

Looking back: **The long-term impacts of** **water and sanitation projects**



**A condensed version
of the WaterAid
research report
“Looking back:
participatory impact
assessment of older
projects”**



SUMMARY

This report demonstrates two important principles:

- 1 Water supply and sanitation projects have impacts on people's lives which extend far beyond the expected improvements to health and reduction in time spent collecting water. The study shows that impacts can also include significant improvements in household income levels and security of livelihoods. Increased school attendance occurs along with better child care, social and cultural benefits such as reductions in stress levels, increased status and self-esteem, better family and community relations, and increased ability to observe religious rites and customs.**
- 2 Involving community members in evaluations of their own projects brings new insights into both the wider impacts of interventions and the factors contributing to the long-term sustainability of water supply and sanitation systems.**

Understanding the potential breadth of the impact that water supply and sanitation projects can have on poor people's lives underlines the fact that access to safe water and sanitation is a precursor to any form of sustainable development. It also provides evidence to reinforce the argument that improvements to access should form the cornerstone of any strategy to reduce or eliminate poverty. Understanding the role that communities can play in participatory impact assessments of projects is vital if planners are to gain information which helps them design projects that will have the maximum possible positive impact on people's lives.

This report is one of a series which analyse WaterAid's experience in supporting integrated water, sanitation and hygiene promotion projects in developing countries.

Other reports in the series are:

- *WAMMA: Empowerment in practice*
- *Hitosa Water Supply: A people's project*
- *India: Making government funding work harder*
- *Contracts or Partnerships: Working through local NGOs in Ghana and Nepal*

Cover Photo: WaterAid/Caroline Penn

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Looking back: The long-term impacts of water and sanitation projects

A condensed version of the WaterAid research report “Looking back: participatory impact assessment of older projects”

A WaterAid Report

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Introduction

It was sometime in 1979 and Misra Kedir, a young woman from the parched Iteya Shaki community in Hitosa, Ethiopia, had just given a difficult and exhausting birth to her first child. She was waiting to be given *atmit* – a special fluid prepared from cereal products that helps both the mother and her new born baby resist infection. But there was no water in the village. As she recalled years later, “I will never forget how I suffered. There was no water to wash the baby and myself. I was embarrassed by the unpleasant smell, especially when neighbours, including men, came to visit me.” By the third day, her parents managed to prepare the *atmit*, but it had become too painful to drink – her dry throat ached from not having fluids for so long. Now, every time she remembers, Misra “thanks Allah for helping (her) and the baby” survive that ordeal.

Misra’s story is among those collected in a 12-month study starting in 1999, which looked into the long-term impact of WaterAid-supported projects carried out in Ethiopia, Ghana, India and Tanzania between 1991 and 1993. This study was the first of its kind. It moved away from conventional assessments where project impacts are evaluated mainly in terms of mechanical measures of inputs and outputs. Instead, it situated projects within the social context of the community, and measured impact using largely qualitative methods supported by some quantitative means. Rather than just report the changes as reflected by figures and statistics, it calls in ‘guest speakers’ like Misra to commentate. These are ordinary community members whose tales of relief from suffering and anecdotes of increased personal empowerment provide a greater

Women in Africa and Asia walk an average distance of six kilometers to collect water.



WaterAid/Caroline Penn

sense and meaning to the concept of *impact* than the “number of latrines built” or “percentage served by hand-dug wells” can communicate. Instead of just making deductive conclusions from the empirical evidence collected, it attempts to capture the complex reality in impoverished villages along with the drama of people’s daily struggles.

Five hypotheses were posed which directed the activities of four decentralised study teams, one in each country, towards identifying broad ‘domains of change’ such as health,¹ socio-economic status, gender relations, education, environmental conditions, community management and support services for community organisations. Both ‘control’ communities (ie where no project intervention had taken place) and ‘reference’ communities (ie where the impacts of project interventions were studied) were chosen in each country. Facilitated by researchers, communities themselves then generated their own impact indicators. This

in itself revealed the key ways in which water and sanitation projects had affected and changed their daily lives. These impact indicators, which covered the breadth and depth of community life, show how the impact of the projects turn out to be further reaching than the initial project objectives.

The Looking Back Study was a two-way learning opportunity for both the communities and the study teams. It raised the challenge of how the formal social science skills of ‘outsiders’ and the traditional community knowledge of ‘insiders’ can be blended together for the mutual learning advantage of both. The research also provided opportunities for increased dialogue and improved collaboration between partner organisations and WaterAid.

The study provides a valuable insight into the benefits and challenges that water and sanitation interventions bring to communities.

¹ It is only since 1996 that WaterAid-supported projects have contained a significant hygiene promotion component. The noted health changes are therefore focused mainly on those resulting from increased quality, quantity and accessibility of water, rather than on the specific hygiene practices of protecting drinking water from contamination, hand washing and safe disposal of faeces.

THE FIVE HYPOTHESES

- 1 Projects constructed and managed by communities have a positive impact on the living standards of those communities, particularly in the areas of health (especially of children), economic status (especially of women), and school attendance.**
- 2 Project impact is less for the poorer sections of the community, and greater for women and children than for men.**
- 3 Beyond the immediate, positive effects of education on improving sanitation, the environmental impacts of projects on their communities are negligible.**
- 4 Impact depends more on effective management than on technical quality of work.**
- 5 Impact of projects is not associated with a longer period of provision of support to community organisations.**

Methodological approach

Shocking as it may seem to many, Misra's experience is not uncommon and in some instances is even typical, almost routine, for women living in dry, arid regions around the world. Conditions of water scarcity and the associated sanitation and hygiene problems are fairly well documented and are the reason why many development organisations, including WaterAid, seek to help address the situation. While various responses and programmes have been devised, the problems still remain tough and obstinate.

Impact assessments are tools used to evaluate the various responses and programmes which have been implemented. They test the assumption that WaterAid-supported projects lead to 'sustainable improvements' in people's lives in the communities that they serve. But there are many methodological issues involved in making these assessments, which mainly deal with problems about validity (or the truthfulness of claims being made) and reliability (whether observations of a particular impact will be seen similarly by different observers). Validity is improved by quantification and measurement; for instance by showing figures on the incidence of diarrhoeal diseases before and after the implementation of a water and sanitation project. But quantitative approaches are rather narrow measures of impact; for example, they are not likely to show how the three water points built in the Iteya Shaki village of 375 households will have changed relationships within Misra's family, or how the quality of Misra's relationship with her children has improved as a result of water becoming more readily accessible. Yet the qualitative approach also has its flaws as it has the tendency towards being 'anecdotal' in the use of data and of being subjective in its analysis. Hence reliability problems are raised. Therefore, this study adopted a mixture of both quantitative and qualitative approaches.



WaterAid/Caroline Penn

Communities were involved from the start of the projects including planning and construction.

