

# **Water supply and sanitation access and use by physically disabled people**

## **Report of field-work in Bangladesh**

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## Glossary

|                 |   |
|-----------------|---|
| <b>AD</b>       | assistive device  |
| <b>ADL</b>      | activities of daily living  |
| <b>badna</b>    | plastic water pot   |
| <b>BPKS</b>     | <i>Bangladesh Protibandhi Kallyan Somity</i> : (Welfare Association of Persons with Disabilities of Bangladesh) |
| <b>CBR</b>      | community based rehabilitation  |
| <b>CRP</b>      | Centre for the Rehabilitation of the Paralysed  |
| <b>CSID</b>     | Centre for Services and Information on Disability   |
| <b>DFID</b>     | Department for International Development  |
| <b>DPHE</b>     | Department of Public Health Engineering   |
| <b>DPO</b>      | disabled people's organisation  |
| <b>D:</b>       | depth   |
| <b>H:</b>       | height  |
| <b>L:</b>       | length  |
| <b>W:</b>       | width   |
| <b>g.i.</b>     | galvanised iron   |
| <b>INGO</b>     | International non-government organisation   |
| <b>kalash</b>   | jar   |
| <b>lungi</b>    | cloth worn by men wrapped around the waist  |
| <b>LH</b>       | left hand   |
| <b>RH</b>       | right hand  |
| <b>NGO</b>      | non-government organisation   |
| <b>OT</b>       | occupational therapist  |
| <b>PI</b>       | physical impairment/physically impaired   |
| <b>PT</b>       | physiotherapist   |
| <b>PWD</b>      | people/persons with disabilities  |
| <b>VI</b>       | visual impairment/visually impaired   |
| <b>UNICEF</b>   | United Nations Children's Fund  |
| <b>Upazilla</b> | Sub-District  |
| <b>VDC</b>      | village development committee   |
| <b>WATSAN</b>   | water and sanitation  |
| <b>WEDC</b>     | Water, Engineering and Development Centre   |
| <b>WHO</b>      | World Health Organisation   |
| <b>Symbols</b>  |   |
| <b>∅</b>        | diameter  |
| <b>~</b>        | approximately (used where a measurement was not taken so a guess has been made)                                 |

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# 1. Introduction

## 1.1 Project Background

This report has been produced as part of phase two of KaR (Knowledge and Research) project R8059: '**Water supply and sanitation access and use by physically disabled people**'. This research is funded by the UK Department for International Development (DFID) and is being carried out at the Water, Engineering and Development Centre (WEDC), Loughborough University, UK, together with collaborators in Bangladesh, Uganda and the UK. The project web page is <http://www.lboro.ac.uk/wedc/projects/auwsfpdp/index.htm>

As part of phase two of the research, in-depth fieldwork is to be carried out in four low-income countries. Criteria for selection of fieldwork locations are:

- Availability of current information about multiple examples of good practice on access for disabled people to water and sanitation.
- Commitment/interest from a local partner.
- Support/approval of a local disabled people's organisation (DPO).
- Contribution to a diversity of cultural and geographic contexts.

## 1.2 Purpose of field-work in Bangladesh

Bangladesh was the second location for fieldwork for this research project. The purpose was to observe and document a wide range of examples of existing facilities, adaptations, equipment, activities, approaches and strategies that have helped children and adults with physical limitations improve their access to water and sanitation-related activities. The focus was on examples that others could learn from, and replicate or adapt according to their own needs and situation. In addition, organisations involved in water and sanitation (WATSAN) service delivery were targeted to determine current practice in serving the needs of disabled people and to develop strategies for mainstreaming the issue.

The research deliberately focused on examples of good practice, and so findings do not in any way represent the typical situation of most disabled people in Bangladesh.

## 1.3 Methodology

### 1.3.1 *Discussion process*

On the basis of information received by WEDC about examples of good practice, a preparatory visit was carried out to Bangladesh in December 2002,

hosted by the Centre for the Rehabilitation of the Paralysed (CRP), Dhaka (see Appendix A2 for the report). The purpose of the visit was to decide whether or not Bangladesh would be suitable for in-depth fieldwork. Meetings were held with relevant agencies from both the disability and the WATSAN sectors, to introduce and discuss the research project, to identify potential field-visit locations and further relevant agencies who are involved in the issue of water and sanitation. This also provided the opportunity for agencies to express an interest in collaboration in the project. Support was gained from UNICEF and the Bangladesh government Department of Public Health Engineering (DPHE). Several local non-government organisations (NGOs) and DPOs expressed an interest in being actively involved in the research.

