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BUILDING ON PROJECT EXPERIENCES IN RURAL WATER SUPPLY

IN TANZANIA: TRENDS AND ISSUES

REVIEW PAPER

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Acronyms and Abbreviations

AFYA	Ministry of Health
CDA	Community Development Assistant
CP	Community Participation
CPHE	Community Participation and Health Education
DANIDA	Danish International Development Assistance
DAT	District Action Team
DED	District Executive Director
DGIS	Directorate General for International Cooperation
FINNIDA	Finnish International Development Agency
HESAWA	Health through Sanitation and Water
HIMA	Hifadhi Mazingira (Kiswahili for Conserve the Environment)
KIDEP	Kigoma Integrated Development Programme
MAENDELEO	Ministry of Community Development, Women's Affairs and Children
MAJI	Ministry of Water, Energy and Minerals
NGOs	National Government Organizations
NORAD	Norwegian Agency for Development Cooperation
O&M	Operation and Maintenance
PICU	Project Implementation Coordination Unit
PMO	Prime Minister's Office
PROWESS	Promotion of the Role of Women in Water and Environmental Sanitation Services (UNDP)
RAT	Regional Action Team
RDD	Regional Development Director
RUDEP	Rukwa Integrated Development Programme
RWE	Regional Water Engineer
SIDA	Swedish International Development Authority
TSh/TAS	Tanzanian Shilling
VHW	Village Health Workers
VIP	Ventilated Improved Pit latrine
VL0M	Village Level Operation and Maintenance
VWC	Village Water Committee

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1. Introduction

This review paper was prepared on the request of the Directorate of International Cooperation (Dgis) of the Ministry of Foreign Affairs in The Netherlands by IRC International Water and Sanitation Center. It gives an overview of the key elements of five large donor-supported rural water supply projects in Tanzania. The paper describes the main developments in the period between 1971 and 1991 when water master plans were prepared and projects implemented. It also identifies trends in approaches and issues for further development.

1.1 Background

Development of rural water supply has always been a priority in Tanzania. In 1971, the Government presented a plan to increase rural water supplies, 'so that by 1981, all Tanzanians will have ease of access to a public domestic water point'. Bilateral donors were invited to develop water master plans for specific regions and later to implement part of these plans through rural water supply projects.

Twenty years later, in 1991/92, several evaluations and appraisals have taken place to assess achievements of the implementation projects supported by DANIDA (Iringa, Ruvuma and Mbeya regions), Dgis (Shinyanga and Morogoro regions), FINNIDA (Mtwara and Lindi regions), NORAD (Rukwa and Kigoma regions) and SIDA (Mwanza, Mara and Kagera regions). Together, these projects cover 12 out of 24 regions in Tanzania (Fig. 1).

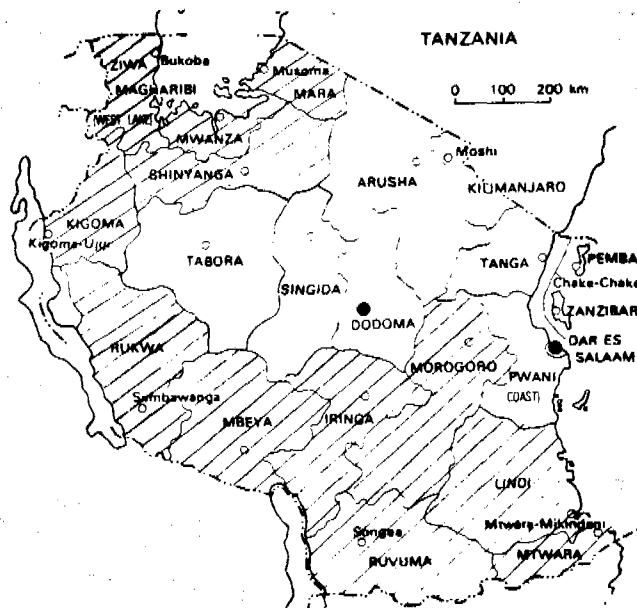


Fig. 1: Map of Tanzania with project regions

1.2 Purpose of the paper

In the paper the findings of recent evaluations and assessments have been summarized, to draw lessons from the past and indicate trends and issues for the future. The purpose of this activity is to assist in the planning of new phases of implementation projects to consolidate existing achievements and reach the target of full coverage set in 1971. In addition, an overview paper can help identify the issues which surpass individual project levels and require a joint approach at inter-regional and national level.

1.3 Methodology and contents

For the preparation of the paper, a checklist of key issues was drawn up and case studies made of each donor-supported project (Appendix 1-5). On the basis of the cases as well as other documents and field experiences the draft overview paper was prepared.

The following issues are covered in the paper:

- * general approach followed;
- * costs and outputs;
- * development of the organizational set-up;
- * community participation and gender issues;
- * technology choice;
- * operation, maintenance and monitoring systems;
- * financing and financial management;
- * other project aspects, including sanitation, health and hygiene, environmental issues and training.

In a final chapter, the authors (Christine van Wijk and Jo Smet) draw conclusions on the basis of the preceding overview and identify issues for discussion between the projects and at national (policy) level. The key aspects covered in this chapter are integration, coverage, sustainability and cooperation. After presenting the draft for review to the Tanzanian and donor agencies and receiving comments, a final version of the paper will be prepared.

2. Project Approaches

Large-scale donor support to the water sector in Tanzania started in the 1970s with the preparation of regional water master plans. Almost all donors then continued their support in the form of implementation projects for rural drinking water supplies. Initially, the emphasis was on large-scale, rapid construction. Later, and at varied points in time, approaches changed to include also strengthening of maintenance; involvement of the communities not just as voluntary labour, but as managers of completed schemes; and integration of implementation into the Tanzanian government system. Table 1 gives an overview of these developments by project and year of initiation.

2.1 From separate construction to maintenance, community management and integration

When the first donor-supported implementation projects started, much emphasis was placed on rapid construction. Most projects set up separate implementation units led by expatriate consulting engineers, either within the water department or as a parallel organization. Community participation was often not included, or used only as a means for free labour (self-help labour in construction, preventive maintenance work and reporting problems in O&M). This approach made it possible to achieve high implementation rates, but the resulting facilities could not be maintained. Moreover, even when the systems were functioning, women often did not use them because the system had been built without consulting the users and they were not competitive with existing sources in distance or water characteristics.

When it became clear that under the existing strategy, completed water supplies did not function properly and were not always used, the approach of the projects shifted in three ways:

- 1) Good operation, maintenance and management of completed water supply schemes became an additional project goal;
- 2) Participation of communities aimed not just at free village labour, but at participation in local decisions on design and planning and at full community management of completed schemes;
- 3) Project implementation was no longer by a parallel project organization, but by Tanzanian departments.

The shift from community labour to community management is since 1988 supported by the Tanzanian water policy. This policy states that the villages are the managers of the local water systems and the ones first responsible for constructing, operating and maintaining their water system, with the Ministry of Water and other departments in enabling roles. The results of these changes of direction are discussed in section 2.3 below.

Table 1: Organization and approach of rural water supply by year of initiation in 12 regions in Tanzania

Regions	Iringa Mbeya Ruvuma	Shinyanga Morogoro	Mtwara Lindi	Kigoma Rukwa	Mwanza Mara Kagera
Supporting agency	DANIDA	DGis	FINNIDA	NORAD	SIDA
Regional Water Master Plan	1979	1971 ¹⁾ and 1977 ²⁾	1972	1980	1978
Implementation rural water supply by parallel organization, no community participation	-	1974 ³⁾ 1978 ⁴⁾	1978	1981	1982
Implementation rural water supply under RWE; donor-paid service for community participation	1983	-	1988	1984 ⁵⁾ 1986 ⁶⁾	-
Department of community development takes over donor paid service; team approach with MAJI	1990	-	-	1992 ⁷⁾	-
Implementation of water/sanitation/hygiene projects by integrated project teams from MAJI, MAENDELEO and AFYA	-	1985	-	-	1985

1) In Shinyanga only.

2) In Morogoro, a domestic water supply plan was prepared.

3) In Shinyanga

4) In Morogoro

5) In Kigoma

6) In Rukwa

7) A gradual transfer of responsibility started in 1992

2.2 From supply-driven to demand-driven projects

A further development which is occurring in all donor-supported projects is from supply-driven to demand-driven projects. The initial projects were supply-driven, in the sense that the projects and the Tanzanian authorities allocated them and did not ask villages to come forward with demands and resources (village plan, water management organization, water maintenance fund).

In the DGIS-supported project, the allocation by the authorities was based on political criteria, e.g. even distribution of a few handpumps over many villages. The project used also ease of physical access and clustering of villages. As a result, handpump wells were also allocated to villages which had a low interest in them. Subsequent evaluation showed that maintenance results in these villages were poor and the approach was changed from supply-based to demand-based projects.

For this purpose, villages in Shinyanga and Morogoro are now invited to prepare their own development plans first. These may or may not have water as a major priority. The plans are subsequently integrated into ward and/or district development plans. The same approach is followed in the HESAWA programme, but with an additional requirement for village financial contributions.

The preparation of village development plans in principle allows a first distinction in village interests and planning capacities. However, the system is not yet working optimally. In the HESAWA programme, a whole ward can get village water projects when one or two villages have listed water as their priority. In Morogoro and Shinyanga, implementation plans had to be made too quickly and were often overambitious.

In the DANIDA-supported project, village selection is still by the project and the authorities, but in socio-economic surveys during the master plans three objective criteria were used to draw up the list of priority villages. The criteria included health risks, reliability problems of existing sources and access problems to existing sources. This list of priority villages is still used to allocate water projects. Villages that now think to have a higher priority can request a water supply project from the regional project steering committee, but as this may mean that a selected village has to be dropped instead, changes are not frequent. As in the projects supported by DGIS, NORAD and FINNIDA, after initial selection project villages commit themselves through a signed agreement to establish a mixed water committee, select and employ village mechanics/caretakers and establish a water maintenance fund, but these are not always conditions prior to allocation.

The HESAWA programme¹ is the only case in which establishing a water committee and a water maintenance fund are conditional to implementation. Moreover, villages can either opt for getting a new water system (handpumps, piped system or rainwater collection, depending on technical and economic feasibility) or for increasing and improving traditional sources (wells, springs). Getting a deposit for a new water supply has proved

¹ Although both the DGIS-supported projects and Hesawa are named programmes, the term projects has been used in this document to ensure internal consistency.

not the greatest problem. There are however four problems associated with asking a specified deposit as an indicator for project demand and capacity.

First, the amount required per facility is considerable (TAS 12,000 or 20,000 depending on pump type). Villages, therefore, often start with a lower number of facilities than needed. This causes problems when all villagers have contributed to the water fund, because the people from unserved neighbourhoods insist that they too get their water supply, or demand their initial contribution back, while refusing any more payments to the village fund. Second, a problem resented by the villagers is that under this approach, much money remains idle and is subject to inflation as long as maintenance and repair costs are low. Third, the deposit is not based on actual maintenance costs, as the cost of maintenance in a village-managed system is not known (see section 6.2). And fourth, the system assumes that there is only one good way for financing: having all costs for maintenance in the coming year or years in cash in the bank. In reality many villages rightfully prefer a different financing system which matches their particular circumstances. This is discussed further in section 6.1

2.4 Outputs, maintenance and coverage

Table 2 gives an overview of the status of the donor-supported projects reviewed. It presents the total budgets allocated for rural water projects and the project outputs in terms of rural water systems at the time of their evaluation or review.

The table shows that donor-supported projects play an important role in the rural water supply sector in Tanzania. The total average donor support from these and other donors is some US \$ 30 million per year. Tanzania itself spends, apart from the salaries of all Tanzanian project staff and the very substantial contributions from the villagers in time and labour, also a significant amount of money on rural water supply.

Table 2: Donor funds and outputs in terms of water systems built/villages served with water for 5 donor-supported projects (indicative as based on incomplete data)

Support Agency	Phase/ Years	Donor funds	Handpumps	Outputs Piped systems	Other ¹⁾	Villages served
DANIDA	I-III(1992)	DKK 562 m ²⁾	662	190 ⁵⁾	3 ⁶⁾	263 ²⁾
DGIS			360 ³⁾	2 ³⁾		
FNNIDA	1978-1992	FIM 203m US\$ 40.4m	2451 new 928 rehabilitated	17 ⁴⁾	-	888
NORAD	I-VI 1981-1992	NOK 460m	-	72	-	235
SIDA	1985-1992	SEK 226m US\$ 46m	1417	37	1010	444

1) Rainwater storage tanks, protected wells, protected springs

2) Phase III figures are by September 1992

3) Still operational since 1974. No cumulative data on output since 1974.

4) Including several large schemes (Makonde plateau Water Supply Scheme caters for about 300,000 people)

5) Number of villages with piped gravity schemes

6) Three villages with other systems: one hydram and two with boreholes and motorized pump

- Costs and progress

From the table no conclusions can be drawn on the costs per water system or village served and on progress in new coverage. First, the definition of a served village varies. In some projects, a village is served when only one or two of its neighbourhoods have got an improved water system. Second, the budgets serve to finance also other outputs than rural water systems, such as maintenance development, sanitation, training and other forms of institutional development. As not all projects had figures broken down per type of input, total budgets have been given for all projects. Third, output figures include both the construction of new systems and the rehabilitation of old ones. In some cases, previously installed handpumps are being rehabilitated for the second or third time. Some of the progress is thus not reaching any new villages.

As long as no transparent system of measuring outputs and computing costs exists, it is thus not possible to get an idea of what the overall net-results of the donor-supported projects are and what the unit construction costs are for a particular type of water supply in terms of technical, social and overhead costs.