In each country, the study first selected communities from the areas covered by WaterAid projects. Individuals and groups of individuals (eg women, elders, etc) were then selected from within these communities. At both levels of selection, purposive criteria rather than random choice were used. The sample sizes varied significantly. For example, six communities were selected in Ethiopia with an average of 158 participants per community in the interviews, community mapping, focus group discussions and other data-gathering exercises. In contrast, there were only four communities in Ghana with around 20 participants per community where the *Odikro* (chief) was involved in the random selection of community members. In some cases he limited the numbers of participants due to the impact the research would have made on agricultural activities during that part of the season.

Baseline data was collected and analysed where available, but most had no significant value for the measurement purposes of the research. This limitation was addressed in two ways: a) by study teams relying on community recall to understand the nature and extent of change using participatory tools such as force field analysis; and b) by

Community members were involved in the evaluation process and this brought new insights into the wider impacts of the projects.



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having control communities to provide an indirect means by which impact could be assessed.

Establishing causation within a social development context is notoriously difficult and therefore the study teams decided not to attempt to prove it precisely. Instead the study relied on the qualitative information collected from interviews, observations, and participatory rural appraisal (PRA) techniques to ascertain whether the community attributed the key changes to project interventions or other causes, and to disaggregate developments in a community according to different agency interventions. The key component of the study was that the community participants undertook complex analytical tasks to arrive at their own conceptualisation of impact.

Finally, to improve the overall reliability and validity of the data collection process a number of methods were employed. Field pre-tests were made after the study teams' orientation workshops in order to inform team members on the methodologies. Triangulation was applied to the data (cross-checking information gathered, using one method, with information collected from alternative sources, including the use of secondary data from government agencies and schools when available). Key informant interviews were tape-recorded to minimise observer bias in simple note taking. The teams had multidisciplinary backgrounds, and at the end of each piece of fieldwork, findings were shared with the community so that other community members could express their opinions or challenge the interim results.

PRA TECHNIQUES USED IN THE STUDY

three-pile sorting	trend analysis
photo parade	community mapping
history line	linkage diagram
force field analysis	wealth ranking
focus group discussion	pairwise ranking
seasonal calendar	self-evaluation
daily routine charts	health (transect) walk

The country case studies

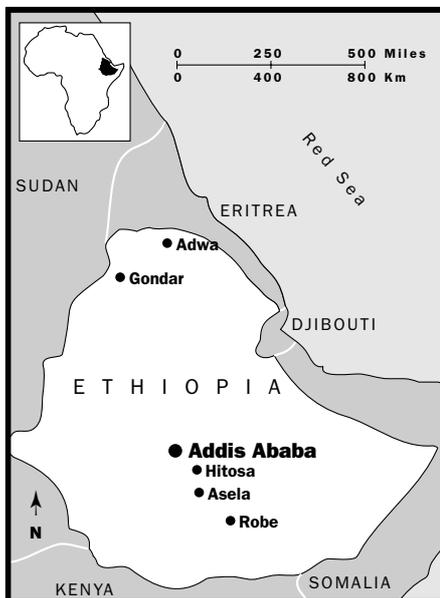
Ethiopia

WaterAid has been involved in Ethiopia since 1983. It opened a country office in the capital, Addis Ababa, in 1991 and has since been promoting community-managed integrated water supply, sanitation and hygiene projects through its partner organisations. In 1992, it supported the formation of a Water Unit within the Ethiopian Orthodox Church/Development and Inter Aid Church Commission (EOC/DICAC) which to date has developed two projects in the North Gondar region of northern Ethiopia. Also in 1992, WaterAid supported people in the Hitosa wereda (district), just south of the capital, in Arsi zone, to build the largest gravity-based water supply scheme in Ethiopia. By 1996, more than 60,000 people living in 31 communities had water provided by this system.² Water Action, another local partner, is an indigenous non governmental organisation (NGO) established by Ethiopian professionals with WaterAid's support. Since it began in 1995 it has completed eight projects and assisted in the Hitosa project. Now Water Action is implementing nine projects to benefit an estimated 366,000 people.

EOC/DICAC and Water Action were participants in this impact assessment. Two reference and one control community were selected in both North Gondar and Hitosa for the project:

Rimecha Michiko the control community for Hitosa has a population of 1,038 (208 households) of mainly Arsi Oromo and Jille Oromo ethnic groups. The community is Muslim, and subsistence agriculture is the principal livelihood. The main water source is unprotected and subject to contamination by solid and chemical waste.

Hate Tulu, one of the reference communities in Hitosa has a population of 2,275 (455 households) Muslim Oromos



living on subsistence agriculture. Four water points, one reservoir and 18 pit latrines were built here. This infrastructure is jointly managed by the local Watsan (water and sanitation) committee, the Water Administration Office and the Water Management Board.

Iteya Shaki the second reference community in Hitosa has a population of 1,875 people (375 households), and like Hate Tulu, is made up of Oromo Muslims living on subsistence agriculture. Three water points and three model pit latrines were built here, with the same management structure as Hate Tulu.

Anker and Adeza the control community in North Gondar, has a population of 2,648 (662 households) predominantly Orthodox Christian Amharas (some are Muslims) living on subsistence agriculture. The springs and seasonal streams are unprotected, and there is only a school VIP latrine (ventilated pit latrine).

Chandeba in north Gondar, is the largest community in this study, with a population of 3,682 people (921 households). They are

Population: 62.56 million (2000 estimate)

Per capita income: on average, each person earns £71 each year

Economy: The country is heavily dependent on agriculture

Capital: Addis Ababa (population – 2.11 million)

WaterAid partners:

- Ethiopian Orthodox Church
- Water Action
- Prognyst

Areas with WaterAid-supported projects:

Arsi (Asela, Hitosa), Bale (Robe), Tigray (Adwa) and North Gondar Zones and Addis Ababa

² For full details of the Hitosa scheme refer to the published report “Hitosa Water Supply: A people’s project” available from WaterAid.

Access to safe water at short distances has significantly affected people's daily routines. Families can spend more time together and community members are able to observe social obligations and religious rites and customs.



WaterAid/Jenny Matthews

ethnic Amharas and are predominantly Orthodox Christian, with some Muslims and live on subsistence agriculture. Two spot spring developments, two hand-dug wells fitted with hand pumps and 16 pit latrines were built here. These infrastructures are managed by a local Watsan Committee.

Birshign is a community of 743 (201 households) of Amhara Muslims in North Gondar living on subsistence agriculture. Three hand-dug wells fitted with hand pumps and three model pit latrines were built here. There are no local community management structures.

