

# All people, one goal, all access

## Water and sanitation access for people with disabilities



WaterAid/Thomas Russell

**Picture 1:**

With no access for her wheelchair, this woman in Mali must crawl across the wet and dirty latrine floor when going to the toilet.

## Introduction

Accessing safe water and sanitation is a struggle for many in Mali. For people from vulnerable groups, such as those with physical impairments, access and use of facilities can be very difficult or impossible, as facilities are often not designed with their needs in mind.

Many people from vulnerable groups rely on others for assistance. This affects individuals' dignity and self-esteem, as well as having a wider impact on their families. The example shown in picture 1 highlights how small design

features can force users to follow unhygienic practices.

Inclusive design and research into the process of providing adaptations for development work is extremely limited. WaterAid have begun including disability within their work in Mali.

As a result, a study was carried out to identify needs and ideas for solutions for people with physical disabilities in Mali, reporting on WaterAid in Mali's inclusive work.

## Research aims and objectives

The research project aimed to build on work that WaterAid in Mali had carried out in a pilot project in 2006. WaterAid in Mali collaborated with SightSavers International in the trachoma endemic village of Tienfala to provide a new well and improved latrines for people who are blind. Their work included the production of audio hygiene education tools. In order to learn lessons from the work undertaken to date and provide feedback to WaterAid in Mali, where a self-recognised weakness is a lack of documentation and evaluation of field projects, an evaluation of the pilot project was part of this study.

Working with WaterAid in Mali's partner JIGI, a second rural location was chosen, the small town of Kolokani, in order to meet a wider range of users. The research aimed to identify **physical barriers to access** and use of facilities. Through discussion with users, the research sought to provide **examples, suggestions and ideas for solutions**, for

both adaptations to existing facilities and designs for new facilities.

The scope of the research was limited to sanitation facilities, as these are relatively easier to construct than water facilities. Ideas produced in the field followed **action research**, with designs being adapted during the research period.

## Disability in Mali

A 1999 study showed that more than 10% of the population in Mali have some form of impairment, with highest rates of 19% for the region of the pilot project (Diawara 2005). A 2005 study reports that disabled people's organisations across the country are poorly run, fraught with conflict in leadership, opinion and experience a lack of resources. Furthermore, disabled people's organisations have to date not been involved in a discussion of water and sanitation (WATSAN) facilities (Diawara 2005).

Diawara argues that society in Mali views disabled people with pity, incapable of leading an active life. This, in turn, erodes the will of disabled people to do things by themselves. Sanogo, from WaterAid in Mali, explains that facilities have been designed without consideration of the specific needs of users from vulnerable groups. This research aims to provide data for this knowledge gap. Current research in WATSAN access for vulnerable groups in Mali can be found from Messiah College, in the US, in collaboration with World Vision and Handicap International.

This briefing note summarises the findings and recommendations from the research project of an MSc student at WEDC, Loughborough University, in collaboration with WaterAid in Mali in July 2007.

## Methodology

In Tienfala 15 beneficiaries of the pilot project were met, including people yet to receive improvements. In Kolokani, samples of convenience were used due to limited time, via the local disabled people's organisation.

In Kolokani 16 participants included wheelchair users and people using supports to aid mobility. Disabled participants were involved in the data collection, in asking questions in the interview and in the audit.

This approach can allow for more open and relaxed meetings, with appropriate wording of questions, and gives participants themselves the experience of using tools to assess and identify their own needs.

The following data collection tools evolved during the fieldwork period:

- **Accessibility audits** were used in groups of four to five people to examine existing water points. Each person would take turns to demonstrate and give comments on their access to and use of the facility. The audit created a platform for discussing ideas for improvements and alterations
- **Individual interviews** were used in the home, to assess access to and use of both water and sanitation. An accessibility audit of the latrine was incorporated into the interview. This allowed for clear identification of problems users faced, and the opportunity to discuss ideas for improvements
- **Focus group discussions** were used on a limited scale to discuss ideas for improvements to facilities

Accessibility audits proved to be a suitable tool for assessing needs and discussing ideas, both in group and individual settings. Piloting tools beforehand is recommended to help familiarise researchers. Focus group discussions operated best in small groups of people with shared issues. The use of physical aids and examples appears a suitable way to demonstrate ideas and present options. The trial and error process of action research is a suitable method of obtaining final solutions.



