding is envisaged from any donor, this should be made clear and committees assisted to make 'baseline' plans which make use of the resources they do have.
3. DWASHE should be asked to include plans for support to maintenance, including purchase of spare parts, training in pump maintenance and build up of revolving fund
4. DWASHE should include IEC materials in budgets where these are necessary

9.7.4 Implementation

1. Implementation should not be phased out just because Irish Aid have been operating in a district for a long time. Coverage in all districts is still low, and rural population is growing at 2.5-3.0% a year, and new schools and health centres being opened. PWASHE should decide if districts are no longer a priority because their targets have been reached.
2. In terms of districts in which to concentrate activities , logistics and other donor inputs should be considered in discussion with PWASHE. This may lead to some geographical grouping of efforts, rather than major overlap.

9.7.5 Appointment of staff to any non-GRZ posts should be on the staged basis of -:

1stly) Secondment from GRZ, if no suitable candidate
2ndly) Recruitment from private sector within Zambia, if no suitable candidate
3rdly) International recruitment.

10. RESEARCH, PILOT PROJECTS AND TRAINING.

The review of activities to date shows that there are several elements for which present knowledge is insufficient. Some of these call for training of personnel, while others require collection and analysis of information, both of which are elements which Irish Aid could support in addition to its funding of DWASHE, and NWASHE activities.

10.1 Technological research

10.1.1 **Bucket pumps and handpumps** The recurrent costs of maintenance of bucket pumps versus handpumps are unknown. This partly relates to lack of knowledge of the effect of bucket pumps on plastic screen especially where windlasses or boreholes are poorly aligned. DWA could be commissioned to undertake monitoring of wear on casing and need for and effect of re-aligning windlasses where necessary. At present bucket pumps are chosen instaed of handpumps on the basis of the number of users and time taken to draw water from depth. If wear on casing turns out to be a major problem, then an additional factor may be how much chain can be wound on a windlass without the resultant alignment of the bucket causing wear.

Allied to this problem would be

- pilot projects for bucket (both types) manufacture and
- training in correct windlass installation.

10.1.2 **Handpumps** Zambia has standardised on three high lift pump types, the India Mk II, the Afridev and the Zimbabwe bush pump. The India MkII is a very cumbersome pump for maintenance systems at low density. Tool kits are heavy, spare parts not cheap, and riser pipe frequently needs lifting out (risking dropping in) when full of water. In neighbouring Malawi (with which Isoka district has good trading relations), the Afridev is widely used and is manufactured locally. A pilot project of Afridevs in Isoka might help to show whether, as in Malawi and Moçambique, it offers a better VLOM level solution than the India MkII, among low density rural communities, with poor communications systems.

10.1.3 **Hydrogeology.** Not enough is known of the areal extent of high seasonal water level fluctuations, long-term trends, distribution of saline aquifers, and areas where cylinder wells are a reliable alternative to boreholes or hand-dug wells. Much unprocessed information is available within the projects and DWA, and monitoring of water levels, through schools could be established.

10.1.4 **Drilled in wells.** These have proved more successful in some areas than others in Southern and Eastern provinces. A pilot project could be carried out with DWA to see whether it offers a cost effective solution for the increasing number of wells going seasonally or permanently dry. It requires the establishment of whether there is a reliable underlying confined aquifer, so that the well can continue to be sued with a bucket and windlass, or whether it will have to function effectively as a borehole with a handpump or bucket pump.

10.1.5 **Low cost technologies.** In both sanitation and rural water supply there is a role for low cost solutions and the approach of gradual up-grading which is

replicable with little or no outside financial input. People in Mpulungu have already shown ingenuity in methods to support latrine pit walls in soft ground. This and similar ideas can be 'borrowed' and tested from within the province and outside. The first stage is to obtain more information on what ideas have already been developed by individuals and communities and what impact they have had.

10.2 Socio-economic research.

10.2.1 **Needs Assessment** The Needs Assessment survey in Mbala was a pilot project which has provided a very useful picture of needs within the districts of Mbala and Mpulungu. Both for planning within districts and for provincial setting of priorities for funding, such systematic surveys should be carried out in the other districts. As was found in Mbala they require considerable planning and much effort from a large number of people, but the results seem to justify this.

