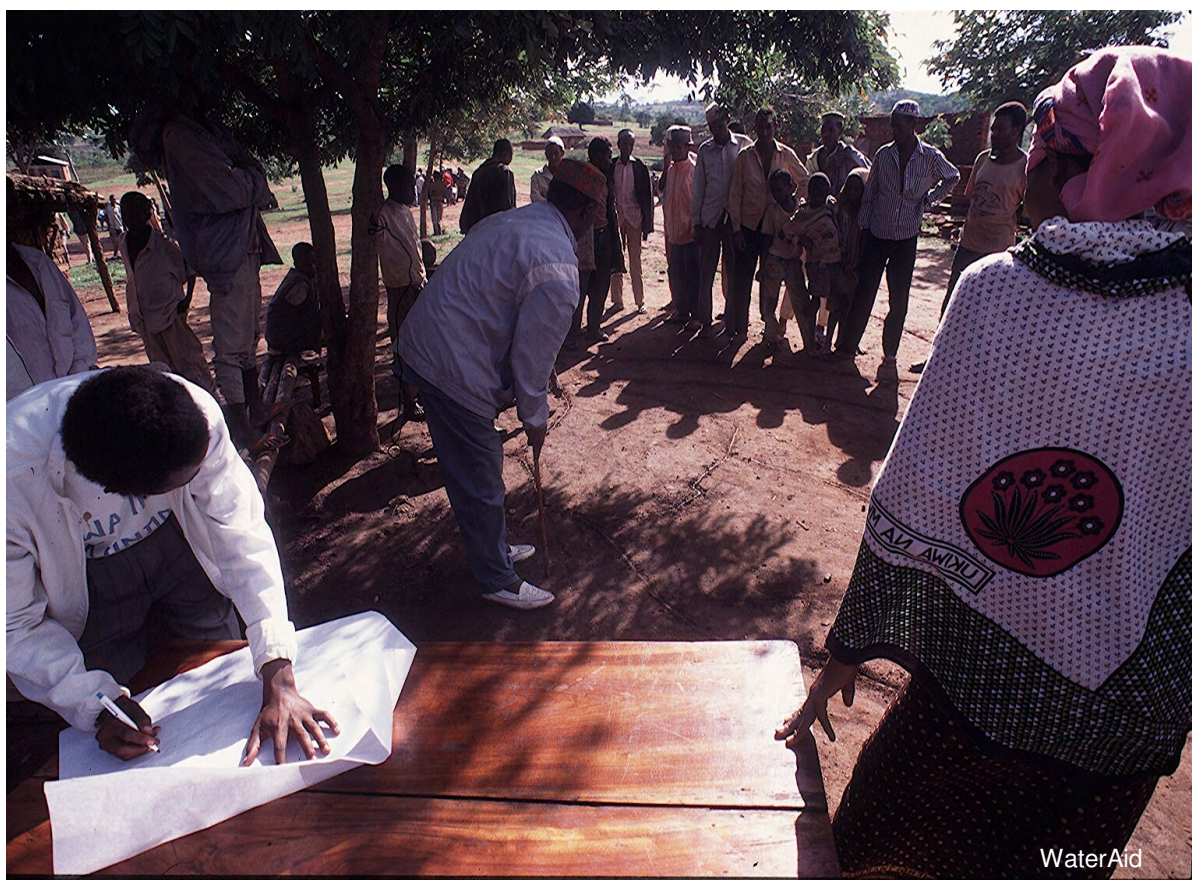


WaterAid learning for advocacy and good practice

WaterAid water point mapping in
Malawi and Tanzania



A WaterAid report

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**Report of findings
based on country visits to
Malawi and Tanzania**

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Acronyms

AfDB	African Development Bank
CCAP	Church of Central Africa Presbyterian
CIDA	Canadian International Development Agency
DA	District Assembly
DCT	District Coordination Team
DDC	District Development Committee
DDF	District Development Fund
DEC	District Executive Committee
DDC	District Development Committee
GNI	Gross National Income
GIS	Global Information System
GPS	Global Positioning System
ICWP	Improved Community Water Point
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt fuer Wiederaufbau
MASAF	Malawi Social Action Fund
MASEDA	Malawi Socio-Economic Database
MDGs	Millennium Development Goals
MoPW	Ministry of Public Works
MoIWD	Ministry of Irrigation and Water Development
MoWLD	Ministry of Water and Livestock Development
NGO	Non-Governmental Organisation
NSO	National Statistics Office
NWDP	National Water Development Project
PO-RALG	President's Office – Regional Administration and Local Government
PRSP	Poverty Reduction Strategy Paper
UNICEF	United Nations Children's Fund
VAP	Village Action Plan
WA	WaterAid
WB	World Bank
WPM	Water Point Mapping
WSP	Water and Sanitation Program
WSSCC	Water Supply and Sanitation Collaborative Council

Table of figures

Box 1: Definitions of Improved Community Water Points	21
Box 2: Daily challenges for the acting water officer in Dowa District, Malawi	26
Figure 1: Political context-mapping evidence-stakeholders	12
Figure 2: Malawi district level stakeholder relationships	16
Figure 3: Location of water points and density of functional water points, 2004	22
Figure 4: Tanzania district level stakeholder relationships	30
Figure 5: Distribution of functional water points in Mpwapwa, Tanzania, 2004	36
Table 1: Summary of main features of WPM in Malawi and Tanzania	8
Table 2: Status of and agencies involved in WPM in Malawi	18
Table 3: Change interests, actual use and obstacles for using water point mapping information by stakeholder	45

Table of contents

Preamble and summary	6
1 Introduction	11
2 Malawi	14
2.1 The rural water sector	14
2.1.1 Sector reform processes and decentralisation	14
2.1.2 Implications for local level planning, budgeting and monitoring	14
2.1.3 Capacity constraints in the water sector	17
2.2 Water point mapping	18
2.2.1 The history of water point mapping in Malawi	18
2.2.2 Objectives and target groups	20
2.2.3 Inputs	20
2.2.4 The water point mapping process	21
2.3 The use of water point mapping	25
2.3.1 Use of WPM at district level	25
2.3.2 The use of WPM at regional and national level	27
2.4 Potential versus actual use of ICWP mapping information	28
3. Tanzania	29
3.1 The rural water sector	29
3.1.1 Sector reform processes and decentralisation	29
3.1.2 Implications for local level planning, budgeting and monitoring	29
3.1.3 Capacity constraints in the water sector	31
3.2 Water point mapping	32
3.2.1 The history of water point mapping in Malawi	32
3.2.2 Objectives and target groups	32
3.2.3 Inputs	32
3.2.4 The water point mapping process	33
3.3 First impressions from feedback sessions at district level	35
4 Analysis	37
4.1 Evidence	38
4.2 Links	39
4.3 Context	40
4.4 Opportunities and challenges	42
4.4.1 Opportunities	42
4.4.2 Challenges	43
5 References	47
5.1 Documents	47
5.2 Persons contacted	48
Annex 1: Terms of reference	50
Annex 2: Framework for analysis – July 2005	59

Preamble and summary

This report is part of WaterAid's project Learning for advocacy and good practice – WaterAid water and sanitation mapping. It is the first output of a planned larger study using a common methodology with the aim to contribute to a deeper understanding of the process, outputs and uses of water point mapping across a number of WaterAid country programmes.

WaterAid is increasingly using mapping as a substantial component of their support work in country for:

- Monitoring the effectiveness of its investments in service delivery;
- Verifying water supply and sanitation coverage, evaluating access, and equity in rural and urban contexts ;
- Strategic planning and advocacy at local government level and at times at higher governmental levels.

Yet, the scale and mode of implementation varies widely across the organisation. So far, there is little documentation and coordination of mapping exercises within WaterAid, which results in ambiguities and inhibits internal learning processes. Also, the impact of mapping on the policy process in country as well as general strengths and weaknesses of mapping have not yet been coherently assessed.

The **purpose** of this report is twofold. On the one hand it starts a process of documentation of how WaterAid applies water point mapping based on examples from Malawi, where water point mapping was first applied, and from Tanzania, which started water point mapping more recently based on the same methodology. Included are the inputs, as well as the general process of mapping in-country. On the other hand it assesses – as far as possible – the impact that mapping has so far had on the policies it intends to influence and likely reasons for limitations thereto.

The **main features** of water point mapping are summarised in Table 1 below.

Based on the visits to Malawi and Tanzania, the following **opportunities** have been identified emerging from water point mapping:

Water point mapping was seen by district personnel in Malawi and Tanzania as a credible and powerful tool for making apparent information on the distribution and functionality of water supply infrastructure across districts.

WPM has in some cases had an impact on the allocation of water points within and between districts in Malawi.

Socio-economic and technical information obtained from mapping can provide an entry point into discussions surrounding the lack of water point sustainability, reasons for non-functionality etc. As such, it provides an opportunity for WaterAid to verify the effectiveness and efficiency of its own investments at district level.

Furthermore, the information displayed through WPM makes complex information more accessible and therefore bears the potential to open up policy debates. WPM can play a role in supporting decentralisation processes

by helping to create downward accountabilities between district officials and water users. It can also serve as an instrument to countercheck the still largely ineffective district-level demand-responsive planning process comparing village applications for water points with the existence of water points in a given area.

Last but not least, WPM comes at a time where monitoring is gaining more importance on government agendas as a means to measure progress towards the MDGs. This trend might play in favour of institutionalising water point mapping within governmental planning and monitoring systems.

Yet, the use of water point mapping and its impact on policy processes in Malawi overall remains limited. This is because of various **challenges** related to the tool:

Matching the GIS-related technical sophistication of water point mapping with the capacity of district personnel to handle such data is the first problem that needs to be addressed.

Another challenge for water point mapping is to achieve its incorporation into wider governmental planning and monitoring processes. The process of carrying out mapping (surveying, analysis and feedback) and the active participation by the future users of information is crucial in order to encourage the continued use of the tool. In addition, carrying out mapping is only the first step in a longer process of engagement. In this context, the lack of a systematic mapping-updating system remains a major bottleneck in Malawi as well as Tanzania.

Furthermore, mapping can only influence policy processes to a certain extent. Its overall impact partly depends on the progress of wider sector reform and decentralisation processes that are currently in flux in both countries.

A major difference between water point mapping in Malawi and Tanzania is the reaction by the central ministry/reform programmes to the tool. While in Malawi obtaining governmental backing and ownership of WPM proves a difficult task, first governmental feedback in Tanzania has been very positive so far. The question is whether and how the tools can be adapted to these different political circumstances.

The findings of this report were presented to WaterAid in London in December 2005. In the discussion following the presentation several points were raised by WaterAid staff:

It was felt that in Malawi, a good way of taking forward WPM would be to organise a workshop with all mapping partners and the GoM.

Concerning the next steps of the Learning Project overall, it was decided that shedding light on experience from mapping in Asia would provide a complementary element and lay the ground for learning experiences across regions. Mapping in Asia uses somewhat different methodologies, puts the emphasis on social aspects and poverty analysis, and is used in urban rather than rural areas.

Table 1: Summary of main features of WPM in Malawi and Tanzania

Features of Mapping	Malawi	Tanzania
History of mapping in country	Malawi was the first WaterAid country programme to experiment with water point mapping. The first district in Malawi was mapped in November 2002. Since then the mapping of 24 out of 27 districts - the equivalent of roughly 90% of Malawi - has been finalised.	In Tanzania, water point mapping is still in a pilot phase running from mid-2004 until end-2005. By then, the 10 districts in which WaterAid is active will have been mapped. This covers approximately 10% of the Tanzanian mainland.
Objectives	The main objective is to provide a basis for a more equitable, efficient, accountable and transparent allocation of resources for water point construction and rehabilitation at district and sub-district level. Implementing partners had additional – sometimes – differing objectives.	The broad objective in Tanzania is the same as for Malawi. In addition, the aim of WPM is to assist WaterAid make more efficient and effective investments. Overall, water point mapping is also expected to strengthen the availability, depth and quality of data throughout the sector.
Target groups	The target groups for water point mapping are District Coordination Teams and District Executive Committees (technical arm of the District Local Government). The MoIWD is targeted as an institutional home in order to establish WPM as a regular activity.	The immediate target group of WPM is the technical arm of the district level government. Ultimately, the expectation is that local politicians, civil society organisations and citizens will use the information to demand better services. The MoWLD and PO-RALG are targeted as potential institutional homes for WPM.
Implementing partners	Various donor agencies provide funding and/or take responsibility for data collection/ feedback; technical support i.e. data collection, analysis and training was carried out by WaterAid and starting from 2004 by WSSCC Malawi chapter and District staff collect WPM data.	WaterAid provides funding for the pilot phase in Tanzania. It cooperates with a local private sector company specialised in GIS which carries out data collection and simple data analysis. At district level, the technical arm of government is involved in data collection.
Inputs		
Costs	The costs are calculated per recorded water point;	The contract between the private sector company and

	average mapping costs per district are estimated to range between US\$ 10.000 – 20.000 depending on geographical size, population density and total number of water points.	WaterAid in Tanzania foresees a lump sum payment of 7500 US\$ per district for data collection and carrying out of simple analyses. This is regardless of the size of the district, the total number and accessibility of existing water points.
Time	On average, data collection required a month and data analysis and feedback an additional two months.	Data collection takes approximately 15 days, data processing and analysis an additional month. Feedback sessions are conducted as appropriate.
Human Resources	Four district staff with bicycles or on motorbikes collected data in pairs, with a person from WSSCC/WaterAid or a donor ensuring quality control; extensive human resources were also involved in efforts to institutionalise mapping within the government.	One member of the private sector company together with a district officer is involved in data collection. At WaterAid, three staff are actively involved in mapping but only one person dedicates up to 30% of his time to the WPM process i.e. to quality control.
The mapping process		
Surveying	This is done in cooperation with the technical arm of the District Assembly; data collection includes taking the GPS location of each water point and filling in a questionnaire on technical and management information obtained from village or water committee representatives. A slightly different methodology was used by one donor (GITEC).	The process is roughly the same. The questionnaire was slightly amended in order to fit the situation in Tanzania. In addition to the GPS location and questionnaire, a digital picture of the water point is taken.
Mapping and analysis of results	Mapping includes the inputting of survey results into a database to form an inventory that can be displayed via a digital map. Based on the inventory, different analyses are possible (see Stoupy and Sugden 2003a, 200b for more information).	The software used to create an inventory based on survey results and to produce a digital map is the same as in Malawi. The maps used in Malawi appear to be slightly more sophisticated than in Tanzania (where mapping is still in a pilot phase).