In preparation for and throughout the field-work, CRP's research officer acted as local co-ordinator and liaison person in Bangladesh, which included receiving and disseminating information between WEDC and local agencies, and co-ordination of meetings and visits.

On the second, main visit, an initial planning meeting was held, hosted by DPHE and the World Health Organisation (WHO), to introduce and discuss the research with a wider audience than on the preparatory visit. There was increased participation from the WATSAN sector at this second meeting (see Appendix A3 for minutes). Participants drew up a list of possible visit locations and key informants, which formed the basis for a two-week schedule of visits.

A team of data collectors was formed, with local collaborators from Bangladesh Welfare Association of Persons with Disabilities (BPKS), CRP, Centre for Services and Information on Disability (CSID) and WHO, under the supervision of WEDC researchers. They were given a short introduction to the purpose and use of the research tools, supervised and given feedback during initial practice interviews and data recording.

Local collaborators also acted as informants, contact/liaison persons, interpreters and guides to field-visit locations.

### ***1.3.2 Data collection***

Frameworks for data collection were developed during the first fieldwork visit in Uganda (Jones & Reed, 2003), and formed the basis for data collection in Bangladesh. Revisions were made as omissions became apparent (see Appendix A5 for data collection frameworks).

Two main types of visit were carried out.

### **a. Family homes and institutions:**

The focus here was on facilities, adaptations and equipment, how a disabled person could use them, and what benefits they had brought. Data was collected through:

- Semi-structured interviews with informants - disabled people, family members and neighbours.
- Observation and documentation of equipment and facilities, including drawings, measurements, photographs.
- Observation and documentation (written and photographs) of how a disabled person used particular equipment and facilities, including the disabled informant demonstrating, and explaining at the same time, daily activities related to water and sanitation.

On these visits, three to four data collectors, including one WEDC staff member, worked as a team, taking roles of lead interviewer, interpreter where needed, and data recorder. The translator and documenter could supplement additional questions where they felt there were still gaps in information. These roles were rotated regularly. Photographs and measurements were also taken.

Where the interviewee was a woman, the team would split up at some point during the visit: a Bangladeshi woman interviewer would take the informant aside to talk about personal issues, while other (male or foreign) team members continued with other data recording.

### **b. Visits to organisations/service providers:**

The focus of these visits was to learn about approaches to WATSAN service delivery and institutional factors that affect implementation. The research team interviewed representatives of WATSAN service providers and the organisations that support them, such as NGOs, international NGOs (INGOs) and donors. Data was collected via semi-structured interviews, usually in English, but occasionally through an interpreter.

## **1.4 Field visits**

Field-work took place over a two-week period, from 10<sup>th</sup> to 20<sup>th</sup> March 2003, under the supervision of WEDC staff. It was not possible to cover all suggested visits in the limited time available, so further data collection was undertaken by local data collectors after the departure of WEDC staff.

Criteria for selection of field-visit locations can be summarised as: Accessible facilities, adaptations, equipment or approaches that have helped people with physical impairments and limitations improve their access to water and sanitation-related activities. See Appendix A4 for more detailed criteria.

A total of 43 visits and meetings were undertaken (Appendix A1).

### 1.4.1 Contributors

At least 93 people contributed to the research, through interviews, meetings, telephone conversations or e-mail correspondence. They were from government and NGOs, including DPOs, and international organisations. Around 30 were private individuals. 62 contributors were disabled, of whom 9 were children.

**Table 1: Disabled people and carers visited**

|                                      | Female    | male       | total      |
|--------------------------------------|-----------|------------|------------|
| Disabled adults                      | 9         | 44         | 53         |
| <i>(including disabled elderly)*</i> |           | <i>(3)</i> | <i>(3)</i> |
| Disabled children                    | 3         | 6          | 9          |
| <b>Total disabled people</b>         | <b>12</b> | <b>50</b>  | <b>62</b>  |
| Carers                               | 12        | 4          | 16         |
| Service providers                    | 5         | 20         | 25         |
| <b>Total non-disabled people</b>     | <b>13</b> | <b>18</b>  | <b>31</b>  |
| <b>Total number of people</b>        | <b>25</b> | <b>68</b>  | <b>93</b>  |

\* Brackets indicate the group is a sub-set, i.e. included in the group above.

