

# Case studies

## 1.1 Introduction

These case studies have been collected as part of a project to bring issues of social exclusion in the practical development of infrastructure in low-income countries into the core of project planning and design. They have been used to influence and illustrate the guidelines that have been produced as part of the research.

The case studies are being set out here to provide a resource for engineers and the trainers of engineers. They can either be used as a supplement to the training notes produced under the project or used separately to provide illustrations of the overlap between gender issues and the development of infrastructure.

One of the problems in collating the case studies has been the lack of *engineering* issues. There are many case studies of the importance in considering the needs of men and women in the development of infrastructure, but these have come from gender studies rather than mainstream civil engineering. This leads to the impression that gender issues lie outside of the core of project development and design, forming a specialist area requiring specific expertise. In contrast, many engineering examples do not bring out social issues explicitly, so there is a gap between “gender” knowledge and “engineering” knowledge that these case studies and associated books and booklets aim to bridge.

## 1.2 The studies

The case studies have been kept short, to make them accessible and useful as part of larger initiatives. They have been edited slightly to bring out the engineering issues, rather than other aspects, such as politics or rights based actions. A comment is provided to expand on some the lessons that can be drawn from the case study.

The studies are grouped according to sectors:

- water resources;
- water supply
- sanitation
- solid waste
- transport
- irrigation
- construction
- management and organization
- emergencies
- hygiene activities

Within each section, the case studies are grouped according to the project cycle (planning, feasibility, design, construction, operation and maintenance, evaluation).

### 1.3 Other project outputs

- For a short introduction on infrastructure and its impact on people, see *Building with the Community* (WEDC 2002)
- For guidelines on how on engineers can include gender issues in their work see *Infrastructure for All* (WEDC 2002).
- To train engineers and technicians to meet the needs of men and women see *Developing Engineers and Technicians* (WEDC 2002)
- Website: <http://www.lboro.ac.uk/wedc/projects/msgender/index.htm>

### 1.4 Referencing

The case studies have been provided by a wide ranging group of people over several years. Some are personal observations or have been extracted from published or unpublished reports. Attempts have been made to identify the originator of these extracts, but this has not always been possible. If you know the original source of a case study, please contact Brian Reed (details below), in order that credit can be given.

### 1.5 New Case studies

If you have examples of engineering issues that have a gender or social exclusion aspects, that you think would be useful additions to these case studies, please contact Brian Reed (details below).

## 1.6 Acknowledgements

The guidelines were produced by a project team consisting of Sue Coates, Marie Fry, Sarah Parry-Jones and Brian Reed, lead by Ian Smout. The team wishes to thank the following people for their assistance in preparing this publication.

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### Case study 1

## A reservoir saves a reputation

### 1.1 Background

Ghuwein (A small ancient village south of Hebron in the Palestinian territories). Ms A, a single woman of 20, is the eldest unmarried daughter of one of the extended families in Ghuwein. There is feuding between them and their very close neighbours. Part of the reason is because the neighbours had asked to marry her to one of their sons. The family refused, partly because Ms A was hoping to find a husband outside this community, living in Samoa', with the possibility of an easier life - taking care of sheep is hard work. The family did not want to let her go anyway because if she was married then they would have no-one to look after the housework - bread making, water gathering and helping with the sheep at milking time and lambing. She used to get up at 4 in the morning to start her tasks and work until nightfall (seven o'clock in summer because the men are harvesting) with very few breaks, and on-call continuously if any of the family wanted anything. She used to spend four hours a day (if the donkey was available) to collect water. During ploughing it would take longer because she would have to fetch water without the donkey. Now she does not have to do any of the water collecting since the renovated cistern is next to the house, she is able to rise at six o'clock - a saving of two hours for her personally.

It was not only the issue of the time it took to fetch water but also, the slurs on her character. Because she had to go a long distance away to collect water out of sight of the family (at least half an hour's walk over the hill), the aggrieved neighbours maintained that she was up to no good. Such slander could have serious consequences in such a small community, maybe ensuring that she could not find a match (since there are more young women than men). Now her neighbours cannot make any comment since the cistern is close to the house.

This is a family of sons, so only her mother (in her early 50's) and herself to do all this work. Their solution was to marry their sixteen year old son to a seventeen year old girl from outside the area, bring her in, train her up and then they could allow the daughter to be married. Presumably unless she marries someone in an urban area she will find herself in the same situation.

*(Taken from the "Hebron Water Access and Storage Project (H-WASP) – West Bank: Progress Report" (Implementation stage: Progress to August 2000). Printed by ERM (Environmental Resources Management) for DFID, August 2000)*

## Case study 2

### Selecting the right technology

#### 2.1 Background

The Malawi gravity-fed rural water supply scheme was one of the earliest examples of popular participation in large-scale, government-sponsored development projects in Africa, and it delivered sustainable benefits over a wide area. Forty-seven piped water schemes supplying over one million people have been completed since the Programme was first developed in the late 1960s. The popularity of the project lay in the fact that the piped water was brought to villages from a year-round source such as a spring or stream, located above the line of habitation, making the water both pollutant free and reliable.