- Maintenance and use

With regard to maintenance and use it is not yet clear what the precise effects are of the changes described above. It is only clear that the parallel and construction-oriented projects have not worked. Evaluations of the initial projects supported by FINNIDA and DGIS, for example, found that 50 to 80 per cent of the installed facilities had ceased to function and that without participation in local design, only a quart of the villagers used a working system throughout the year.

Many project reports mention that maintenance results are better since the introduction of the focus on maintenance and on the community as the primary managers of the water systems. However, all projects so far lack hard data to support field observations. As further discussed under maintenance and management, there is thus an urgent need for monitoring and evaluation systems to assess the effectiveness of the new approaches to planning maintenance, and management in quantitative terms of functioning and use

- Integration in the Tanzanian programme

With regard to the integration of the projects in the Tanzanian water supply programme, the strategies vary per donor. In all projects, technical implementation work is now done by MAJI, but social and health activities are either done by a parallel and donor-paid service in MAJI (projects supported by FINNIDA, till 1990 DANIDA and till 1992 NORAD), or by staff from MAENDELEO and AFYA (projects supported by DANIDA, NORAD, DGIS and SIDA) (Table 1).

In the projects with a separate promotion service, several review missions have advised to bring in MAENDELEO more. They justify this by pointing out that a separate promotion service is not sustainable for the Water Department and that within the Tanzanian system MAENDELEO already has the mandate for community participation in development work. Whether this advice is being followed is not known. The Tanzanian water policy itself is not clear on the division of tasks between the two departments. The policy defines

MAENDELEO's role as training of MAJI staff and communities for community mobilization and does not define which department implements community participation activities during design, planning and construction and gives support on various aspects of water supply management after the handing-over of the schemes.

- Balancing coverage and maintenance

A further issue which emerges from the experiences of the various projects is the question of how to combine the building up of strong maintenance and support capacities with ongoing construction of new water systems. In the absence of a general policy guideline, the various projects use different strategies to deal with this aspect.

In the DANIDA-supported project, it has been decided to work only in the villages with the highest priority for an improved water system and to base the targeted number of villages on the combined implementation capacities of MAJI and MAENDELEO. In case of conflicting interests between participation and construction, village participation and capacity building are to get precedence over rapid construction. The project does not aim at full regional coverage, but has taken as strategy to serve only the highest priority villages (some 500 out of 1500) and to hand the systems over immediately when construction is completed. In principle, no return visits take place for rehabilitation, except for replacing of a plastic handpump part by a steel one (as it was considered a mistake to supply a handpump with a non-sustainable cylinder).

In the DGIS-supported regions, initial construction and rehabilitation projects were followed in 1985 by a combined construction and O&M development project. The construction activities in this last project had as aim to complete the coverage of served villages, because in partially served villages unserved neighbourhoods were not willing to support the village maintenance. Output targets were, for 1987, 373 handpump wells, 82 new and 281 rehabilitated. Implementation was delayed for almost a year and actual outputs were 142 wells, 24 new and 118 rehabilitated. The evaluation mission concluded that at this pace, Tanzanian regional coverage targets cannot be achieved. For the next phase it was therefore proposed to supplement the implementation capacity of the Tanzanian district staff by Tanzanian implementation consultants and to involve also others in the private sector (contractors, craftsmen). These were to construct 75% of the 3780 new water points proposed to be constructed in the next five years. In the plan of operation these targets have now been scaled down to 2850 waterpoints (1/3 rehabilitated, 2/3 new) and 48 piped systems (42 rehabilitated, 6 new). Taking an average of 250 users per public waterpoint, a total of 2850 waterpoints is to be built in 5 years. Some 50-60% of these can be built with the current district capacities; the remainder is planned to be built through local craftsmen and contractors after an inventory and training.

In the projects supported by NORAD, local craftsmen are already involved to enhance construction. The results of this involvement are not yet reported. In the FINNIDA-supported no new construction is foreseen as support to construction was scheduled to end in early 1993.

The SIDA-supported HESAWA programme aims to introduce and propose solution to problems through a process approach. Solutions must be appropriate and acceptable for the people so that new activities may be generated in response to felt needs, leading to full coverage. The HESAWA programme spent much of its first seven years on capacity building. Output in terms of water supplies was therefore initially low. The investment in HRD is now starting to pay off: between 21 and 60 % of the total output of the different technologies was achieved in the last two years. Part of this output was achieved by involving two Tanzanian consultants (1 technician, 1 promoter) in implementation in each of the seven integrated districts. It is further tried to increase outputs by strengthening village capacities to improve traditional water systems.

The evaluation mission advised to use the consultants more evenly in the programme, because in the districts involved they have more or less taken over the work of the line staff. The mission recommended further to improve the quality of work in the construction of traditional wells and to delegate construction of other technologies more to local contractors, such as well drillers and -diggers, to increase outputs. Preparation of the projects with the villagers and supervision of construction quality and progress would remain with the District Action Teams (DATs). Nevertheless, the level of output in HESAWA would have to increase dramatically if anything like full coverage is to be achieved. But because of the not yet satisfactory maintenance system, the evaluation mission has advised against a too rapid increase of implementation and only greatly step up production when maintenance can be assured, to avoid that the history of broken water supplies repeats itself.

3. Project Organization

As shown in Table 1 all projects are now integrated into the Tanzanian government structure. This chapter describes the various project arrangements and experiences at national, regional and district level, including cooperation and coordination between the various departments, scope and roles of consultants and decentralization to district level.

3.1 National and zonal levels

Two projects, the DANIDA-supported project and HESAWA, have special project support offices at higher (national or zonal) level. The office financed by DANIDA (PICU or Project Implementation Coordination Unit) is stationed at national level. It is located in the Ubungu office of MAJI and consists of 6 consultants (4 expatriate, 2 national) and 2 MAJI executive staff. Two foreign consultants are scheduled to be phased out by end 1992 and mid 1994 respectively.

The HESAWA project has a project support office, called zonal office, at inter-regional or zonal level in Mwanza. This office has 3 Tanzanian government officers from the implementing ministries, 2 expatriate advisors and a large number of Tanzanian consultants. The total number of non-Government staff employed, from professionals to drivers, was 110 in 1992. In the evaluation it was recommended to reduce the external support in size and put more emphasis on its advisory role. At the national level, HESAWA has a programme director. She is a government officer from MAENDELEO, which is the lead agency for the project at central level, and is stationed in her own department.

The Morogoro/Shinyanga project has a project coordinator at national level. She is a Tanzanian sociologist employed by the project consultants and is stationed in MAJI-Ubungu. For the new separated projects a liaison office is planned in Dar-es-Salaam.

The FINNIDA-supported project employed 2 expatriate advisers at inter-regional or zonal level after its integration into the Tanzanian structures. Both advisers were stationed in Mtwara. The project is scheduled to be terminated at the beginning of 1993, but continuation of community participation activities and enhanced involvement of MAENDELEO have been recommended.

The DANIDA-supported project has one consultant at inter-regional or zonal level. He is the interregional workshop advisor and is stationed in Iringa. His position is to be phased out by mid 1994.

The various evaluations and reviews report that managerial units at a higher (national or zonal) level are only useful if they provide strong management on key issues. These include guarding progress and ensuring quality control by the regional level and promoting the development of maintenance systems. In addition they should have an overall picture of results on technical and non-technical outputs and costs and performance of maintenance and upkeep. Some units do provide this management, but others don't. Moreover, the systems used are such that combination into a state-of-affairs and progress at national level is not possible.

3.2 Regional level

In most projects, the regional level is the main center for implementation. This is not yet in line with the Tanzanian policy, which recommends that implementation (except for the most complex systems) is done or managed by the District Water Engineer with the assistance from other departments. The regions are to provide supervision and support. However, as described below, operationalization of decentralization, while aimed at in all reviewed projects, still has some problems. Much of the implementation capacity is, therefore, still at regional level. The following is a description of arrangements in the various projects.

The DANIDA-supported project is stationed in MAJI under the Regional Water Engineer. The project employs three advisors in each region, for construction, maintenance and village participation. Eight of them are expatriates, the ninth is a Tanzanian consultant. The project first had a separate, donor-financed unit for village participation stationed within MAJI. In 1987 it was decided to involve MAENDELEO, as village participation is the mandate of this department and a parallel water participation unit was only sustainable as long as financed by the donor. Special arrangements were made to integrate the donor-paid fieldworkers into the Tanzanian government system. The village participation workers are still physically located in the RWEs' offices, but it is considered that they will move to MAENDELEO when the DANIDA-financed offices at MAENDELEO have been completed. In general, cooperation between the two departments is reported to go well, though tensions occasionally arise, e.g. over different speed of progress between the technical and social departments. One of the project's rules is that in that case the speed of village participation determines the pace of construction, so that there is enough time to build up village capacities for scheme maintenance and management. A joint Tanzanian-Danish review mission visits the projects every year and advises the two Governments on more substantial project decisions or changes in direction that may be required.

The projects supported by FINNIDA and NORAD are also stationed in MAJI under the RWE. In these projects, village participation has been set up analogous to the original arrangement in the DANIDA-supported project: a special participation unit under the RWE headed by a local consultant and fully financed by the donor. Both units had limited staff and have had to make compromises in working with villages so as to keep up with construction.

The NORAD-supported water project in Kigoma and Rukwa is now part of the integrated rural development projects (KIDEP and RUDEP) which NORAD finances in the two regions. Water supply is the most important component of these projects, with a budget share of some 30%. The RWEs which implement these projects are assisted by two expatriates, for construction, and O&M. It is now planned that the expatriate advisors will return but provide some on-going support through periodic support visits. Appraisal missions to Rukwa and Kigoma regions have recommended a greater involvement of MAENDELEO as a department in the community participation activities, but it is not known if these recommendations have been taken up. The mission to Rukwa has further advised against RUDEP setting up a second parallel unit for village participation in the other components of the project.

In the projects in Morogoro and Shinyanga, three departments are involved: MAJI for water supply, MAENDELEO for community participation and women's involvement and AFYA for health education and sanitation. MAENDELEO had the coordinating role between the departments. In practice, cooperation between the three departments gave problems because they operate on an equal level and there was no higher-level authority which can take decisions in case of diverging opinions. The new projects (1993-1997) will administratively be stationed under PMO. There will be no more direct implementation at regional level.

In the HESAWA project, field activities are implemented by Regional and District Action Teams (RATs and DATs). Because these are formed by and act under the authority of the Regional Development Directors (RDD) and District Executive Directors (DED) there is a clear line of authority and responsibility for progress. The teams themselves consist of staff from the departments of MAJI, MAENDELEO and AFYA. The teams choose one of their members as internal coordinator. Administratively and at national level, the HESAWA project falls under MAENDELEO, but this is due to Tanzanian administration history² and has not changed the division of authority at project level.

While in all projects much emphasis still lies on implementation, in some projects especially the support tasks at the regional level need to be strengthened. Checking of designs of the common water systems could for example be done by the Regions, with the national level doing spot-checks and checking difficult systems. Stronger standards and supervision are further required to ensure good workmanship with especially the simpler technologies, such as rockwells and rainwater catchments.

3.3 District level

In 1982, the Tanzanian District Authorities Act was passed. This act delegated many functions of the central government, including O&M of water supply systems to the local authorities at district and village level. The 1988 water policy states that " Emphasis will be placed on involvement of beneficiaries so that they construct through self-help, meet running costs, protect, conserve and operate water projects in their areas". Operation (implementation) of the projects and maintenance activities beyond village capacity will rest with the districts, while the regional level will be in charge of supervision and coordination (Tanzanian national water policy, sections 35 and 42).

In line with this policy, all projects aim at decentralization of project implementation and maintenance support to the districts. Operationalization is still in its early stages. In the HESAWA project a strong district focus is found. For implementation the project distinguishes two types of districts: 7 which are integrated, have District Action Teams and get most technical and participation support, and the remaining 8 which are not yet integrated and get some village projects, though support is less. The idea was that these

² When the project began, Maendeleo was a department in the Prime Minister's Office (PMO). The RDDs and the whole district administration (DED, district water engineer and other district officers), as well as local government fall under this office, which is higher than the line ministries. After some time, Maendeleo became a full ministry and HESAWA found itself situated in one of the line ministries.

districts would become integrated districts as soon as some of the other districts were able to continue by themselves. As it has proved impossible to phase out even a single district, the evaluation team has recommended to abandon the distinction between districts and work with all districts in line with their capacity. By mid 1993, the situation is that one district has been phased out and all districts are defined as integrated.

The project in Morogoro and Shinyanga also has a district focus, but in practice the center of gravity has so far been the region. It is proposed to change this in the next stage, among others through allocating implementation funds directly to the districts and supplementing district capacities by involving the local private sector in technical works.

In DANIDA and NORAD-supported projects some design and construction is done by district personnel, as in all projects decentralization is limited by the shortage of higher-trained executive staff at district level, lack of district funds and in some cases a surplus of technicians at regional level.

The projects have taken different measures to cope with the lack of capacity at district level. The NORAD-supported project has stationed expatriate advisors also at district level. The HESAWA project has allocated two national advisors to each district action team, one technician and one district promotion officer. The evaluation mission has advised that these staff reduce their direct implementation role in favour of a more advisory one and expand their work to several districts. The DGIS-supported project proposed to establish project-financed support units and district managers next to the district implementation teams, but this proposal was dropped after rejection from the Tanzanian authorities. Instead, a two-pronged approach will be used of adapting speed to district capacities and increasing these capacities by delegating part of the technical work to private craftsmen and small contractors. The FINNIDA-supported project had not decentralized implementation.