SUMMARY OF FINDINGS IN ETHIOPIA

Impact indicator	Impact
Health	
<ul style="list-style-type: none"> Sufficient quantity and quality of safe water supply, when required, at short distance to user 	<ul style="list-style-type: none"> Incidence of stomach pain / diarrhoea reduced Incidence of water linked diseases reduced Water used for washing body, clothing and utensils increased from between 26% and 33% to 52% of total consumption Bathing using soap increased from less than once per week to between daily and weekly Household utensils cleaned more regularly Time for observance of religious rites Reduced fatigue for women Changed workload for women Quantities of water for domestic duties increased from <10 litres/ per person (pp)/day to 18–22 litres/pp/day Availability of water during and after childbirth increased Incidence of post natal infections reduced
<ul style="list-style-type: none"> Number of households with traditional latrine 	<ul style="list-style-type: none"> Increased use of pit latrines in Hitosa. Few in North Gondar
<ul style="list-style-type: none"> Hand washing 	<ul style="list-style-type: none"> Increased use of soap for hand washing before handling food Increased incidence of hand washing after defecation
Economic status	
<ul style="list-style-type: none"> Time devoted to agricultural activities Condition of livestock (healthy and fat) Number of cattle Priority of household purchasing power 	<ul style="list-style-type: none"> Livelihood of the community improved
<ul style="list-style-type: none"> Presence of shops, food/drink vendors, cart owners in the peasant association Time devoted to non-agricultural activities 	<ul style="list-style-type: none"> Introduction of off-farm activities Income of households improved
<ul style="list-style-type: none"> Housing built with corrugated iron roof sheeting Housing with separate rooms for kitchen and livestock 	<ul style="list-style-type: none"> Housing structures improved Eye diseases reduced due to cleaner environment Roof water harvesting method introduced
School attendance	
<ul style="list-style-type: none"> Number of school age children Drop out rates Absenteeism Punctuality 	<ul style="list-style-type: none"> Increase in number of students attending school regularly Hours spent on school-related activities increased to between seven and nine hours/day Students have time for studying Parents acquire new ideas and practices
Social	
<ul style="list-style-type: none"> Level of family interaction Number of meals Meals eaten on time Time devoted to children, elders, social gatherings 	<ul style="list-style-type: none"> Time spent collecting water reduced from an average of six to eight hours to five to twenty minutes More time spent with family Social/community interaction increased
Psychological	
<ul style="list-style-type: none"> Safe arrival of female family member from fetching water Water available for religious ceremonies Cleanliness of students uniforms 	<ul style="list-style-type: none"> Reduced tension Observance of religious rites Increased student self-respect

LOOKING BACK: THE LONG-TERM IMPACTS OF WATER AND SANITATION PROJECTS

Population: 20.2 million
(2000 estimate)

Per capita income: On average, each person earns £277 each year

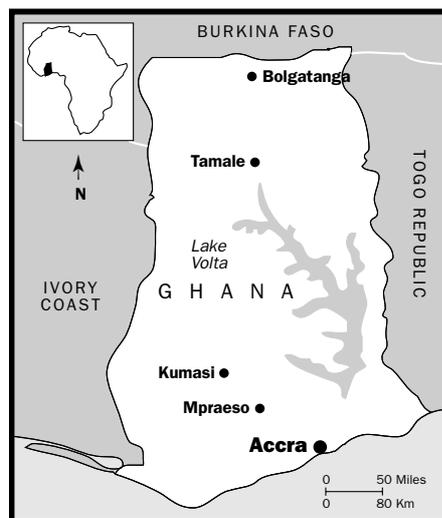
Economy: 50% of economic output comes from agriculture. Rich in minerals

Capital: Accra (population – 1 million)

WaterAid partners: Eight local NGOs, including Obooma Rural Action Programme (ORAP) who are based in Mpraeso

Areas with WaterAid projects: 22 out of 110 district assemblies, which are dispersed through five out of Ghana's ten regions

Ghana



An estimated 44% of Ghana's population do not have access to safe and clean water, while 58% are not within reach of any kind of sanitation facility. WaterAid has operated in Ghana since 1985, where it supports eight local NGOs including ORAP which was established in 1991. WaterAid's approach in Ghana has been to focus on one water supply technology – the hand dug well, which is affordable, accessible by communities and therefore sustainable. Projects also include improved sanitation through latrines, hygiene education and handpump maintenance training.

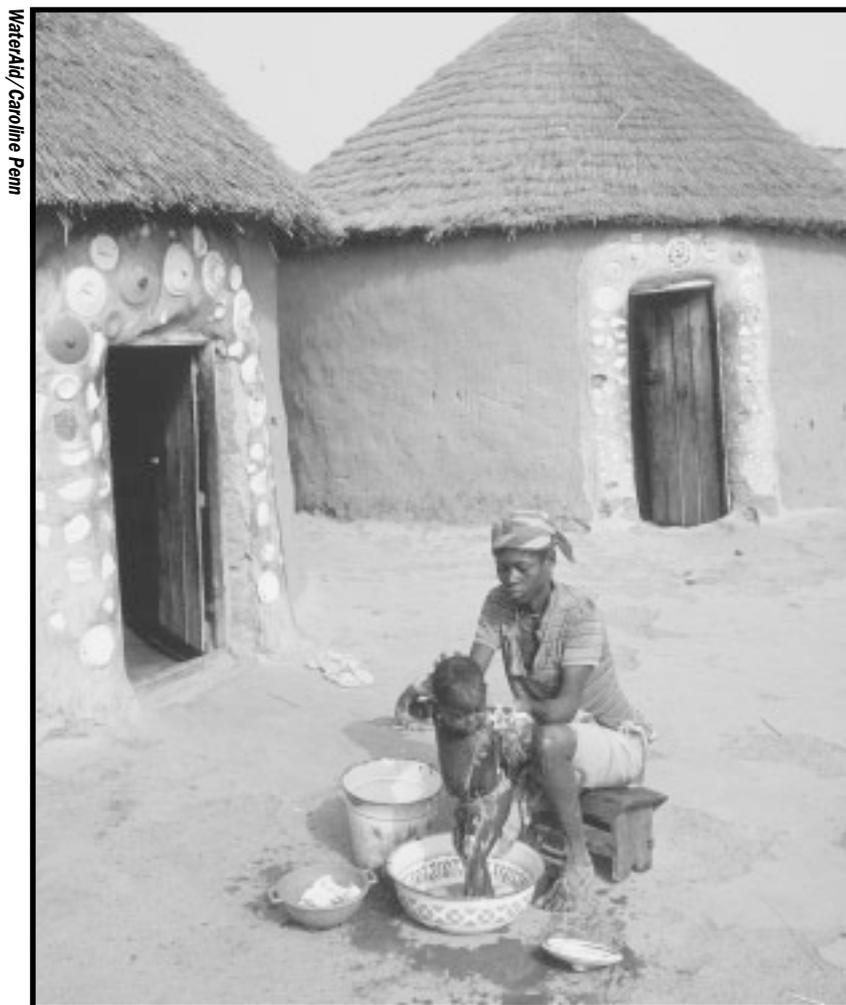
In the humid, sub-tropical Kwahu South District in eastern Ghana the rainy season brings both hope and worries for many communities. On one hand, the rains signal the start of the main harvest and planting season for cocoa and colanuts. But on the other it is also the time when communities become most vulnerable to disease. The *Odikro* (chief) of Ekawso village was particularly worried: "Whenever it rains," he said in one interview, "all waste disposed at Nkawkaw (a nearby town) drains into the stream and flows down here for us to use; even excreta disposed at Nkawkaw drains into the stream."