#### 2.2 Action

New schemes were only undertaken at the request of local communities who were involved in system design and planning. Appropriate technology was developed that matched local needs and local resources. Sharing responsibility between the government and local communities, based on their respective comparative advantages, meant that communities were expected to perform only the tasks they could manage, given appropriate training, resources, and organisational and technical support. They were required to supply nearly all the labour for construction and to carry out continuing maintenance after construction.

The Programme devised appropriate institutional solutions. Working with existing patterns of organisation appropriate to local conditions and with recognized local leadership, both traditional and political, enabled the programme to expand quickly and yet leave behind effective local management capacity. Political backing was an important factor

*Krishna and Robertson, 1997*

#### 2.3 Comment

Simple technologies are appropriate for communities with a low technical and managerial capacity. The project design should adapt to suit the people, rather than the other way round.

## Case study 3

### Water and sanitation design

#### 3.1 Background

The Mothers' Clubs in Surigao City in the Philippines are very well organised under the supervision of the City Health Bureau. These clubs are active in income-generating activities and primary health care. As the women have to travel 3 to 5 kilometres up the mountains to fetch water, they approached the city administration for assistance to build a gravity flow water system to bring water to their villages. There was a positive response from the authorities.

#### 3.2 Action

The Mothers' Clubs worked closely with the project technical team in the feasibility study, the design of the system and its implementation. The women told the engineers about the short cut trail leading from the spring to the village. The result was that the quantity of pipes and fittings originally requested for eleven systems could extend the service to eight more villages. After water was brought the clubs organised environmental cleanliness through the building of toilets, sanitary disposal of garbage and promotion of personal and domestic hygiene.

#### 3.3 Comment

The indicates the benefits of user (especially women) identification and involvement at all stages of the project cycle

*Water Supply IT Source Book 1996*

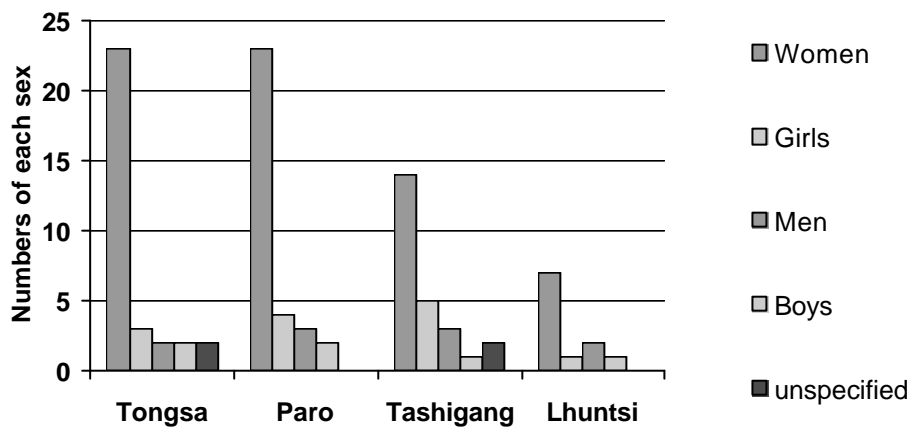


## Case study 4 Who carries water?

### 4.1 Background

In the case study from Bhutan a study to identify who is responsible for carrying water reveals that the majority of water is carried by females (80) and this can be used to inform the planning and design of water projects in Bhutan.

### 4.2 Results



*Marie Fry PRA Bhutan 1997*

### 4.3 Comment

Gathering basic social data allows the engineer to design practical products to suit the users.

## Case study 5

# Group campaigns for clean water

### 5.1 Background

In the Dominican Republic, villagers trained in health promotion successfully implemented a project to grow more food and spread knowledge about effective health care. They formed a 'Women of the South' group. They then began to ask why a pure water supply was not being fairly shared. Their complaints came to a head when government, trying to repay an IMF loan, lowered wages and increased the price of piped water. The inadequate water service deteriorated further as the authorities spent less on maintaining it. The women decided to stop paying for their water until there was an improvement. They even took samples from various water sources and had them analysed, and the high incidence of harmful bacteria gave even more weight to the women's campaign - why should people pay more for water that was not even pure? The price had increased fourfold over two years.

### 5.2 Action

The final outcome was still not clear at the time the report was published (1987). Some supplies had been disconnected (but when the women asked the water worker's union the supply was reconnected by friendly workers!). However, in some areas where the water had been cut off due to non-payment, an all night protest and a threat of occupying the water board was used to get the water supply being reconnected.

### 5.3 Comment

Short term, narrow analysis of water as a community can miss out the value put on it by all members of society.

*Ref: Christian Aid project Focus Pack, Focus on Water*

Case study 6

Meeting the exact needs of the  
women in the community.

### 6.1 Background

In Baku, Azerbaijan, more than 87 per cent of the population believed that their piped water was unsafe to drink, and households spent an average of 40 minutes a day collecting water, so water supply improvements were desperately needed.