The private sector has so far only been involved in the NORAD-supported project. The project gives out contracts to local craftsmen for the construction of headworks. The available documentation gave no information on whether results are satisfactory.

4. Community Participation

When implementation started in the late 1970's, village involvement only consisted of voluntary labour (mostly trench digging) during construction. This activity was organized by MAJI in cooperation with the village leadership. Maintenance, management and financing of recurrent costs were done by MAJI. This strategy was gradually changed in the new implementation projects. These now include also participation in local planning and design, mainly the formation of a water committee and the distribution of water points. After construction, and with training, the completed water supplies are handed over to the communities for local maintenance and management, including administration and financing.

Most projects have developed systematic ('step-by-step') procedures for this participation. They are sometimes rather bureaucratic and rigid, with a great emphasis on village duties, little attention to village rights and informed choices between alternatives, and no room for negotiations to adapt to local needs and conditions.

4.1 Attitudes and techniques

The change from free labour to village-managed water systems implies that project implementation staff must from the start approach and work with the villagers as the future managers of the water supplies. Several evaluations and reviews showed that as yet, not all project staff have acquired the required attitudes and skills to work as partners with villagers. Such staff tend to come with a fully fixed plan and tell villagers what to do. They do not assess conditions jointly with men and women from the villages and do not identify and discuss with them what could locally be most sustainable and acceptable and then implement jointly what has been decided through the consultations. As one of the review missions stated, a partnership approach is not possible when government staff 'see themselves as the only experts in development, look with skepticism on the idea that women have something to contribute and feel threatened by the idea of more community participation in the decision process' (Joint NORAD-Tanzanian Review 1991, p. 16).

Lack of more creative techniques for village participation is a related gap mentioned in several project assessments. A number of projects have undertaken actions to develop more positive attitudes and creative skills. In Rukwa, for example, a logical framework analysis workshop was held to increase understanding of the multi-sectoral and participatory nature of water and sanitation projects. In the Lake Regions, development of participatory attitudes, skills and techniques is one of the underlying principles of the human resources programme. The evaluation in this region was also carried out as a participatory process. In Iringa, Mbeya and Ruvuma, project staff learned in a participatory workshop how to develop their own training materials and adapt them to the villagers they work with. Staff from this and several other projects also participated in a workshop on participatory techniques held by PROWESS.

In general, however, participation methods are still very standardized and conventional (instructional meetings). Joint identification and analysis of problems and joint planning of local solutions is not yet common, and training and working with villagers in a top-down manner is still common.

4.2 Gender aspects

Both the Tanzanian government and the donor-supported projects have a policy of enhancing that men and women can participate more equally in development and development benefits. The work done during the implementation of the projects has definitely contributed to the operationalization of this policy. All projects require and promote that an equal number of women is chosen on the water committees and involve them in training. An effect of this strategy is that in villages with water projects, the number of women with an official function and access to information, decision-making and training has increased. A general experience is further that in the project villages women receive much trust in finance handling and that the villagers often chose women as water fund treasurers.

Nevertheless, women face many constraints in taking part in actual decisions and trainings. Moreover, village men are not always interested in taking an equal share in maintenance and financing of a domestic water system, even though they are usually keen to take up maintenance and management positions. So far, none of the projects have combined the individual experiences of project staff on how best to deal with these constraints and have developed these experiences into a consolidated gender strategy. Reviewed training materials and position papers on gender were rather academic and removed from the practicality which women face at village level, e.g. in attending and speaking out at public meetings and in participating in trainings and functions. Manuals for community participation are mostly not gender-specific and do not indicate how these constraints can be overcome.

5. Technology Choice

Developments in technology choice are characterized by the gradual widening of the range of technologies and the including of also simpler options, such as protection of springs and traditional sources and the construction of protected dug wells. Combinations of technologies are still rare, while none of the projects give the villages an informed choice for matching the type of technology and service levels to local needs and sustainability. In the following sections, more details of these aspects are discussed.

5.1 Range of technologies

In some of the projects reviewed, the development from village water supplies maintained and managed by MAJI to systems maintained and managed by the villages goes hand in hand with the use of a wider range and simpler technologies. Most projects started with piped gravity systems and hand-drilled handpump wells only, but the number of technologies is gradually increasing. The projects supported by NORAD and SIDA (HESAWA) include spring protection and the protection of already existing (traditional) wells. Rainwater harvesting is included in the HESAWA project. The HESAWA project further assists villages to construct protected dug wells. The DANIDA-supported project has a few hydram projects and has included dug handpump wells. The project in Morogoro and Shinyanga uses piped supplies, by gravity or with electric pumping, and hand-drilled shallow wells. Dug-ring wells which were used in Shinyanga because of their greater reliability seem to have been abandoned because they take longer to construct and are costlier.

The development to widen the range of technologies and include also simpler technologies fits into the trend to match technologies to local geo-hydrological conditions as well as village capacities to sustain the system after construction. A combination of several technologies in one village is however not yet practised, although two missions proposed such options for the plateaus in Shinyanga district and the Makonde plateau in Mtwara.

On these dry plateaus, single solutions are less feasible, because they require extensive distribution and pumping with diesel pumps in case of piped supplies, while handpump wells are geo-hydrologically not possible (in Makonde) or have to be sited far from the villages (Shinyanga district). Examples of combinations of different technologies are the use of rainwater harvesting and improved traditional sources during the rainy season and the use of handpump wells or water collection by oxcart from a more distant piped system in the dry season. Fig. 2 depicts such a proposed combination of improved traditional solutions with a seasonal new system. Because in such a system the handpump will stand unused during part of the year, a special management arrangement will have to be made with the village for safeguarding the pumps during this time, for example by having a caretaker live nearby or seasonal removal of the pump.

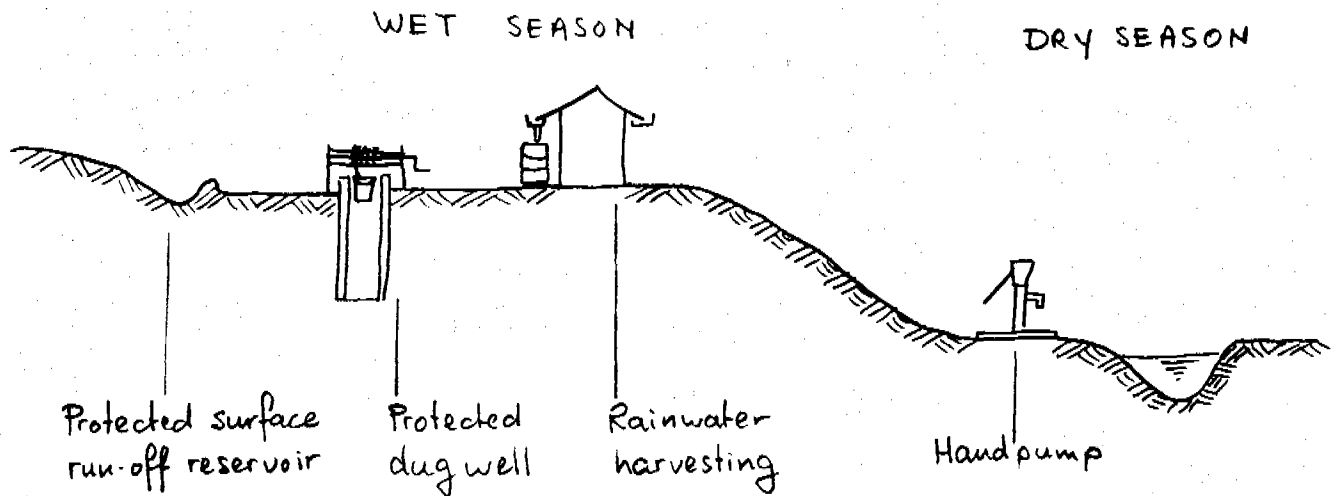


Fig. 2 Proposed combination of water systems for small plateau villages in Shinyanga rural district

5.2 Community choice

Although village water projects are now handed over to the villages and they maintain, manage, finance and use the water supplies, all project so far make the decision on the type of technology one-sidedly. They also give the villages only limited information as to what the implications are of this choice, in terms of complexity and costs of running the system, ease of location of water points, risks to water quality, implications for use and hygiene, etc. For example, none of the projects have exact information about the size and composition of the maintenance costs. Only the DANIDA-supported project has recently produced some figures on the basis of data collected in nine villages with a piped system and in some villages with handpump wells in Ruvuma.

At present, none of the projects also inform the villages on more than one option and the pro's and con's of each option. Hence the villagers have no possibility to compare the chosen technology with their current system(s) and with other alternatives and to decide what choice would be most realistic in view of their particular needs and capacities.

Moreover, in areas with cattle the question how to deal with cattle watering is not always discussed. In these areas, the men often ask water for cattle and are not always interested in water for domestic use. Constructing a water supply only for domestic use, or constructing separate sources for domestic use and for cattle thus has the risks that the men will not support the maintenance of the domestic system. Adding cattle watering facilities to a domestic water supply does not have this disadvantage, but makes siting and management of water sources and waterpoints, and payment for use more complex. A good strategy for sustainable services has not yet been developed for these situations.

A further reason for giving the villages a more informed community choice is that the experiences of the donor-supported projects show that each technology has distinct advantages and disadvantages. If villages are to manage their system well, they should understand these aspects from the start, so that they are better prepared for dealing with

them during local planning, maintenance and management. The following section contains a summary of project experiences on the major types of technology used in the projects, piped gravity systems and hand-drilled and -dug handpump wells. These could be used to give villages a more informed choice in their type of technology and service level.

5.3 Comparison of main technologies

The systems most commonly installed in the projects are piped gravity systems and handdrilled or dug shallow wells with handpumps. It is not uncommon that either technology brings specific problems in meeting each of the rural water supply's objectives, safe water for every household within 400 meters. In many situations the conditions of local hydrogeology and surface water sources determine the source selection.

- Piped gravity systems

Piped gravity systems have as disadvantages that they are costlier to construct and require more village labour than hand-drilled wells. An advantage is that their maintenance cost are lower. It is also easier to spread the distribution points evenly over all village sections than is often the case with shallow wells, unless some parts of the village are too elevated. Furthermore, villages can also more easily expand these systems with some more public taps in new settlement areas, provided they know where the future expansion areas can best be located. They also need to know the potential and implications (source capacity, costs, financing) of private connections, as after handing-over they may (and do, e.g. in the DANIDA-supported project) decide to install such connections.

A disadvantage of gravity systems is that the quality of the water in the source can easily deteriorate. In the rainy season the water often gets very turbid due to soil erosion and excreta from cattle and people can easily cause bacteriological contamination. As water treatment is costly to install, the only way is that the user villages protect the source and manage land use in the area draining on it. This happens in the DANIDA-supported project.

- Hand-drilled shallow wells

Project experiences show that hand-drilled wells are much quicker and less costly to construct than gravity systems and their construction requires little village labour. These characteristics make them attractive to villages as well as projects. A further advantage is that the well is effectively protected against contamination when topped with a handpump, provided the villagers know about and avoid risks that new latrines are sited too close or drainage is poor.

Disadvantages of shallow wells are that their maintenance costs are higher than for gravity systems and that it is technically not always possible to locate a well in each village section. Sometimes wells need to be sited outside the village or neighbourhoods without well have to share a well in another part of the village. This requires special arrangements for use and contributions and for safe water use in the season when nearer traditional sources can be used.

Furthermore, villages have to be well-organized and motivated (women and men) for good maintenance and quick repairs, because when the handpumps break down there is no other way of extracting groundwater. The users then either have to share the remaining pumps or are forced to go back to open, and almost always heavily contaminated surface water.

A final disadvantage of drilled handpump wells is that it is less easy than with gravity systems to sustain the achieved village coverage percentage when the population increases. In some project villages (e.g. in Ruvuma), village leaders solve this problem by allotting new households a plot for a homestead near one of the wells and tell them to farm on the outskirts of the village. This is not possible in villages where all land around the wells is in use, so that after handing-over the village either has to undertake initiatives to extend the number of handpumps or see that the % people served within the village goes down again.

- Hand-dug shallow wells

Hand-dug wells take longer to construct and demand much more village labour contributions. However, when the handpump breaks down it is possible to open the well and draw water by bucket while waiting for the pump to be repaired. This brings of course a risk of contamination and can also deter communities from repairing the pumps. Nevertheless, dug ringwells can be an option in villages which are in a difficult situation for a quick pump repair, e.g. because of their isolated location, provided that the wells' user groups are aware of the contamination risks and social control on hygienic use is high. Two handpump projects outside Tanzania, in Burkina Faso and Guinea Bissau, included this option in their project and found that an informed discussion brought especially villages with a low chance of pump sustainability to choose a protected ringwell, equipped with or without a fixed bucket. Hand-dug wells are a favourable option for low yielding aquifers because of their larger storage capacity.

5.4 Levels of service

While a choice in technology is not yet given to the users, there is a development in piped systems towards giving villages a choice in service levels. In the DANIDA-supported project a joint project team has recently proposed that private connections may be included in the design where this is technically feasible. The reason is that after handing over, several villages established house connections to meet local demands and increase revenues for O&M, while the designs of the schemes were made for public taps only.

Under the new project policy (which still has to be authorized by the two governments) the technical staff will advise the villagers about the maximum number of house connections possible and the implications for the running cost of the system. It is not clear whether those opting to take a private connection will also have to pay for any extra capital costs involved (e.g. extra-dimensioning of intake and pipes, connection costs). The latter would be in line with the Tanzanian water policy, which prescribes that piped systems with public taps are the standard service level for rural water supply. If construction costs of some piped schemes increase because many villagers want house connections without contributing to the above-standard construction costs, it would mean that these household benefit to the detriment of others, because in that case fewer supplies can be built and fewer villages be served from the existing budget.