Four communities took part in the study, all located in the project area of ORAP:

Mpraeso Amanfrom is a large community with a population of around 2,000 people, who are christianised ethnic Kwahus engaged in subsistence farming, cash crop production and pottery. A hand dug well was built in the area, managed by a local Watsan committee.

Kwaku Dwira is a community of around 546 christianised ethnic Asantes, living on subsistence farming. A hand dug well was built in the community, along with a trench latrine. These are managed by a Watsan committee.

Ekawso is the control community for Ghana. It has a population of around 74 christianised Kwahus living on subsistence farming whose



WaterAid/Caroline Penn

Personal cleanliness had greatly improved in communities. Here a mother bathes her child in the traditional Mamprusi compound, Ghana.

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only source of water is the local stream. No water and sanitation interventions have been implemented.

Atwedie has a population of 365 ethnic Kwahus and Ewes. They are christianised, and engaged in subsistence farming as well as petty trading. A hand-dug well was built here which the community manages.

The management systems in the three reference communities were seen to be generally efficient. In Atwedie for instance, there was no well-constituted committee responsible for the facility, but there was a

general sense of community ownership and responsibility for the facility.

The impact of the research itself deserves to be noted. Not many community members were able to participate because it was planting/harvest season when the research activities were conducted. But those who were able to thought it was worthwhile, and that the activities offered them opportunities to reflect and think about their own situation. The study revealed the extent of community demand for improving interventions, and became the forum where this demand was articulated.

SUMMARY OF FINDINGS IN GHANA

Impact indicator	Impact
Education	<ul style="list-style-type: none"> • Increase in attendance rates for both teachers and students • Teachers accepting postings to communities more readily • Absenteeism / drop out rates reduced • Improvement in punctuality
Health	Significant reduction of: <ul style="list-style-type: none"> • Bilharzia • Scabies • Yaws • Diarrhoea • 'Scaling skin' • Guinea Worm • 'Whitening of body after bathing'
Opportunity for work	<ul style="list-style-type: none"> • Women potters have improved their trade and increased production • Increase in number of food vendors in the community • Increase in food product processing and palm wine tapping • Ability to sell iced water
Socio-cultural	<ul style="list-style-type: none"> • Wives 'lying with husbands until daybreak' • No more quarrels / conflicts with neighbouring communities • Improvement in pride and dignity in community • Improvement in colour and general appearance of cooked food • Ability to serve visitors with potable drinking water in clean cups and offer cooked food
Cleanliness	<ul style="list-style-type: none"> • Increased level of cleanliness of community and condition of clothing • Improved refuse disposal • Reduced incidence of cup and storage container staining
Time	<ul style="list-style-type: none"> • Queuing for water significantly reduced • Distance to fetch water significantly reduced • Observance of funerals / religious duties made easier

Population: A broadly diverse country of over 1 billion people (2000 estimate)

Per capita income: On average, each person earns £219 each year

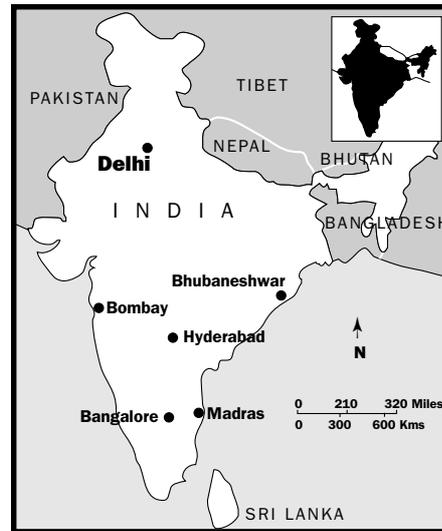
Economy: 28% of economic output comes from agriculture; leader in mining; diversified manufacturing

Capital: New Delhi (population – 1 million)

WaterAid partners: 75 indigenous NGOs including League for Education and Development (LEAD)

Areas with WaterAid projects: The WaterAid India Office has projects in five states – Tamil Nadu (Madras), Andhra Pradesh (Hyderabad), Karnataka (Bangalore), Maharashtra (Bombay) and Orissa (Bhubaneshwar)

India



WaterAid began its work in India in the early 1980s and set up an office in Tamil Nadu (southern India) in 1992. Since this time WaterAid’s role in India has changed from primarily funding partner organisations, to being an organisation that supports the development and advocacy of best practice approaches for the sector. The WaterAid India Office works with around 70 partners who implement projects predominantly targeted at the poorest sectors of Indian society.

For a number of residents of villages of the Krishnarayapuram Panchayat Union in Tiruchirappalli district, the handpump has become more than just a tool that brings them water. As lower-caste dalits, they previously suffered discrimination and abuse, were highly dependent on the upper castes for food and access to water (they were not allowed to touch water sources) and had to use glasses separated for them in teashops. For them a hand pump built right within their village was a source of immeasurable pride. The handpump is a symbol of their empowerment. As Sirumbayi, a 33-year old mother of three children who was trained with four others to be a handpump caretaker recounted, “After having learnt that we are capable of repairing the hand pumps, we are now allowed to take water. We have seven sets of spanners and a box of grease, which we replenish periodically, and we are maintaining four hand pumps in the community.”

Three dalit and one non-dalit community (all uni-caste) were studied. In all four communities, LEAD had started forming self-help groups or *sangams*, to carry out a micro-finance programme. Most residents are either farmers or agricultural labourers. Because of its accessibility and transport facilities Panjapatti, a dalit community, has better education than even the non-dalit village. Four communities took part in the study:

Panjapatti is a community of 202 people (49 households) who are Paraiyars (a dalit caste). They either run rain-fed farms or are landless agricultural labourers. A borewell and a handpump were built in this village, which are managed by a *sangam*.

Arappalipatti is a non-dalit community of 149 people (38 households) of the Sozhia Vellalar caste. They are engaged in subsistence farming and petty trading. A borewell and handpump were built and are managed by a Watsan committee.

Aggragampatti was selected as the Indian control community with great difficulty. It possesses characteristics comparable to the reference villages and had a borewell and handpump constructed by the government, but no maintenance system. It has a population of 85 dalits (22 households) who are mostly agricultural labourers, although some are engaged in keeping cattle.

Kullampatti is a community of 90 agricultural labourers (24 households) belonging to the parayers, a dalit caste. A handpump was built in this village, which is now managed by a *sangam*.