Feedback sessions	Feedback sessions by WaterAid/WSSCC involved a first session presenting draft maps for amendments by district personnel and other local stakeholders and a second session presenting the corrected maps and discussing related decision-making processes. Subsequently, 1-5 day training sessions were conducted for district personnel on how to use the database. In those districts where mapping was carried out by other implementing partners, the nature of feedback sessions differed and sometimes, no feedback was carried out at all.	The feedback sessions are organised by WaterAid in cooperation with the private sector company. They involve a presentation of the maps, digital photos and results from the data analysis and a short introductory training session on how to query the database that is installed on district computers. The main target of the feedback is the technical arm of the District Local Authority but the political arm is also invited.
Updating	Updating of mapping information is not carried out in a systematic manner. In Salima district, the District Coordination Team updates new water points on an annual basis and with technical assistance from WSSCC produces new maps. Various possibilities were discussed including obliging construction companies to register new water points as part of their contract.	There was no updating system in place at the time of the visit. In addition to obliging construction companies to report new water points (see Malawi), a website-based system was discussed that could be accessed by any authorised person with access to the internet or via mobile phone messages to report changes in the functionality status of a water point.
Institutionalising mapping	As of now, mapping is not yet institutionalised within the Government of Malawi. Two options are currently in discussion: alignment with, and administration of, the mapping database with the UNICEF supported MASEDA database at the National Statistics Office; or hosting the database at the Water Resources Authority, an independent, yet to become operational body under the MoIWD.	WA had held exploratory discussions with representatives from MoWLD and from the Local Government Reform Programme concerning the institutionalisation of mapping within the government. First reactions by the two institutions were positive.

1. Introduction

In an ideal world, policy decisions are guided by evidence on where and how to allocate resources effectively, equitably and efficiently. In reality, decision-making is limited by substantial information gaps and existing evidence does often not enter the political realm because it is pushed aside by other, more powerful agendas. As a result, decision-making is not transparent and often leads to unequal outcomes. This is for example the case in Malawi where, in the past, political affiliations rather than need tended to determine the provision of water points to local communities.

Anecdotal evidence of this kind has prompted the international NGO WaterAid to adopt a specific approach to mapping water points in order to facilitate local level decision-making in the rural water sector.¹ Water point mapping is an exercise whereby the geographical positions of all water points in a district are gathered in addition to management, technical and demographical information. The data is entered into a geographical information system and then correlated with official demographic, administrative and physical data (population density, administrative boundaries, roads, etc). The information is displayed via digital maps. The strongest feature of these water point maps is that the distribution of water points within the district can now be clearly visualised and inequities easily spotted.

The evidence produced by water point mapping is striking. For Salima district, Malawi, the data was able to show that the investments in new water points between 1998 and 2002 continued to be disproportionately channelled to those already served, at the expense of the un-served population, thereby widening rather than narrowing inequity in distribution (Stoupy and Sugden 2003a). Yet, as highlighted in the beginning, the existence of evidence does not automatically lead to changes in the related policy processes. One endeavour of this report is therefore to address the following questions. How effectively do WaterAid and their local partners use mapping evidence to make policy processes more pro-poor? When does their evidence have an impact on existing policies? What hinders mapping evidence from entering the policy arena?

The aim of this report is twofold. On the one hand it documents and compares the methodology and application of water point mapping as used by two different WaterAid country programmes - Malawi and Tanzania - so as to facilitate learning across the organisation. On the other hand the report analyses the factors that led to evidence being incorporated in policy processes and the obstacles encountered towards achieving this end. The information is based on a review of existing published and unpublished

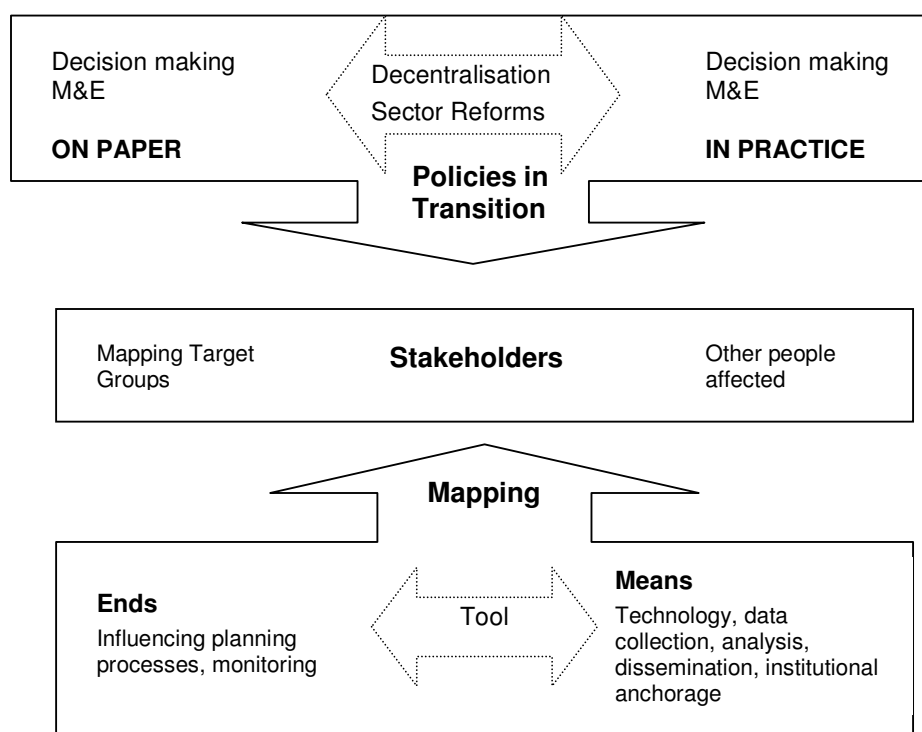
¹ Mapping of water points has been in use for over a decade. Olivier Stoupy, for example, who developed the guidelines for the WaterAid Improved Community Water Point Mapping in Malawi, had previously managed water point mapping for Action against Hunger in Southern Africa and Southern America.

literature, and on field visits to Malawi and Tanzania in August 2005 where interviews were conducted with key stakeholders from government, the donor community and the private sector.

The WaterAid country programme in Malawi started to experiment with water point mapping in 2002 and by August 2005 approximately 90% of the country had been mapped. In Tanzania, water point mapping is still in a pilot phase. Therefore, much of the information relating to the impact of this tool will be based on information from Malawi.

The ODI Research and Policy in Development Programme (RAPID) has developed an integrated framework with a set of factors that impact on how evidence may shape a given policy process.² These include the political context from local to international level (political structures, processes, cultural factors, institutional set-ups, etc); the evidence base itself (trustworthiness, clarity, methods used, mode of presentation and communication, etc); and the links that are being developed between policy makers and other stakeholders (relationships, trust, networks, the media etc).

Figure 1: Political context – mapping evidence – stakeholders



Based on this broad framework a more detailed structure will assist us in analysing how water point mapping is being used by the WaterAid country programmes in Malawi and Tanzania to influence the decision-making

² See for example: Court J, Hovland H, Young J (2005): *Bridging Research and Policy in Development: Evidence and the Change Process*. Bourton-on-Dunsmore: ITDG Publishing or: Young, Court J (2004): *Bridging Research and Policy in International Development: An Analytical and Practical Framework*. ODI RAPID Briefing Paper 1, October 2004

processes surrounding water infrastructure development and rehabilitation. For the case of water point mapping, the broad political context is defined by the Millennium Development Goals (MDGs), the Poverty Reduction Strategy (PRS) process, as well as wider processes of sector reform and decentralisation in-country. The immediately relevant context for mapping is determined by the impact of reform processes at the local level, in particular the evolving and existing arrangements with regard to sector planning, resource allocation and monitoring. Since the political context of both countries is characterised by processes of transition, discrepancies arise between policies on paper and practice on the ground. Concerning the evidence, it is important to understand the objectives behind mapping and how they match with the methodology used and processes of collecting and communicating evidence and institutionalising the approach. With regard to links, a distinction is made between the target groups identified by WaterAid and other relevant stakeholders. Based on the interaction between the three different realms, a number of issues that constrain the uptake of mapping information are identified, and wider opportunities and challenges are discussed.

The report contains three parts. Chapters 2 and 3 describe the mapping experiences in Malawi and Tanzania. In each of the two case studies the political context impacting on local-level decision making in the water sector is set out. The studies then go on to describe how individual WaterAid country programmes and their local partners are carrying out water point mapping. This includes the objectives and target groups, the inputs required and the process of collecting and analysing data in cooperation with local mapping partners, as well as the feedback of information into local-level decision-making processes. For Malawi, examples are given to illustrate the impact water point mapping has so far had on influencing decisions on water point allocations, whereas for Tanzania, where WPM is still in its pilot phase, first impressions from the feedback process are laid out. The case study from Malawi shows that there are a number of constraints that prevent mapping information from realising its full potential. The underlying reasons for these limitations will be analysed in Chapter 4. The report concludes by setting out the major future challenges and opportunities for water point mapping.

2. Malawi

2.1. The rural water sector

Malawi is a predominantly rural country with only 17% of the population living in cities. According to official estimates, 62% of the rural population had access safe drinking water in 2002 (WHO/UNICEF 2004).³ The official target for access to safe water in Malawi is to provide at least one water point for every 250 people within 500 meters of the home (Stoupy and Sugden 2003b). The main technology for providing drinking water in Malawi is a borehole fitted with a hand pump, a design that has been actively supported by the Ministry of Irrigation and Water Development (MoIWD) and is now the technology preferred by most communities. Apart from the MoIWD, a number of donor agencies, including the Canadian and Japanese development agencies CIDA and JICA respectively, UNICEF, the development banks KfW, the WB and AfDB, and numerous NGOs are implementing rural water supply projects in Malawi. It is estimated that donor agencies and NGOs account for 75% of all investments in the rural water supply sector (Stoupy and Msukwa 2005).

2.1.1 Sector reform processes and decentralisation

Until the 1980s, the responsibilities for water supply in Malawi were scattered across units with different sector affiliations. A separate department for water was established in 1984 under the Ministry of Public Works (MoPW). The department implemented water supply projects through a centralised and supply-driven approach, using machine-drilled boreholes as the standard technology. With the start of multiparty democracy in Malawi in 1994, water moved to the centre of politics and the Department of Water was upgraded to an independent ministry. Starting from 1996, under the World Bank supported National Water Development Project (NWDP), a decentralised, community-based management approach to water supply and sanitation was adopted. With the new policy the role of the central ministry changed from direct implementation to facilitation, coordination, setting of standards, and overall monitoring and evaluation of sector policies. The new guidelines by the MoIWD foresee that – in theory – all responsibilities for planning and direct implementation of water supply will be devolved to the district level (GoM 1999, 2004).

2.1.2 Implications for local level planning, budgeting and monitoring

Planning: According to the ministry's implementation manual for water supply and sanitation (GoM 1999), the following new planning and monitoring guidelines apply to operationalise the new policy. As shown in Figure 2, planning starts at the village level where a Health and Water Committee is set up. If a community needs a water supply facility, it prepares a request via a Village Action Plan (VAP) with the assistance of extension workers. This plan is forwarded to the Area Development Committee, which, in turn, passes the request on to the District Coordination Team (DCT). The DCT is a newly established sub-committee to the District Executive Committee (DEC), the technical arm of the District Local Government. The DCT comprises of district

³ According to Improved Community Water Point (ICWP) mapping information, access to safe water supply in Malawi is at 57% (WSP forthcoming).

heads from the Ministry of Water Development, Ministry of Health and Population, the Ministry of Women, Youth and Community Services, the Ministry of Natural Resources and concerned NGOs. Led by the District Water Officer (DWO), the DCT is the planning arm of the District Local Government with regards to water supply and sanitation and therefore has substantial influence on district-level decision-making in the sector. It is responsible for community-based planning and training, for the overall supervision of works and the monitoring of water supply projects. According to the ministerial guidelines, all VAPs are compiled at district level by the DEC who passes them on to the District Development Committee (DDC), which is the political arm of the District Local Government. The DDC comprises of councillors, Member of Parliament, Traditional Authorities as well as representatives of businesses, women and youth who, together, form the District Assembly. It allocates resources available from the District Development Fund (DDF) to projects based on the prioritisation of VAP applications.

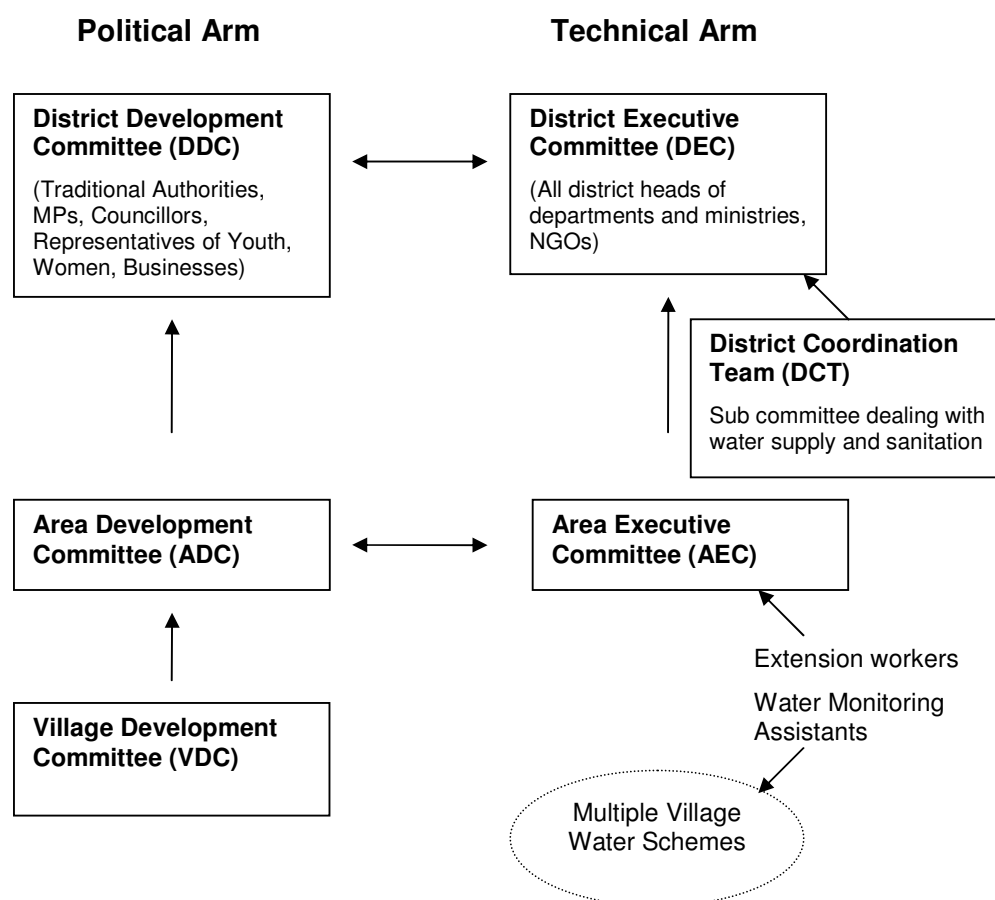
In practice, the resources to prepare VAPs are often inadequate and village action plans are largely ignored in local planning processes. In fact, the informal rule reported in the visited districts was to divide resources available from the DDF equally between the different constituencies, with a larger share at times going to the more powerfully represented communities.

Budgeting: The development budget for water supply in the District Development Fund may come from a number of sources. Theoretically, the MoIWD may deposit its funds with the DDF. The Malawi Social Action Fund (MASAF)⁴ channels its budgets through the DDF and, in addition, donors are encouraged to allocate their funds to the DDF rather than funding projects off-budget.