6. Community Management

In all projects, the first responsibility for maintenance, repair and management of completed village water systems now rests with the villages. This includes also the financing and financial management of the operation and maintenance costs.

6.1 Local management organization and financing systems

The four common elements of all village maintenance and maintenance management systems are: a village water committee for management of the water supply, including the financial management (although also village governments and village accountants may be involved); village caretakers or water point committees for upkeep of water point hygiene and reporting problems; village pump mechanics or scheme attendants for maintenance and repairs of the water system, and a village water fund to finance the recurrent costs.

Inputs given by the projects are training the maintenance and management workers and providing the mechanics and scheme attendants with a set of tools and sometimes (scheme attendants) a bicycle. In some projects, e.g. those supported by FINNIDA and DGIS, training has not yet reached all those with maintenance tasks, while in others the villagers have not yet obtained the required tools or miss an essential tool. It is further not clear if training for the caretakers and water point committees, many of whom are women, is limited to cleaning and reporting, or whether they are also given a more active role in the diagnosis and prevention of such breakdowns and the technical upkeep of the facilities.

For what level of performance the water committees are trained is not clear. At the one extreme, some committees may only assist in fund raising and meet when problems with the water system occur; at the other, a committee may be trained for much more genuine and regular management tasks, such as preparing annual budgets for operation and maintenance, paying village maintenance workers, checking that mechanics and caretakers do their work, etc.

Formally, the village water committees fall under the village government. However, the division of responsibilities and authority between the committees and the overall village government and each party's accountability to the users and water fee payers is not clearly defined. In the projects supported by DANIDA, training to village committees has been extended to members of the village governments and village accountants, to avoid that these functionaries felt excluded and did not support the water committees. At the same time, this has in some cases led to the relegation of water treasurers to collecting and handing over of water fees, without getting any insight into what was collected and how it is used.

- Financing and financial training

To finance maintenance and repairs villages are encouraged to set up special water funds. The amounts deposited in such funds vary considerably between villages. Frequently, projects see the size of the amounts as an indicator of the willingness and capacity of a village to finance the maintenance of its water supply. However, many villages dislike keeping much money tied up in a water fund (e.g. in the HESAWA project and the project supported by FINNIDA), when much of this money is not used and inflation rates are high.

Experiences in the DANIDA-supported project, where the first handed-over water supplies have now functioned for six years, show that villages use many different methods of financing their maintenance. Not the exact size of the water fund is essential, but the practical wisdom and local appropriateness of the chosen financing option and the effectiveness with which it is used.

Training of village water committees in setting up and managing a locally appropriate financing system is one of the weaker points in all projects. Financial training for villagers should be less complex and allow for flexible local solutions. In the DANIDA-supported project for example, trainers from the Department for Cooperatives give water committee treasurers and village accountants a course on bookkeeping, but few villages practice the training as the promoted system is complex and expensive. A simplified course was developed in Shinyanga/Morogoro, but it has not yet been tested. Furthermore, CDAs also need training and experience to be able to assist the villages in problem solving, as financing and financial management and -control are likely to form the greater part of problems in water system management.

- Management of group schemes

Management of large piped systems, using either pumps or gravity, forms a special case. For example, the Makonde water supply supported by FINNIDA serves 300,000 people. It has so far been managed from national level, but this proved not effective and efficient. It has therefore been proposed and adopted that the scheme will be managed again by an autonomous corporation with privately or village-owned water kiosks that sell the water per bucket.

For the grouped gravity systems supported by DANIDA there will be likely two types of management. The scheme parts in and between the villages are managed by the village water committees. This includes managing the village water fund and the village scheme attendants in charge of maintenance and repairs. The management of the common facilities (source, source protection, intake, transmission main, etc.) and the cooperation between individual VWCs will be by group scheme committees. They will consist of representatives from the concerned villages, ward(s) and district. The signed handing-over agreements will have to be modified for this purpose and additional training given to the villages concerned. Large group scheme committees are to have an executive committee.

Because the size and complexity and the nature and seriousness of problems differ from groupscheme to groupscheme, it is expected that some schemes will need special arrangements and that the district will play a greater role in scheme management of large

systems. For financing, for example, the group scheme water committee will prepare a combined group scheme annual O&M budget which combines the budgets for village O&M with the O&M budget for the communal works. After clearance by the respective Ward Development Committees, the group's committee will present this budget to the district authorities and work out an arrangement for shared financing.

- Environmental aspects

Work and training of villages water committees includes in some cases (e.g. in DANIDA-supported gravity projects) the management and protection of water catchment areas, but to what effect is not (yet) known. In other cases, management of water resources and environment is limited to keeping the improved water points clean.

6.2 Handing-over, maintenance and support

Although all projects aim at building up village capacities for self-reliant management of their water systems, most of the projects have not yet started handing-over the completed water systems on a considerable scale. The exception to this is the DANIDA-supported project. Here, water supplies are handed over as soon as they are completed, their quality has been checked and the trainings have taken place. Handing-over started in 1987 and by September 1992 had taken place in 263 villages. In the DGIS-supported project, 2 villages have had their water supply handed over. Many other completed water supplies, e.g. in the projects supported by DGIS and SIDA, are not yet handed over. Villages try to postpone handing over to postpone financial responsibility and when they consider their village not yet fully served. Projects are reluctant to hand over water systems when the spare parts supply is not assured.

- Village maintenance and maintenance support

Although the villages have accepted that they will maintain and manage and finance the maintenance of their water systems, maintenance is not yet fully operationalized:

- village maintenance workers are not always fully trained and equipped;
- the VWCs managing maintenance are not yet all fully prepared and functioning properly, especially with regard to financing and financial management and paying and supervising the village maintenance workers;
- project-prescribed systems for maintenance financing are not always locally appropriate and realistic;
- spare parts are not freely available and some are expensive.

Especially the availability and cost of spare parts for handpumps is a major bottleneck. For piped systems most parts seem to be available from the local market, although quality is not always high. For handpumps, the villages can now still buy spare parts from the visiting project teams, but once this service stops, procurement will become a major problem. The central production and distribution of handpump parts by two monopoly-holding factories (for the SWN pump and the NIRA pump respectively) proved costly and not reliable (at least for the SWN pump), although the factories benefit from exemption of import duties and tax.

A more regionalized production of spares at local and more general workshops combined with some system of quality control has been proposed as another and possibly more effective way of private sector involvement. It would allow nearer villages to buy directly from the workshops, while in districts with a high number of pumps local shopkeepers may be interested in taking up the supply of parts with a higher turnover. The need to set up a special distribution network through other channels, such as the district water engineers would then only be necessary in the districts with a low number of pumps and/or uninterested commercial suppliers.

For all other forms of support to villages, ranging from complex repairs to management or financing issues, all projects focus on the existing district departments of MAJI and MAENDELEO. An assessment in the DANIDA-supported projects showed that a special mobile support unit of MAJI and MAENDELEO for this purpose was not viable for the majority of the districts, as their resources are low. The project now proposes a much more flexible system, whereby the villages either use the private sector or call for support from MAJI (at district level) or MAENDELEO (at ward level) as and when required. Whether the villages will have to pay for some of these services is not yet clear. Monitoring of maintenance and management is proposed to be part of the regular monitoring system in MAENDELEO, MAJI and AFYA.

The HESAWA project trains ward level mechanics, who may either be self-employed or employed by the ward or district. The other projects also aim at support through the regular cadres at district and ward level, but in none of the projects have organization, training and financing been worked out and tested in detail and each project is making its own arrangements. Arrangements for an exchange of information on organization and results between projects and coordination of approaches at the national level have not been established so far.

6.3 Maintenance costs

Because conclusions from concrete monitoring data are still missing, figures on maintenance costs for community managed water supplies are mainly estimates. Table 3 gives the O&M costs for SWN handpumps in projects supported by DANIDA and DGIS and the estimated tariffs for handpumps and gravity schemes in DANIDA-supported projects. O&M costs and tariff estimates for the DANIDA-supported projects are based on field results during the first six years of handpump maintenance in Ruvuma and an O&M cost calculation in two piped schemes with 9 villages in Mbeya. Based on these calculations and estimates, households in group schemes would have to pay TAS 160-220 per year for O&M in their village and contribute another TAS 150 towards O&M of the communal parts of the scheme (source and source protection, intake, transmission main, etc.). The cost estimates for handpump maintenance in Shinyanga and Morogoro are based on the estimated lifetime of the various parts and the 1991 price of the Morogoro pump factory. They include a 25% delivery charge, but no other costs, e.g. payments to the mechanics. Not included in either estimate are the costs of support in case a repair cannot be undertaken by the trained village worker.

6.4 Monitoring systems

When projects are handed over to the communities, there is a need for a system whereby the villages themselves can monitor the performance of their water supply and water supply management, and the higher level authorities can know what the general situation is and where support or changes to the system are required.

Findings on costs and effectiveness of maintenance/management are not yet available. Either the monitoring system is too young, e.g. in Lindi Rural and Morogoro/Shinyanga, or the computerized data are not accessible. In the projects supported by DANIDA and FINNIDA a consultant set up a computerized data collection system, but MAJI staff were not trained and use of the data or the system ceased when the responsible adviser left.

Table 3 Estimated annual maintenance costs for handpumps and estimated maintenance tariffs for handpumps and gravity schemes, in TAS

	COSTS Handpumps	TARIFFS ³⁾		
		Handpumps	Village schemes	Gravity schemes Common facilities group schemes
DANIDA- supported project	8,400 ¹⁾	300	160-220	150
DGIS- supported project	13,500 ²⁾	-	-	-

- 1) average annual O&M costs over 10 year period, 1992 price level. No delivery charge, but salary village mechanic of TAS 100/pump/year included
- 2) estimated cost first 2 years at 1991 price level, including 25% delivery charge, but not salary for mechanic
- 3) per household per year, in Tanzanian shillings (1992 value)

In the projects supported by DANIDA, mobile maintenance support teams at regional level monitor the costs and effectiveness of community maintenance and management in all villages with completed projects. The teams are paid by the donor and are staffed by MAJI and MAENDELEO. They use the village logbooks and information from the village mechanics and scheme attendants to get information. This reporting task is to be taken over by the CDAs. Indicators that are proposed in the DANIDA-supported projects are given in Table 4. The teams further sell spare parts to the villages and give assistance in training and difficult repairs.

In the project that was supported by FINNIDA, one district water engineer has started to monitor data on maintenance costs, using his regular staff. In the projects in Morogoro and Shinyanga, district teams from MAJI, MAENDELEO and AFYA collect the data on cost and effectiveness of village maintenance and management in all served villages. This data is subsequently summarized by the regional team (indicators in Table 4). In the HESAWA project, monitoring of maintenance has not yet started.

Table 4 Monitoring parameters and indicators proposed or used to assess sustainability

PARAMETERS	INDICATORS	
	DANDA-supported project	DGIS-supported project
Technical performance	Water production by regular measurement	No. defectively functioning water points
	Water flow by measurement from tap	No. broken down water points
	Duration of breakdowns	Duration of breakdowns
	Type of repairs done	Type of repairs done
Managerial performance		Turn-over of spares
	No. of meetings VWC	No. of meetings VWC, incl. male/female attendance
		No. visits VWC to water points
Water use and hygiene	Status and turn-over water funds	Status and turn-over water fund
	-	No. households depending on unprotected sources
	-	No. broken down water points (internal crosscheck)
		Hygiene of water points
		Other hygiene improvements made by village

In the DGIS-supported projects, a computerized system has been operational for one year, after training all involved (the village committees, caretakers and village health workers in the villages and MAJI, AFYA and MAENDELEO staff in the districts and regions). Collected data have been condensed and analysed. However, the system needs further simplification and should also get a function as management tool for the villages and not just a management information system for the project.

7. Other project components

7.1 Village sanitation

Attention to village sanitation is late, limited and concentrates on construction of latrines. Concrete output data could only be found for the projects supported by NORAD and SIDA (Table 5), but other projects may have figures as well.

Table 5 Outputs of household and institutional latrines

Support agency	Year	No. household latrines	No. inst. latrines
DANIDA	no data	no data	no data
DGIS	no data	no data	no data
FINNIDA	no data	no data	no data
NORAD	1991	275 ¹⁾	no data
SIDA	1992	1456	161

1) Rukwa only

All projects have abandoned the promotion of ventilated improved pit (VIP) latrines, as they are too costly. The FINNIDA-supported projects stopped sanitation altogether. The projects supported by DGIS and SIDA now encourage households to make good pit latrines by themselves, using local materials, although in the new plans some districts have again budgeted for VIP latrines.

The NORAD-supported project has started to train VHWs and village craftsmen to make and sell concrete latrine slabs of the sanplat type (low-cost, small, strong and movable). The project gives a subsidy of 50% per slab. The slabs are popular and in half a year already more were sold (275) than VIP latrines installed since the project was started. The HESAWA project also trains VHWs on making and selling sanplats, but finds the demand restricted to areas with a shortage of building materials for traditional pit latrines. There is further the misconception that a concrete slab also requires a permanent outhouse, which makes the latrine costly.

School latrines are constructed by the projects supported by DANIDA and SIDA. They are built with a view to high sustainability (durable materials, long life, easy to clean). It is accepted that most villages will not be able to add cubicles of the same quality when the school population increases or eventually replace the facilities.

7.2 Health and hygiene

All projects aim at improving rural health through better water supply, sanitation and hygiene education. In the projects supported by NORAD and FINNIDA, health education is organized by project-employed Tanzanian consultants. Their many tasks limit the attention

they can give to this work. In the project supported by DANIDA, one AFYA officer is seconded to the regional project team. In the field the teams contact local AFYA staff, but their involvement is limited. In the projects supported by DGIS and SIDA, AFYA staff are members of all implementation teams. The HESAWA project further trains village health workers and traditional birth attendants, including in health education.