**Picture 2:** New well design for people who are blind, used by WaterAid in Mali

## Key findings 1: Water: transport, access and use

### Transporting water

The study found that for many people with physical impairments, the transportation of water is a **primary barrier**. Difficulties in transportation can prevent users from collecting water all together. Wheelchair users place water containers on the footrests of the three-wheeled chairs used in Mali. However, over rough terrain the containers are at risk of falling off the chair. Other users, with weakened limbs, found carrying water on the head in the traditional way was not possible, and the alternative of carrying water by hand difficult or painful.

### Access issues

No use of handpumps or standposts took place in this study. However, observation highlighted the issues that prevent people with impairments sharing the same level of **access** as other users.

Handpumps were commonly protected by walls and doors with stepped entrances, preventing wheelchair access. Standposts and aprons with raised edges prevented wheelchair users gaining full access, or made use of the facility difficult.

Large open wells with low walls increased the risk of users falling, making them more dangerous to blind users.

### Factors that assist access and use

In both field locations, **wells with raised walls** provided users with a form of all round support, giving protection against falling and physical support when raising water. Picture 2 shows an example built by WaterAid in Mali in Tienfala, where an additional surround of gravel provides blind users with **clear guidance** for orientation.

However, not all users found a walled well easiest to use. A wheelchair user, for example, dismounted to crouch beside and use a small open well. The user was able to raise, grasp and rotate round the raised water to empty to a second container without difficulty.

This well built by WaterAid in Mali (picture 2) contains a lower wall section that would be more suitable for wheelchair users or even children. In the provision of a low section, it is important that clear access up to the designated position is also provided.

The ease with which **pulleys** could be used often depended on the quality and positioning of the pulley. For example, a pulley became redundant for the new well in Tienfala, as the rope would often get caught and stuck in the bolt of the pulley wheel. Users with weakened arms found that a pulley alone can be difficult to use, where the weight of the water can pull rope back against the user. Many users experience difficulty in **transferring the raised water** to a second container, as is common practice for wells in Mali. In addition, throughout the study, users reported that ropes can easily be abrasive to hands.

## Key findings 2: Sanitation

### Accessibility issues

Through individual interviews a number of factors were identified that make access and use of sanitation difficult and unhygienic for people with physical impairments. The evaluation at Tienfala showed that the

provision of raised seats alone can still leave access problems within the latrine environment.

**Steps and slopes** formed by changes in material when laying concrete slabs in latrines. Steep slopes proved difficult – often becoming slippery.

**Slippery surfaces:** stone and gravel paths were reported the most stable. A key problem came from poorly designed or unclear drainage routes. Often, wastewater would run out to entrances, and create slippery surfaces.

**Limited access for wheelchair users:** narrow, concealed entrances, steps and small latrine rooms meant that the majority of wheelchair users were required to dismount and crawl across wet, abrasive and dirty latrine floors.

**Squatting difficult:** painful for users with weakened limbs, to get in and hold position.

**Unhygienic practices:** wheelchair users, if unable to support themselves, needed to rest over the latrine hole – an unhygienic practice, where stone surrounds were also often hot and abrasive to the skin. Blind users were observed using their hands to identify the latrine squat hole.

**Bathing:** users who had difficulty transporting water relied on others to provide water for bathing. People who crawled across latrine floors found keeping themselves clean after bathing difficult.

## Key findings 3: Adaptations tried in the field

Following discussion with participants, some equipment individuals could use in their latrine was produced.



WaterAid/Thomas Russell

**Pictures 3 and 4:** Example wooden seats produced in Kolokani. Dimensions were decided by users. Often, wheelchair users preferred a low seat, that suited the height at which they moved.

**Portable raised seats** made from wood were simple to produce, and gave the advantage of dual use for bathing and latrine use. The seats do not interfere with other users of the existing family latrine. The seats gave the support users with weakened limbs needed. The seats were widened in Kolokani so that users could use the top of the seat to push against when getting up from a sitting position. It was important that the seats met the following design criteria:

- to fit and match existing latrine environment
- to be lightweight and durable (wood provided this)
- Hygienic – PVC tubes were used to direct faeces
- Varnish finish for protection against elements, and ease of cleaning
- Symmetry and floor markers provided for orientation in positioning seats for blind users

One **vertical support bar** was produced for a user who experiences difficulty maintaining and getting up from a squatting position in the latrine. The most important aspect of providing a support bar is to ensure that the bar is well

fixed and will remain stable – which can be difficult where latrine floors are made of earth. The user requested handholds on the bar at different heights, to provide the ability to pull up to stand.