In practice, the MoIWD has not yet devolved its development budget to the district level. It currently continues to implement water supply projects directly based predominantly on requests submitted to the central office by MPs and councillors. The DDF allocations for water supply are therefore dependent on funds acquired by donors and NGOs and may vary substantially from year to year. In addition, many donors continue to implement water projects directly without consultation of the District Assembly.

⁴ The Malawi Social Action Fund (MASAF) is a 12 year World Bank-credited programme designed to finance self-help community projects and transfer cash through safety net activities including water supply and sanitation. (<http://www.masaf.org/>)

Figure 2: Malawi district level stakeholder relationships



Monitoring: According to the ministry's water supply and sanitation manual, the functionality, performance and quality of water services are monitored by communities and Village Health and Water Committees on a monthly basis, with the assistance of extension workers. Regular reports are supposed to be submitted by the District Water Officer via the regional office to the M&E unit at the MoIWD.

In reality, there is no coherent monitoring system in place. District reports received by the regional offices are erratic and incomprehensive. A borehole database set up at the MoIWD has never been completed, and many donor-funded water points are not reported at either district or national level to the ministry. Because of weak recording at all levels, official coverage figures are likely not to represent the reality on the ground. Furthermore, in official data sets the distribution of water points is only broken down to the district level, making it impossible to analyse sub-district disparities in distribution.

On a separate note, though, monitoring is gaining importance. In relation to the MDG targets for Malawi, the need for and value of a reliable database was stressed by government officials at district and national level. With the

assistance of UNICEF, a Malawi Socio-Economic Database (MASEDA) has been set up at the National Statistical Office (NSO) of Malawi with the aim to enhance planning and monitoring of development activities. The database, which is recognised as a central databank by the Government of Malawi, contains 147 socio-economic indicators, but is mainly designed for use at national level rather than disaggregating information between different administrative levels (NSO 2005).

2.1.3 Capacity constraints in the water sector

Overall, the water sector remains in a junior position, with a weak capacity to plan and monitor sector activities compared to other sectors.⁵ The lack of capacity and strategic direction can partly be explained by challenges related to personnel at various levels. At the top, there is a high turn-over at minister and permanent secretary level that effectively inhibits the development of a coherent sector strategy. The sacking of two Ministers heading MoIWD between July and September 2005 is a case in point.⁶ Other senior positions and institutional set-ups created during the sector reform process have remained under-resourced or have not become operational. For example, a Water Resources Authority has been established to host and manage a national database, which has yet to start taking up its work. At district level the upgrading of the Department of Water to a Ministry was never implemented. This means that the position of the District Water Officer remains junior compared to the representatives of other sectors; the lower level of training – normally, a DWO is an artisan rather than a graduate – weakens the representation and authority of water in the District Executive Committee. The retrenchment of staff at all levels, in particular, has meant that vacant posts are generally not replaced. The prevalence of HIV/Aids, inter alia, has led to a situation where an estimated 30-60% of all posts are not occupied.

The ongoing reforms in the water sector described above suggest that while administrative functions are increasingly decentralised, fiscal decentralisation and monitoring systems remain underdeveloped. Consequently, district authorities have only limited control over the allocation of resources, i.e. boreholes. In addition, accountability structures are not clear, with the District Water Officer simultaneously reporting to his line ministry (although theoretically being answerable to the Ministry of Public Works according to his rank at the district level) while also being theoretically accountable to the District Assembly under decentralisation. Thus, there is a disconnection between the theory and the reality of decentralised processes of planning, budgeting, implementing and monitoring water supply projects at the district level. Water projects are largely implemented without coordination, resulting in new water points being drilled next to existing boreholes and continued neglect of underserved areas.

⁵ The limited ability to assert itself against other sectors is apparent in the low level of financial allocations to water under the Malawian PRSP from 2002-05 (Slaymaker and Newborne 2004).

⁶ In both cases, the reason for the replacement of the minister was not related to the water sector as such (<http://www.irc.nl> ; <http://za.today.reuters.com> accessed 22/09/05).

2.2 Water point mapping

2.2.1 The history of water point mapping in Malawi

In Malawi, mapping of Improved Community Water Points (ICWP) started in Salima district in 2002. WaterAid's mode of work is to support local partner organisations with the implementation of water supply and sanitation projects rather than implementing directly. In Malawi, WaterAid's local partners are the District Coordination Teams of Salima and Machinga districts, the technical sub-committees at district level responsible for water supply and sanitation headed by the District Water Officer. WaterAid not only supports the DCTs in project implementation but also assists in overall water supply and sanitation-related planning and monitoring activities. The lack of information related to the distribution of water points across the district, and the apparent duplication of work, prompted WaterAid to carry out a survey of water points in the district as part of their support to the DCT. Since 2004, the technical support for Improved Community Water Point mapping was moved from WaterAid to the Water Supply and Sanitation Collaborative Council (WSSCC).

Table 2: Status of and agencies involved in WPM in Malawi

District	Completion of Mapping	Funding Agency	Main Implementer	Cooperation with Local Government
Northern Region				
Chitipa	Oct 2004	UNICEF	CCAP	No
Karonga	Oct 2004	UNICEF	CCAP	No
Rumphi	Oct 2004	UNICEF	CCAP	No
Nkatha Bay	Dec 2003	UNICEF	CCAP	No
Mzimba	Apr 2003	CIDA/JICA	CCAP	No
Likoma	Pending	-	-	-
Central Region				
Kasungu	Pending	-	-	-
Nkhoto	Pending	-	-	-
Ntchisi	June 2005	ADB	Mataferia Consulting	Yes
Dowa	Mar 2005	JICA	WSSCC	Yes
Salima	Dec 2002	WA/JICA	WA	Yes
Lilongwe	Dec 2003	JICA	InterAide	No
Mchinji	Mar 2005	JICA	WSSCC	Yes
Dedza	Mar 2005	JICA	WSSCC	Yes
Ntcheu	Pending	-	-	-

Southern Region				
Mangochi	Jun 2005	GITEC	GITEC	Yes
Machinga	Dec 2002	GITEC	WA	Yes
Zomba	Dec 2003	Emmanuel/InterAide	Emmanuel/Interaide	No
Chiradzulu	Oct 2004	Consortium	Concern Universal/InterAide	Yes
Blantyre	Oct 2004	Consortium	Concern Universal	Yes
Mwanza	Oct 2004	Consortium	World Vision	Yes
Thyolo	Dec 2003	COMWASH	COMWASH	Yes
Mulanje	Mar 2003	ECHO/JICA	Oxfam	Yes
Phalombe	Dec 2003	COMWASH	COMWASH	Yes
Chikwawa	Oct 2004	Consortium	Oxfam	Yes
Nsanje	Dec 2003	Consortium	World Vision	Yes
Balaka	Oct 2004	Emmanuel	Emmanuel	No

The mapping process started with a pilot phase in Salima District in May 2002 and was subsequently replicated in 23 out of the 27 districts in Malawi by mid 2005. A number of different donors and NGOs got involved in the mapping of the remaining districts as shown in Table 1 above. The main funding agencies were UNICEF in the Northern Region, JICA in the Central Region and a consortium of four NGOs⁷ in the Southern region. In the Northern Region, mapping was carried out by the Church of Central Africa Presbyterian (CCAP) which is engaged in a long term shallow well project throughout the region. In the Central Region, mapping was mainly carried out by WaterAid itself and by WSSCC. In the Southern Region mapping was conducted by the NGO consortium and a number of other agencies with WSSCC solely providing technical support, analysis and software training. Although WaterAid's approach to mapping puts a key emphasis on cooperation with the Local Authority during the mapping process, the actual cooperation with local government varied between different agencies. As shown in Table 1, some of the organisations did not cooperate at all with the district.

In addition to water point mapping in rural areas, WaterAid Malawi has also started a process of mapping water-vending kiosks in peri-urban areas around Lilongwe since 2004. The following information, however, is exclusively drawn from ICWP mapping in rural Malawi.

⁷ The consortium included Concern Universal, Emmanuel International, Oxfam, World Vision.

2.2.2 Objectives and target groups

WaterAid Malawi's main objective for mapping was to strengthen the planning capacity with regard to water supply at district level. In particular, WaterAid's intention was to provide a basis for informed decision-making, thereby empowering its local partner, the DCT, to allocate water sector resources in a more accountable, transparent and equitable manner. WA also intended to improve sector-wide coordination, planning and monitoring of water supply projects at national level.

While this goal was shared across the agencies involved in mapping, some implementing organisations had their own objectives. CCAP's aim, for example, was to improve the planning for their region-wide Shallow Well Programme, and GITEC Consult hoped to use mapping information as a means for obtaining additional funding for its rural water supply project in Mangochi District. The NGO consortium in the Southern region had included water point mapping in their (successful) project proposal for a regional water supply rehabilitation project partly because it was thought to appeal to the funding organisation. The implications of the differences in objectives will be discussed in more detail in Chapter 4.

The main target groups for mapping were the District Executive Committees and the District Coordination Teams, which represent the technical arm of the District Local Government. The main administrative level targeted was the district.

2.2.3 Inputs

The set up **costs** of ICWP mapping in Malawi were approximately US\$25,000. This included the purchase of Global Positioning Systems (GPS) at US\$200 per unit and of the GIS software package at US\$5,000 (WSP forthcoming). In Malawi the costs for data collection, analysis and feedback are calculated based on the expenses incurred per water point. The average price per water point is estimated to be around US\$10 and the total cost of mapping all 50,000 water points in Malawi thus amounts to an estimated US\$500,000. Mapping costs per district therefore range between US\$10,000-20,000 depending on the size, population density and total number of water points.

The **time** involved in carrying out data collection, analysis and feedback varied with the agency responsible for the process but on average the data collection was completed within a month and data analysis and feedback finalised after an additional two months.

The **human resources** inputs required for the data collection process are four officers at district level for the gathering of data on the ground. Training and quality assurance is carried out by one person who provides overall technical support. At WaterAid, a number of persons were closely involved in the development of the ICWP methodology; a consultant, Olivier Stoupy, worked on a full-time basis on ICWP for 18 months, partly as a technical adviser to the MoIWD where he trained personnel on the ICWP database once it had

been transferred to the ministry. Olivier was supported by two assistants in carrying out training, data collection, and analysis, and feedback sessions. A time-consuming part of water point mapping according to him was to work towards the institutional set-up of mapping, such as defining responsibilities for guarding mapping information at different administrative levels and obtaining permission to use official spatial information as the basis for ICWP maps.

2.2.4 The water point mapping process

Surveying: The process of Improved Community Water Point mapping starts with a survey of all water points in a given district. The survey is done in partnership with the DA and, in practice, coordinated by the DCT under the lead of the District Water Officer. Four extension workers are chosen as enumerators and trained on how to use a GPS and on how to identify different types of water points and pump technologies. Apart from recording the GPS position of each Improved Community Water Point (ICWP) (see Box 1: Definitions of ICWPs), the enumerators also have to fill in a simple questionnaire including type of point and pump, whether the water point is functional, its year of construction, funding and implementing agency, perception of water quality and quantity and community training. After a field trial, information campaigns are carried out within the different Traditional Authorities (TA), the next administrative boundaries at sub-district level, in order to ensure cooperation at village and sub-village level. When carrying out the survey, the enumerators work in teams of two using a motorbike or any other available means of transport to reach all water points.⁸ The quality and comprehensiveness of the data is controlled through random verification visits by Water Monitoring Assistants and through additional desk and field-based verification by WAWSSCC providing technical support to mapping.

Box 1: Definitions of Improved Community Water Points

According to WaterAid (Stoupy and Sudgen 2003b), any water point, which provides safe water to the people living in the surrounding area qualifies as an improved community water point.

This includes:

Borehole fitted with hand pump
an apron
Shallow well fitted with a handpump
Shallow well fitted with a windlass
ponds
Stand tap supplied by a piped water scheme
water points

This excludes:

Unlined wells without
Scoop holes
Rivers, lakes and
Privately owned

GITEC Consult recorded the GPS locations of two more types of water points. They included lined wells because according to them, they can be converted to ICWPs through chlorination, top slabs or a hand pump. And they included

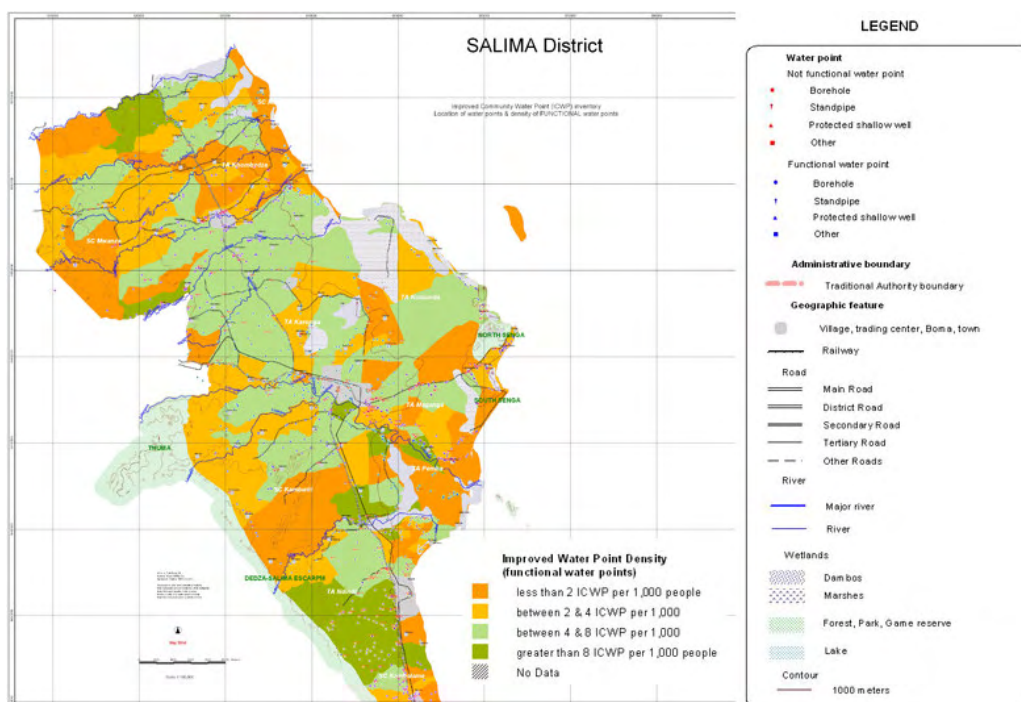
⁸ In the Northern Region bicycles were used as the main means of transport.

(mostly privately owned) electric lake intakes because this was considered to be useful information for the District Assembly for other, tax-related purposes.

In Mangochi district, where GITEC funded and supported the mapping process, the dataset differs slightly from the rest of the districts. For example, additional types of water points were identified and water quality tests were conducted.