Irrespective of organizational arrangements, education on health and hygiene in the projects is generally still weak. It has no clear objectives and methods used are often outdated (lectures, talks at clinics and village meetings, home inspection). These activities sometimes cause resistance by being authoritarian or promoting unrealistic changes. Involvement of village men and women in problem investigation, priority setting, action planning and implementation is generally low or absent. None of the projects measure impacts on village conditions and practices by doing baseline and formulating and monitoring measurable indicators of change in environmental hygiene.

The few studies carried out on water use and hygiene behaviour show that in many villages a part of the population still relies on the use of unprotected water sources and that other risky hygiene behaviour and conditions also make an immediate impact on health unlikely. The studies further show that those people using traditional water sources usually have good reasons for doing so, so that health education alone is unlikely to change this behaviour. Other risky conditions and practices, such as those associated with storage and drawing of drinking water in the homes and drainage of sullage water may be more open to change through participatory health education.

7.3 Environment

In several regions, deforestation, land use, agriculture and livestock, and, to a lesser degree, industrialization, is having a negative effect on the quality and quantity of water sources. In a number of cases, piped gravity systems are already affected. In the DANIDA-supported project (e.g. Ismani Water Scheme) protection of the water source and the catchment area is part of village water management and management training. The effects of this effort has not yet been assessed. The project in Iringa further collaborates with the HIMA project, a special ecology project also financed by DANIDA. This project uses a multi-disciplinary and participatory approach in research and village projects, and has a strong gender element, e.g. in its analysis of land use patterns with male and female farmers.

In Shinyanga, ecological threats occur from overgrazing and the use of pesticides on cash crops such as cotton and groundwater seems to decline. In Morogoro, problems occur due to increased settlement in the catchment areas, leading to silting and bacteriological contamination of water resources. Local outbreaks of cholera and typhoid have occurred. DGIS plans to support the preparation of ecological profiles in the two regions to better map the threats. Whether this will be done with community involvement and gender-sensitive is not clear. The water project further proposes to include water source and catchment area protection in the community management tasks of water sources.

At the village level, all projects pay attention to avoiding environmental degradation from lack of drainage at water points. The facilities include drains and caretakers and committees are trained on keeping drains clean. In Shinyanga and Morogoro information on environmental safety of water points (upkeep of drainage, absence of latrines) is included in the monitoring. However, so far, there are no specific objectives and indicators for the environmental protection of catchment areas and water sources, and no systematically recorded results from local interventions.

7.4 Training

Training of project staff in new approaches to rural water supply is being stepped up. It was an important part in the HESAWA project from the very start, getting at least 10% of the project funds. Initially trainings were held as required by the implementation, but recently a training unit with 3 local consultants was set up to plan and organize a more systematic and coordinated training programme. The programme covers 11 main training areas, aims at using more modern training methods (building on experience, learning by doing), and works with so-called course files, written and other materials with which the trainings are organized. The evaluation mission has recommended a greater involvement of the operational staff in training planning and in the development of their own training materials.

In the DANIDA-supported project, a training advisor organized a very popular workshop in which MAJI, MAENDELEO and AFYA staff prepared their own training materials. In both this and the DGIS-supported project, training has so far been more limited (see cases), but these projects have now proposed (DGIS) or planned (DANIDA) extensive training programmes.

Apart from some training for village technicians and water committees, training does not seem to be, or have been, a significant component in the projects supported by FINNIDA and NORAD.

8. CONCLUSIONS

The Tanzanian target for water supply is to serve all people with clean and safe water within easy reach by 2001. History shows that massive construction makes little sense when the systems are not sustained. The ultimate goal is therefore sustained coverage for all. This chapter covers four issues which emerge from the preceding review and need discussion within and between projects and at the national level: integration, coverage, sustainability and cooperation.

8.1 Integration

- Roles of departments

The need to combine technical, social and health inputs in rural water projects is now universally recognized and all projects practise this in their implementation. However, there is no consensus on who should carry out the non-technical activities. Some donor projects finance a special service in MAJI, while others cooperate with MAENDELEO and AFYA. The Tanzanian national policy is not clear on non-technical activities and the role of MAENDELEO. It describes its roles as strategy formulation, and training of villagers and MAJI staff, and does not specify who will do the implementation of non-technical activities in the field.

- Attitudes and skills

The Tanzanian policy clearly states that the villages will manage their water supplies and that the Government staff has enabling roles. This implies that project staff does not give instructions and impose decisions, but provides information and skills with which villages themselves can take decisions, organize activities, monitor progress, etc. Many staff are not trained to working in this way and have a top-down attitude towards village work. Participatory skills and techniques are limited and often only consist of calling a meeting and having a discussion. Activities to change staff's attitudes and skills occur, but scope and impact are still small. Gender-consciousness and -skills (*i.e.*, dealing with men and women in such a way that responsibilities and benefits are divided more equally) are underdeveloped and practical gender strategies not yet formulated and applied.

- Management

Management in implementing the integrated approach is not always strong. Leadership within the implementation teams is an issue which each project solves in its own way and there is no comparison of options. At the project level, control on progress and expenditure and knowledge of performance of completed systems is inadequate in several cases. Systems used to record inputs and outputs in different projects are not comparable. As a result, it is difficult to get a clear idea on what is being achieved by the combined projects, including to what extent some projects repeatedly go back to re-rehabilitate installed systems. There is no discussion on cost-effectiveness of projects.

- Sanitation and health education

Reduction of health risks is a common long-term goal of projects and it is generally agreed that water should be integrated with sanitation and health education. However, implementation of sanitation and health education lags behind water supply. Latrine programmes have switched to improved pit latrines, but are implemented without clear information on strategies and results concerning selection of areas and technologies, cost-sharing, maintenance, use and replication. No clear objectives are set for hygiene education and results are not measured. Both in sanitation and health education programmes there is no community management. Villages are not yet involved in identifying local problems and priorities and do not plan and manage their own improvements with some technical assistance from the projects.

8.2 Coverage

In combination, the projects reviewed give the greatest contribution to the Tanzanian rural water sector. Nevertheless the goal of full coverage in 2001 is unlikely to be achieved. A clear vision on what this means for the future strategies is yet to be developed. The projects reviewed use different strategies concerning a) manpower, b) flow of finance and c) speed of coverage.

a) Improvement or increase of manpower

All projects face a shortage of manpower to implement the projects. The following mechanisms are used to deal with this problem:

- 1) Use government staff for all tasks and optimise cost-efficiency by good management and/or providing financial incentives. This strategy is proposed by DANIDA. Incentives are practised by NORAD. It is not clear how the planned lay-off of government staff will affect technical and social implementation and support capacity of the projects;
- 2) Supplement government staff with Tanzanian technical and social consultants. This is practised in HESAWA and was proposed by DGIS, but rejected by Tanzania. Experience in HESAWA is that consultants tend to take over all work from line agencies. Problems also occur over differential rewards. It is not clear how long consultants stay on to provide support and if government staff can/will take this over;
- 3) Use government staff for preparation, participation and after-care, but carry actual construction out with local craftsmen and small contractors. This is recommended in HESAWA and Morogoro/Shinyanga and practised in NORAD-supported projects. Results are not yet known;
- 4) Use simpler technologies and train villages for self-reliant construction. This is practised in HESAWA, but technical results are not yet good.

b) Improvement of flow of finance

Another strategy to increase output is improvement of the flow of finance. Where this flow is through the formal Government channels, e.g. in the DANIDA-supported project,

delays in transfer of funds to implementation level are long. This slows down the projects. Projects become costlier due to low outputs and fewer villages are served. Moreover, ongoing devaluation means that donor funds exchanged at national level are worth much less at the time they reach the implementation level. Outputs could be much increased when the Tanzanian Government agrees to direct transfer of project funds into special project accounts at implementation level.

c) Varying speed of coverage

With regard to pace of progress each project also follows its own strategy. Three different strategies are used:

- 1) Work with all interested villages and groups paying a deposit, whether water is a serious problem for them or not (proposed for D_{GIS});
- 2) Cover high priority villages first and adapt speed of coverage to the available implementation capacity (D_{ANIDA});
- 3) Work with wards in which a few villages have paid the deposit and met other conditions (H_{ESAWA})

The implications and risks of the respective strategies seem not to be much discussed. While speed and coverage are important, a too speedy coverage of all villages also has negative aspects. The project may for example include villages with a low interest which nevertheless meet initial conditions such as a down-payment, because they know there may not be another chance to get a water project in future. Serving only interested groups, as proposed in the new D_{GIS}-supported project has some advantages (upkeep and payment by actual users; no waiting for whole village to get organized), but it can also mean that only wealthier and better organized neighbourhoods get served, that the public health aspect (safe water and sanitation for all) is laid aside and that the project has to go back repeatedly to serve new groups in the same villages.

Moreover, when a large number of not-too-simple village or group systems is handed over in a short time it is quite possible that district government services will not be able to handle all after-care required. This goes especially for support on local management problems. Villages cannot go to the private sector for those, as they often can with technical problems. Adequacy of CDAs is then an issue, especially if large numbers of them are laid off as part of Government staff reduction. Slower progress and/or more upfront training of villages seem a better strategy in that case.

Concluding it can be said that while projects use different strategies to increase coverage, it appears that the strengths and weaknesses of each strategy are not discussed between projects and at the national level and that no general lessons are drawn from experiences so far.

Other issues related to coverage

Apart from the issues discussed above, two other issues related to coverage emerge from the review. The first one is partial coverage of villages due to technical problems, such (no groundwater in part of the village, too high elevated areas for taps). In such cases it seems that there is a need to work out better arrangements with the men and women in

that part of the village to share and co-finance clustered waterpoints in a neighbouring area and/or to protect traditional sources that remain in seasonal use in their own neighbourhood.

A second issue is responsibility for upkeep of service levels in villages after handing-over. In the reviewed projects, some villages have made new taps or condensed settlements to keep up the percentage of households with easy access, while in others this percentage has declined. The Tanzanian water policy does not define who is responsible for this aspect. If village governments are responsible, the projects may have to inform and capacitate the villages and point out where best to plan village expansion areas if these are also to have water. These issues are not yet considered in the current projects.

8.3 Sustainability

Sustainability is the third issue with which all projects deal. Interest focuses especially on sustainability of water systems. Sustainability of sanitation and health education has only started to be an issue and is discussed at the end of this section.

Demand for improved water supplies

The presence of a demand for an improved water supply is an important, though not sufficient, condition for its sustainability. Asking villages to demonstrate this demand before project allocation can be useful, but the funds asked should not be too high and not be tied up. Establishment of a sensible and viable local financing system can be a more useful indicator. Other factors to be taken into account are differences in demand between village leaders, men and women and demands for water for domestic use and cattle.

Technology choice

Another important condition for sustainability is that the type of technology matches the capacities and needs of each village. Use of a wider range of technologies, upgrading of traditional water sources and the combination of several technologies are all means to increase sustainability and coverage. The use of these means could be expanded. Source selection depends on hydrogeological and stream data.

There is further the issue of how the technology is chosen. If the villages become responsible for their water supply, the logical implication is that they are explained what types of technologies are in principle possible in their village. But they also ought to know what the implications of each option are for them in terms of maintenance and management complexity, costs, ease of location, expendability, health risks and other potential effects. With such information, and with help from the project, the villages can then weigh and choose the system or combination of systems which is the best compromise between what they would like and can afford.

An informed user choice has also been recommended for the installation of house connections (DANIDA-supported project). From the proposal it is not clear if the households will pay only for connection costs and O&M, or also for the extra dimensioning costs which may be required when house connections are added to public taps. If the latter costs

are not included, fewer project funds will be left to serve other villages and free extra benefits go to the wealthiest households among the users. Both aspects are against the national policy of Tanzania as well as most of the donors.

For handpumps the type of pump is a special issue. At present, SWN (for deeper wells) and NIRA pumps (direct action) are generally used. A mission to Morogoro and Shinyanga has suggested that another pump, the Afridev is also considered for deeper wells because it is more suited to VLOM. Moreover, the project has started to develop a new direct action pump, to be produced decentrally by local workshops.

While the introduction of another, more VLOM type pump for deeper wells may well be considered in the longer term, it should be taken into account that the general adoption of SWN and NIRA pumps (some 10,000 installed) has led to a high degree of pump standardization in Tanzania. If instead of 2, 4 types become accepted (SWN, NIRA, Afridev and Afya), the market for the respective spare parts will decrease, possibly resulting in a lower interest of the private sector³. Another shift in pump types may furthermore bring those villages in the DGIS-supported project which have already had three other types (Shinyanga, Kangaroo and SWN) to the conclusion that they can just wait for the next rehabilitation, instead of maintaining what they got. Finally, the pumps have to be sufficiently sturdy to allow intensive use by 200 people or more. It is to be discussed whether investment in decentralized production of whole pumps is sustainable when project support on production and quality control fall away. Decentralized production of pump parts is another matter and is discussed under support systems below.

Workmanship

Further factors for a good sustainability are workmanship and control of quality of design and construction. For common designs, the regions could do this, while the national level does spot-checks and controls complex systems. Expansion of control in quality of construction of the simpler technologies was found to be urgently needed. Present arrangements do also not include the creation of quality awareness among the villagers and do not give them a role in observing quality standards in construction.