## Recommendations for improved access and use

### Water

**Transportation ideas** for wheelchair users included using an elasticised band or rope to fasten containers in place on the footrest of chairs or for bound straps to allow storage underneath the chair. A form of cart was a common desire for many users. One option would be to develop a low-cost Hippo Water Roller as used in South Africa, to incorporate water containers local to Mali.

**Adaptations to wells and locking mechanisms** were discussed with users, producing the idea shown in picture 5. A wider ledge would allow users to rest containers on top of the well wall. A raised block next to the well would make transferring water to a second container easier. A system to lock rope in place would allow users access to raised water with a preferred container, or both hands. Self-locking devices, such as a ratchet and pawl, would give security when raising water, reducing effort where weight pulls against the user. Once water is raised, the user must be able to reach and move the container. A sufficient slack of rope could be given with extendable looped lengths, combined with a locking device or hook for reach.

**Improved access** to all water facilities is of primary importance to users. Simple modification to standposts, such as a ledge up to the tap for example, could allow wheelchair users the same level of access as others.

## WaterAid in Mali's 'Damu' raised seat



In the pilot project in Tienfala raised concrete seats affixed to reinforced domed slabs were produced and provided free of charge for blind elderly villagers. This study showed that all users found the new seat easy to locate, easy to keep clean and provided support where before users

had experienced difficulty squatting.

However, in a culture where latrines have no roofs, the surface of the seat becomes very hot and painful to the skin. Many covers were observed in use in the field; from plastic and rubber to corrugated iron. The rim of the seat was also often observed to be used as a hand support when getting into position. In addition, the height of the seat appears to make full use not possible for young children. Plus, the need for reinforcement goes against the low-cost design of domed slabs.

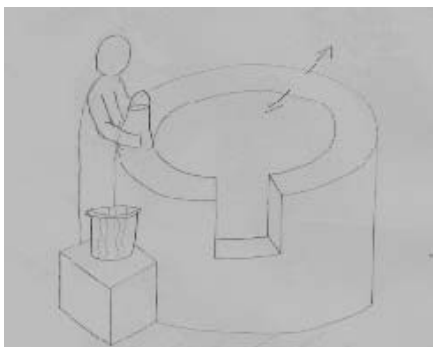
### Sanitation

Ideas that came through discussion with users included:

**Support bars** to aid movements in the latrine. One user requested a ladder type support.

**Protection for hands and limbs** such as wooden walkers and sandal form protection from old tyre material was requested by wheelchair users. Examples can be found in Jones and Reed (2005).

This study showed that **raised seats** can be appropriate solutions for existing latrines. However, in construction, access for anal cleansing may remain an issue.



**Picture 5:**  
Adapted well design  
idea from  
users in  
Kolokani

from access for wheelchairs inside the latrine, to improved drainage and non-slip surfaces – which could be made by roughening concrete or using gravel.

## The future

This study provides examples for both the process of consultation with people with physical disabilities, and of factors and design ideas that can meet their needs. For **new facilities**, designers have a great opportunity for producing inclusive facilities and for experimenting with ideas to provide a range of available options to meet individual needs. For example, fixed raised seats could be produced locally at low cost with mud bricks and cement plastered for protection and hygiene. For **communal facilities** there is a need for time to be given for developing and testing inclusive designs.

- **Further research** should include the use of handpumps and further ideas for the transportation of water, where current research is low
- **Future implementation** needs to be inclusive at both the consultation and design stage. Consultation needs to start early, where people from vulnerable

groups are purposely sought for. Disabled people are the experts, and it is simple ideas and adaptations that can meet people's needs, without the need of expensive provision. Capacity building within sector organisations can help increase understanding of the needs of people with physical disability

- **Encourage innovation** with users and their families, in an environment where self-innovation is low. Demonstration latrines could be used
- **Sharing of ideas and findings** within the field of research of WATSAN for vulnerable groups is required, with increased dialogue and collaboration between research groups
- **Greater collaboration** between disability and WATSAN organisations. For example, the issue of water transport is a shared issue where disability organisations can provide users with the means of obtaining adaptations

## References

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## Keywords

**Access, Disab\*, Inclusive design, Vulnerable groups, Mali**



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

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