### 6.2 Action

In 1994, the government of Azerbaijan requested assistance from the World Bank to finance a project to improve the quality, quantity, and the reliability of the water system. IDA approved the project, providing a credit of USD 61 million. Considering that the duty of water retrieval rested mainly upon women, the World Bank utilised the counsel of The Women's Committee, a major NGO concerned with gender issues, to help in conducting the assessment of the women's needs. Using this participatory needs-assessment, a community outreach programme was created with the aid of the community women to make them aware of the need to conserve water, repair leaks, and maintain effective water distribution for future maintenance. The design of the water system, which was tailored to the needs of the women, met the exact needs of the community. The result of this project was the involvement of over 800 households of all the major sectors of the community, providing a sense of ownership and duty to the community.

*Source: Toolkit on Gender in Water and Sanitation 1996, The World Bank*

### 6.3 Comment

The project did not need to set up separate consultation procedures as it used existing local links with groups that had been identified as important in the planning of the water supply scheme.

## Case study 7

### Women leading the demand for water

#### 7.1 Background

KwaDlamini is a remote rural community approximately 35 km from the nearest town and 10 km from a tarred road, in KwaZuluNatal. The water project was initiated by a group of women who were tired of the long distances that they had to walk to collect water. They were also unhappy with the quality of the water. They had heard of the Mvula Trust and an application was made for funding. When they heard that their application was approved they said that they felt like flying and wished that the water project could be implemented the same day.

#### 7.2 Action

A water committee was elected by the community and initially comprised of 16 members, 12 women and 4 men. Hardworking, dedicated, trustworthy and developmentally committed people were considered the most appropriate for the job, rather than community members with high levels of education. This was partly explained by the fact that the initiators of the project were seen as being the appropriate people to be on the committee. The chairperson, secretary, deputy-secretary and bookkeeper are all women; the treasurer is a man.

The whole committee was trained in administrative and management skills and there is certain amount of flexibility with the administrative duties according to member's other commitments. Communication with Mvula is done mainly by the chairperson, secretary and bookkeeper. Communication with the community is done through community meeting but there is also a lot of personal liaising between the committee members and community members. The whole committee, guided by the chairperson decides upon actions for the committee and duties are allocated throughout the committee to ensure everyone participates. Initially children were brought to committee meetings but recently a crèche has been established making it easier for mothers to participate.

In striking contrast to this promising picture is the low position of women in the presence of the Induna or chief. Here the women sit separately from the men and do not speak unless asked to do so. Defaulters who did not pay their contributions were brought to the chief for him to make a ruling on how they should be made to pay.

The project was worth R 775 000 (77 500 pounds) and the community was expected to contribute 8 per cent of the capital costs. This amounted to R 106 per household. While most households contributed this amount, those who could not afford the payment or who did not pay had their portion deducted from the wages they received when they worked as labourers on the project. Labour was paid for rather than volunteered and here both men and women were involved.

### 7.3 Comment

Women are not a minority interest group but the main customers for a waster supply scheme.

## Case study 8

### Social / gender analysis in practice

#### 8.1 Background

A feasibility study looking at the needs and priorities of several towns in Ethiopia included social/ gender analysis to identify the different social groups, assess their level of access to resources and to develop ways of ensuring that any disadvantaged groups would benefit from implementation of the project.

#### 8.2 Action

The survey showed many similarities and differences. For example in two of the towns, men and boys were significant carriers of water but in the majority of towns, women and to a lesser extent girls were the main collectors of water. Women would therefore benefit most from improvements to the water supply system. The analysis also identified that there was a high level of female headed households, that these households often had lower economic status and that this affected access to resources. For instance private connections had the best access to water and latrines but more private connections were to male headed households while the greater proportion of public fountain users were from female headed households. The towns had relatively high levels of sanitary awareness compared to rural areas. Individual households with higher levels of sanitary awareness did not necessarily practice better sanitary behaviour. Better levels of sanitary behaviour were found in households who reported lower levels of diarrhoea. Better behaviour seemed to be encouraged by high personal motivation, higher monthly income levels and good access to water facilities. The recommendations for the project therefore included ways of generating income for the poorest households in the communities, improving access to water and sanitation facilities and motivating people to improve their sanitary behaviour. Other recommendations of the funding agency include:

- clarification of individual roles/ relations/ responsibilities with water and identify target groups;
- recognise different needs between men and women and the impacts of a water project on them;
- utilise women's knowledge and information in project formulation;
- unify managers and users of water; and
- pay particular attention to the needs of the poor.

#### 8.3 Comment

Social / gender analysis should be included as part of every feasibility study. It can produce interesting and useful findings.

## Case study 9

# Practical ways of involving women in water projects

### 9.1 Quotes

'The almost total exclusion of women from the whole process of improving water supplies may well be the most significant factor in the disastrous failure for improved supplies. If women are not included in the planning and implementation of the improved water source, as they have been in the past for traditional water sources, their motivation to use and maintain the new source will be small. In short, they are over-worked but under-utilised'.