Village capacity building

Village capacities to maintain and manage completed water systems have not yet been sufficiently established. Sometimes, villages have not yet been fully trained and equipped. Managerially, the systems for financing and financial management are the weakest element. Projects should assist villages to make wise financing arrangements and not impose one standardized system. Training for community financing and financial

³ Reference is made to the case of India where standardization of pumps coupled with a large market brought an interest of the private sector. With assistance from Unicef, the Indian government was then able to set up decentralized production of pumps and spares with quality and price control, resulting in the general availability of pumps and spares through the private sector in all parts of the country.

management need to become more practical, and CDAs need more training to enable them to advise villages on these issues.

Gender strategies need to be developed to ensure that women get a real say in planning and management and to avoid that while positions and training go to men or reach women on paper, day-to-day responsibilities for upkeep and financing go to women. Few projects further break up their data in project reports according to gender and assess the effect of involving men and women on project results and villagers' lives. Better use could be made of the available literature and field experience on the practical steps that can be taken to bring women better into the project process, while avoiding their overburdening.

Handing-over seems best to be done immediately after the technical work has been completed. Other conditions to be fulfilled before handing-over are:

- * well-functioning water committee
- * all required training completed
- * equipment for O&M provided
- * quality of construction checked
- * guarantee period for flaws in design or construction defined
- * spare parts available
- * support structure available
- * conditions of technical and managerial support for problems beyond village capacities.

Support systems

Irrespective of handing-over, some type of back-up system is required. At present such system is not in place. For technical support, most projects see a role for the district water engineers and the private sector. The projects supported by DGIS and DANIDA have started to develop the district role, but it is not assessed how much can be done by the private sector in each district and where the district water engineer will have to play a role and how his support will be operationalized and paid for. A major role in managerial support is foreseen for the community development assistants in MAENDELEO (for this support, no private sector services are available), but training, organization and financing have not yet been fully worked out.

A very weak part is further the availability and costs of spare parts, especially for handpumps. Distribution from national level does not seem to function and could possibly be replaced by production and supply of spare part through local workshops and shopkeepers. However, possibilities are likely to vary per area, so that for problem areas special arrangements will have to be made. Quality of production and pricing will have to be looked into as well. A strategy on this common issue is as yet lacking.

Improvement is furthermore needed for monitoring of O&M costs and results. Data on maintenance cost under community management are or have been collected in some projects, but need condensation and analysis. Few projects have defined indicators for O&M performance and have established a monitoring system which allows both villages and the water authorities to systematically observe village performance and identify where

more action is required. The monitoring system in Shinyanga and Morogoro needs to be simplified and to become also a village tool.

Environmental aspects

Environmental degradation is a threat to sustainability of rural water supplies in the longer run. Direct problems are greatest with gravity systems and in some areas with shallow wells. Some activities needed are investigation of the seriousness and causes of drying up wells in problem areas, preparing ecological profiles with community involvement and a gender approach; including management and protection of water resources in the village management training and implementation in all regions; and assessing effects in areas with experience.

Sanitation and hygiene

All projects include construction of sanitation facilities and health education. Whether installed facilities are being maintained and used is not yet being assessed. Self-evaluations or monitoring systems by village committees and health workers would be a good way to do so. As specific objectives for health education are lacking, it can not be determined whether improvements are being realized and sustained. Moreover, water use studies show that health education alone does not stop the use of unprotected water sources. This gives further support to the conclusion reached above that more attention is needed to combine new water supplies with upgrading of selected traditional sources.

Attention is increasing to establish latrine programmes which can be sustained by the villagers themselves. Such self-reliance is needed as government or donors cannot build latrines for every new household. Really self-sustaining village programmes have not yet been created, however. Health education is also still weak and not geared to village self-action. There is a need for projects to help villages analyse local conditions and practices, select problems, set priorities and indicators, and implement their own action plans. Projects would have a support role rather than being implementators and decision-makers. Health staff is generally not trained for this type of community-managed improvements and would benefit from training in modern techniques for communication and village action planning and support.

8.4 Cooperation

At present each donor-supported project is working by itself. There is no systematic exchange of information and no organized discussions take place on issues of common interest, such as organization, flow of finance, technology mix, service levels and spare parts supply, either among the projects or in joint meetings of the projects and the Tanzanian authorities.

Moreover, all projects focus on implementation and provide no support to national level activities. While this is understandable from a coverage point of view, it may be looked into if monitoring and human resource development should be supported at national level.

Monitoring

Monitoring is an essential tool to have insight into progress on coverage and sustainability. There are no comparable systems for recording output and performance. It seems therefore useful when the projects would coordinate their monitoring system and assist the national level to incorporate their data into a national monitoring system.

Human resource development

With regard to human resource development, there are several issues that directly affect the implementation projects. First, a major bottleneck to implementation by the districts is the surplus of technicians at the regional level and the shortage of more qualified staff at the district level. Although the distribution of manpower is an internal issue of the Tanzanian authorities, donors could possibly assist by financially supporting training to regional technicians so that they can qualify for a higher implementation post at district level.

Implementation capacity is further threatened by the planned reduction of government staff. Especially the reduction of technical staff in MAJI and CDAs in MAENDELEO will have serious consequences for implementation of the water projects. While the former can be alleviated by a greater involvement of the private sector, involvement of CDAs will remain crucial, especially in providing after-care to villages for whom management and financing of a water system is very new. Failure to provide such support was one reason why in Kenya and India earlier village management of water supplies was no success. Continued availability and training of CDAs are therefore important issues to discuss for all parties involved.

Finally, over the years implementation methods in the field have changed, but the training of new staff of MAENDELEO, MAJI and AFYA in the national institutions does not always reflect this. Knowledge built up in the field is not fed back into the national training system and projects have to re-train new staff joining them. Donor support to assist Tanzania to revise its training on water and sanitation would be a longer-term investment in water sector capacity building.

Support to selected issues at national level (such as HRD, licensed spare parts production, monitoring of construction and maintenance) would be directly related to implementation capacities and sustainability at district and village levels and thus contribute to the strengthening of the rural water supply and sanitation sector in Tanzania.

APPENDIX 1

Overview of DANIDA-supported projects in Iringa, Mbeya and Ruvuma

Overview of DANIDA-supported projects in Iringa, Mbeya and Ruvuma

History

Construction of piped gravity systems already started during the water master plan in 1980. A pilot project was carried out with community participation not only in construction, as was the custom in MAJI-built schemes, but also in planning and design, and with the intention to hand over the schemes to the villages for operation, maintenance and management. Later, hand-drilled wells with handpumps (SWN or NIRA) were introduced. Now also hand-dug wells are made in areas with less abundant groundwater. Sanitation and hygiene education are marginal components. Emphasis is on the construction of durable and relative costly school latrines.

Organization

Initially the projects were carried out by a separate construction unit in the RWEs' offices. A DANIDA-financed village participation unit was also stationed in MAJI. Project management was by expatriates. After an external evaluation, it was decided to transfer the participation work to MAENDELEO. DANIDA pays for the training of village participation assistants in one of the Tanzanian training colleges for community development. MAENDELEO thereafter employs them as CDAs and posts them in project areas with a shortage of CDAs. DANIDA also finances the extension or construction of CD offices, so that the units will also be transferred physically to MAENDELEO. One regional CD officer is in charge of community participation activities in water supply and sanitation. He/she is assisted by a DANIDA advisor in each region (two expatriates, one Tanzanian).

The Regional Water Engineer is also assisted by expatriate advisors (one for construction, one for O&M, and one interregional workshop advisor in Iringa). The positions of advisors for construction and workshop are being phased out in 1993/4. At national level, a Project Coordination Unit (PICU) is established in the MAJI offices in Ubungu, with eight staff (2 MAJI staff, 4 expatriate advisors, 2 national consultants). One advisor post in this unit will be phased out in 1994. The Ministry of Health is only marginally involved. It has seconded an officer to the project in each region and been involved in the design of the school latrines. In the field health assistants give health speeches at project meetings.

Approach

The three regional projects have a three-year rolling plan which is monitored through quarterly meetings of the regional steering committees. During the preparation of the water master plan visits were made to all villages and a decision taken on the type of technology and priority. Criteria were technical feasibility and need (observed and felt) of a water supply. Systems are constructed in the villages with the highest priority and no projects are undertaken in other villages unless for very strong reasons (e.g. economy of scale). New request can be accepted by the steering committee, but only at the expense of already selected priority villages. The project aims at keeping a balance between ongoing construction and strengthening village capacities for O&M. Because of the importance given to community participation, the speed of community participation work in the villages rather than technical capacity determines the rate of progress.

To systematize the participation process, a step-by-step programme has been set up. This was recently revised by a joint socio-technical team of project implementors. Choice of technology (gravity schemes, drilled or dug wells) and level of service (only public water points) are determined by the project. But for the future it is proposed that villages with piped schemes can also install house connections. The conditions for house connections are that it is technically possible and the villagers concerned pay the additional costs for their higher service level. Whether the latter also includes the above-standard construction costs is not clear. The proposal was formulated, because after handing-over villages with piped schemes often install private connections to meet local demands and increase revenues for O&M. As the systems are not designed for this service level, this has implications for the scheme's capacity and design life, which the villagers do not always realize. By including this decision in the participation process and giving more information on the implications of this decision, it is expected that problems with the capacity of the scheme resulting in less or no water at tail-ends can be avoided.

Villages accepting the project form a village water committee (VWC) (three men, three women) and sign a contract. The VWC participates in the location of waterpoints, the organization of the self-help labour and the selection of villages scheme attendants or handpump mechanics for training. The VWC itself gets training for the later management of the water supply. This has recently been extended to include also members of the village government and (where present) village accountants. Participation of women in meetings and committees is part of the project strategy. Over time much knowledge has been gained by individual staffmembers on how to bring women into the process, but it has not yet been transformed into a systematic approach which goes beyond the general guidelines.

Results

By September 1992, or mid-way phase III, 263 villages had got an improved water system. Directly after completion and inspection these are handed over to the village government for O&M, with a one-year guarantee period. Construction is going on in another 74 villages and design in 26. Because of lower implementation speed and higher costs, only 100 out of the targeted 150 villages of phase III are expected to be completed.

All handed-over schemes are working, but as discussed below exact data on performance are not available. Piped gravity schemes have some problems with preserving a good water quality. The project tries to counteract this by including source protection in the village participation programme and cooperates in Iringa with an environmental project (HIMA). Handpump wells have no water quality problems, but it is not always easy to locate the pumps in a central place and their O&M cost are higher than for gravity schemes.

Some villages with piped schemes have already expanded the scheme with some additional pipelines and standposts to cater for the expanding population. Village governments with handpumps have found this more difficult. In villages with land left around the handpumps a policy of condensation is sometimes followed by allowing new families to build a homestead on half an acre of land near a pump. However, this solution is running out and most village governments in handpump villages find it impossible to install new wells and thus keep up safe water usage in their village.

The performance of handed-over schemes is monitored by three regional mobile teams. The teams consist of technical staff and one CDA and are financially supported by DANIDA. Team members give on-the-job training and advice to village mechanics and VWCs and carry out repairs which fall under the scheme's guarantee period (1 year) or are beyond village capacity. The teams also collect computerized data on O&M costs and nature and duration of breakdowns. This data have so far not been condensed and analysed, as the expatriate who developed the computerized monitoring system has left.

Originally, it was planned that the DANIDA-financed regional support teams would be replaced by Tanzanian-paid mobile district teams. DANIDA would pay the investment costs for their transport. Investigations showed however that virtually none of the districts have enough resources to finance such mobile teams for O&M support. A new set-up for O&M has therefore been proposed, under which all O&M tasks are to be carried out, managed and financed by the villages. The proposal describes the organization and specific O&M tasks to be carried out in each type of individual scheme (i.e. piped gravity, diesel-pumped, hydram, handpumps) and also describes the organization and tasks in group schemes (i.e. piped schemes with two or more villages). It further advises recommended tariffs for gravity schemes and handpumps, on the basis of data collected for 2 schemes and 9 villages.

In case of major technical problems, the villages should contact the district water engineer, NGOs or the private sector at their own cost. For group schemes, the group scheme committees will present annual budgets to the ward development committees and the district authorities and discuss with the latter what part of the financing will be done by the districts.

A large support role, which is to be paid by the Government (districts) is to be provided by the CDAs. They will assist the VWCs and village governments in the proper administration of the schemes and their expertise for this task has to be built up. More support is also still needed for proper financial administration. The project already provides some training on bookkeeping in cooperation with trainers from the Department for Cooperatives, but the training is not yet sufficiently adapted to the conditions at village level.

In the O&M plan it is further proposed to integrate reporting and monitoring of operation and maintenance of water supplies into the existing reporting system from villages to wards to districts. The plan contains a list of indicators, but does not give any details on the operationalization and systematization of reporting, and the condensation and analysis of results and their use for management purposes.

The DANIDA-supported project has the largest number of handed-over water supplies of all donor-financed projects (263). The oldest have now functioned for over six years. Villages seem to be able to keep the systems going, but capacity building is -and needs- continuing. Data on the quality of scheme performance exist, but have not yet been analyzed. Sustainability and upkeep of coverage levels within the village boundaries seem to be better for small gravity schemes than handpumps, but the former have more problems with water quality of the source. A sustainable supply system for spare parts has not yet been built up. School latrines are designed to be durable and have a good life time, but the annual Tanzanian-Danish review has advised a reduction of their costs.

APPENDIX 2

Overview of Dcis-supported rural water supply and sanitation projects in Shinyanga and Morogoro

Overview of DGIS-supported rural water supply and sanitation projects in Shinyanga and Morogoro

History

Planning began with the Shinyanga water master plan (1971-1973). It was followed by a shallow wells project from 1974 to 1978. A total of 721 wells were constructed by the Dutch consultants. In 1987, the project was handed over to the region. During three years, a special unit in the office of the Regional Water Engineer constructed another 230 wells.