Mapping: Once the data collection process is completed, survey results are inputted to a database to form an inventory. In order to reproduce the information on a map, the Geographical Information System (GIS) software ArcView is employed. Sets of EXCEL-formatted water point inventories are correlated with spatial information based on the 1998 population census provided by the National Statistics Office. Based on the official spatial information infrastructure, densities can be broken down to Enumeration Areas (EAs), the smallest administrative unit, comprising approximately 1000 people on average. In addition to the distribution of water points, other crucial information can be displayed on the map including major road networks, rivers and lakes, hydro-geological information or natural reserves. Water points can be distinguished on a map by the various characteristics obtained through the questionnaire such as functionality, year of construction, type of point etc. Figure 3 shows a typical map that is used during feedback sessions with district personnel.

Figure 3: Location of water points and density of functional water points - 2004



There are various challenges related to the use of spatial information. First of all, the mapping information can only be as accurate as the official figures provided. For example, data based on the 1998 population census are assumed to underestimate real population figures and therefore project unrealistically positive water supply coverage rates. For this reason, GITEC has decided to use unofficial sources of population projections in a complementary way. The low quality of the official spatial data set, as well as the use of different types of GPS, may also contribute to various levels of inaccuracy while producing maps.

Analysis of information: The most influential type of analysis is the correlation between the availability of water points and the population density in an Enumeration Area, which illuminates inequity in distribution at the lowest administrative level. This allows for a comparison between clusters of villages as opposed to official statistics masking differences in distribution below the district level. In addition, the wealth of the data set provides the basis for additional types of analysis. It is, for example, possible to investigate the level of investments in a specific area over a period of time, to analyse whether investments have been channelled to the appropriate technology (e.g. based on the depth of the aquifer) or to conduct queries regarding reasons for differences in life spans of water point functionality. Furthermore, a methodology has been developed to calculate and understand the investments required for achieving the MDGs related to water supply in Malawi. The methodology for calculating and analysing mapping data has been extensively documented by WaterAid reports (Stoupy and Sugden 2003a, Stoupy and Sugden 2003b) and by WSP (forthcoming) and will therefore not be presented here in any further depth.

Feedback to target groups: After the processing of the data, preliminary maps are presented to key stakeholders in the water sector at district level for verification. These maps show the location of water points across the district in relation to the national water point coverage target. A second meeting is held with the District Executive Committee, once amendments have been included, in order to present various types of analysis; decision-making processes are also discussed in relation to the maps. In addition to the maps, an electronic as well as a printed version of the database is handed over to the DA and a free viewing software, ArcExplorer, is installed on the DA computers. ArcExplorer links the water point-related database to the spatial dataset but cannot be used to create new profiles or to update an existing map.

Overall, and depending on the agency responsible for the mapping process, the nature of feedback sessions may vary substantially. As shown in Table 1, a number of agencies do in fact keep the information to themselves rather than feeding it back to the Local Authority.

The feedback process also involves a 2-day training session on the use of ArcExplorer so as to be able to query the database and carry out basic analyses. Normally, the District Planning Officer and the data clerk are selected rather than the District Water Officer who in most cases is not computer-literate. The level of computer-literacy at district level differs substantially, which makes it difficult to find a common ground during training sessions, especially during a period as short as two days.

Updating: On average, the number of water points increases by approximately 10 - 15% each year (WSP forthcoming). During the same time, an unknown number of schemes fall into disrepair. This means that mapping information becomes outdated after a relatively short period. The need for updating mapping information is thus urgent in order to ensure that mapping remains a 'living' and usable tool. As of now, however, there is no coherent updating system in place and it is not clear what a sound yet low-cost procedure could look like. The exception to this is DCT Salima who updates mapping information on a yearly basis with technical support from WSSCC.

Institutionalising mapping: An important part of WaterAid's strategy to establish water point mapping as a decision-making tool in Malawi has been the attempt to find a governmental home for the administration of the mapping database. The involvement of the central ministry has therefore been sought at an early stage of the mapping process in Malawi. Yet, ministerial support towards mapping remained limited in the beginning. Mapping revealed politically sensitive information about differences in water point coverage between different regions and was strongly associated with WaterAid and other donors supporting mapping on the ground. By March 2003, when WaterAid published its first mapping report based on information in Salima district, the government acknowledged mapping in principle and issued guidelines for carrying out mapping in Malawi based on the methodology developed by WaterAid (MoIWD 2003). Thereafter, the mapping database was transferred to the MoIWD to be incorporated in existing ministry databanks and Olivier Stoupy assisted the ministry through training of personnel and with the overall administration of the databank. But, subsequent reshuffles within the ministry resulted in the loss of capacity. The latest decision by the ministry is to host the mapping database at the newly established, but not yet operational, National Water Resources Authority. WaterAid/WSSCC are further interested in linking the mapping database to MASEDA, a UNICEF-supported socio-economic database. Yet, this databank is still not fully operational and the existing water supply indicators are not aligned with ICWP mapping. WSSCC is in communication with MASEDA on the development of indicators.

2.3 The use of water point mapping

2.3.1 Use of WPM at district level

The use and impact of water point mapping was greatest at the district, the main target level of water point mapping. Yet, as the examples below illustrate, the take up of mapping differed widely between the visited districts.

Salima District was the first district to be mapped in Malawi. The mapping process was completed by the end of 2002. Salima is a district where the capacity of the District Coordination Team is comparatively strong. One member holds a Masters degree and uses spatial databases in his work and WaterAid provides continuous overall support to the team through a local office. The DCT reported that before maps became available in the district, councillors and local chiefs used to quarrel between themselves about the allocation of water points. In the absence of information, it was very difficult for the DCT to have an impact on decisions concerning the distribution of water points. Since the DCT has a printed map to support their recommendations for the allocation of future investments, their voice has gained importance and counter arguments from politicians have faded away slowly. As a result, the planning process in Salima has become more transparent and councillors have now started to actively support mapping.⁹ The DCT members also feel that they are better recognised by NGOs operating in the district since they are able to present them with valuable information based on the maps.

Overall, the use of maps has therefore considerably improved district-level cooperation on water point allocations between different stakeholders. In recent years, the DCT has also reportedly targeted non-functional water points and has been able to rehabilitate the majority of those facilities. The team also uses the electronic database for further queries – for example to find out how many water points are allocated next to major road networks.

Yet, the DCT regards mapping as high-tech and are concerned by the fact that they need technical and financial support if they want to produce new maps based on the updated information collected by extension workers on a yearly basis. An immediate challenge, for example, is the fact that no colour printer is available at the District Assembly. The purchase of coloured print-outs for a DA meeting thus becomes a major expense that could not be financed without the support by the local WaterAid office.

In **Dowa District** where the mapping process was completed in March 2005 with close involvement from WSSCC a similar picture emerges. The representative from the DCT, Mr. Chipchaka, reported that he was overwhelmed when he first saw the water point density map for Dowa District. It revealed in particular that, despite high levels of investments in specific areas, there were still pockets with relatively low coverage. According to Mr.

⁹ At the time of the visit, the District Development Committee in Salima was temporarily suspended until the pending re-election of ward councillors.

Chiphaka, the value that the map adds to their work is the overview and clarity they now gain about their district. While, previously, they prepared recommendations based on village applications, they now have a tool to double-check the demand expressed by communities. When the Dowa DCT used the mapping information for the first time for their recommendations concerning water point allocations, they were strongly challenged by the political representatives who preferred to have the total number of boreholes divided equally between the different constituencies. But, the DCT managed to hold up its position by presenting the district map to the Assembly who subsequently accepted their recommendations.

Box 2: Daily Challenges for the acting water officer in Dowa District, Malawi

In Dowa District, the District Water Officer who passed away in 2004 had not been replaced in mid-2005. The technical assistant together with two aides has since taken on his responsibilities, namely the supervision and training of communities for new water points in addition to the monitoring and general maintenance of the 1452 existing water points serving the 411.000 people living in Dowa District. A major challenge for her is transport (she only has a motorbike in bad condition) and the lack of funding i.e. the necessary allowances and fuel to carry out supervision and training.

But, there are also clear limitations to the use of mapping information in Dowa. Mr Chiphaka reported that so far, the electronic information has not been accessed and that although the DCT would like to update the map based on their recent work, they do not know how to go about it. In light of the challenges that the acting water officer faces in her daily work (see Box1), the question arises how realistic it is to expect the acting water officer to conduct further analysis let alone updating of water point coverage throughout the district.

In **Mangochi District** where GITEC Consult funded and technically supported the mapping process, the picture was different. GITEC is engaged in the district through a major rural water supply project due to run out by the end of the year. One immediate objective of GITEC and the DA was therefore to attract funding for a follow-up project covering the remaining district. The visit to Mangochi coincided with a meeting of the District Executive Committee, the technical arm of the DA, to identify future priority areas for water supply development within the district. The related presentation was based on statistical information derived from ICWP mapping but instead of showing ICWP density maps, copies displaying the distribution of Village Action Plans across the Traditional Authorities were presented as the basis for decision making.¹⁰ The members of the DCT were not aware that a water point density map was available at the DA, in the office adjacent to theirs. In fact, the maps

¹⁰ At the same time, the presenter acknowledged that VAPs did not accurately project demand because it was known that some communities were known for writing applications despite of having a service whereas other, more marginalised communities were often ignorant or incapable of participating in this process.

were kept in their cover in order to preserve them rather than being made available for use. The data clerk who had been trained on how to query the electronic database had not yet been able to apply her knowledge. Although she shares the office with the District Water Officer, there is little communication between them regarding the database. The District Water Officer, for his part, had used figures from the mapping report to recommend the targeting of resources to underserved areas during the last DA meeting. Yet, according to him, councillors were not convinced by his presentation and insisted instead that resources be equally distributed.

In **Mwanza**, where water point mapping was completed in October 2004 under the auspices of the NGO consortium, the use of water point mapping information remained marginal, too. The District Assembly had not yet passed a decision on water point allocation because no further budget allocations had been made to water supply since ICWP mapping had been completed. Water point density figures were used for the compilation of the forthcoming District Development Plan 2005-2010, and the software was used at times in order to print out a district map, predominantly to display the administrative borders rather than for information with regard to water point allocations. Following a recent computer crash at the DA, the database had not been re-installed and was therefore unavailable at the time of the visit.

2.3.2 The use of WPM at regional and national level

The most well known example of a donor using mapping information in Malawi is the **Japanese International Cooperation Agency (JICA)**. In 2003/4 the then Ministry of Water Development wrote a project proposal to JICA requesting a large-scale rural water supply project in Mzimba District. On the basis of the mapping results, showing that this district was comparatively well covered on a national comparison, JICA rejected the ministry's proposal. The agency requested that another proposal be submitted focusing on Lilongwe West, where ICWP mapping had shown an overall coverage rate as low as 4%. This proposal was then given the green light. The ministry, for its part, did not accept the results from ICWP mapping in Mzimba District because an assessment of water point coverage carried out by its own staff suggested a lower coverage rate. However, when the information was subsequently reviewed by the ministry, the ICWP mapping proved to be correct.

Concern Universal (CU) provides an example of how far donors are making use of mapping information on a more operational level. CU had carried out mapping as part of an NGO consortium in two districts of the Southern Region. During the mapping process, the electronic database had been transferred to the organisation and staff had been trained on how to use it. Nevertheless, neither the software nor the maps have ever been used by CU. At the time that mapping was conducted, CU had already carried out its own water point inventory displaying additional technical information for each facility, which it continues to use and to update instead of using the mapping

database. The mapping database had been lost following a computer crash and had never been re-installed thereafter. Overall, CU felt that mapping had added little value to their project. Although it is keen to update the ICWP mapping in its project intervention area to expose the impact of their project on water point functionality rates, it does not know how to update information nor does it currently possess the necessary software to do so.

2.4 Potential versus actual use of ICWP mapping information

The examples above show that water point mapping information, especially if presented on a map, can create awareness and provide a strong basis of argument for DCTs at the district level. Supported by a map, the technical arm of the District Local Government has at times managed to convince decision makers to channel resources particularly to underserved areas. In Salima District, where mapping was carried out three years ago, mapping information has now become the accepted basis for planning water supply development and rehabilitation. At the same time the examples show that there are important limitations to the use of water point mapping information. Mapping:

- is only partially exploited compared to its potential;
- is not used by all actors that theoretically have water point mapping information at their disposal; and
- has so far had only a marginal impact on nation-wide planning and monitoring processes with regard to water supply.

The discrepancy between the potential and actual use of water point mapping information can be explained by a number of constraints that arise in relation to the political context, the evidence base and the links between the providers and users of water point mapping. Possible underlying reasons for these limitations will be discussed in Chapter 4.

3. Tanzania¹¹

3.1 The rural water sector

In Tanzania, 80% of the population live in rural areas. According to the latest estimate by 2002 Population and Housing Census, 42% of rural households used an improved source as their main drinking water. When breaking this figure down to the coverage at regional and district level, stark differences emerge. In the seven lowest served districts access to safe water supply is below 10% whereas in the four best served districts access rises to above 80% (WAT 2005). The large disparities in water coverage in Tanzania are linked to the selected donor support, which a number of regions received since the 1970s at the expense of others (de Waal 2005).

The official target with regard to access to water supply in Tanzania is defined as at least one water point for every 250 people within the proximity of 400 meters and, more recently, with time for collection not exceeding 30 minutes.

3.1.1 Sector reform processes and decentralisation

Starting from the 1990s, the Government of Tanzania embarked on a set of far reaching political and administrative reforms. One of these core reforms is a Local Government Reform Programme that aims at decentralising, by devolving resources and responsibility for service delivery to district and municipal councils overseen by PO-RALG, the ministry responsible for local government. The decentralisation process intends to create autonomous Local Government Authorities through the devolution of political powers, and fiscal and administrative decentralisation. In this process, the role of the central government and line ministries, including the MoWLD, changes from that of central control to policy making, regulation, general support and monitoring to ensure the quality of services (PO-RALG 2005). The implementation of reforms started in the year 2000. To date, the process is ongoing, with the legal framework and sector policies not entirely aligned to it. For example, the central ministry still spends 90% of the sector budget on national projects. Consequently, the remaining 10% of the budget channelled to local authorities is mainly allocated to staff salaries (de Waal 2005). Also, a sector-wide monitoring and evaluation system is not yet in place.