10.2.2 **Water use** The NASs can also be of use to plan other research. For instance little is known of what sources people use for different purposes and why. If distance is the overwhelming factor then health education will take a long time to have much effect on sources used, but if there are areas where health issues such as cholera, dysentery , crocodiles, or bilharzia already affect people's choices, then new sources combined with facilitation of environmental sanitation strategies will have a much more instant effect.

10.2.3 **Water sources** Where there are alternative water sources it is often found that people prefer their original drinking water source because of its taste. Yet in most cases to date it has been assumed that people will want to use the protected source for drinking and little attention has been paid to other sources. Issues such as ownership, beliefs, and management of other sources may be relevant to the strategies that communities would like to follow and that health education should adopt, but to date little is known of these aspects.

10.2.4 **Communal income generation.** If user fees are paid on a regular basis towards maintenance costs, a large amount of money can accumulate. Usually one of three things happens -:

- People stop paying because none of the money is needed in the first year
- Accumulated funds depreciate with inflation
- Or more rarely the treasurer absconds with the money

If there is no regular payment -:

- People only pay when disaster strikes, and may then not be able to raise enough money to solve the problem

In some provinces quite well-developed systems are developing for employing water supply user fees as a starter fund for community development schemes. These schemes then generate income which can be used for major repairs and avoid people feeling that the supply costs more than it benefits them. In Northern Province this system has not developed. In order to see the potential for this approach, some feasibility studies are needed on aspects such as attitudes to community participation, communal ownership, co-operative schemes etc.

10.2.5 **Baseline studies to monitor impact.** At present there is no community-level health data or water use and hygiene behaviour information against which the impact of WASHE interventions can be measured. Education is going to be increasingly through a cascade system (NWASHE-DWASHE-Sub-DWASHE to

community or schools). Its effect, and that of different environmental sanitation strategies cannot be judged, and yet need to be known for -:

- designing and modifying health education
- justifying continued funding of WASHE support
- showing politicians the importance of promoting WASHE initiatives

Some of this could be done through schools, but a few pilot communities should also be monitored, perhaps with a form of community self-monitoring.

10.3 Training.

10.3.1 Whilst there is much capacity for training using NWASHE and local institutions within the province, there appear to be a few gaps which need filling .

10.3.2 **Well drilling and borehole design**

DWA have now considerable experience in the province, which they will use both for research and contract supervision. However they lack expertise in drilling in soft ground and well development (as do several of the contractors used). They also need training in well design including gravel pack and slot size selection. In some areas this is not necessary, but where conditions are difficult, at present no-one has the knowledge to find solutions and to construct reliable, sand-free boreholes.

10.3.3 **Pump and bucket pump installation and TOT for handpump maintenance.** This could be carried out by NWASHE, but a refresher course is necessary for DWA at district and provincial level, for DWASHE and indirectly to sub-DWASHE.

10.3.4 **Financial management and accounting** Most DWASHE committees and provincial DWA requested courses in this aspect as they have to deal with larger amounts of money than previously. There is also the issue that where spare parts provision is to be through the public sector, those responsible will need training in price setting and review, stock keeping, and procurement, as well as management of a revolving fund.

10.3.5 **Contract management** Both for new local contractors setting up, and for DWASHE and associated departments/ministries this is needed. The complexity of fee retention, quality control, advances, liabilities, standing time etc. will increasingly become part of management. Where DWASHE (or one of its members) has to deal with national contractors conversant with contract law, or a local contractor is encouraged to set up offering services which require community inputs, there will be a need for better understanding of rights and liabilities.

11. CONCLUSIONS

11.1 Irish Aid is moving from a directive to a supporting role in the sector. At present this process is in an early transitional stage, At this point it is possible to see the achievements and problems of the old approach, but for the new strategy the impact can only be gauged mainly by the opinions of those involved. Institutional changes have occurred but implementation is only just beginning in July 1998.

11.2 Irish Aid has supported WASHE at national level and two different systems at district level in order to develop WASHE concepts and get results on the ground. It has shown the variation in views at different levels and among different donors of the principles of the WASHE programme, but also how DWASHE can be an effective institution for greater influence of GRZ at district level in planning and monitoring of RWSS at a time when ministerial responsibilities are still poorly defined.

11.3 The new Irish Aid approach in Northern Province is geared to building up community participation as a long term commitment rather than the simple provision of labour and initial funds which was the previous role. To do this requires the establishment of sub-district support systems which will take time to become effective, but which most DWASHEs have enthusiastically taken on.