Twice as many men contributed as women. Among disabled people, three times as many disabled men contributed as disabled women. This was in spite of efforts by the researchers, including engaging a female Bangladeshi data collector, to ensure that examples from women were represented. Among carers, however, the opposite was the case: three times as many women as men were met. This is likely to be a fair representation of the ratio of female to male carers.

### Types of impairment:

The majority of the disabled people met had a physical impairment, including paralysis as a result of spinal cord injury, polio, or stroke, amputations, congenital anomalies, and cerebral palsy. One woman had a visual impairment (VI), and two had a speech impairment in addition to physical impairment.

### 1.4.2 Visit locations

The majority of visits were to family homes rather than to institutions, which is appropriate, as the focus of the research is on the household context (see Table 2). A reasonable balance was achieved between agencies working in water and sanitation sector and the disability sector (see Table 3).

**Table 2: Type of visits**

|  | <b>Total</b>           |
|--|------------------------|
| Family homes of disabled people              | 17 (14 rural, 3 urban) |
| Residential institutions for disabled people | 2                      |

**Table 3: Organisations visited**

|   | <b>disability sector</b> | <b>WATSAN sector</b> | <b>total</b> |
|---|--------------------------|----------------------|--------------|
| Government of Bangladesh offices/ service providers |                          | 3                    | 3            |
| NGOs  | 8                        | 2                    | 10           |
| <i>(including DPOs)</i>                             | <i>(6)</i>               |                      | <i>(6)</i>   |
| International organisations                         | <i>(1) (INGO)</i>        | 5                    | 6            |
| <b>Total</b>  | <b>8</b>                 | <b>10</b>            | <b>18</b>    |

## 1.5 Limitations and gaps

A meeting scheduled with the Ministry of Social Welfare was unfortunately unable to take place, for unforeseen reasons. This is recognised as a major gap in information from the government ministry with primary responsibility for disability issues.

Lack of time for training local data collectors and weaknesses in the data collection frameworks meant that data collection after the departure of the WEDC team initially contained significant gaps, and a follow-up visit by local data collectors had to be carried out to collect more complete information.

As much as possible was done to maximise the use of available time, but even after discussion and clarification with informants, visits did not always meet the research objectives. Conversely, surprising and unexpected information occasionally emerged when the team did not expect it.

## **Lessons learned**

Given the limited time available in this research project for field-work in each country, it was recognised that it was unrealistic to aim to train local data collectors to a level that they could carry out data collection independently. Subsequent field-work should aim to involve local collaborators in complementary roles only, with the main data collection role to remain the responsibility of the WEDC team.

## 2. Findings

### 2.1 Personal assistive devices and accessible facilities

*Personal assistive devices* (ADs) are aids or equipment used by a disabled person, often designed specifically to meet their individual needs, which enable them to carry out daily living activities more easily or more independently.

*Accessible facilities* are those with features – whether intentionally designed and constructed to be accessible, or with changes, additions or adaptations made to a facility, that make them more comfortable, less arduous, or simply possible to use by a disabled or frail elderly person, with or without the assistance of a carer or AD.

#### 2.1.1 Drawing water

A range of accessible water sources were observed, the majority were household hand-pumps, but also piped water supply to taps. See Table A8.1 for complete data on accessible facilities, and A8.2 on ADs for drawing water.

#### Lessons learned:

**Proximity:** a major factor in accessibility of water was proximity, i.e. a water collection point in or near to (5 to 10 metres) the house or place of use. The benefits include:

- for some disabled people, drawing water is made possible, where it was not before, because they are able to move short distances only.
- reduced time and effort in getting to and transporting water.
- smaller quantities of water tend to be drawn each time, e.g. up to 5 litres, which is feasible for many disabled people who would not be able to carry larger quantities. The need for storage is also reduced, and the potential difficulties in accessing stored water sources.

Benefits are felt not only by the disabled person, but by the whole family, and often neighbours too.

An alternative way of reducing the distance between water source and place of use is to take the water-related activity to the water source, e.g. bathing and clothes washing at the water-pump reduces the quantity of water that needs transporting and storing.

**Reachability:** to allow the disabled user to reach as close as possible to the water point the approach path should be smooth and level, or sloping at a

gentle gradient for wheelchair or crutch users. The path or ramp may be of concrete or smooth packed earth. Concrete is more durable, but high cost, while earth costs nothing, but may get washed away regularly and need regular maintenance.