Hannan-Andersson gives examples relating to three villages which were studied in Tanzania of how to involve women in water projects. These include:

- employing female project staff;
- involving women in village planning meetings, village water committees, women's promotion groups, dance and drama groups and pump and well caretaker programmes;
- utilising all existing groups possible;
- training in community development methods should be provided for both male and female staff members;
- appointing more than one woman member of staff so that they can support each other;
- arranging village meetings at times that are convenient to women;
- ensuring that women are allowed to express themselves at meetings perhaps by arranging all-women meetings;
- taking care not to recruit only women from the higher levels of the village hierarchy as there is conflict and inequality even among women;
- ensuring that women are represented on village water committees and supporting their roles within them;
- material on water, sanitation and health can be included in literacy programmes, using simple readers as visual aids;
- women's promotion groups can be democratically formed in each area who can be involved in meetings and report back afterwards;
- appointing women as pump attendants and essentially supporting them with appropriate training, resources and back up support;
- giving special attention to training, as if women fail in a post as a result of lack of training, it will be taken as a general indication of the unsuitability of women for the job;
- women well caretakers can be elected, perhaps with a monthly rotation;

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- providing facilities such as clothes washing facilities near the well to make the well care-takers' job easier;
- special programmes could be devised for primary schools to encourage children to accept changes;
- trying to build on existing hygiene practices when promoting hygiene rather than trying to introduce a totally new pattern of living;
- working to understand the traditional patterns of living and the motivations behind the existing patterns;
- working also to understand women's present situation within a society and the reasons behind their position and status.
- It is important to involve women in the planning, operation and maintenance of water and sanitation projects. There are a range of methods available to do this.
- Traditional patterns of living, women's and men's position and status in society and the reasons behind these all need to be understood.

*From: Hannan-Andersson, C (1985) Ways of involving women in water projects, Waterlines, 4 (1), July 1985*



## Case study 10

### Engineering a solution

#### 10.1 Background

A water supply project in India included an elevated service reservoir. The women of the village had been identified as the most suitable caretakers for the water supply scheme. One of the tasks was the dosing of the water with chlorine. This had to be done in the service reservoir. Because the reservoir was elevated, access to the dosing point was via some stairs. These were steep and not considered safe or respectable to climb in a sari.

#### 10.2 Action

The engineers had identified that women were the best people to manage the water supply system. They could also recognise that the stairs they had provided for access were not suitable for women, who wore long clothes. To date they have not managed to find a solution to this problem.

#### 10.3 Comment

Even when gender needs have been established, solutions may not be straightforward. Standard engineering solutions may have to be adapted to suit local needs.

*Sue Coates/ Archana Patkar*

Case study 11  
Height of headwalls to hand-dug  
wells

### 11.1 Background

During 1992 the ODA sent a team to evaluate the Eastern Region Water Supply Project. In the town of Letang, some hand-dug wells were in use, and these had head walls built above ground level. The head-walls were tall and wide, so that it was difficult and exhausting even for one of the assessors, as a tall man, to lift water from the wells because the headwalls came up almost to his armpits, and he had to lift water with his arms straight. The difficulty must have been much greater for Nepali women, who were significantly shorter in height.

### 11.2 Comment

Facilities should be designed with due regard to the height and physical abilities of those who will use them.

*Mike Smith*

## Case study 12

### Washing area design, Nepal

#### 12.1 Background

During 1992 the ODA sent a team to evaluate the Eastern Region Water Supply Project. The project had been primarily engineering-led, and local and expatriate technical staff had liaised with communities mainly through the leaders of the Panchayats, the local political structures. Links with the communities were therefore only through a small group of local leaders who might not have been representative of the various interests and views of all sections of the communities. Where users developed views on scheme design, there were no channels for these views to be fed back to the engineers. Distribution of water supplies was generally equitable, but in some cases tap stand locations were considered to be unduly public, especially for women. The tap stands were used for bathing purposes, and some tap stands were close to roads, where there was little or no privacy. The design of the tap stands was also considered unsatisfactory, as users and especially women wanted larger concrete aprons around the tap stands for clothes washing and to reduce crowding.

#### 12.2 Comment

- All members of the community should have opportunity to contribute to the design of suitable water points.
- Privacy should be given serious consideration in the design of communal water points.
- Social and cultural attitudes should be considered when siting communal water points, in order to ensure that the facilities are fully used and that users have no objections to their location.

*Mike Smith*

## Case study 13

### Water point development

#### 13.1 Background

Suggested comments to ask prior to design of water points:

- Is there an adjustable handle on the handpump for different heights of people ?
- Is there a concrete bucket-plinth to help women lift water onto their heads ?
- Are washing slabs provided so women can bring their washing to the water rather than the other way around ?
- What about providing sinks and washing slabs ?
- Is there shade for the users ?
- Is the path easy to use in the wet season and are there steps provided on steep slopes ?
- Could spilt water be used for vegetables, seedlings or seedling trees ?

#### 13.2 Comment

Water points should be designed with the convenience of the user in mind.

*WaterAid, Oasis Magazine, Spring 1990*

## Case study 14

### Practical planning

#### 14.1 Background

In some villages in Zambia and Malawi, women were asked to design their "ideal" stand post. In the presence of an engineer and a technician they built a model stand post of some loose bricks and a pipe with a tap. They worked at it and tried out different shapes of the stand post and positions of the tap till they were satisfied that everything was according to their requirements. The engineer then took all relevant measurements of the model, and a proper technical design of the model was made. The actual stand posts for the communities were built according to the women's design.