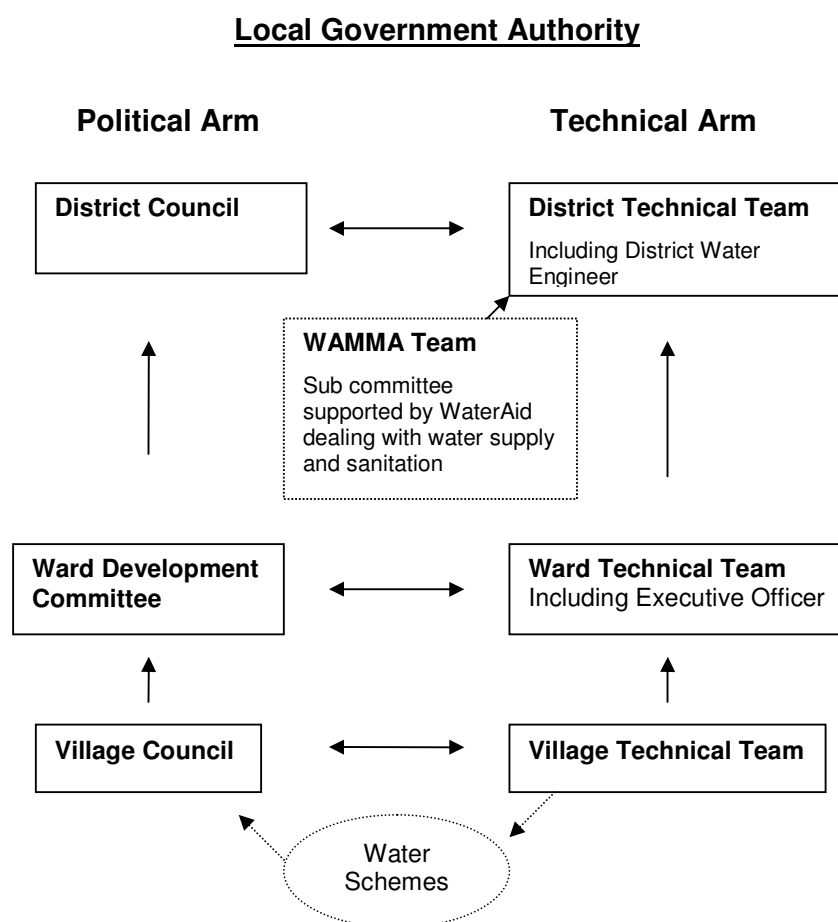
3.1.2 Implications for local level planning, budgeting and monitoring

Planning: According to reform documents, planning in Tanzania is bottom-up and demand-responsive. In theory, the yearly planning cycle is led by the villages and Mitaa (neighbourhood) who identify their opportunities for, and obstacles to, development through Participatory Rural Appraisals with the assistance of local facilitators. Based on these appraisals, multi-sectoral village plans are prepared and submitted to the next administrative level, the Ward Development Council, who passes them on to the technical arm of the Local Government Authority at district level. According to the guidelines, the

¹¹ In Tanzania, where mapping is still in its pilot phase, the visit concentrated on the process of carrying out mapping i.e. the feedback session at district level. One such session in Mpwapwa District was attended by the researcher.

technical committee to the Local Government Authority is supposed to prepare a local government authority plan based on the village plans, which is subsequently discussed and amended by the local government authority council and from there submitted to PO-RALG.

Figure 4: Tanzania district level stakeholder relationships



In practice, the planning process at district level is incoherent because of a lack of funds and human resources to carry out the process outlined above on a regular basis and with all communities. As a result, local government authorities are faced with unreliable data or a total lack of data when compiling village plans and preparing the budget. District projections to PO-RALG are submitted late and remain incomprehensive.

In Mpwapwa District, WaterAid supports a WAMMA¹² team consisting of sector representatives from health, education, water and community

¹² WAMMA is an acronym representing the four parties involved in district teams supporting villagers in planning and implementing water supply and sanitation projects. W - WaterAid; M - Maji (the Water Department), M - Maendeleo ya Jamii (Community Development Department) and A - Afya (Health Department).

development that assists the district water committee in the soft components accompanying water supply and sanitation projects, such as community mobilisation, sanitation and hygiene education, training of water committees and overall project monitoring and evaluation.

Budgeting: The Local Government Authority planning and budgeting cycle specifies that the Ministry of Finance disburses development funds to Local Government Authorities based on the submission of plans and on existing district development indicators. However, in the rural water sector, the MoWLD still retains control over 90% of the sector budget at central level. The ministry currently allocates the bulk of its development budget to major national projects, such as a pipeline from Lake Victoria to Shinyanga district, instead of to Local Government Authorities (de Waal 2005). At district level, funds for water supply projects are scarce and largely dependent on donors supporting the district budget. In Mpwapwa District, for example, donor funds amounted to almost 75 % of the entire development budget for water supply. The lack of funds was seen as the major challenge for the water sector by most of the interviewed stakeholders.

Monitoring: A national Monitoring and Evaluation system is currently being developed by PO-RALG, with an element of routine data collection at ward level on a monthly basis and an element of in-depth surveys at longer intervals. In the meantime, local Local Government Authorities report on an ad hoc basis to MoWLD. Apart from the institutional ambiguity due to the ongoing reform process, the lack of capacity at village level means that broken-down facilities are not consistently reported to the district authority. In Mpwapwa District, the WAMMA team carries out M&E. However, this does not replace a regular sector-wide and vertically aligned monitoring system providing information for counter-checking village plans with actual needs at the local level. The current situation tends to disguise disparities of water point distribution across the district.

3.1.3 Capacity constraints in the water sector

As in Malawi, ongoing reform processes lead to a discrepancy between the theory and practice of decision-making on the allocation of supply services. Although administrative functions and decision making powers have been devolved to local Local Government Authorities, the lack of fiscal decentralisation and of a functioning M&E system effectively constrain local level planning and budgeting. Budgets at district level are dominated by donor funds and accountability structures remain weak.

3.2 Water point mapping

3.2.1 The history of water point mapping in Tanzania

In Tanzania, discussions around mapping started in early 2004. Water point mapping (WPM) was introduced because it was thought to provide a tangible

tool to converge service delivery with policy work at the local level. In addition, water point mapping ties in with previous work on national-level water-related data that WaterAid carried out in cooperation with the ministry. WPM is still in a pilot phase which started in October 2004 and is expected to be finalised by December 2005. During this period, all 10 districts, in which WaterAid Tanzania is active, will be mapped. This area will represent approximately 10% of the Tanzanian mainland. WaterAid's local partners in Tanzania are the WAMMA teams that support the technical arm of the Local Government Authority in planning, implementing and monitoring water supply projects within the 10 districts where WaterAid works. For the implementation of Water Point Mapping, WaterAid decided to cooperate with the local private sector.

3.2.2 Objectives and target groups

Water point mapping was introduced by WaterAid Tanzania for several reasons. It will provide a tool to assist WaterAid make more effective and efficient investments. It is also expected that WPM will support the Local Government Authorities planning and monitoring processes under the framework of decentralisation. In addition, water point mapping is hoped to strengthen the availability, depth and quality of data throughout the sector.

The immediate target group of WPM, according to WaterAid representatives, is the technical arm of the district council, in particular the District Water Engineer and the WAMMA team that carries out WaterAid's service delivery programme. WaterAid works primarily with the technical arm of government in order to make sure that WPM captures the reality in the districts and ensure accuracy and sustainability. The ultimate target groups of water point mapping are the councillors who represent local communities at the district, the communities themselves, local NGOs and service providers operating at district level, and national level decision makers. The intention is to enable those groups to demand better service delivery.

3.2.3 Inputs

The total **cost** of the WPM pilot phase is expected to amount to US\$ 100.000 for 10 districts. A contractual arrangement between WaterAid and Geodata Limited, a local company that is carrying out mapping on WaterAid's behalf, foresees a lump sum payment of US\$7500 per district regardless of its actual size, the total number and accessibility of existing water points. The sum includes all expenses during the data collection, the data processing and basic analysis.¹³ Additional start-up costs for adapting the WPM methodology to the circumstances in Tanzania are expected to amount to roughly US\$ 30.000. This includes a trip by Geodata to Malawi in order to familiarise itself with the existing methodologies, a short-term consultancy by a technical advisor for refining the company's methods of data collection, processing and analysis, and the mapping of three districts.

¹³ This sum might increase slightly as a result of a recent substantial increase in fuel prices.

The **time** required for data collection per district amounts to approximately 15 days depending on the size of the district and the accessibility and total number of water points; data processing and analysis requires another four weeks. A feedback session, which might be carried out several months after the data collection depending on opportunities arising, takes approximately 2 days. This includes a feedback session at the District Council and a short introductory software training session for the District Water Engineer and WAMMA team. The entire pilot phase in Tanzania is expected to last 18 months.

Human resources required for the data collection at each district are one member of staff from Geodata, together with an officer from the Local Government Authority WAMMA team. At WaterAid itself, three members of staff are involved in mapping, two of whom only dedicate a minimal amount of their time to it. A third person, the Local Governance Advisor, spends up to one third of his time on mapping, mainly to ensure quality control of the process.

3.2.4 The water point mapping process

Overall, the process of WPM adopted by WaterAid Tanzania is similar to the approach in Malawi. The main difference is the outsourcing of data collection, processing and analysis to Geodata Limited, a local company specialised in GIS, land surveying, remote sensing, and in database, software and website design and development (Geodata not dated). The company was awarded a contract with WaterAid Tanzania based on a tendering process.

Surveying: The surveying of water points at district level is similar to the process in Malawi. The representative of Geodata contacts the Office of Lands and technical arm of the district council, i.e. the District Water Engineer (DWE), who assigns one person from the WAMMA team to Geodata for the realisation of the water point survey. The mapping team introduces itself to the ward, the next sub-district administrative level, from where it obtains guidance to contact village executive officers or village headmen. During the mapping survey, the accompanying WAMMA officer is trained in the use of a GPS and the downloading of GPS data to a laptop. In addition to the information obtained in Malawi, the methodology in Tanzania includes taking a digital picture of each surveyed water point. Upon completion of the water point survey, Geodata reports back to its office and later to WaterAid, while the member of WAMMA reports back to the DWE.

Mapping: Following the survey, the data obtained from the questionnaires is entered into an ACCESS database (later to be converted into EXCEL) so that information can be displayed via digital maps.¹⁴ This database is available in English and in Swahili.

¹⁴ The GPS data is downloaded directly into the Access database and is being supplemented by the survey questionnaires data which is manually keyed in. The database, technically known as WaterAid Tanzania Geospatial Database, contains two main components. The first one is a GIS component driven by ESRI ArcView engine and the second is non-spatial

Unlike in Malawi, enumeration areas in Tanzania are not demarcated by boundaries but indicated via points, which are cross referenced with population densities. Currently, a project is underway in order to demarcate village/enumeration boundaries but although the majority of districts are now demarcated, these boundaries are not yet official. As a result, the lowest administrative level at which water point density can be correlated with population density is the ward level comprising 7.000-20.000 people, as opposed to 1000 people per enumeration area in Malawi. Although this impacts on the accuracy of the breakdown, disparities at ward level remain currently so great that they allow for a meaningful analysis according to WaterAid Tanzania.

Analysis of data and feedback: In August 2005, Geodata had conducted basic data analysis for the purpose of feedback at district level. The analysis comprised of:

- Density of functional and total number of water points in correlation with population density against the national coverage target of 1 water point per 250 people;
- Levels of investment for the two census years of 1988 and 2002;
- Correlation of water point functionality with pump technology and type of well; and
- Levels of investment by donor.

WaterAid, together with Geodata, convenes feedback sessions with the Local Government Authority at district level. The sessions mainly target the technical arm of local government but members from the political arm, i.e. MPs and the Council Chairman, are also invited to participate. During the feedback, the district map and photos of mapped water points are displayed; first findings and a preliminary analysis are presented and discussed. The electronic database is installed onto district computers and the WAMMA team familiarised with the ArcExplorer software.

Updating and institutionalisation of mapping: As of mid-2005, there was not yet a systematic approach to updating mapping information. Different possibilities are currently being explored by WaterAid Tanzania and Geodata. As in Malawi, for the updating of newly installed water points, the possibility of including GPS-based updating in the ToR of contractors is being considered. Concerning a district-wide update of functional and non-functional water

database driven by Microsoft Access engine. The ArcView GIS is used to process, analyse and visualise map-based or spatial information as supplied by the Access database using ODBC or SQL Connect utility, while Microsoft Access is used to capture, process and manage non-spatial field data from GPS and Survey questionnaires and later to EXCEL for further investigation and analysis.

points on a regular basis, a web-based updating system accessible by authorised users is also under discussion. However, at this stage, it is not yet clear how this could be operationalised. One apparent obstacle is the lack of access to the internet by many district assemblies, let alone individuals at sub-district level.

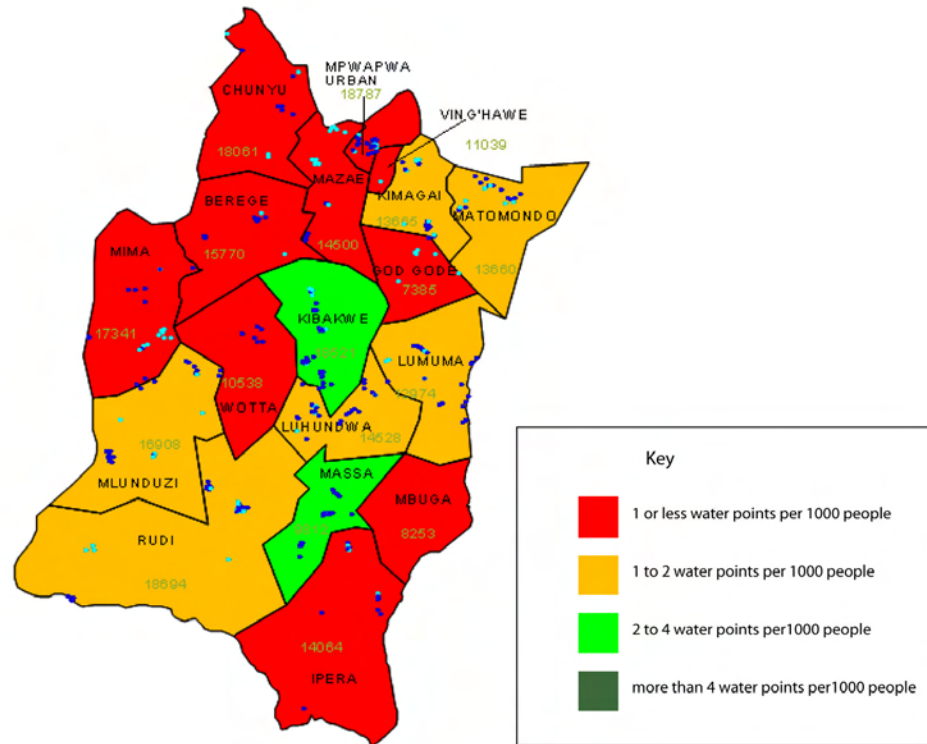
Discussions about the institutionalisation of mapping have been initiated with the official in charge of Information Management at the Directorate for Policy and Planning at MoLWD, and with the Local Government Reform Programme. First reactions by the two institutions are positive. Both representatives mentioned in particular the value of water point mapping for rendering the planning process more transparent. Mapping was also considered to be compatible with the evolving M&E system in principle.

3.3 First impressions from feedback sessions at district level

The impression obtained from observing feedback in Mpwapwa District was very positive. During the feedback session, the District Water Engineer, as well as an MP, emphasised that the information displayed on the district map showed “the true picture”. The mapping results were trusted in particular because all stakeholders were aware of how information had been collected on the ground and because they were able to double-check water point allocations on the map with their own knowledge about the district. The information displayed on maps (see also Figure 4) was understood by all persons present. Yet, members of the WAMMA team raised the point that, for villagers, maps should display information at the ward level, with a detailed legend so as to make maps accessible for them too. A WaterAid representative who had presented the district map to his international colleagues also cautioned that the colour shades from green, indicating good coverage, to red, indicating low coverage, as displayed in Figure 4 tend to draw a black-and-white picture of a situation that is more nuanced on the ground. His impression was that his colleagues were convinced by the colours displayed on the map that the water point coverage in Mpwapwa was poor, although this is not the case in his opinion. He stressed that the red wards partly covered hilly areas with numerous unprotected springs resulting in villages not demanding water supply services from the district.