The drinking water situation in these communities is defined by the existing caste system. Kullampatti and Aggragampatti traditionally drew water from rudimentary dug wells, and the two other communities used water from streams. Whenever these wells dried up, communities used water from irrigation wells constructed by the government. However the dalits were discriminated against when using these wells and so made efforts to provide their own

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drinking wells, but these were not sustainable in times of drought.

In 1987, the government started to construct bore wells in the area, but the bore wells in Kullampatti and Panjapatti were located in upper caste settlements and this became a constant source of tension. Although a non-

dalit community, Arappalipatti faced difficulties when the people of nearby Kanakkampatti refused to share water as they were considered 'accursed.' In 1991, LEAD started its projects in these three communities (Kullampatti, Panjapatti and Arappalipatti). The impacts are summarised overleaf:

WaterAid/Caroline Penn



Since the construction of a borehole Mrs Puttoroja can give safe water to her daughter Shobaia.

SUMMARY OF FINDINGS IN INDIA

Impact indicator	Impact
Education	
<ul style="list-style-type: none"> • School attendance levels (especially girls) • Women's literacy levels 	<ul style="list-style-type: none"> • Increased school attendance, although girls are given minimal essential school education as they are expected to help in domestic activities • Women's literacy levels improved
Health and hygiene	
<ul style="list-style-type: none"> • Proximity to water source • Availability of sufficient quantities of protected water • Quantity of safe water 	<ul style="list-style-type: none"> • Children attend school in clean clothes • Reduced incidence of scabies • Child mortality reduced • Increased water consumption for potable and non-potable purposes (40–100 litres/day for washing) • Reduction in diarrhoeal episodes. No diarrhoea-related deaths reported in the past three years in two of the reference communities
Income	
<ul style="list-style-type: none"> • Expenses on medical treatment • Condition and quantity of community clothes 	<ul style="list-style-type: none"> • Greater proportion of household income retained • Meaningful linkages with LEAD and other institutions, including financial services, have now developed • In Kullampatti and Panjapatti thriving communal kitchen gardens utilise wastewater from the handpumps
Socio-cultural	
<ul style="list-style-type: none"> • Presence of <i>sangam</i> • Dedicated water source for dalit community • Attendance in user group meetings • Women's role in maintenance system for handpumps 	<ul style="list-style-type: none"> • Increased community unity. Dalits no longer subject to abuse. Caste Hindus in Arappalipatti were united and can engage in collective action • Increased personal empowerment for dalits generally and particularly women • Improved self-esteem. Women in Panjapatti no longer consider themselves 'untouchable' • Women caretakers and mechanics trained in maintenance and repair of handpumps
Time	
<ul style="list-style-type: none"> • Proximity to water source • Availability of sufficient quantities of protected water • Time taken to draw water from source 	<ul style="list-style-type: none"> • Reduced time and labour for fetching water • Increase in women participating in non-domestic activities • Changes in women's workload • Time taken for broken handpump to be fixed three to four days compared to 45 days in control community

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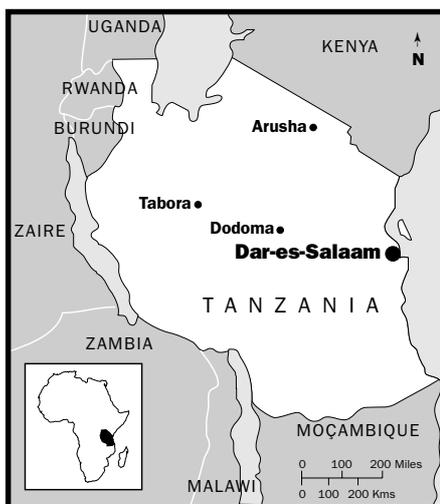
Tanzania

WaterAid has been supporting projects in Tanzania since 1983. Initially they focused on the construction and repair of water facilities at mission hospitals, mainly in the dry central region of the country. An internal WaterAid evaluation in 1990 emphasised the need for village-based planning. This coincided with a change in national policy from the provision of free water for all to community-managed water supply systems and one outcome of the change was the formation of the WAMMA programme in Dodoma Region.³ Currently WaterAid operates four programme offices in Dodoma, Arusha and Tabora Regions and Dar es Salaam.

The Dodoma Region of Tanzania is home to one of WaterAid's largest programmes. Arid and poor, the region has a high population and the need for water supply and sanitation is considered massive. Mzee Gilbert Kityangile of Songambe village recounted the situation; "In the past every family had to use extra hands to collect as much water as possible from distant sources." The problem was so bad that school age children could be seen wandering around looking for water, "even though there was a law enforcing parents to send their children to school." In its 1994 Annual Review, WaterAid Tanzania reported that around 750,000 people had benefited from completed water supply projects. Recently, WaterAid has started to introduce health and hygiene components and the impacts of these interventions are now reflected in the collective memory of villagers.

The study in Tanzania covered four villages:

Songambe is the largest village selected in the whole Looking Back study, with a population of 16,991 (2,530 households). The village is comprised of different ethnic groups of people who are largely Christian and Muslim. They are engaged in subsistence farming and petty trading. A borehole and a distribution network was built, which is managed by a community Watsan committee.



Berege is a village with a population of 3,387 (885 households) ethnic Wagogos. They are Christians, and live on subsistence farming and livestock keeping. A borehole was built and is managed by a private contractor in partnership with the community.

Chaludewa is the control community in Tanzania and has a population of 1,827 (293 households) of multiple ethnic origin. They are Christians and live on subsistence farming and keeping livestock. There has been no water and sanitation intervention in this community for the past ten years.



WaterAid/Jim Holmes

Population: 33.5 million (2000 estimate)

Per capita income: On average, each person earns £149 each year

Economy: 84% of work force is engaged in agriculture

Capital: Dar es Salaam (population – 1.73 million)

WaterAid partners: Regional and district governments, NGOs, as well as local communities

Areas with WaterAid projects: Dodoma, Tabora, and Arusha Regions and Dar es Salaam city

³The published report "WAMMA: Empowerment in Practice" details the evolution of WAMMA and is available from WaterAid.

Handpump caretaker Shaban Abdala in Tanzania.

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Tandala is a community of 5,678 ethnic Warangis. They are Muslims, and live on subsistence farming and keeping livestock. A gravity scheme was built here, with a tank and distribution network. These are managed by a Watsan committee.

Because the communities were fairly large, research participants were selected according to four categories: a) mixed group of men and women of different ages, income and status, b) low-income men and women of mixed ages, c) schoolchildren from classes 4–7 and d) community representatives.