*Case from the PSSC Project, IRC, Zambia and Malawi ( P 52/53 Community Management Today IRC Occasional Paper 25 1994)*

In a project in Sierra Leone, women were given mud to design their own water points. They designed a two basin washing slab and wastewater channel to demonstrate what they wanted.

*WaterAid, Oasis Magazine, Spring 1990*

#### 14.2 Comments

It is quite feasible for engineers to consult women for an improved design of facilities, and that when consultation takes place the results repays the investment of time by the engineer.

Users can be involved in the design of their facilities using a range of inventive methods.

## Case study 15

### Issues in an isolated rural area

#### 15.1 Background

In Guinea Bissau's Buba Tombali hand pump project, women did not attend project planning meetings in the first phase due to their segregated lifestyle.

#### 15.2 Action

Planning procedures were adapted to contact the women as the first activity when the project was introduced and a well survey was conducted. The women were visited in their homes and at their workplaces, and at the next meeting the information from the women and the survey team was summarised in the local language and discussed. At the meeting it was ensured that there was general agreement with the selection of well sites and the women were fully aware of each one's role in the project. A second meeting with the women after the wells were constructed was held to discuss the management arrangements for the wells. There were also practical activities carried out, such as a vegetable garden at the pump site and selling of soap and seeds which were not available in this isolated area.

*IT Source Book Water Supply 1996*

#### 15.3 Comment

Planning procedures can be adapted to include women i.e. visiting women in their homes, using the local language, practical activities and having women on the survey team.

Case study 16  
Dialogue between women and the  
technical designer.

### 16.1 Background

Peasant women in Dodata sub district who spent 4 - 6 hours each day fetching water identified lack of easy access to clean water as their main problem. From the beginning there was no project blue print and no time schedule to follow, so allowing many people to influence the shape and content of the project. Women were trained to operate and maintain the communal water points, and to manage the overall scheme e.g. keep the books and collect fees. There was continuous dialogue between the women and the technical designer of the project which led to some innovative adaptations of the standard design. This was one of the factors leading to a strong sense of ownership of the project. The project took six years from identification to it's handing over to the local community.

*(Evaluation Synthesis of rural water supply projects; report no 596 DFID May 1997)*

### 16.2 Comment

Time scales need to adapt to the project, not vice versa.

Case study 17  
Helping widows

### 17.1 Background

A water and sanitation project in Uganda required a cash contribution from all the people in a council area before work could proceed. One town had a high proportion of widows due to AIDS. They were less able to pay the community contribution.

### 17.2 Action

The community water committee realised that this was going to be a problem and asked what sum was needed for the total community contribution. The committee then divided up the amount each household had to pay according to each person's ability to pay.

### 17.3 Comment

The project's requirement for a community contribution was seen as a method of involving the community and for creating a sense of ownership. However, it was a fairly blunt instrument and could not cater for people's specific conditions.

*Brian Reed*



Case study 18  
Food for thought

### 18.1 Background

In Zimbabwe it is a requirement that women feed well sinkers, who at present are predominantly male. During an evaluation exercise on gender participation (1991) women expressed their feelings towards this practice. They complained bitterly against it as they felt they were being left out of the actual implementation of the project. The women felt that participating only through cooking is too simple and does not take their possible involvement and responsibilities as main users of the wells seriously.

*Joyline Mwaramba. Working with women and men Occasional Paper 25 IRC*

### 18.2 Comment

Projects can reinforce stereotypical behaviour and miss out on people's potential contributions.

Case study 19  
Handpump manufacture,  
installation and maintenance

### 19.1 Background

The Savodaya Movement in Sri Lanka trained mostly uneducated women to produce (metal working skills), install (including borehole drilling), and maintain a type of handpump. They work with the communities, showing the men how to construct the apron slab ready for installation of the pump. They train the local women in handpump maintenance and give back-up support when required. They also provide health and hygiene education.

### 19.2 Comment

Users of handpumps can be involved in the manufacture, installation and maintenance of handpumps.

*Handle on Health' video produced by IDRC. Project involved Savodaya Movement, IDRC and CIDA.*

Case study 20

What is the critical path for programming?

### 20.1 Background

A project's timetable was determined by the speed at which physical borehole rehabilitation work could be undertaken by the Ugandan Directorate of Water Developments Rig team. The original target of rehabilitating 60 bore holes a year was doubled in the second year, because the Rig Team substantially exceeded its first year target. This decision was made in the benefit to speed up access to clean water, with no realisation of the adverse implication for health benefits and for project sustainability. The Ministry of Health, which was responsible for setting up village level bore hole O&M committees and for undertaking hygiene education training and sanitation construction, had to fit into this new timetable, and complete its activities before the bore hole team began work. The original timetable was too short for it to do its work effectively. It should have been the speed at which the communities could be mobilised, and hygiene education activities completed satisfactorily that determined the speed of rehabilitation work, not the other way round.

*(Evaluation Synthesis of rural water supply projects Eval report no 596 DFID May 1997)*

### 20.2 Comments

Equal importance should be given in project programming to technical and institutional aspects of the project.