The District Water Engineer, for his part, was more intrigued by the new form of displaying information on a map rather than by the dataset itself. The WAMMA team was most surprised by the high rate of non-functional water points and by the digital photos showing the poor hygienic status of many of the water points. They saw mapping as a useful tool for improving their work with regards to the allocation of new water points, monitoring of hygiene behaviour and evaluation of reasons behind the low sustainability of functionality.

Figure 5: Distribution of functional water points in Mpwapwa District, Tanzania, 2004



Whether information from water point mapping will be actively used by the district could not be assessed during the feedback session. Nevertheless, a number of issues indicate the potential for the uptake of mapping information. For example, the WAMMA team in Mpwapwa is keen to have its work better recognised by the Local Government Authority which, currently, tends to associate the team with WaterAid and values the soft skills that WAMMA provides less than the construction of hardware. The WAMMA team felt that mapping information can help to shed light on the importance of hygiene education and on the factors increasing the sustainability of water projects. The District Planning Officer sees mapping mainly as a planning tool. For him, it is important that he can utilise the map as a means to counter-check village applications for prioritising investment priorities at district level. He and the Council Chairman also see the water point map as a tool that strengthens their voice in communication with donor organisations active in the district.

4. Analysis

How effective are WaterAid and their mapping partners in influencing decision making regarding the distribution of water supply services? The examples of how information from water point mapping is used in Malawi so far point to a discrepancy between the potential and actual impact of the tool. As identified in Chapter 2, differences arise at three different levels:

First, the **potential depth and breadth of analysis** based on the rich dataset is only partially applied. In Malawi, the main information being used by the technical arm of district local governments and donors to influence decision-making is mainly linked to the equity in distribution of water points. More complicated analyses, for example supporting an appropriate choice of technology, evaluating the sustainability of various types of pump technology or different strategies to meet the Millennium Development Goals, are not applied except for Salima District where the local WaterAid office provides continuous support to the District Coordination Team. The main source of information used is a printed map and in some cases the printed report. The software, on the contrary, has been used very little by district personnel

Second, not all potential **users** are targeted and, of those persons targeted, not all are aware of, or making use of, mapping information. The indication that an estimated 75% of all financial resources for rural water supply in Malawi are currently originating from Non-State Actors, suggests they need to be taken into consideration in order to maximise the impact on equitable resource allocation. In Malawi, all major donors are now aware of and supportive of water point mapping, but not the numerous smaller NGOs who are less likely to cooperate with the District Local Government. So far, the application of water point mapping does not exploit its full potential as a tool for increased sector coordination in Malawi, with the exception of Salima District.

In addition, communities and individual water users, in particular those who are potentially deprived of water points, are not actively targeted by water point mapping. Also in Malawi, the extent to which the technical arm of district government, who is the main target group of water point mapping information, makes use of the evidence differs between districts. While in Salima mapping has become a central tool for planning water sector allocations, its influence still remains marginal in Mangochi and Mwanza.

Third, the **application of mapping information** is largely restricted to the district level with limited impact on higher policy levels until now. Although, in Malawi, the water point mapping database has been transferred to the Ministry of Irrigation and Water Development, it was not used regularly by the ministry for decision making with regard to sector allocations. The Water Resources Authority, who was then hosting the database, was not yet operational. Discussions were ongoing with the National Statistics Office

administering the MASEDA database (the yet to become fully operational UN-supported socio-economic databank).

The underlying reasons for the identified discrepancies are related to the nature of the evidence produced through water point mapping, the links between the producers and users of water point mapping information, and the wider political context surrounding water point mapping as shown in Figure 1. The discussion below is structured along these lines.

4.1 Evidence

For evidence to be produced and used effectively it is important that objectives have been clearly defined and are shared among the different mapping partners, that the right tools are chosen to reach the identified ends, and that the evidence can be readily picked up by the targeted users.

Definition of objectives: In Malawi where a number of different donors were involved to different degrees in carrying out water point mapping, their objectives tended to differ. For the NGO consortium in the Southern Region, part of the motivation for carrying out mapping seemed to be the fulfilment of the project description, rather than a sustained and continuous engagement with the district. Similarly, in the Northern region of Malawi, mapping was carried out by an organisation mainly interested in information for monitoring its own programme. In Tanzania, where water point mapping is only funded and supported by WaterAid, this question has not arisen so far. The differences in objectives in Malawi resulted in the district assemblies not being involved in the mapping process in some cases, leading to a limited application of the evidence in DA decision-making processes. Involving many actors in the mapping process in Malawi, which had the advantage of getting the main donors on board, thus also has a trade-off that needs to be carefully weighed.

The compatibility of ends (mapping objectives) and means (mapping methodology): In Malawi, WaterAid's overall objective of mapping was to render the district allocation of water sector resources more equitable and the process more transparent. The key tool selected was the use of GIS technology for the production of digital maps. GIS technology allows for a high degree of accuracy and sophistication in displaying information, but effective application of this information in decision making also requires specialist analytical skills. It may therefore be useful to reassess the priority of water point mapping: Does it lie with the depth and precision in presenting findings through advanced and accurate technology, or with maximising the impact of basic information through the involvement of as many stakeholders as possible? The fact that colour printers, which are needed to properly read the water point maps, are not normally available at the district level either in Malawi or in Tanzania serves to illustrate this point. Coloured maps make it possible to display more details on a map but incur high costs for the District Assembly if a printing facility is available at all. More thought needs to be put into the most appropriate application of tools to reach identified goals.

Mismatch between evidence and capacity of target groups: With regard to the tool applied to produce and update evidence on water point distribution, there is an important mismatch between the provision of GIS software to district officials and the actual capacity at district level to apply it. Most district water officers in Malawi cannot handle a computer.¹⁵ For them, it is difficult to imagine what an electronic database is and how it can be queried. On the other hand, the district representatives trained to carry out various types of analysis may not be familiar with the information required for the water sector or may have other priorities. In addition, the sophistication of the software may surpass their experience with computer programmes and may conflict with other district databases in use. As a result, the software made available at the district level is generally not applied, which leads to a waste of resources and creates unrealistic expectations towards district personnel. An important issue to address here is to clarify which type and packaging of information is most appropriate for which actors and administrative levels. In-depth meta-analysis, for example, is better done by the private sector or by a national body with the necessary skills, whereas easy-to-use information should be more widely available to local authorities and even at sub-district levels, in particular to the general public. This also links to the broader question of ownership and guardianship of mapping information in-country.

4.2. Links

The existence of evidence itself - however convincing – does not guarantee its uptake by policy makers and the change of resource allocation priorities. The process, i.e. the way in which information is transmitted, plays a crucial role in moving new evidence to the centre of decision making.

Is seeing believing? On one occasion the proposition came up that the evidence shown by water point maps is so convincing that “seeing is indeed believing” and therefore likely to trigger policy changes. While this can be debated, one important hindrance is that stakeholders who can affect decision-making in water point allocation do not get to see the evidence in the first place. A number of factors linked to the process of carrying out water point mapping, e.g. including staff at district and sub-district level, are related to this: First of all, as referred to earlier, some mapping partners in Malawi were interested in the exercise mainly in order to improve their own interventions within a specific district. These partners did not necessarily share mapping results with each other or with the district assemblies. In other cases, mapping results were presented but without showing the physical maps which, again, deprived stakeholders from grasping the visualisation of distribution inequities. Especially in Mangochi, Malawi, where maps remained sealed in boxes for reasons of ‘preserving them’, the importance of carefully guiding a mapping process and feedback sessions became apparent. In Mpwapwa, Tanzania, on the contrary, where mapping was accompanied by

¹⁵ The situation was different in Mpwapwa, Tanzania, where a water engineer headed the district water office. However, it was reported that the capacity in other Tanzanian districts did not necessarily live up to the qualification of Mpwapwa district.

taking photographs of water supply infrastructure, the presented information triggered lively discussions related not only to equitable distribution but also to hygiene practices, community contributions and the like. In Salima and Dowa districts of Malawi where feedback sessions were supported by WaterAid/WSSCC, the maps assisted in changing policy decisions on water point allocations. Whereas, beforehand, allocations were evenly distributed between different constituencies, the maps empowered the water officer and district coordination teams to challenge this request by councillors and Members of Parliament and focus resources in the least served areas.

Playing a constructive role: Whether the evidence is perceived as threatening or as supporting the targeted stakeholders also plays a crucial role for its uptake. In Malawi, a number of attempts have been made by WaterAid to attract the interest of MoIWD and to move the database and technical support unit for mapping into the ministry. Yet this proved to be difficult in the beginning, not least because there are strong vested interests at the central ministry to maintain control over the allocation of water points. The political nature of information revealed by mapping was perceived as the threatening existing practices of senior officials, and previous levels of control concerning infrastructure development, and was therefore ignored and rejected by the ministry. The implementation of mapping by WaterAid and later on by other donors was a welcome excuse for the ministry to identify mapping as WaterAid's Project rather than seriously engage with mainstreaming the information in sector decision making. When WaterAid outsourced the technical support to mapping to the Water Supply and Sanitation Collaborative Council (WSSCC) of Malawi, mapping became more accepted. Yet, this arrangement remains a temporary solution. The future sustainability of water point mapping strongly depends on its incorporation into government monitoring and evaluation systems and budgets.

4.3 Context

The wider political context greatly impacts on how readily new evidence is taken up. Some policy processes are defined as more 'closed' than others, thereby making it difficult for new evidence to be taken up. In the case of water point mapping, the ongoing nature of reforms provides opportunities as well as challenges for the incorporation of mapping evidence into district as well as regional and national-level policy processes.

Policies in transition: Both Malawi and Tanzania are currently in a process of decentralisation, with the aim of shifting fiscal responsibilities from the central to the district level. Decision making in both countries is supposed to become demand-led, i.e. based on priorities set at the village level. At the same time, village-level planning is not yet fully operational in either country, partly because of a lack of resources for carrying out priority setting processes and partly because funds for the development of infrastructure are not yet channelled through district assemblies. Similarly, monitoring and evaluation systems are in a process of restructuring in both countries. The transitional

nature of policies in Malawi and Tanzania leads to a discrepancy between decision making in theory and in practice, thereby leaving local level planning and monitoring in a limbo and weakening existing accountability structures. In Malawi, the planning capacity is further limited by the weak position of the Ministry of Irrigation and Water Development (MoIWD) at district level, and the frequent change of senior personnel at permanent secretary and minister level, which strongly inhibits continuity and a strategic approach to water supply at the national level.

This has a number of implications for mapping evidence. On the one hand maps can clearly play a role in supporting and widening existing accountability structures with regard to water sector allocations at the local level. Officials in both countries and at different policy levels stressed that mapping can be a useful tool to counter-check existing resource allocation decisions based on partly unreliable demand-led processes. In addition, if made available to the wider public, i.e. to communities and officials at sub-district levels, water point mapping also has the potential to create downward accountability between the District Assembly and its constituency.

On the other hand, the contribution of mapping to addressing wider challenges associated with the ongoing reform processes described above is limited. For example, in Mpwapwa District, Tanzania, the overall lack of financial resources and not the lack of information were stated as the greatest challenge for improving water supply services. In Dowa District, Malawi, the capacity of the acting water officer to carry out any type of regular sector monitoring was strongly limited by a lack of transport, fuel and manpower to cover the whole district. In Salima District, only one third of all financial allocations to the water sector were channelled through the District Development Fund and thereby under the control of the DA. Whether district-level staff will be better supported, and increased financial resources channelled to the district for water sector allocations, is dependent on wider civil service and local government reform processes, as well as on a better alignment of Non-State actors with government policies and procedures. An important feature of these will be to create clearer performance incentives to deliver services more effectively and efficiently to users on the ground. Water point mapping, however, is largely limited to highlighting existing shortcomings with only marginal impact on transforming them. The question arises whether planning processes are ready for water point mapping? An important challenge in this context is to work towards the institutionalisation of mapping at the local as well as national level. This is dealt with in more detail below.

Sustainability: The greatest single challenge for water point mapping as a planning and monitoring tool is how to render it sustainable. This is confirmed by UNICEF's experience of water point mapping in Zambia where the process collapsed once the agency withdrew its support. The obstacles towards sustainability are of both a practical/financial and institutional nature.

First, it remains unclear how physical updating of new infrastructure investments and repairs can be implemented on a regular basis because of lack of transport, time and financial resources from the side of water sector personnel, and because of irregular reporting on the part of donors. A regular updating system is important in order to create expectations by stakeholders to continuously use the tool to demand improved service delivery. In both countries, there are some ideas of how updating of mapping information could be organised but no systematic approach is in operation as of now. This is crucial since it is estimated that, for example, in Malawi water points increase by around 10-15% each year which effectively outdates the existing database within 6 – 12 months.

Secondly, the institutionalisation of mapping within the government is essential to enable the ownership of the tool by national institutions. In Malawi, two options for institutionalising mapping are currently being considered – the hosting of the database with the newly established, but not yet operational, National Water Resources Authority or, alternatively, a permanent secondment to the National Spatial Data Centre of the National Statistics Office.¹⁶ In Tanzania, prospects for institutionalisation appear positive at this very preliminary stage since there are direct contacts, and verbally confirmed interests, from senior staff at the ministry and local government reform programme.

4.4 Opportunities and challenges

4.4.1 Opportunities

Water point mapping is recognised in Malawi and Tanzania as a credible and powerful tool for visualising information on the distribution and functionality of water supply infrastructure. In Malawi and Tanzania, district personnel reported that they were overwhelmed by the information revealed by maps and surprised by the degree of non-functional water points. Potentially water point maps also make information available to the wider public, particularly to illiterate water users. However, this has not yet happened in practice.

Mapping information has reportedly had an impact on the allocation of water points within and between districts in Malawi. In one case, the Government of Malawi had to withdraw a proposal to JICA for a rural water supply project in Mzimba District and to resubmit it for Lilongwe West based on the differences in water point coverage revealed by WPM. In Salima and Dowa districts, District Assemblies reported that, based on mapping information, they changed financial allocations for water projects from equal allocations to all Traditional Authorities to a specific targeting of underserved areas.

¹⁶ WaterAid Malawi is currently preparing a proposal to integrate the ICWP database into the MASEDA with a view to develop a MASEDA-Water Supply databank.

In addition, the socio-economic and technical information obtained through the accompanying questionnaire allows for deeper levels of analysis concerning underlying reasons for non-functionality etc. For example, it can provide an entry for debates surrounding the lack of water point sustainability and questions around water point rehabilitation. As such, water point mapping provides a good opportunity for WaterAid to verify the efficiency and effectiveness of its own investments at district level. This is a clear objective for WaterAid Tanzania but does not feature highly at WaterAid Malawi.