SUMMARY OF FINDINGS IN TANZANIA

Impact indicators	Impact
Health and hygiene	
<ul style="list-style-type: none"> • Sufficient quantity and quality of clean water at the dispensary and households for delivering children, syringe sterilisation, and reduced workload for dispensary staff • Reduced distance to fetch water • Reduced workload for women • Time saved • Increased frequency of washing school uniforms and adult clothes • Improved hand-washing habits with clean water • Acceptability of latrine use 	<ul style="list-style-type: none"> • Improved hygiene during childbirth • Improved hygiene and health for babies • Improved equipment life at the dispensary • Improved personal hygiene for women (including menstrual) • Improved women's health • Improved children's health due to mothers close care • Improved household cleanliness • Meals cooked and eaten at appropriate times • Reduced incidence of skin diseases • Reduction of water-related diseases • Decrease in open defecation (majority of population use household latrines)
Economic	
<ul style="list-style-type: none"> • Meals taken at appropriate time • Time saved by reducing distance to fetch water • Reduced expenses to buy water for the Mosque 	<ul style="list-style-type: none"> • Improved output in agriculture and livestock production • Improved incomes from shops, tea-rooms, selling ground nuts, potatoes, cassava, fruit, etc • Improved income • Improved housing structures and increase in numbers of houses • Saved money used for other economic and home use
Environmental	
<ul style="list-style-type: none"> • Preservation and reforestation of the water source area 	<ul style="list-style-type: none"> • Increase in wild animals • Reduced water pollution
Social/psychological	
<ul style="list-style-type: none"> • Availability of flowing, clean safe water at mosque for cleansing • Reduced distances to fetch water • Quarrels and abuses at water points • Demand for water increased, but supply is not enough • Improved personal hygiene • Increased number of tea-rooms 	<ul style="list-style-type: none"> • Community can now attend to full daily prayers • Improved status from having piped water • Corpses now cleansed before burial • Improved marital relationships as couples can now sleep together until daybreak hours • Reduced stress of both men and women • Peace of mind for women and families • Improved status of women • Reduced harassment and abuses of women from local well owners • Improved school attendance • Improved community smartness • Pleasant tea brewed at tea rooms • Increased community activities such as credit societies, tree nursery groups, training institutions

Thematic assessment of impact

The following summaries bring together the research findings within seven themes or 'domains of change'.

Livelihoods and incomes

The impact that projects have on communities which previously did not have potable water supplies or sanitation facilities appears quite obvious, in that it would cause tremendous change. However, the community members themselves best describe the real meaning and relevance of these changes. Zeini Batti, for instance, of Iteya Shaki (Ethiopia) was widowed ten years ago and has since been the family's breadwinner: "I supervise farm activities and am responsible for carrying out household activities. My children assist me in every way possible. I was overburdened with responsibilities. In the past, I used to devote five hours a day to fetch water. Since 1995 (when the water point was built), life has somehow become easy. I now have more time, and can do other activities like basket weaving and making utensils. I now save a minimum of Birr 21–24 (about £2) each year. Now I feel healthy since I have time to rest."

Impacts on livelihood are commonly noticed following water and sanitation interventions. Mary Kisiwa, a potter from Mpraeso Amanfrom (Ghana) said, "Now we do not spend much time to obtain water for moulding our pottery products." Esther Yayaa, of the same village, now sells ice water within the community. For community members in Ethiopia and India, increased water availability has meant that livestock populations have also increased. In Ghana, more water has become available for cola nut and palm oil processing and for distilling *Akpeteshie*, a local alcoholic drink.

But sometimes there can also be a downside. Some livelihoods can be threatened as a

result of the introduction of water points or sanitation facilities. In Berege (Tanzania) donkey water sellers were forced out of their trade and this has created enmity between them and the private operator of the water facility. In Hate Tulu (Ethiopia), drug vendors selling medicines for common water and sanitation-related ailments have been forced out of the area because they have lost their market.

Mzee Siwa of Tandala village (Tanzania) described project impact on incomes. "Money saved from buying water at exorbitant prices," he said, "can now be used for other items such as sugar, kerosene for home lighting, soap bars, school uniforms and analgesic medicines. It has also enabled one to sip a good and tastier cup of tea at home or café bar. This was almost impossible in the past when water was far." Simon Majendi, a butcher in Songambebe village commented that with affordable and plentiful water, his business has improved. Cleanliness has increased and this has attracted more customers, and the profits have enabled him to build a concrete floor. He will soon diversify his business interests into tree farming for commercial markets.

Socio-cultural life

Equally important are the changes brought about in the socio-cultural life of villagers. The research participants across all countries measured the introduction of water points in terms of improvements in the quality of their family life. The *Gyaasehene* (regent) of Atwedie village (Ghana) said that women no longer needed to wake up as early as 3am to look for water. "Our wives," he said, "can now lay with us till daybreak." More attention can be given to domestic duties and in some cases, children are able to spend more time with their mothers by taking lunch breaks with the family.

Rashid Kayuga is 64 years old. He was one of the first people in his village to build a latrine.



WaterAid/Jim Holmes

The time saved is obviously reallocated to other activities. In the Muslim communities in Tanzania and Ethiopia, villagers can now pray five times a day, and even wash before praying. In periods of water shortage, prayers could only be observed once each day. Communities find more time to interact with each other, participating in funerals, marriage ceremonies and other social activities.

The misery of living without water points nearby is clearly remembered. The tales that are most vivid are those recounted by women. Genale Weyee of Iteya Shaki, Ethiopia said, "Prior to 1995, I used to travel five to eight hours to fetch water from Borru during September to January, and Boneya during February to June. I went from dawn till dusk without food and rest. Until I came back home there was no one to take care of my children."

Health and hygiene

Communities have experienced a significant reduction in diarrhoea and other water and sanitation related diseases. In Atwedie (Ghana), the diseases bilharzia, scabies and yaws have been eradicated from the village. As the regent declared, "Now one will only have yaws or scabies if one chooses to."

Women's personal hygiene, especially during their menstrual period, improved dramatically as they were able to bathe regularly. "In the past when water was difficult to obtain," recalled Mdala Rhoda Senduwu of Songambebe village (Tanzania), "women who had problems with their menstrual hygiene were taken to the elders for consultation so that they could improve their cleanliness." Mdala Herieti of Berege (Tanzania) adds, "Water presence near our homes has improved our menstrual hygiene and made us feel secure even in front of others."

Pregnancy and childbirth are also critical times for women's health. Adequate water supplies have simplified the task of traditional birth attendants (TBAs) like Mdala Rhoda Senduwu who said that when she delivers babies she can "now share [her] stock of water and be assured that it will be replenished."

Children in Kwaku Dira (Ghana) no longer need to walk through the bush in the early morning to fetch water, which had previously led to numerous cases of snakebites. In Mpraeso Amanfrom (Ghana), children no longer have to cross a busy road to access water. These school children also told how they knew when someone was suffering from bilharzia: "They often urinate blood or have

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bloodstains in his/her panties. But among them presently, nobody urinates blood.” This is in contrast to the control communities in Tanzania and Ethiopia where the results indicated that the children were in poor health.