Case study 21  
Project design maintains the  
status quo

### 21.1 Background

On a water supply project, maintenance trainees were selected from a pool of local motor-bike mechanics. Thus, it appears that only males will be selected for training, with women marginalised from the technical aspects of water supply hardware operation and maintenance. Mechanics will be expected to maintain up to 15 pumps in their designated area and will hold responsibility for the iodination of water.

### 21.2 Action

Studies elsewhere have shown that in instances where men alone are trained in maintenance, equipment is likely to fall into disrepair. Repairmen are often not aware that equipment is malfunctioning because they do not hold responsibility for water collection and therefore visit water points far less frequently than women. The regular presence of women at water points makes them ideal candidates for day-to-day maintenance. Moreover, women generally have greater ease of communication with other women regarding problems with water supply. However, if women are to be involved in maintenance, adequate support networks in the form of supplies, training and remuneration for their work is required.

Caretakers responsible for day-to-day pump maintenance will be nominated through village water committees. In contrast to the clear recommendation that women should participate in project management, there is no explicit suggestion that women should have preferential access to caretaker positions, although the dominance of women on water committees may go some way to ensuring this.

*Bridge Reports No. 28*

### 21.3 Comments

The technical design of a project of a project can work against the social goals.

## Case study 22

### Training women

#### 22.1 Background

In Lesotho one third of the households are headed by women, largely due to labour migration, with about half the men employed outside the country. Naturally women do most of the work in the house and the community including installing new water systems, digging trenches, laying pipes and carrying rocks needed to construct water reservoirs. When the government started a programme to train water minders or handpump caretakers to ensure proper use of systems, it encouraged village water committees to select women to be trained together with men. Between 1981 and 1983, of the 348 water minders trained, 115 were women.

#### 22.2 Action

One, a mother of six, was given a five-day training course on the importance of potable water supply, the operation of the handpump and the potential breakdowns of the hand pumps. She was also instructed in public relations, personal hygiene and environmental sanitation.

Supplied with a kit of basic tools, she returned to her village Matlohelva to take care of the system. She was also responsible for mobilising her neighbours to help cut the grass around the water source and cleaning the distribution tank and seal boxes, collecting money from each member of the community every month to defray the cost of diesel for the engine, maintenance of spare parts, transportation and the engine attendant's wages. During the winter when the snow in the mountains lies 2 to 3 metres deep, she was to ensure that the pipes were covered with earth lest they freeze and burst.

*IT Source Book Water Supply 1996*

#### 22.3 Comment

Women are not a minority group but a major player in water projects and should be considered at all stages, technical and social.

## Case study 23

### Hand pump maintenance

#### 23.1 Background

Sarvodaya Shramadana, one of Sri Lanka's largest non-governmental organisations, developed a hand pump which could be manufactured locally. The organisation selected ten villages in north central dry zone to establish local workshops and also trained 20 women from 10 nearby villages - two from each village - to drill 50 wells and a further 10 women to manufacture, assemble and install the pumps.

#### 23.2 Action

The criteria for selecting the women were that they had to be between the ages of 18 and 25, with an intermediate education, ability and interest for the work and physical fitness to handle the labour involved. The training was for four months and included technical and monitoring skills. The women built the main workshop for pump manufactures. The village self-help groups built village workshops for repairing the pumps. The work soon expanded to include production of small agricultural implements and small repairs to implements and trucks.

The main constraints to the project was the reluctance of parents to send daughters for training, as this was one of the first attempts of getting girls to be trained in what so far had been considered men's work. However, at the opening ceremony of the main workshop the visitors were struck by the skills of the women who had been trained. Reluctant fathers now relented. Another problem was the negative attitude of men towards women technicians. At first the women were laughed at and had to seek help from the Sarvodaya Mothers' Groups and the Saravodaya Village Elders Groups to change these attitudes. Later the men co-operated fully. The project demonstrated that women, who are the main partners in water projects, have a great incentive to make and maintain water supply projects with proper training in spare parts production and the co-operation of the men in the community.

*(Iddamalgoda and Dharmasili, 1987)*

#### 23.3 Comment

Both men and women need to realise the benefits of women's involvement in the technical aspects of water supplies.

## Case study 24

### Training mechanics

#### 24.1 Background

In Orissa, UNICEF have formalised a model of Self Employed Mechanics (SEMs), which is designed as a village level operation and maintenance scheme. In this model, women and men from the village are identified, trained and then provided honorarium as SEMs to maintain handpumps and undertake minor repairs. UNICEF agreed to provide free bicycles for women as an incentive and support system.

#### 24.2 Action

While the concept of the approach was to enable a more localised maintenance structure, the process was seen to be bureaucratic and gender-blind. To be selected as an SEM, one needed to be literate and have some prior technical skills, both factors being discriminating against women in their present social position and condition. Further the elected village group were responsible unilaterally for selecting the SEMs. In Kiramaha village where the UNICEF Project was ongoing, only a few men knew that Kartik Pradhan had been chosen as an SEM and had attended the training. However, even these few men did not know exactly why he had been trained and what were to be his tasks. The socially backward and vulnerable including the women were not aware of the whole process.

#### 24.3 Comment

How could the accountability of the SEM to the community be ensured in such a non-transparent situation and how could the SEM ensure community ownership of the hand-pumps he was to maintain on behalf of the community?