An important opportunity provided by water point mapping is that the display of information has the potential to open up policy debates. In particular, water point mapping can support decentralisation processes by helping to create downward accountability. Important questions remain as to whether priority-setting for the development of new water infrastructure based on village applications provides an accurate instrument to reach the unserved population. Water point maps could be used to verify the still largely ineffective district-level demand-responsive planning process by comparing village applications with the existence of water points in a given area. This was stressed by officials both in Tanzania and Malawi. Furthermore, the fact that water point maps make complex information more easily accessible bears the potential of involving communities and individual water users in debates around water point distribution and allocation of financial resources to the water sector at large.

Water point mapping also comes at a time where the role of monitoring is being strengthened as part of efforts to reach the MDGs. In Malawi, the focus on achieving MDGs has increased the ministry's interest in measuring progress and revealed the lack of indicators for valid and meaningful measurements. The current establishment of a UNICEF supported databank in Malawi and Tanzania, which partly relies on GIS-based information, also confirms this trend.

4.4.2 Challenges

The challenges with regards to water point mapping are mainly related to the way in which mapping information is adapted to the wider socio-economic and political context in which it is used. The process of surveying, analysing and feeding information back to stakeholders is only the first step in a continued process of engagement. The impact and sustainability of mapping largely depend on this latter process. In this context, the Malawian case study shows that a "quick and dirty" approach, engaging many donors in order to cover the whole country in a short period of time, can compromise the impact of mapping information. Mapping had the highest impact in Salima district where WaterAid was able to provide continuous support to the District Assembly, while in other districts, where WaterAid was only marginally engaged, the use of mapping information tended to be limited. There is a risk of disappointment where the local government is keen on making use of mapping information but is then not able to follow up because no updating system is in place.

Table 3 below highlights the change interests, the actual use, and the obstacles limiting use of mapping information by stakeholders. It emphasises the difference in interest by stakeholders and also shows the current limitation of mapping on policy processes. The information illustrates that impact on policy processes takes time and can only partially be influenced by the tool. A possible conclusion to be drawn is to focus expectations on low hanging fruits on which WaterAid has most leverage. For example, as planned by WaterAid Tanzania, the focus of mapping at the initial stages could be on improving the effectiveness of WaterAid's own investments at district level.

A major difference between water point mapping in Malawi and Tanzania is the reaction of the central ministry/reform programmes to the tool. While in Malawi the reaction was largely hostile in the beginning, and seeking support by the government proved a difficult task, first feedback in Tanzania is very positive. The question is whether and how the tool can be adapted to these different circumstances.

Yet, to make water point mapping a sustainable exercise, government ownership of mapping, through its inclusion into M&E systems and through the allocation of financial resources, remains crucial. In many countries GIS-based information systems have gained popularity over the last years and are now being used in parallel by different stakeholders and in different sectors. It might be useful to start mapping in a country by exploring existing activities and to try to build on these practices from early onwards. Related to this is the challenge of upholding the credibility and accuracy of mapping information if updating is to be organised based on the current level of capacity. Reports of inaccuracy could easily endanger the legitimacy of mapping. Maintaining credibility will depend on firmly rooting mapping activities within wider decision making processes and associated verification mechanisms.

Table 3: Change interests, actual use and obstacles to using water point mapping information by stakeholder

	Reasons for engagement	Actual use	Obstacles
WaterAid Malawi	- provide a planning and monitoring tool for district level technical staff that enables them to advocate for more transparent and accountable decision making with more equitable and sustainable outcomes.	- data collection and analysis carried out in most districts but the extend to which WPM is used for decision making on resource allocation remains limited and differs greatly between districts.	- mismatch between technical skills of district personnel and WPM methodology; - the majority of resources for infrastructure development remains off budget.
WaterAid Tanzania	- in addition: to monitor the effectiveness and efficiency of their own investments in districts.	- data collection carried out in 10 districts and likely to be used for planning and monitoring purposes at district level.	- map was criticised as drawing a black-and-white picture. - district-level maps criticised by WAMMA team as difficult to use by some stakeholders i.e. villagers.
Concern Universal (a Malawian mapping partner)	- obtain funding for region-wide water point rehabilitation programme; - show difference in coverage of functional water points before and after project completion on a digital map.	- CU continues to use its own updating system instead of the WPM methodology in the project. They are not able to update the digital map because of a lack of skills and software.	- it was not clearly defined why WPM would be used and what for. CU never took ownership of the mapping process.
District technical staff supported by WA	- to improve sector-wide planning and to have a stronger leverage with donors; - to meet WaterAid's expectations; - to create more awareness for the importance of their role across the local government.	- use of WPM for on-budget allocations to water infrastructure development and rehabilitation in Salima; - (limited) use of WPM for coordination with donors across the district.	- in Salima, at least 2/3 of financial resources to the water sector by donors are allocated outside the District Development Fund; - "some NGOs behave as if they are an assembly in their own entity"; - technical capacity to update information is limited.

District technical staff not supported by WA	- to improve sector-wide planning and to have a stronger leverage with donors;	- differs widely, in some cases no use at all.	- no involvement in the process in some cases; - limited human resources and technical capacity; - limited authority of water officers in Malawi compared to colleagues from other sectors.
District Councilors and MPs	- to show that they have served their constituencies well; - to show that their constituencies are deprived	- MP in Balaka West challenged the DA to use mapping results for decision-making on water point allocation.	- MPs do not always have access to WPM information.
Communities and individuals	- no community had access to WPM information.		- no information released as of yet to the general public about WPM, - no specific targeting of communities.
The information for this table is based on illustrative examples from visits to four districts in Malawi and one district in Tanzania and is not comprehensive.			

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5.2 Persons contacted

Tanzania		
Name	Position	Affiliation
Amani I. B. Mafuru	District Water Engineer	Mpwapwa Local Authority
Charles Buberwa	Managing Director	Geodata Ltd.
Charles Chitenca		Local Government Reform Programme
Damas Debwa	Local Governance Advisor	WaterAid Tanzania
Dominick de Waal	Policy Analyst	WaterAid Tanzania
Felix Ngamlagosi	Policy, Planning and Information Management	Ministry of Water and Livestock Development
George M Lubelje	MP	Mpwapwa Local Authority
Godwin Mukanwa	Council Chairman	Mpwapwa Local Authority
Herbert Kashililah	Senior Programme Manager	WaterAid Tanzania
Musa Awale	Dodoma Representative,	WaterAid Tanzania
Mpinga		
Robson M Magesa	District Planning Officer	Mpwapwa Local Authority
WAMMA Team		Mpwapwa Local Authority
Malawi		
Name	Position	Affiliation
Alfred Kutengule	Planning Unit	Ministry of Irrigation and Water Development
Andrew Maclean	Construction Advisor	DFID Malawi
Boniface Gondwe	Deputy Director, Planning Design and Construction	Ministry of Irrigation and Water Development
Boyce Nyirenda	District Programmes Coordinator	WaterAid Malawi
Haroad Pondeponde	Acting Water Supervisor	Mangochi Local Authority
Hebe Makamanga	Project Coordinator Water Point Rehabilitation Project	Concern Universal
James Mambulu	Water and Environmental Specialist	CIDA Malawi Programme
Jim Anscombe	Project Manager	GITEC Mangochi
John Kandulu	Regional Manager	WaterAid
Kondwani Mponda	Hydrogeologist, Southern Region	Ministry of Irrigation and Water Development
Lovemore Mvula	Programme Manager Salima	WaterAid Malawi
Lucy Kamphonje	Chairperson Development Committee	Salima District Assembly
Manda M. Reinford	Programme Officer	JICA Malawi Office
Malidadi Landa	MA Student	Mangochi Local

Malinda Gama	District Water Officer	Authority Salima District Coordination Team
Masauko A. Mthunzi	Programme Manager WES	Concern Universal
Matthews Tsirizeni	District Planning Advisor	Salima District Coordination Team
Maxwell Mbulaje	District Environmental Officer and Acting DPD	Mwanza Local Authority
Modesta Kanjaye	Deputy Director for Groundwater	Ministry of Irrigation and Water Development
Nelly Magelegele	M&E Officer	WaterAid Malawi
Olivier Stoupy	Consultant	
Paul Chunga	District Environmental Health Officer	Salima District Coordination Team
Robert Kampala	Country Representative	WaterAid Malawi
Rodrick Chikawa	Project Officer, Blantyre Region	Concern Universal
Sham P. Mathur	Head of WED	UNICEF Malawi
Sidney Chiphaka	Director of Public Works, Acting DPD, Acting DC	Dowa Local Authority
Simon Msukwa		WSSCC Malawi Chapter
Steven Sugden	Former Country Representative	WaterAid Malawi

Annex 1: Terms of reference

WaterAid learning for advocacy and best practice project

Terms of reference (29 July 2005)

Water and sanitation mapping

Vicky Blagbrough (Programme Learning Facilitator)

Ned Breslin (Country Rep WaterAid Moçambique)

1. Introduction

WaterAid is increasingly using mapping as an important component of their support work in country. Mapping is being used in different country programmes for:

- Strategic planning at local government level and, at times, at higher governmental levels¹⁷
- Monitoring water supply functionality
- Evaluating issues of access and equity in both rural and urban contexts
- Verification of coverage rates
- Lesson learning and sharing
- Understanding sanitation coverage, access, and equity
- Advocacy with government for attention to poor people or unserved
- Providing a sound basis for extension of services to unserved communities¹⁸

The scale of implementation varies across country programmes. For instance, Malawi, who is rightly credited with initiating mapping within WaterAid, has seen their model of district-level equity mapping applied to 23 out of 27 districts in the country since 2001. Others are in a relatively early stage of development. Mapping is proving to be politically sensitive in Mozambique where the results are undermining national assumptions on coverage rates. While some country programmes use GPS¹⁹ mapping others, like Ethiopia, have started with less technically demanding approaches to mapping. WaterAid in Asia country programmes have done extremely innovative work on clarifying issues of coverage and access in mushrooming slum and squatter areas. West Africa has included sanitation in their mapping work. All country programmes are working to support partner capacity to map; Ethiopia is trying to bring university students into the process; and all are

¹⁷ In Uganda, Equity of distribution has been successfully advocated into the national government's Performance Monitoring Framework for the sector, as one of the indicators of sector performance.

¹⁸ The mapping work in Pakistan, for example has extended sewerage services to slum communities in Karachi, Faisalabad and other cities where the mapping approach has been adapted.

¹⁹ Geographical Positioning System

looking for ways to use mapping results to influence government, donor and NGO implementation practice. Mapping is thought to be a powerful tool for policy makers and implementing agencies, and to shed light on some of the sector's key challenges related to sustainable coverage, equity and MDG targets.²⁰

However, there is little documentation and coordination on “mapping” exercises within WaterAid, which results in ambiguities and inhibits learning across the organisation. Furthermore, the impact of mapping on the policy process in country, as well as general strengths and weaknesses of mapping, have so far not been coherently assessed.

2. Purpose

The objectives of this learning for advocacy and best practice project are to:

- Clarify what different country programmes mean when they use the term “mapping” in their work.
- Highlight the methodological differences and commonalities in mapping across country programmes in order to provide insights into how mapping is being implemented and allow country programmes to learn from the approaches to mapping being used across the organisation.
- Specify the “targets” and objectives of the mapping work in each country – who are the results trying to influence and why? What are the goals of mapping? What outcomes have been achieved through the mapping work?
- Clarify who is actually carrying out the mapping work in country – WaterAid staff, partners, consultants or combinations of these - with an eye on how mapping will be managed and implemented long-term, and the role of local community groups and/or watsan committees in those activities.
- Explore strategies being applied by country programmes to ensure “buy-in” on mapping approaches and findings among target groups (partners, government, etc), and to highlight problems encountered in trying to bring others “on board”
- Highlight the strengths and weaknesses of mapping as applied in country programmes, based on their experiences.
- Identify and discuss the technical challenges that surround mapping, especially in light of often weak partner capacity to sustain more complex systems (like GPS-based data systems) including the prospects for guaranteeing sustainability through a system of updating and managing information over time.
- Clarify the resource needs of mapping (i.e people, time, materials, money).
- Explore how the processes and outputs of mapping are shaping debates and actions (allocations etc) in-country at the local, sub-

²⁰ See Appendix One for an overview of mapping work in all country programmes in WaterAid.

national and national level – with the priority focus of this study being on local level engagement.

- Facilitate cross-country learning among WaterAid and its partners so that lessons from experience in mapping are shared and country programmes engaged in mapping can identify concrete ways in which the work in their country programmes can improve over time.
- Develop a list of “mapping fundis” who can serve as a resource to the organisation.

3. Process

The project will proceed in three phases.

3.1 Phase One

The first phase will be in partnership with the Overseas Development Institute (ODI), within the framework of the ODI Civil Society Partnership Programme.²¹ ODI’s representative, Katharina Welle, will begin by visiting two (2) country programmes that are at different stages of implementation with mapping. The country programmes are Malawi and Tanzania, and the visits will occur during August 2005. The objectives of the first phase are to:

- Test a methodology for answering the key questions (objectives) in sec 2 above.
- Document the mapping experiences of Malawi and Tanzania country programmes, using the above methodology. It should be noted that these initial case study documents may be rough, but the goal is to start finding ways to document WaterAid’s experiences in a meaningful way.
- Produce guidelines, based on the tested methodology, which provide the framework of questions for future case studies.

Phase One will be completed by 30th Sept 2005.

3.2. Phase Two

A researcher-consultant will be commissioned (possibly, but not necessarily, from ODI) to continue the documentation process. The objectives of Phase Two are to:

- Finalise the Malawi and Tanzania case studies, incorporating feedback received from programme and UK staff on the draft documents produced in Phase One.
- Document the mapping experiences of approximately 7 additional country programmes, using the framework of questions developed in Phase One and in accordance with WaterAid’s research protocols (these protocols are to be finalised at the forthcoming Global Advocacy Meeting in October).
- Finalise the 7 (approx) country programme case studies, incorporating feedback received from programme and UK staff on the draft documents.

²¹ One of the objectives of the Civil Society Partnership is to understand better how Civil Society Organisations use evidence in order to influence policy processes.

- Produce a synthesis document of the policy and best practice lessons learnt from WaterAid's mapping experience in 9 (approx) of its country programmes, for discussion and debate within WaterAid in order to reach a common understanding of the strengths and weaknesses of WaterAid's existing mapping processes and outputs, and possible ways to improve them. Potential discussion fora are RMT meetings, team meetings, e-conference on WAX.....
- Develop a dissemination strategy for sharing and promoting to audiences within and outside WaterAid the policy and best practice lessons learnt from WaterAid's mapping experience (and the subsequent discussions), in collaboration with programme and UK staff in the Strategic Development Department, International Dept, PPED, and Communications Team.
- Draft a list of potential mapping fundis from within the WaterAid family to support the development of mapping work within the organisation.

Phase Two will be completed by 31 January 2006.