The contrast in general household and personal cleanliness was clearly demonstrated. In reference communities, schoolchildren wash their uniforms about twice per week, compared to control communities where clothes washing ranged from once every two to three months for dresses, trousers and shirts and two to three times per year for traditional clothing called *gabi*, bed sheets and blankets.

Experience in Ethiopia showed how hygiene awareness campaigns need to be supported by community management tasks. A latrine programme was introduced and householders started to be sufficiently sensitised to use latrines rather than defecate in the open. However when the latrines became full, there were no systems in place to deal with this. Hence, open defecation practices resumed.

Children play important roles in hygiene awareness. When they are taught in school not to defecate in the open, they bring this message home and ‘convert’ the adults. But in some of the countries, there were no latrines or urinals in the schools and so students’ new awareness could not be translated into new practices.

Psychological impact

Another critical concern of community participants in the research was the psychological impacts. When the women travelled long distances fetching water, stress and anxiety were high for the whole community. In Ghana, children were exposed to animal attacks and in India and Tanzania, women faced the threat of physical abuse and sexual harassment from well owners. This is still seen today in the control community of Chaludewa (Tanzania).

On the other hand, a sense of pride and self-esteem is consolidated with the building of water points. In India, this has allowed lower caste people to be more autonomous and independent. In Tanzania and Ghana, where receiving visitors with hospitality is socially important, people can now offer potable water or pleasant-tasting tea in clean cups. More people from neighbouring villages started to visit the communities with water points and this has led to increased status and self-respect.



WaterAid/Jenny Matthews

Improved livelihoods were one of the many positive impacts seen in the study. With less time taken to collect water, women were able to spend more time working to earn money.

Education

The impact on education was reflected most clearly in the results of the focus group discussion in the control community of Rimecha Michiko (Ethiopia). Here only about 10% of all school age children are sent to school because they are needed to help their families in fetching water, taking animals to water sources, and collecting firewood for home consumption. The families require child labour as a mechanism for coping with the hardships of village life. Also, low incomes do not allow them to cover school expenses

In India the study found that women took on the operation and maintenance of handpumps, a role traditionally assigned to men.



WaterAid/Caroline Penn

(exercise books, clothes, etc) for more than two children per year and the majority of households have more than four children. In the Belale elementary school, girls constitute only 15% of students and many of the children who are in school come in late due to duties such as watering animals. Students are absent from school two to three days per week to take cattle to water sources that typically involve a six-hour round trip. Absenteeism and drop out rates are therefore high, with nearly one out of every five students dropping out during the school year. Additional reasons for absenteeism included malaria, common colds and eye diseases.

In contrast, after the introduction of water points, school attendance increased in Tandala (Tanzania), Arappalipatti (India) and Panjapatti (India), particularly among girls, and punctuality improved across all reference communities. Without safe drinking water it was also very difficult to attract and retain adequately qualified teachers, but now the chances of teachers accepting postings are much higher. This was specifically recorded in Mpraeso Amanfrom (Ghana) where the head teacher said; "Teachers posted to teach at the community primary school do not hesitate to come." The quality of instruction also improved and this was attributed to the increase in the number of lessons taught per day and the time that teachers have available to devote to the curricula.

Gender issues

The study teams encountered difficulty in recording changes in gender roles following water and sanitation interventions. It was also difficult to generalise across such diverse case studies and national cultures. In Ghana and India, there was some indicative evidence suggesting changes in gender roles. In Atwedie (Ghana) for instance, men had begun to participate in the traditionally female role of collecting water. In India, women in dalit communities took over roles traditionally assigned to men, such as the operation and maintenance of handpumps. Women's mobility in Panjapatti

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and Kullampatti increased (attributed to time saved fetching water) with many gaining labour and better wage rates outside the community.

In Tanzania, while there had been general improvement in community awareness of gender roles, those related to the home (child rearing, house cleaning, food preparation) were still considered women's responsibilities. Women's household, child rearing and food production burdens had not been significantly reduced. On average in reference communities in Tanzania, the gender task analysis exercise showed that women spend 16 hours working each day and although they are spending less time collecting water, other duties or new livelihood opportunities have only changed, not reduced their workload. In comparison men have more time to relax than women.

Women's participation in the handpump maintenance scheme in India developed their confidence and they formed a savings and credit system. This in turn has enabled women's groups to obtain loans for asset creation. The women's *sangam* in Panjapatti has become sufficiently empowered to negotiate with financial institutions and the local community administration. In Chandiba (Ethiopia), women acquired new livelihood skills that also improved their social standing and status. In Panjapatti, dalit women gained the confidence and self-esteem to prepare food to mark the passing of festivals without assistance from upper caste groups.