Case study 25

Maintenance training to women led  
to a wider empowerment

25.1 Background

In Banda Uttar Pradesh, women were very frustrated with the low rate, delays, and infrequency of pump repair. They organised themselves and protest at the offices of the local office of the state government's water supply organisation. Taking their water jugs, they smashed them into small clay pieces in the office compound. Finally the water department agreed to respond.

25.2 Action

In co-ordination with a woman-centred NGO, Mahila Samayaka, the women received technical training, and the water department agreed to help train and pay them a small stipend to repair their own pumps. After forming repair teams of three women, and providing tools and backup, the effort has been very successful, with a change from more than 50 per cent of the pumps out of order at a time to only a nominal few out of order in the district. Mahila Samayaka then followed up with other services to the women, including non-formal education. While being successful, the project has yet to find a way to collect local fees to ensure the effort will be sustained, should the water department stop paying the pump mechanic fees to the women.

*Jacob Pfohl Mainstreaming Gender in WES UNICEF 1998*

25.3 Comment

Water projects can be a legitimate entry point to increase women's choice of livelihood.



## Case study 26

### Decentralised system

#### 26.1 Background

The Nhlungwane water project is in deep rural part of the province of KwaZulu Natal. The water source is ground water pumped by a diesel generator to reservoirs and reticulated to 41 communal standpipes throughout the village. The project is administered by the Village Water Committee which consists mainly of women from the village.

#### 26.2 Action

The Water Committee holds regular meetings in the community to discuss problems, and reports regularly to the village development committee. Topics generally covered at these meetings include:

- Amount collected during the month
- Dealing with defaulters
- Repairs to be made to the system
- Resolutions in terms of problems related to maintenance and repairs · Planning for new or needed interventions as necessary

The management of the scheme has been de-centralised to standpipe level. Each tap has a minder, a "nompompi", all of who are women all of who have volunteered for this position. The roles and responsibilities of the "nompompi" are clear, consisting mainly of:

- Keeping tap keys
- Opening and closing of taps during agreed time periods
- Ensuring that each household receive 3x 20-25litres containers of water per day, during the week and 5x 20-25litres over the weekend
- Receiving and recording monthly payments of R5 per month and ensuring that residents pay by the 27th of the month

The project also has a paid operator, who receives R200 per month. Importantly, the operator is a local woman, and when an evaluation was done of the sustainability of the project, many of those who participated think she is more responsive to emergent problems because she is a woman who will suffer if water is unavailable. She is responsible for the following:

- Servicing the engine
- Replacing parts when needed
- Supplying water to all four tanks (which often takes 3 hours for each tank to fill up) every Monday and Friday

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- Checking any faults that might be found in the tanks and main lines · Attending to repair reports given by Wardens
- Reporting progress and matters needing attention of the committee and community in the monthly meetings.

Water supply is regular, and the problems this project faces are relatively minor. The sort of problems raised include:

- Water hygiene is problematic at some water points, as people complain that some put their fingers inside the tap and this causes the water to become contaminated
- Action against defaulters has sometimes been slow; and led to some concerns in the community that some families were receiving free water
- The community does not have a storeroom to keep spares and project equipment, and this leads to worries about theft
- Some Nompompis do not lock their taps as required. This means that some have greater access than others. Others complain that families have attached hosepipes to their taps, which is a drain on the system

These problems are relatively easy to address, and in fact are raised so that solutions can be found.

### 26.3 Comments

The decentralisation of management to tap level allows for very effective peer pressure, as all the users are close neighbours, known to one another. It also allows for cross subsidisation at this lowest level. It is easier to assist someone well known as it is understood that this help will be reciprocated when needed. Management at the lowest possible level has been found to very effective with both cost recovery and with the smooth operation and maintenance of a water scheme. It is usually women who are involved with these management systems.

## Case study 27

### From construction to participation

#### 27.1 Background

In the beginning the Mtwara-Lindi project was implemented by an engineering firm, and had as its main objective the construction of water supplies. As a consequence, when the project commenced, no socio-economic or socio-cultural study had been conducted in the area, although some general data gathering was done.

#### 27.2 Action

In 1984, influenced by the United Nations Decade for Women, a FINNIDA-financed study was conducted on the effects of the Mtwara-Lindi project on the lives of women. The results of that study were as expected:

- women's participation in the planning and implementation of the project had been very low and,
- that the proportion of women in the project training had been minimal.

At the same time as the study there were several other studies on the effects of Finnish Development Co-operation on Tanzanian women, but subsequent Mtwara-Lindi project documentation at no time refers to these studies in any substantive way.

From 1984 rural women were targeted in project documents but with few results. The project document assumed a strategy according to which special efforts would be made to involve women in all stages and aspects of the Project, particularly in planning and maintenance of water supply and sanitation systems as well as health education. There is however, little evidence of special efforts actually made.

An evaluation mission in 1987 stressed the participation of women saying “ Efforts to improve water use practices in the villages should have the support of the women in order to be successful”. They expand the argument at another point by writing “to encourage the participation of women, at all stages of water supply development from planning through implementation to operation and maintenance, is to be endorsed. If the Project fails to inform and involve this level adequately little actual benefit can be derived from the water supply facilities development however high their technical quality.”