Where a hand-pump has a concrete apron, a cement ramp may allow a wheelchair or crutch user to go onto the apron to reach the pump (e.g. Fig. 1). In this case, slipperiness should be minimised by using a slightly rough cement finish to the apron, and the drainage slope must be away from the ramp to minimise water on the ramp.

If the water is used by a number of disabled people, a level area of at least 1 metre around the water point allows users, including wheelchair users, to access it from the side most convenient for them, using their preferred hand.

Alternatively, the pump can be sited at one edge of the apron, making the handle accessible to wheelchair/crutch users on the outside edge of the apron (e.g. Fig. 2). This avoids the difficulty for the user of surmounting a raised apron rim, or the higher cost of a ramp, and the risks of a slippery concrete apron surface.

If the tap is over a basin or other receptacle, it needs to be positioned so that it can be reached from a sitting or standing position. In addition, there should be enough space for the wheelchair user to get their knees under the basin and close enough to reach the tap.

**Accessibility/usability:** how easy is the equipment or facility to use.

**Taps** have the advantage that they require little strength to operate, compared with many handpumps. They can be installed at any height, to suit a variety of users, and convenient for filling any size of container. The rate of flow can be controlled easily, and there is therefore less wastage.

Height of tap: 80 – 100cm is suitable for someone sitting on a stool or wheelchair. However, this may not be suitable for crutch users, or others who have difficulty bending, who may need a higher tap.

*Drawbacks:* The main drawback is the high cost of piped water supply to a tap. Many widely used tap designs were difficult for users with poor grip or stiff wrists, especially if the tap is rounded, with no lever, and requires a twisting wrist movement. If the tap is very low, or over a hand-basin, it may be difficult to fill larger sized water containers.

**Handpumps** can be installed at a height from which the pump handle can be reached, either from sitting in a chair or from sitting nearer ground level, e.g. on a low concrete platform.

A longer pump handle (e.g. 105cm) allows it to be reached from further away, or lower down, and as it gives greater leverage, so less strength is needed to operate it (see Fig. 1). The drawback is that a greater *range* of movement is needed to pump the same amount of water, which is a disadvantage for a person with limited arm movement.

Installing the spout and pump handle at 90 degrees to each other allows the user to pump and at the same time hold the container to collect water. This is an advantage for someone with limited mobility, as it reduces the amount of walking to and fro needed (e.g. Fig. 1 and 2).

A low concrete sitting platform constructed on the rim of the pump apron benefits disabled people but is also convenient for other family members to sit, e.g. women washing clothes or bathing children. A basic design of platform can be adapted in terms of height, width, distance from the pump, etc. to suit individual households or users (e.g. Fig. 3).

**Assistive devices:** containers with a wide opening, e.g. plastic buckets have a particular advantage for disabled people in that they are easy to fill because of the wide opening, so can be placed on the floor and in spite of the distance between spout and bucket, little water is wasted. They are more difficult to transport however (see Section 2.1.2).

### **2.1.2 Transporting water**

Disabled people were observed transporting water, using locally available equipment, but no particular adaptations or devices were observed. See Table A8.3 for complete data on ADs for transporting water.

#### **Lessons learned:**

No device or container was observed to be particularly suitable for use by disabled people in transporting water. There may have been less emphasis on this issue in the areas visited, because water points were generally close to home, so transporting water was not a big problem.

Soda bottles (1 litre), with a screw-top to prevent spilling and contamination, can be carried easily by a wheelchair user, as they do not need to be carried upright, and can be carried on the lap, or tucked between the chair arm and the user's side, etc. However they are slow to fill. They have no handle, which makes them difficult to carry for a crutch user or someone with poor grip.



**Fig. 1: Long-handed hand-pump**  
Mr Abul Kalam uses the long-handed pump at the CRP transit hostel.



**Fig.2: Wheelchair accessible hand-pump.**  
Mr Ramizuddin collects water from his hand-pump (BPKS design).



**Fig. 3: Low concrete sitting platform**  
Mr Ramizuddin sits on a low concrete platform next to his handpump to wash clothes, bathe himself and his children (BPKS design).



**Fig. 4: Bucket carried on footrest of wheelchair**  
Miss Popi with a bucket on the footrest of her wheelchair. She has to hold it with one hand to stop it falling off.

Buckets with a tight fitting lid are suitable for larger quantities of water, but are inconvenient to transport because of their width, although it is possible, but not easy, to carry a bucket on the footrest of a wheelchair (see Fig. 4).