3.3 Phase Three

The objectives of Phase Three are to:

- Finalise the list of mapping fundis within the WaterAid family, who will be a clear resource for the WaterAid family and can serve as back-up support to individual country programmes.
- Finalise and implement the dissemination strategy developed in Phase Two. Dissemination activities are likely to include:
 - Presentation of key lessons to internal audiences (programme and UK staff, partners, trustees, and supporters); and audiences external to WaterAid (e.g national WASH steering committees, regional watsan network meetings such as SACOSAN, the 4th World Water Forum).
 - Publication of a simple, well-argued and well-written information flyer on mapping which makes the case for this important planning tool, based on WaterAid's collective experiences. It would target busy key national and international decision-makers (e.g government ministers) who need clear, concise, well-presented information (perhaps something like the WSP Blue Gold briefs).
 - Publication of a learning document which highlights the key positive and negative lessons learnt from WaterAid's mapping experiences, to include lessons on how mapping has or has not impacted on policy processes and why. The publication will target an informed external audience requiring in-depth information, supported by a body of high quality evidence. It could look like **Getting to boiling point**, with a main document that highlights issues across country programmes and a series of separate handouts which document lessons from individual country programmes (although the estimated production costs of £10-12,000 may prove prohibitive).

- Production of a manual (or guide) to mapping methodologies and their uses, designed primarily for an internal audience of WaterAid and partner staff and supported by training workshops, seminars and field work as appropriate.

Phase Three documentation will be completed by 1 April 2006, although dissemination activities are expected to continue during FY 2006/07.

4. Management of the project

The project will be managed within the Strategic Development Department by the Programme Learning Facilitator, who is the budget-holder for this project, with the support of Ned Breslin (WaterAid – Moçambique). To support the process, each region will identify a point person who will be the link person between regional work and Ned and Vicky to facilitate smooth communication across the organisation.

5. Timescale

The time scale for this project is as follows:

- Finalise project ToR by end of July 2005
- Phase One completed by 30th September 2005
- Initiation of Phase Two by mid-October, to include a decision on whether to extend the partnership with ODI or, if not possible, the hiring of a consultant to continue the process; and a project implementation plan.
- Phase Two completed by the end of January 2006.
- Phase Three substantially completed by 1st April 2006, with implementation of dissemination activities continuing beyond that date.

6. Budget

The proposed budget for this work is £20,000

A brief overview of mapping work in WaterAid

Bangladesh

WaterAid in Bangladesh is developing a TOR to undertake mapping work in Dhaka and the Chittagong slums, rural Rajshahi and the Chittagong Hill Tracts by the end of the year. The ideas being developed in Bangladesh mirror many of those developed and implemented in Nepal, but there is considerable emphasis in Bangladesh on getting broad civil society participation and buy-in from the start of the mapping process. Lessons can be learned and shared from this experience.

Ethiopia

Ethiopia's mapping work has been completed in 2 out of Ethiopia's 10 regions. The system used thus far has been based on desk studies and analyses of water point access and issues of equity, rather than GPS technology, although GPS is now being included in the mapping process in Benishangul Gumuz Region. Sub-regions are graphed that show which populations are served. Mapping is used as a planning tool and has been useful in discussions with government on where water points should be implemented.

The Bureau of Regions is beginning to look at detailed mapping processes, and they have completed one zone to date. WaterAid in Ethiopia is supporting this process, and including key issues of water point functionality. Lessons on buy-in can be gleaned from this experience.

Ethiopia's experience also includes efforts to include college/university students in the mapping process. While a sound idea, the implementation of this idea has not been smooth and there are key lessons to learn from this effort that other country programmes may want to consider. Ethiopia also offers important insights into technical and logistical considerations that need to be considered, as work to date has focused on regions of Ethiopia that are particularly challenging logistically.

Ghana

Mapping in Ghana has been conducted in the Afram Plains District Assembly in the Eastern Region of the country. The main target was the 25 communities in the District where the overall situation of safe water and sanitation facilities were assessed and documented. The aim of mapping is to create a database of watsan services in the district, use the results to enhance accountability in the district, share results as a learning product, enhance M&E in the district in relation to MDGs and enhance planning at district level. The attempt to map sanitation facilities is particularly interesting and could help other country programmes as they decide what to map in the future.

Ghana is now using its experiences from the Afram Plains in three other Districts (Akuapem North, Bongo DA, and Tamale Metropolitan Assembly) where WaterAid and its partners are implementing water and sanitation projects. The training of

relevant staff in these DAs and the partners' staff (ACDEP, New Energy and Rural Aid) is already planned.

Madagascar

Madagascar's mapping work is still in the conceptual phase but the country programme is proving once again to be a major influence on sector programming. Government has recently completed an inventory of water points, which has yet to be published. It is unclear at this stage how the inventory was implemented, what was included and whether issues of functionality are clear, but WaterAid in Madagascar is being asked to support the improvement of this work, and sees mapping as a logical way to do so.

WaterAid is also recruiting a technical person to look at WaterAid financed water point functionality and plans to use mapping as part of this process. Key issues of sustainability will be the focus of this work.

Malawi

Malawi's work in mapping is well documented. GPS-based mapping work started in WaterAid internationally with the completion of mapping in Salima district. This work focused on "equity of access" and raised serious questions about how donors, government, INGOs and NGOs were allocating their watsan resources. Since then, mapping has advanced quite far in Malawi, with donors rethinking their implementation decisions, district level planning based on mapping results becoming a reality nationwide, and a plethora of INGOs and donors now engaged in mapping work nationwide. To date, 23 out of 27 districts have been fully mapped in Malawi.

Government has bought into the process as well. They have asked that the data base that has been built up over the years is housed in the Government's National Water Resources Board. WaterAid and the WSSCC are providing technical support to the government on this issue.

Mozambique

Mapping work has been completed and written-up in 3 districts in Niassa (Sanga) and Zambézia (Namarroi and Namacurra), with results forthcoming from a further 4 districts in Niassa. The results to date have proven to be politically sensitive as they show that coverage levels in these districts are between one-half and one-third of what government previously thought. The purpose of mapping in Mozambique is to support on-going M&E work, to build district-level planning capacity with the goal of clarifying what is required to meaningfully and sustainably address coverage issues at local level, and to raise questions of access. Lessons on logistical challenges, political challenges and buy-in can be gleaned from Mozambique's mapping experiences.

Nepal

WaterAid in Nepal has initiated and published comprehensive poverty mapping in the Katmandu Valley (peri-urban). Mapping work identifies clusters of slums, squatters

and public stand posts in five municipalities within Katmandu Valley. The objectives of the work are to:

- Identify access to piped water supply and alternate water sources for families living in slums as well as squatters, and to visually map these locations
- Identify and enumerate functioning and non-functioning public stand posts within these municipalities

Social data – such as issues of willingness to pay, time allocations for water collection and the adequacy of the water supply are also included in Nepal's mapping process. Mapping is used as an advocacy/lobbying tool and is now being presented to a Task Force comprised of the Asian Development Bank, Melamchi Development Board, Katmandu Valley Water Supply Reforms Board by the NGO Forum (WAN is a member). The goal is to then use the information provided through digital mapping to influence government and other concerned sector role players.

Nigeria

WaterAid in Nigeria uses mapping as a programming, planning, advocacy and political tool, as well as a powerful method for benchmarking access to water supply, sanitation and the status of hygiene and livelihoods. This information is then used to help local authorities plan their interventions with the goal of meeting MDGs (in terms of quantifying and qualifying the gap). This information supports on-going M&E at local level under the local millennium development goals initiative (LMDG-I).

Mapping in Nigeria uses GPS, and the data is analysed and produced by WANG in hard copies with a Local Plan Report. At present there is a belief that there is buy-in at the community level and the local authority level, with the goal of generating buy-in at the State and National level in the future. It is envisaged that WANG might be able to provide leadership on this nationally since the Federal government is very interested in inventorying all WATSAN infrastructure in the country. WANG is linking the local mapping with the UN DevInfo system used in tracking Country Progress towards the MDGs so this could prove to be a useful tool at the national level. Out of the 774 Local Government Authorities in Nigeria, WAGN is planning to map 30 Local Government Authorities, with one – in Oju Local Government Authority – having been completed to date. Costs to date are estimated at ~GBP 10,000 per Local Government Authority with an additional GBP 1,200 needed for data analysis and map production per Local Government Authority.

Tanzania

Tanzania have built their mapping work along the lines developed by Malawi. Issues of equity, access, functionality and use are central to Tanzania's work. GPS mapping is complemented by photography which is a useful innovation. But the central questions being asked in Tanzania are about who is being served, who should be

served, and who is over-served. Like Mozambique, this is starting to raise political questions.

The long-term goal of the programme is to enhance planning at district level, to inform WaterAid and others of where investments should be focused, and Tanzania is also looking at ways in which mapping can be used by local communities as an advocacy tool. To date, 2 pilot districts have been fully mapped, a further 2 are in the process of being completed and 5 more are planned for the future. Costs are coming down but average ~US\$7,500 per district at present.

Uganda

Uganda has completed a GIS mapping exercise in Katakwi District, which is written up. Mapping in Uganda is designed to enhance planning capacity at district level, ensure issues of equity are addressed, help inform sector role players about spares issues in the district, and explore issues of functionality to support M&E work. The work is being disseminated and shared, and is seen as an important component of Uganda's future plans. Uganda is almost finished with a mapping exercise in another district and a further district should be completed by the end of the fiscal year 2005-6.

Zambia

Zambia is currently developing its mapping work and plans to use it as a planning, monitoring and advocacy tool.

Pakistan

Slum mapping, undertaken through the mobilisation of university students, is a regular feature of work undertaken by Pakistan partner organisations, and is the foundation for their 'component sharing' approach to the provision of sewerage services in the cities. The mapping work includes mapping of sewer trunk lines that can be connected to, mapping of houses and structures that need to connect to the trunk lines. The approach which was first piloted in Karachi has now been used in other Pakistani cities through the Urban Resource Network, a network of civil society organisations, research and academic institutions.

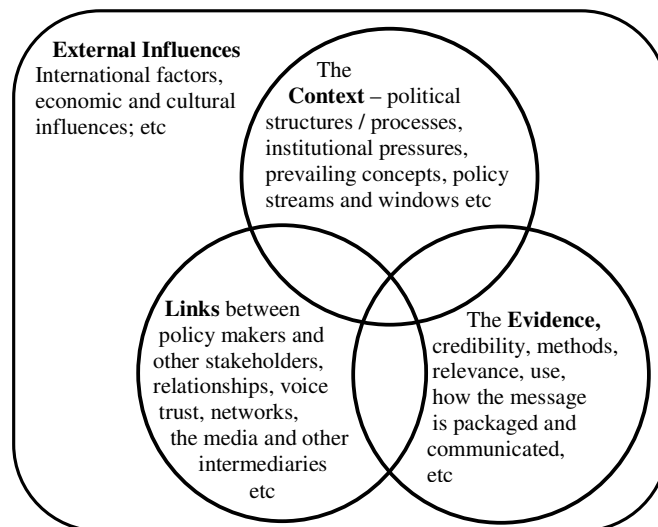
Annex 2: Framework for analysis – July 2005²²

The ODI Research and Policy in Development Programme (RAPID) has developed an integrated framework for exploring the links between evidence-based research and

²² The guided research questions below are derived from the RAPID framework and were developed in July 2005 prior to field work in Malawi and Tanzania.

policy processes.²³ They have identified a number of factors that are important for evidence to enter and shape a given policy process. These factors are visualised in Figure 1 below. The **political context** – in this case existing water sector policies at local, sub-national and national level – and the **external environment** – here for example the international aid agenda and the PRSP process in country – provides the environment that may or may not be receptive for new evidence, i.e. the results from WatSan mapping. The **evidence** basis itself, how it has been researched, its accuracy, trustworthiness and accessibility determine how well it will be taken up by the political realm. Finally, the **interaction** between the researchers and decision makers through various channels of communication such as the media or policy networks plays an important role in bridging research and policy. For pro-poor policies, this also includes the role that the poor play in producing and communicating evidence.

Figure 6: The RAPID Framework



This framework will be used as a starting point for developing a set of guided research questions. The three broad clusters of political context, evidence and links will provide the overall reference for exploring different areas of investigation linked specifically to WaterAid's water and sanitation mapping. From there, more detailed questionnaires will be developed for each of the different stakeholder groups to be interviewed.

Guided research questions

External environment and policy context: mapping and existing government M&E systems

²³ See for example: Court J, Hovland H, Young J (2005): *Bridging Research and Policy in Development: Evidence and the Change Process*. Bourton-on-Dunsmore: ITDG Publishing or: Young J, Court J (2004): *Bridging Research and Policy in International Development: An Analytical and Practical Framework*. ODI RAPID Briefing Paper 1, October 2004

What is the government agenda concerning equal access to and sustainability of water supply and sanitation services (and other objectives defined by mapping)? What role do donors play in this process? What state-based (and donor-based) M&E systems exist for assessing equal access, sustainability of water supply and sanitation services etc? When and how often is data collected by the government? Is any M&E system in place at local government level? What tradition exists for holding local governments into account? Did the governmental objectives and existing M&E systems play a role for the design and implementation of mapping? What resistance to changing the existing system is there and why (routine, political agendas, weak capacity etc)?

Evidence and links: mapping – intention and effect

How do WaterAid country programmes define mapping for themselves? What are the objectives of mapping in country? How clearly are they defined? (e.g. provision of information for capacity building of local authorities or lobbying i.e. MDG/PRSP advocacy at national/sub-national level?)

How do government officials and other target groups perceive information provided by mapping? Is the information useful for them? Is crucial information missing or misrepresented? What do they (intend to) do with the information? What incentives do they have to make use of the information? If they are willing to introduce changes based on this information but cannot – what constrains their actions?

Evidence: the production

Which methodology is used in country? Under what conditions is evidence collected and processed? Which groups of actors are involved in collecting and processing the information? What role do local communities/WatSan committees play? What are the costs/ (physical, financial, human) resources involved in the process? Which (technical) challenges do CPs face using the methodology? What are the prospects for updating and managing mapping over time?

Evidence: factors determining credibility and legitimacy

Is the methodology sound? Is the underlying method made clear and comprehensible? Can the evidence easily be verified? Is the source trustworthy? What reputation do the communicators of the evidence have with their target groups?

Evidence and links: how useful are maps as a(n advocacy) tool?

How central is the use of maps for presenting and communicating the findings? Why are maps chosen as a means of communication? How useful are they? Who are they targeted for? Who can produce, access and understand these maps? Who not? How cost-effective is mapping?

Links: incentives for uptake and constraints to implementation

How crucial is the lack of information as a factor leading to inaction? Who receives mapping-based evidence? Does the availability of information create incentives for the (local) government to take action? Who monitors their (in-) actions following the evidence? Which other factors prevent local authorities' from acting upon the information?

Evidence and links: capacity building versus advocacy?

To what extent are local partners involved in mapping? Is there a trade-off between involving local partner organisations and using a specific methodology/producing specific outputs? Are local partners/communities/WatSan committees informed about mapping? Are they interested in mapping? Do they have specific capacity building needs?

Evidence and links: relative importance of content and process

How important is the content (quality/reliability/trustworthiness/research base) and as opposed to the process (ownership/involvement of end users and other stakeholders/communication strategy applied/etc)



WaterAid's mission is to overcome poverty by enabling the world's poorest people to gain access to safe water, sanitation and hygiene education.

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