Following the 1987 Evaluation Mission's strong statements there is no mention of women in the next Phase of the Project for 1988-1990 and, taking their lead from the Project Document, the Evaluation Mission of 1990 makes no mention of women.

In the final project phase of the project, 1991-1993, project personnel include women explicitly in the project document as a target group:

*"Women of the region, as the main users of water, will be a special recipient group, and the success of the Project will greatly depend on their attitudes and participation being responsi-*

*ble for the hygienic handling of water and for the hygienic habits in homes. They play a decisive role in the achievement of the health related objectives of the Project. In the present situation, economic development that can be foreseen to result from the improved water supply situation will be achieved mainly by the release of women's energy and time from long-distance water fetching to more productive activities "*

Finally, it is clear from project reports from the last and final Phase 1991-1993 that systematic strategies for involving women are being put in place. For example, in the revised draft of the community participation manual strategies to reach women are included in the syllabus of a community participation course. A special course on women, water and sanitation is offered; the role of women in village participation is considered at some length; and statistics are beginning to be disaggregated by sex.

### 27.3 Comments

By the time the 1991 - 1993 Project Document was published it stated that the success of the project depended on the attitudes and participation of women, which begs the following questions:

- a) Rural women are seen in the project document as a "special" group. Does this imply that they are only included because they are the water collectors and managers of water?
- b) Is it not also important to know how men use water so as not to inadvertently disregard their participation and responsibilities with hygiene education and water supplies?
- c) Should women be viewed as the only keepers of the family health? In a nutrition program in Tanzania it was recognised that targeting only women with nutrition information was inadequate. Men needed to be involved, as well, as they were often the ones to provide the money for food.
- 4) Is it valid to say women, released from water collection, would put their energies and time to more productive activities?

Although fetching water is considered a woman's responsibility, men reiterated that they would give money to women to purchase water if paying for water would guarantee an easy access to a reliable source. This would free men from performing domestic chores. Men perform the chores when women have to walk long distances for water. But provision of a reliable supply of water through a system of water tariff would partly reduce the woman's workload. The workload in the cassava farms would still be a hindrance in their full participation in hygiene and water affairs.

*looking at Gender Water Supply and Sanitation Finnida 1994*

## Case study 28

### Learning from experience

#### 28.1 Background

In Zimbabwe, the National Action Committee for Water and Sanitation formed a national working group on gender participation. The group evaluated rural water projects in Mt. Darwin, Makoni, Mudzi, Zvishavane and Nkayi. It found that to date, women's participation in integrated rural water and sanitation projects is mostly limited to low positions, entailing very little decision making and from which no financial rewards are derived. The evaluation resulted in the development of a policy to better divide jobs and benefits in water supply and sanitation between men and women.

*Case from Joyline Mwaramba, (Working with women and men IRC Occasional Paper 25. 1994)*

#### 28.2 Comments

Sometimes it is only at the evaluation stage that lessons are learned. Monitoring should start with baseline information and continue throughout the project if mistakes are to be avoided.

## Case study 29 Time

### 29.1 Background

A DFID monitoring visit to Ghuwein village in August 2000 collected this anecdote. A woman was asked to give her opinions about the relining of a cistern for collecting and storing rainwater. She said that the project benefited her because she spent less time collecting water. When pressed as to how she used the extra time, she thought, then decided that she did not do anything extra, but did her usual jobs a bit more slowly.

*M.D.Smith*

### 29.2 Comment

Time saved may be used for income generation or just reducing the current burden on water collectors.

Case study 30  
Failure to involve people led to  
project failure

### 30.1 Background

In the Singida Region of Tanzania recent water projects involved women only as voluntary labourers. A survey soon after the new water systems were provided showed that only 14 per cent used the new water points because of operational difficulties and their distance.

### 30.2 Action

The project manager looked at the reasons and found that the limited impact was caused by the lack of real dialogue between project staff and the community. For a greater impact the project recommended involving women in planning and maintenance and the improvement of traditional sources.

*IT Source Book Water Supply*

### 30.3 Comment

Participation is paid for whether it is carried out or not...

Case study 31  
Evaluating management of  
handpumps

### 31.1 Background

In Bangladesh two separate hand pump programmes were evaluated gender-specifically. The reported frequency of breakdowns was significantly lower for the pumps maintained by the women. The reported duration of breakdown was also lower but not significantly. Eleven percent more women than men cleaned the platform regularly. Of those who did this every day twice as many were women. The views of the male caretakers coincided with the findings of the study. Almost three-quarters thought that women would be as effective as men at pump maintenance

*Micro, 1984*

A case in Rajasthan, both frequency, and duration of hand pump breakdown were lower for female than for male mechanics. However, the opportunity costs were high

*Jonsson and Rudengren, 1991 Gender in water resources IRC Tech series 33E 1998*

### 31.2 Comment

These findings, while interesting, should be viewed with caution because they are based on recall of experience over a period of two years and not on monitoring. Also more than 80 percent of hand pumps were located either on the land or in the house of the caretakers. A possible distorting factor is also the age of the pumps, which was not taken into account in the analysis.

*(Gender in water resources IRC Tech series 33E 1998)*