At first, the wells were equipped with Shinyanga handpumps. This pump was produced with mainly local materials. It was low-cost, but needed frequent (village) repairs at a time that the VLOM-concept was not accepted. Another pump, the Kangaroo footpump, was also not suitable for village maintenance. Because of problems with reliability it was decided to improve wells and replace all earlier pumps with SWN-handpumps. This happened during a rehabilitation project (1980-1982). The SWN pump was first imported, but later produced in Morogoro. It was initially thought to be maintenance-free.

Meanwhile, a new project was started in Morogoro region. First, a domestic water supply plan was prepared (1977-1979). Implementation of shallow wells began in 1978. Construction of piped supplies started in 1982. Most piped systems were gravity supplies. Diesel-pumped systems were where possible changed to schemes with electric pumping. In 1985, a new combined project was started in both regions, the Morogoro and Shinyanga Rural Water Supply and Sanitation Programme. This has per 1 March 1993 been followed up by a five-year project in each region (1993-1997).

Approach and organization

Initially the project had a construction-oriented approach. The consultants had their own construction unit outside the Tanzanian administration. Maintenance was by the water department, with the villages reporting problems. Other departments were not involved.

The 1982 evaluation recommended a change of direction. The project was to be integrated into the Tanzanian government structure, with a focus on the district level. The emphasis was to be on maintenance and management by the villages. Construction would aim at rehabilitating existing wells and completing the number of wells needed in each project village. Thereafter, the water supply would be handed over to the village to maintain, manage and finance the recurrent costs. Community participation, hygiene education and sanitation were added to the project.

For the implementation special teams were formed at regional and district level. They consisted of staff from the departments of MAJI, MAENDELEO and Afya, assigned full time to the project. The regional teams were assisted by two expatriate advisers. A national consultant was the inter-regional coordinator for the project. She was stationed in Maji (Ubungo office), but was employed by the Dutch consultants.

Members of the implementation teams were responsible to their own heads of departments and fell administratively under the RDD and DED. The RDD and DED also chaired the project steering committees in the regions and districts. The staff from Maendeleo coordinated the teams, but this role was never recognized by the two other departments. Implementation suffered from a lack of clear leadership and direction. Decision-making involved many people from equal levels and implementation started before the plan of operations of the three departments was ready.

The 1991 evaluation concluded that the team approach and the focus on the community were sound, but that the project needed more leadership and that a heavy regional structure of the project was not in proportion with the type of project activities. Construction of shallow wells and the building up village capacities could in principle be done by staff at district level, provided they have the materials and training. Only piped water supplies would need implementation by the region.

For the new phase (1993-1997) there will be two separate projects again. They should combine increased construction with village capacity building for maintenance, management and financing. Emphasis on sanitation and health education has been reduced. The district teams implement the projects. They have identified the technologies, prepared budgets and receive funds. Some other technologies and upgrading of existing sources are proposed, especially in Shinyanga region, but the use of alternative technologies is still very limited. The districts in Shinyanga also propose 506 VIP latrines and washing slabs. No sanitation is planned in Morogoro. More detailed planning will take place in workshops. The region gets a support function, with some funds. Each project gets 5 consultants, a team leader, engineer, social specialist, trainer and administrator. In Morogoro, 2 consultants are expatriates and 3 nationals. In Shinyanga, the ratio is 4:1, but the training advisor will be replaced by a local consultant in two years. Two female consultants have been engaged so far. A liaison office is planned in Dar es Salaam.

Average construction capacity is 40 wells (or equivalent systems) per district per year. This is equal to some 1800 waterpoints in five years. Proposed targets are 2850 public waterpoints, divided over various types of point sources, 42 rehabilitated and 6 new piped schemes. For part of the construction local contractors will be sought and trained. The Tanzanian authorities rejected proposals for local consultant units and external team managers to increase outputs. To supplement the CDAs, animators will be engaged in the villages, preferably females.

Results

Aggregated figures for the number of water systems and -points constructed over the total period of the projects are lacking. From 1985-1990 water supplies were completed in 98 out of 416 villages in Morogoro and 70 villages out of 627 in Shinyanga. In 1992, handing-over had taken place in 2 villages. Of all systems built, 360 handpumps and 2 piped supplies are still operational.

The roles of all parties (functionaries, steering committees, villages) have been defined in a 'systems design'. For implementation the project uses a 'step-by-step' procedure for integrated fieldactivities and an integrated fieldmanual. The latter specifies 17 steps for

implementing the project. Its latest revision dates however from 1986 and a new update in cooperation with the implementation teams is required.

All project villages have formed water management committees and almost all have set up village water funds. Deposits in these funds vary per village and district, with in Morogoro a minimum average of Tsh 6,456 in village funds in Ulanga district and a maximum average of Tsh. 47,107 per fund in Kilosa district. The water committees include two women members, but village women have no real influence, because they have problems in being heard at meetings and their committee members are elected in a non-democratic way and miss the back-up of other village women. A team from the University of Dar es Salaam prepared a training programme on gender issues, but the material reviewed was academic and for training relied mostly on lecturing, which is not the most suitable method to train fieldstaff and does not take their own experience into account.

For maintenance, village-selected mechanics and scheme attendants have been trained and equipped (although pump mechanics lack clamps). Village caretakers have been selected, but still need training. At present, 30% of the handpump wells in Morogoro and 45% in Shinyanga are out of order. Partly this reflects the lack of maintenance in the past and the delays in rehabilitation. It is expected that results will improve once pumps are rehabilitated and village maintenance and management are fully implemented.

The project has established a monitoring system from the villages upward to keep track of the performance of the villages in maintenance, management and hygiene with the help three one-page forms. Forms and monitoring and reporting system were developed in a one-week workshop with the regional teams and tested out in the field. One village form is filled by the mechanic and gives information on preventive maintenance, frequency and duration of breakdowns, type of repairs and turnover and cost of spares. The second is filled by the water committee and gives data on committee activities and incomes and expenditures for the water supply, and the third is filled by the village health worker and gives data on the number of households relying on unimproved sources, environmental hygiene at improved waterpoints and latrines. Data from the village forms are summarized monthly for each district by the district teams and three-monthly for each region by the regional teams.

The first half-year experience showed that the system has taken off well, with 90% of the villages reporting. The forms need more simplification and function too much as a reporting system for the project management and not yet as a tool for the villages' own management of their water and environment.

The greatest threats to effective village maintenance are currently the lack of spare parts, especially for handpumps, and their high costs. Exact data on the cost of maintenance of the systems are not yet available. The evaluation mission made an estimate based on the presumed average lifetime of each pump part and the 1990 replacement prices. According to this estimate villages may need to make an average reservation for maintenance and repairs of Tsh. 13,000 per pump per year in year 1, Tsh. 19,000 in year 2-4, to Tsh.

27,000 in year 10-15 ¹). Prices in these estimates are those charged by a national industry with a monopoly for the production of SWN pumps and include a 25% delivery charge.

A further area for action is community financing. The project has got training materials to assist village committees to budget for maintenance, select a locally appropriate financing system, organize fund collection and administer and account for the funds, but this material is not yet used.

Sanitation activities were taken up recently. The project dropped the VIP latrine (although some districts have proposed it anew) and started to promote the construction of good pit latrines. Lack of trees for strong floors (slabs) of traditional latrines is a problem in deforested areas.

Hygiene education is limited to some activities in the step-by-step programme. The evaluation showed that their effectiveness needs to be increased, by working with users and not just the village leaders, using more modern methods and techniques and training the health assistants in communication skills.

Training was in the latest phase confined to training of fieldstaff on the integrated ('systems') approach, and training of staff and villagers in the use of the monitoring system. It is to be expanded during the next phase. Subject areas in which training is proposed are: participatory techniques; preparation of educational materials; community financing systems; village skills for construction and maintenance; women's leadership; participatory evaluation; district planning and technical and managerial training for contractors. The plans further foresee in the preparation of ecological profiles and gender assessment studies.

¹ An estimate for Danida-supported handpump projects in Ruvuma in 1992 gives TAS 8,400 as the average O&M cost per handpump per year.

APPENDIX 3

Overview of FINNIDA-supported projects in Lindi and Mtwara

Overview of FINNIDA-supported projects in Lindi and Mtwara

History

FINNIDA and Tanzania cooperate in the rural water sector since 1972. After completing the water master plans implementation started in 1978. Phase I-IV (1978-1987) focussed on rapid construction and worked parallel to the Tanzanian government through a organization of Finnis consultants and directly employed Tanzanian staff. This organization employed 15-18 expatriates, some 60-160 permanent staff and 70-200 casual labourers. By end 1986, 2230 handpump wells and 12 small piped water supplies had been constructed and one large piped scheme had been rehabilitated (one Makonde scheme for 150,000 people), at a total cost of FIM 53,2 million. Installed handpumps are the NIRA 85 (51%), NIRA 76 (41%) and the India Mark II (6%). Six other handpumps have also been tested. The NIRA is a direct action pump working only in the shallow aquifers. It was tested on suitability of VLOM² under the World Bank handpump project. Originally the NIRA pump was imported from Finland, but recently a TANIRA pump assembly plant was set up near Dar es Salaam.

Reorganization and approach

An evaluation in 1987 showed that over 50% of the systems did not work, due to lack of funds and skills for O&M and management, weak institutional and organizational capacities and a supply-oriented construction approach. The project then changed direction for phase V and VI. The amount of funds was reduced and the focus placed on integration, training, operation and maintenance and community involvement. It was also agreed that from 1992 on, MAJI would gradually take over financing of material costs, starting with 10% and with an annual increase of 10%. The same would happen with the costs for community participation, but starting in 1993 and in steps of 20%. Community participation would be expanded from self-help labour in construction to involvement in local planning and maintenance, financing and management. From 1988 onwards, construction is carried out by the RWEs and DWEs. An expatriate advisor has been stationed at Mtwara. His managerial role is still implementation-oriented. The Lindi RWE office has no advisor and acts more autonomously. A post for an O&M advisor could not be filled and has stayed vacant.

Community participation is also stationed in the RWEs offices. The two Tanzanian advisors have previously worked in MAENDELEO. They are paid by FINNIDA and have an implementation rather than an advisory role. The original plan, that other departments (MAENDELEO, Afya) play a support role, has not been effectuated.

The advisors in Mtwara have a separate unit within MAJI with their own accounting, transport, etc. Planning of the projects is done by MAJI-regional with advice from the consultants. The need for decentralization to district levels is recognized, but the division of work has not yet been worked out. The regional offices are overstaffed with water technicians, resulting in low utilization and motivation. At the same time, the districts have too few funds to pay for increased staff, per diems, transport, etc. Decentralization of participation tasks, although intended, has not been carried out for the same reasons. A

² Village-Level Operation and Maintenance

conceptual paper for community participation was prepared, based on the national policy, but the latter has not been operationalized and MAJI fieldstaff have not adapted their way of working.

Results

Lack of clear arrangements on the operationalization of shared financing between FINNIDA and MAJI, and organizational problems in Mtwara led to a virtual stop of the project in Mtwara for almost a year, with work only going on in Lindi. By July 1992, the total output achieved since 1978 was 2451 new handpump wells, 928 rehabilitated wells, and 17 piped schemes.

Village water committees and village water funds have been set up and community leaders (men and women) in 25% of the project villages have been oriented on community involvement. Emphasis is on village responsibilities and not on decision-making, planning and problem-solving. For maintenance, regional maintenance units were established under the RWEs, financially supported by FINNIDA. So far, no viable maintenance support system could be developed. Management of piped water supplies still falls under MAJI. The villagers (VWC, scheme attendants) so far have a preventive maintenance and reporting role. For the maintenance of handpump wells, a three-tier system was proposed, but not operationalized³. A division of tasks between region and districts has not yet been worked out.

For local maintenance, 337 handpump caretakers (2 per village) have been trained in 17 courses. This means that some 20% of the project villages have a trained caretaker. Trainings for scheme attendants and pump mechanics in piped schemes have not yet taken place. Ki-swahili manuals for O&M of diesel-pumped schemes have been developed but are not used for unknown reasons. Provision of tools and spares (against payment) to villagers is still to be organized. Most villages have set up funds for O&M, but there are no regular contributions linked to actual costs and budgets, and the balance of the funds is rarely enough to cover the costs of payment for the mechanics and acquisition of basic spares.

To monitor construction and maintenance, the consultants set up a computerized management information system. MAJI staff was not trained and after the departure of the persons who set up the system it was no longer used. The strategy of the project is now to develop a good manual system first. O&M is monitored through follow-up visits, but these are not carried out lately as no transport and funds are allocated for this purpose. Data on the actual costs of O&M are not available. In Lindi Rural, the DWE has recently started to monitor O&M costs of handpumps and piped systems. Sometimes, the villages report on O&M performance to the DWE, but this not a regular feature and the information is not registered and followed up systematically. Hence, data on functioning of installed systems is incomplete. The RWE in Mtwara reported that in Masasi district, over 70% of the 600 HPS were not functioning, while in Mtwara rural, 80% of the piped systems were out of order. For Lindi region, 26% of the handpumps and 73% of the piped systems were

³ A three-tier handpump maintenance system was tried earlier in the Dgis-supported project in Shinyanga, but was shown not to work. Main reasons were lack of management at village level and lack of resources at district and regional level.

reported out of order, without further details on causes and duration. No information is available on the actual use of the systems.