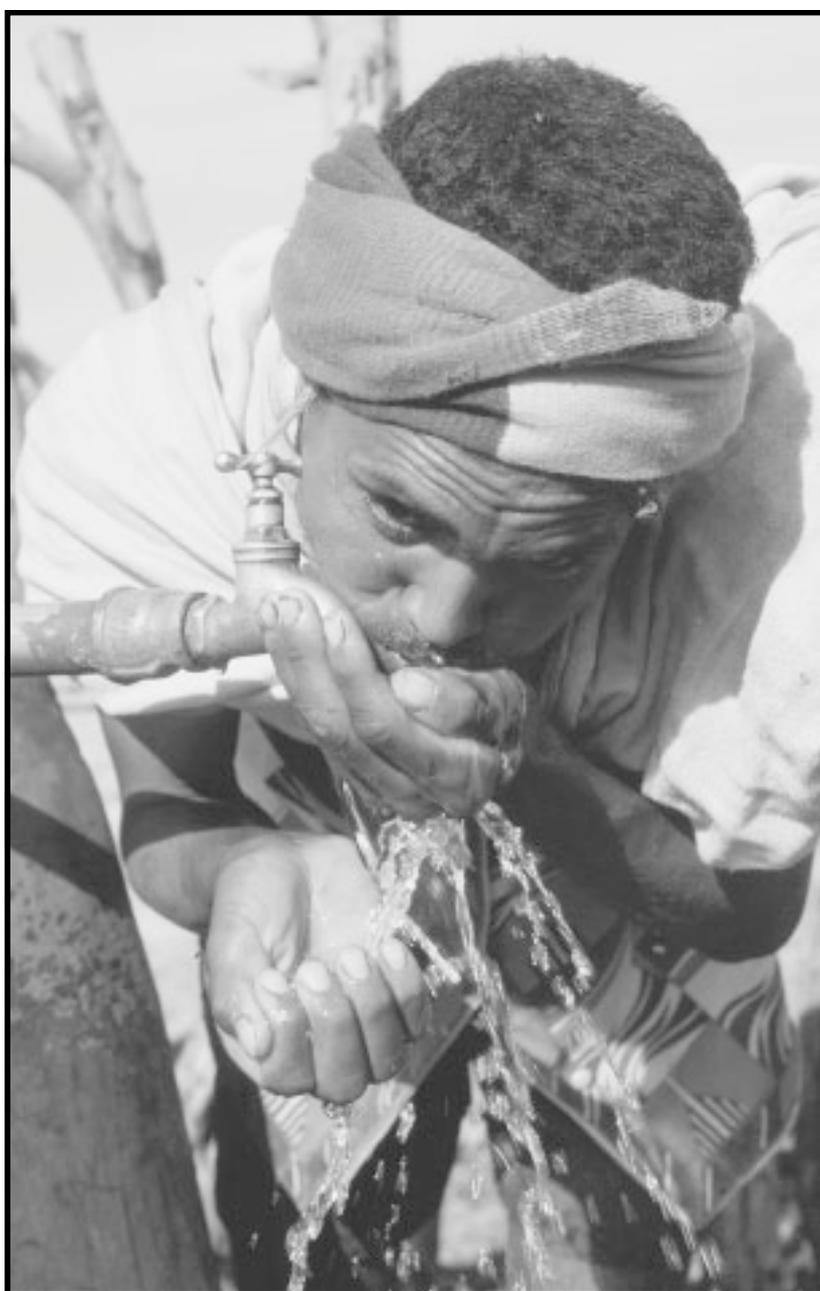
Community management and sustainability

Eleven of the 13 reference communities preferred using traditional community-based systems with Watsan committees to manage their water and sanitation infrastructures. With proper training and technical assistance from the beginning of the project, most of these management systems functioned effectively and were proven viable for running projects on a sustainable basis. A key example is the Hitosa (Ethiopia) project.

However, there were also cases of failure in the execution of roles and responsibilities, mainly because of limited skills, capacities and motivation, but also a failure to sustain the commitment of the water committee.

Only two communities had a different form of management system. Atwedie (Ghana) had the most informal management system. There was no water committee, no clearly delegated functions to individuals, and no regular procedures, but the community was highly motivated and productive, and had no

Safe, clean water was flowing from all but one of the installed systems. This provided communities with improved quantity and quality of water for domestic and agricultural activities.



WaterAid/Jenny Matthews

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difficulty coming together in the event of a facility breakdown. In Berege (Tanzania), the community owned the project but employed a private manager. This model delivered mixed results. While it provided water to the majority of the community, it was evident that neither the water committee nor village government understood the roles and responsibilities in this model, and the private operator himself did not have adequate skills to manage a project of the size required for the community.

The study looked at the sustainability of project outputs. All water supply systems still had flowing water except in North Gondar where the three handpumps had failed. This was attributed to the lack of adequate community structure to maintain the systems. In India where local women became handpump caretakers, a strict regime of CGT – checking, greasing and tightening – was in place. Community members took pride in

their properly maintained system. In one reference community in Ghana, villagers contributed cash every 40 days for the operation and maintenance of the installation.

A number of issues of sustainability were raised in the course of the study. In Tanzania, there was concern whether the drinking water systems could meet community demand, especially from those on higher ground or those that were further away from the source. The sanitation and hygiene promotion campaigns in Tanzania could not be viewed as sustainable as promotion was only undertaken during times of epidemics and the role of village health workers was not fully appreciated by the community. In Hitosa, the management boards needed strengthening. Currently, board and Watsan committee members are volunteers and this was perceived as posing sustainability problems in future years.

The hypotheses

The following conclusions have been reached in relation to each of the five hypotheses which directed the activities of the study teams.

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

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

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

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

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

Impacts between the different groups varied considerably, and therefore it was difficult

to validate this hypothesis. Across all communities, the women and children were typically the groups who were most disadvantaged and hence they tended to benefit more from project interventions. However impacts cannot be said to affect women and children exclusively as they also relate to the general well being of the whole family.

In Ethiopia, the study teams found no differences in the impacts upon groups of people who had different wealth status.

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

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

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

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

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

technical work, as shown by the lack of major breakdowns. In India, the high technical quality of work heightened community ownership of the facility, which led to strong adherence to management procedures.

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

Hypothesis 5: *Impact of projects is not associated with a longer period of provision of support to community organisations.*

This hypothesis was rejected by the study. Continued and on-going support to communities facilitated sustained development within the communities. Projects that have been in existence for a longer period tend to have a greater impact than those that are relatively new. In Ghana ORAP's continued visits and advice to the reference communities proved instrumental in the water points providing uninterrupted supply. In India, support from LEAD to maintenance committees and village *sangams* contributed to the increased impact of interventions. In Tanzania it was found that the relative impact on hygiene behaviour was related to the duration and frequency of visits to the community by project staff.

The projects are owned and managed by the communities. At this village in Ghana, the whole community helped to collect and place stones around a well to prevent erosion of the concrete.

WaterAid/Nick King



Conclusion

Everywhere around the world, especially in many remote and isolated communities, people live in conditions of extreme water scarcity. These hardships are compounded by associated sanitation and hygiene problems, all of which affect the physical, economic, social and cultural well being of communities.

The Looking Back Study teams listened to the women and men of some of these communities. In doing so, they have heard how water and sanitation projects produce immeasurable benefits far beyond those of reducing disease and the burden of long-distance water collection. After projects are implemented time saved can be allocated not only to improving livelihoods, but also to spending more time with the family and attending to social and religious obligations. Traditional birth attendants can deliver babies more safely. Mental as well as physical health can improve, along with school attendance

and the quality of teaching. In many cases the self-esteem of individuals and entire communities is dramatically enhanced. Economic opportunities for women increase, as does the chance for girls to take part in formal education.

Their narratives tell more. They show how community members are capable of assessing the impact of interventions and introducing their own management systems for the operation of facilities that do not necessarily follow 'established' rules of water point management. They provide advice on the time needed to realise changes in sanitation and hygiene behaviours, and on the training schemes that need to be set up alongside water and sanitation projects. They show that when relationships mature between organisations such as WaterAid, local partners and communities, water and sanitation facilities become more sustainable.

The study found that with increased time children could go to school or even play. Here six-year-old Mariam plays a game called bao with her grandmother Bint Hamisi.



WaterAid/Jim Holmes

Looking Back: the long-term impacts of water and sanitation projects is a summary of a study carried out by WaterAid in 1999/2000. The study looked at a number of water supply and sanitation projects carried out by WaterAid and its partners in Ethiopia, Ghana, India and Tanzania over the period 1991 to 1993. The study sought to test the belief that water and sanitation projects bring about fundamental, sustainable changes to people's health, livelihoods, their relationships, and the way in which they perceive themselves.

This report concludes that water supply and sanitation interventions can have significant and often unexpected positive impacts on people's lives and lessen the deprivation they experience. It provides evidence that improvements in access to water and sanitation should form the cornerstone of any poverty reduction strategy. It also argues that involving community members in assessments of their own projects is essential if the true impacts are to be appreciated and for future projects to reach their full potential.

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