11.4 The pace at which the new approach can supersede the old has perhaps been a bit optimistic. If integration is to allow for the development of capacity to take over most project functions (rather than simply the return of seconded project staff to their parent ministries), more time will be needed. Definition of functions (which are numerous), and how to integrate them into GRZ through DWASHE committees (whose members are generally willing but burdened with many other duties) using GRZ procedures (which are often ill-suited to intersectoral resource sharing) cannot be an instant process. This is the first project to try and hand over functions to GRZ so completely and so rapidly.

11.5 The main weakness of both approaches so far has been that maintenance of existing sources has largely been neglected. UNICEF systems only apply to one technology for higher cost-effectiveness, while in Northern Province DWASHE plans do not include maintenance but need to relate to many different types of supply. The concentration by DWASHE on new works tends to have led to high donor dependence and numbers of existing supplies falling out of use.

11.6 The Northern Province strategy implies a gradual build-up of capacity alongside a rapid reduction in project-based activities. This is in contrast to the UNICEF approach which puts a gradual build-up of GRZ capacity alongside a project-type management and rapid contractor-based implementation. The former may build up a stronger capacity slightly more quickly, but with a risk of reducing the proportion of people benefiting for several years. However the resulting institutional structures should be less donor dependent. A decision will need to be made on whether capacity building or coverage is the prime concern, and how the two can best be balanced.

11.7 If Irish Aid is to take an increasingly facilitatory role, plans for future support need to respond to DWASHE views of the rate at which GRZ has the capacity to take over project functions at district and sub-district level. The objective has been well defined by Irish Aid but those taking on the responsibilities need to feel that they have more control over how it is achieved.

APPENDIX 1. TERMS OF REFERENCE FOR A REVIEW OF IRISH AID'S RURAL WATER PROGRAMME IN ZAMBIA

Background

Irish Aid has been involved in rural water supply since 1983. The rural water programme was originally based in the Kasama district of Zambia's Northern Province. The project developed and expanded and has been instrumental in the construction and rehabilitation of almost 700 wells. Considerable effort was also put into health education and community participation. As the programme developed, there was a growing and direct involvement in many of the construction and rehabilitation activities owing to weak local structures and scarce resources. This approach resulted in the establishment of a parallel structure which worked closely with the Department of Water Affairs.

Since the expansion of the Irish Aid Programme in 1993, Irish Aid is involved in the provision of rural water supply to eight districts of Northern Province; Kasama, Isoka, Mbala, Nakonde, Kaputa, Mpika, and the newly created districts of Mpulungu and Mungwi.

A programme of reform of the water sector was launched by the Government of Zambia (GRZ) in March 1993 and the Programme Co-Ordination Unit (PCU) was given the responsibility of steering the implementation of the sector reforms. Since 1994, GRZ has received technical and financial assistance from the German government (through GTZ) and the Government of Norway (through NORAD) for the execution of a ten-year sector development programme. Irish Aid has also assisted the reform process at national level through assistance to N-Washe and the Reform Support Unit.

Irish Aid recognises that the progress that has been made in the reform process and now seeks to fully integrate it's activities into government structures through support of District Washe programmes. It is in this context that it is proposed that a review of Irish Aid activities in the water sector now be undertaken.

The following are Terms of Reference for such a review.

Specific Terms Of Reference

1. Concisely assess the affectiveness and value of Irish Aid's intervention in the rural water and sanitation sector to date. Issues such as impact, capacity building , coverage, sustainability, gender and value for money should be addressed.

2. In view of major structural changes currently underway in the water sector in Zambia assess the effectiveness of Irish Aid's strategies in supporting these changes through assistance to N-Washe and D-Washe structures.

3. Review principal technologies employed by Irish Aid, for the provision of water supply in rural communities and comment on the of each in the light of

prevailing conditions. Assess the relative benefits of Irish Aid's focus on groundwater as a source of water supply with reference to other possible alternative sources, particularly in the light of Irish Aid's technical support to the D-Washe programme.

4. In the light of the findings recommended principles and guidelines for the most effective utilisation of Irish Aid's funds in this sector over the coming years.

Methodology

1. Review background documentation including existing reviews and national water policy documents.

2. Interviews with irish Aid staff, government officials, other donors and D-Washe.

3. Site visits.

It is expected that the review will be conducted over a three week period in late May or early June. A draft report should be submitted to the embassy at the end of the review and the report should be finalised within a further two week period.

APPENDIX 2. LIST OF REFERENCES CONSULTED.

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