A special case in O&M is the comprehensive piped water scheme on the Makonde plateau. This scheme consists of 6 piped systems serving 300,000 people who have no other permanent water source. The system was built before independence and was operated by an autonomous body, which sold water in kiosks to the villagers. The system is now operated, maintained and financed by MAJI at national level. However, there are not enough funds and the service deteriorates consistently, despite inputs in rehabilitation. District councils are also not able to take over O&M. The Government has now adopted initial proposals from a FINNIDA-financed study of the Tanzanian Institute for Resource Assessment to re-establish an autonomous corporation for O&M of the scheme, sell water per bucket at a tariff of Tsh. 2-5 per 20 liters, which covers capital and O&M costs, and establish an efficient and effective operation, maintenance and management system with community involvement. The details of these arrangements are to be worked out in a second study by IRA.

Nearly two years before the planned end of phase VI, the FINNIDA project has been terminated, after a mission was sent out to assess the sustainability of the project. The mission concluded that MAJI RWE and DWE are able to continue technical construction on whatever scale national finances allow. Community participation and management that were to lay the foundation for sustaining the installed facilities are insufficient. The mission advised that this component is continued for at least two more years. The responsibilities and authority of the various parties should be defined more clearly, capacity building of the villages should be completed and a viable support structure identified and put in place. The new water policy at national level provides a good basis for these tasks, but concrete guidelines need to be worked out.

Another area for action are water resources protection. Water resources and quality in the area are deteriorating and threaten sustainability in the longer term. Sustainability would further be improved by better quality construction and more community involvement in choosing a sustainable type of technology, service level and financing system. Rainwater harvesting, which is practised privately on a large scale in some areas, deserves more attention and should be improved technically.

APPENDIX 4

Overview of NORAD-supported projects in Kigoma and Rukwa

Overview of NORAD-supported projects in Kigoma and Rukwa

History

In Kigoma and Rukwa, water master plans were prepared with Norwegian assistance from 1980 to 1982. Implementation first started as separate water projects with their own regional implementation units. The projects were subsequently brought under MAJI and are now part of the Kigoma and Rukwa Integrated Development Programmes (KIDEP and RIDEP). The water sector gets the largest share of funds in both programmes (NOK 3 million and 4 million/year, excluding the cost of expatriates). Sanitation and hygiene education are so far only marginally included. Originally, the projects concentrated on piped gravity schemes. Other technologies used now include boreholes and shallow wells with locally produced SWN 80 handpumps, rehabilitation and sometimes conversion of diesel-pumped systems and protection of springs and traditional wells.

Organization and approach

The Ministry of Water is the implementing agency of the projects. Recently, the private sector is also involved and contracts are given out to local craftsmen for the construction of, for example, headworks. No information was available on the quality of this work. Until recently, expatriates were stationed at regional level (1 for construction, 1 for O&M) and with some DWEs. Under the RIDEP and KIDEP projects, water supply advisors are now stationed at district level under the DED. It has further been proposed to replace part of the advisorships by a system of regular support visits.

For community participation (CP) and health education (HE), special CPHE units have been formed within MAJI at regional and district level. The Department of Community Development has seconded staff to these units, but is not involved itself. The units are short in specialized manpower. In some districts and field projects, MAJI staff therefore carry out CPHE work, without previous training or content support. In Kigoma, KIDEP was reported to develop yet another community development unit. Several review missions have recommended that this practice of separate units is abolished and that the Department of Community Development and Ministry of Health are involved directly. This may have taken place since 1991 and needs more recent information.

The projects intend to decentralize most implementation work to district level and involve the regions in monitoring, information management and support to district planning and management. Operationalization is impeded by under-staffing of the higher technical staff (DWEs and section heads) in the district offices and relative over-staffing of lower technical staff. To stimulate outputs, a system for the payment of incentives has been created for some activities such as well drilling. The aim of the incentives is to speed up technical construction. Training is a weak component in the projects.

Results

Between 1980 and 1991, some 200 villages have been served in Kigoma. Since 1982, 50 villages got gravity schemes and 17 diesel-pumped water. Other outputs are 77 villages with boreholes and handpumps and 30 with protected wells and springs are built since 1990. No data were available on outputs in Rukwa.

Projects are allocated either on the basis of the water master plan (priority villages) or sometimes a village request. Each candidate village must accept the project formally (sign contract) and establish a village water fund. The process of community participation is laid down in fifteen steps. They emphasize especially the duties of the villages and staff tends to interpreted participation as compliance with project demands. Each village has to set up a mixed village water committee and establish a water fund. Active involvement of women is both a Tanzanian and project policy, but the project has not yet developed a systematic approach for bringing women into the various planning and management activities. The sometimes great pressure on construction further reduces opportunities of staff to bring women into the process.

In Rukwa, 55 village schemes had been handed over in 1991. For 26 of them, the village has formed a maintenance funds, while 10 villages are in the process of doing so. For operation and maintenance usually one of the male villagers from the voluntary labour force has been trained as scheme or pump attendant. He has got a free bicycle and an initial box of tools and spares. The village has to compensate him for his work. For complex repairs, the village can apply for support from MAJI (or from the private sector if preferred), but there was no clear division yet in what work is to be done and financed by the villagers and what by the DWE and RWE.

Sanitation has developed from the installation of demonstration VIP latrines (too costly) to the training of health assistants and some village craftsmen in making latrine slabs of the sanplat type. These are sold at 50% subsidy and have proved popular: 275 sanplats were sold in 6 months, more than the total number of VIP latrines constructed in ten years. A review mission therefore recommended wider marketing at their real cost. Hygiene education is still very weak and the mission recommended to use the sanitation programme as an entry and combine it with a good hygiene education programme.

The breakdown rate of completed water supplies is known to be high. Only 25% of the schemes in Rukwa for example were reported to be fully reliable throughout the year. Actual figures are lacking, however, and what data exist are not systematically condensed, analysed and used for management purposes. Major problems are lack of fuel in diesel pumped schemes and risky water quality in gravity schemes. Groundwater now gets a higher priority where this is available but has other disadvantages, such as an a-central location and higher O&M costs for handpumps. There is also a growing lack of spares and villages often have to spend the greater part of their funds on travelling to towns, withdrawing funds and buying spares from MAJI or the private sector.

Most village water funds have been established through ad-hoc fund raising and are not yet operational. Data or estimates on maintenance costs are not available and villages only get a rough indication of what they should collect. Committees get little guidance and lack a systematic and practical procedure for financial management. Fund deposits are not made periodically and withdrawal is complex (3 signatories, including MAJI), so that scheme attendants are often not paid regularly. As maintenance and management problems are likely to increase with time, some back-up system is needed. This requires changes and expertise building in both MAJI and MAENDELEO.

APPENDIX 5

Overview of SIDA-supported project in Mara, Mwanza and Kagera⁴

⁴ Formally, Hesawa is called a programme, but for the sake of consistency with the other cases it is here called a project.

Overview of SIDA-supported project in Mara, Mwanza and Kagera

History

Swedish assistance to the rural water sector in Tanzania began in 1965. In 1978 water master plans were prepared for Mwanza, Mara and Kagera and in 1982 implementation started. Six thousand handpumps were to be installed, 400 a year. But as installation is not the answer by itself, the "Health through Sanitation and Water" (HESAWA) project was started in 1985.

The water supplies comprise handpumps (SWN and NIRA), traditional sources, rainwater harvesting and gravity-fed piped systems. Activities in health comprise the training of VHWs and TBAs and the organization of village and school health education. Sanitation consists of construction of latrines and improvement of drainage, waste disposal and vector control. Choice of technology and local planning and implementation are to be such that after hand-over villages can autonomously run, manage and finance their systems. Human resource development for village autonomy in water and sanitation and community participation are the two cornerstones of the project.

Organization and approach

The project started off in the Prime Minister's Office, but is now located in the Ministry of Community Development, Women and Children's Affairs. One of MAENDELEO's female officers has the function of project director and deals with the coordination with the other project departments, MAJI and Afya at the national level. A zonal office with 3 Tanzanian Government staff and 2 expatriates and a group of 110 Tanzanian consultants and NGO staff, from professionals to drivers, takes care of project management and support. Implementation is by specially formed project teams at regional and district level. The teams consist of 3 Tanzanian staff from the executive departments, appointed by the Regional Development Director and District Executive Director. Each regional team is assisted by one expatriate advisor and one Tanzanian accountant. The district teams which work in integrated project districts (seven out of 15 districts) has also two consultants, a District Promotion Officer and a District HESAWA Technician. Although all 15 districts get some support, the seven integrated districts get most funds and vehicles and the above-mentioned consultants.

Villages wishing to take part in the project have to include an improved water supply in their village development plan, form a Hesawa committee (3 men, 3 women) and opening a water account. In this they deposit Tsh. 20,000 per SWN pump or 12,000 per NIRA pump. For maintenance of piped schemes a deposit of TSh 12,000 per domestic point is required. Rainwater harvesting facilities are provided at a subsidized capital cost. After meeting the project's demands, the villages get assistance from technical and social staff to plan and implement water supply and sanitation improvements, set up a local maintenance and management system, get training for water maintenance workers, health workers and water committees, and form mixed village study groups for which training programmes are developed.

Human resource development comprises 20% of the project budget. Regional and district staff are trained on the project's concepts as well as various content matters and in making the project's own training materials. Key project concepts are that each village gets the technology which they can in principle sustain by themselves and that planning, implementation and maintenance/management are also done by the villagers. The role of the staff is to bring technical assistance, materials and support and to prepare the villages for self-reliance in water supply, sanitation, hygiene and health. Villagers get training in planning and technology and can take part in study groups. The training for these study groups follow a pre-determined curriculum of courses related to water, sanitation and hygiene; the choice is not based on self-defined village needs or problem inventories. As part of the training the villagers also make physical improvements (protection of traditional water sources, construction of pit latrines).

Results

By July 1992, 547 traditional water supplies had been improved (wells and springs), 1417 handpump wells installed, 37 piped systems with 865 standposts built or rehabilitated, 25 rainwater collection systems installed at institutions and 66 at households, and 372 rainwater jars had been cast. The total number of latrines built by households was 1456, at schools and clinics, 161. Training was given to 655 VHWs and 231 TBAs, 1914 waterpoint caretakers, 893 village craftsmen, 91 storekeepers and 677 study groups.

In 1992, as part of an external evaluation participatory village studies were carried out in 24 of the 600 HESAWA programme villages and 3 control villages. The studies were carried out by a team of project staff, external evaluators and villagers. The teams found that 26% of the wells had dried up or had handpumps out of order. Possible reasons were poor well siting and standards of workmanship. Quality of work in upgrading traditional sources could also be improved. Rainwater supply looked promising as a supplementary technology and cases of good community management were seen. Functioning of piped systems still required improvement. A sustainable maintenance system and spare part supply for all technologies were not yet in place. In general, the village committees and caretakers were not aware where and how to acquire tools and spares and how to obtain repairs by the ward pump mechanics or the private sector. There are however substantial differences between districts, both in quality of construction and in execution of maintenance.

In the 600 village water accounts, a total of some Tsh. 10 million has been deposited. This money lies idle and quickly depreciates in value. This is a source of frustration for the villagers, but there is no spare parts supply system yet and the villagers do not know for what else to use the funds. Size and management of village HESAWA funds are not based on real costings of O&M and financial management is to be developed. Reluctancy to pay exists further in villages where handpumps are distributed unevenly, because groundwater is not present everywhere.

In sanitation, the project switched from the too costly VIP latrines to concrete slab making. Demand is low, although there are differences between areas. In areas with a good availability of traditional building materials, concrete latrine slabs are thought too costly. People also seem to think that a concrete slab should have a matching permanent outhouse. In one area the project now experiments with improving the traditional type of

latrines. Sanitation is also brought into the school health programme, where it is linked to joint analysis of health problems and finding local solutions. But integration into the mainstream programme has not yet occurred.

The health programme includes training of village health workers and traditional birth attendants and the organization of hygiene education. The evaluation mission concluded that the programme has a good potential. The study group programme, which is a separate activity, was found costly and has no clear outputs of its own. The mission concluded that objectives and results of hygiene education need to be made more measurable. A monitoring system can help the villages track their performance and the project to measure the overall results. Environmental conditions at village water points, for example, are often poor, which may point at not yet fully effective hygiene education, although also other problems, such as a low permeability of the soil, may locally play a role. More general environmental degradation may play a role in the decline in rainfall and drying up of groundwater sources, but this requires more investigation.

In the HESAWA project villages, women's involvement in village affairs is higher than before the project and in the control villages. However, it still needs to be strengthened. Despite the rules, water committees are for example not always mixed and women's contribution to financing of O&M is not acknowledged. Meetings are often a men-only affair. The project has set objectives and developed a strategy paper on women's involvement, but practical measures in the project process, such as especially inviting women to meetings and adapting meeting times, duration and seating to their possibilities are not yet generally introduced.

Although village capacity has been built up, the villages are not yet wholly prepared for self-reliant management of health, sanitation and water. HESAWA village funds have been established, but good financing systems remain to be developed. A spare part supply system is not yet in place and a viable support system where the villages can get help for technical or managerial problems beyond their capacity needs to be further developed. The project has therefore not yet been phased out in any of the first seven integrated districts, while the other districts with a lower degree of project support are urging to be fully phased in.

Especially in the integrated districts, the HESAWA project is much larger than any of the districts' other projects. That, and the task force approach by a special project team and the presence of two consultants who do much of the operational work makes that the project is still seen as an external activity, rather than part of the districts' own work, whether externally funded or not. The evaluation team has suggested that the implementation role of the districts could increase when the consultants get an advisory role for more than one district and their implementation role is partly taken over by the local private sector (well-drillers and diggers, etc.). The mission further proposed to dissolve the distinction between integrated and non-integrated project districts. The available resources could then be distributed over all districts and be related to the districts' capacity to sustain a construction and maintenance programme in their respective areas.

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