Traditional aluminium water jars are also difficult for disabled people to transport water as they have no handle, and no lid to prevent spilling.

### **2.1.3 Storing water**

No particular equipment or adaptations were seen specifically designed to be accessible to disabled people. However disabled people were observed using ordinary receptacles in everyday use. See Table A8.4 for complete data on assistive devices for storing water.

#### **Lessons learned:**

Water stored in a bucket is easy for many disabled people to access, as it can be scooped out with a mug or other container, and no heavy lifting or pouring from the bucket is necessary. The risk of contamination is high, as the lid must be removed for access, and from the cup being dipped in the water, so they are unsuitable for storing drinking water. However, because of the wide opening they are easy to clean.

Plastic jugs with handles and a lid are widely available in different sizes, from 2 to 3.5 litres. These are suitable for storing and pouring smaller quantities of water, particularly for drinking. The handle makes it usable by a person with poor grip. The lid prevents contamination.

### **2.1.4 Drinking**

The drinking receptacles observed were plastic mugs and aluminium cups with no special features, which are all widely available in Bangladesh. See Table A8.5 for complete data on assistive devices for drinking.

#### **Lessons learned:**

A suitable table or tray at waist height, with a semi-circle cut out to closely fit around the user's body when sitting at the table, can provide a stable surface to reduce the risk of water spillage from a cup. It can also support the user's body, providing stability to the person with poor balance, which makes drinking easier. This enables the drinker to take control over the activity, e.g. being able to drink at their own pace. This type of table can be used in conjunction with an ordinary chair, or a specially supportive chair, or a wheelchair.

There are benefits to both the disabled person and to carers, who need to spend less time giving drinks to the disabled person.

### **2.1.5 Bathing**

A range of accessible bathing facilities were observed, including specially designed brick and concrete finished rooms with internal piped water, with the majority of these in institutions or urban areas. In rural areas, features were seen that made it possible for a disabled person to bathe at the water source, e.g. at a handpump, beside or in a pond. The ADs seen were mainly different forms of seating, either made or adapted locally. For complete data see Table A8.6 on accessible facilities and A8.7 on ADs for bathing.

### **Lessons learned**

Accessible bathing facilities had the following features in common:

**Reachability:** a smooth access path, of concrete, earth, or paved with brick, which finishes at a similar level to the floor of the bathing area. This helps accessibility for wheelchair and crutch users.

The path should be level or gently sloping. For independent wheelchair access, if the path needs to slope, the lower the gradient of ramp the better.<sup>1</sup> It must not be assumed that a ramp suits everyone, however. Some users, especially those with poor balance, may prefer one or two steps rather than a steep slope.

For those with poor balance or co-ordination, or who crawl, some form of support along the path is helpful, especially where the ramp or steps are steep. This could be a rail of bamboo or rope, or similar locally available low-cost materials. Where a pond is used for bathing, and the ground is muddy and slippery, it is useful if the rail extends into the water itself. This provides support both for entering the water, and to hold onto whilst bathing.

For an enclosed bathing area, a level area/ platform immediately outside the entrance is recommended, so that wheelchair users are not in danger of rolling backwards, or crutches users find it easy to balance whilst opening the door. Where the door opens outwards, the flat area should be a wheelchair width deeper than the width of the door, to allow a wheelchair to manoeuvre around the open door. For example, if the door is 80cm wide, and the wheelchair 70cm wide, the flat area needs to be  $80 + 70 = 150$ cm deep.

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<sup>1</sup> International guidelines propose an ideal 1:20, maximum 1:12 for independent mobility.

**Accessibility to indoor bathroom:** The entrance should be wide enough for wheelchair access, usually 800-900mm, but this depends on the width of the wheelchair in question. For one wheelchair user, 710mm was wide enough. For most crutch users, extra entrance width is convenient, although not essential.

The transition from path to inside should be as level as possible, or with only a minimum threshold for wheelchair, crutch user or person crawling to overcome (Fig. 5). Where a threshold is necessary, e.g. for flood prevention purposes, this should be rounded to make it easier for a wheelchair to get over (see Fig. 6). (Steps up to 23cm were seen being surmounted by a crutch user, and up to 20cm by a wheelchair user).

The *door* needs to minimise obstruction for the wheelchair, e.g. by opening outwards, or by having the hinge next to the wall so that the door is flat against the wall when opened. Double doors, each of which is half the width of the opening, are a more costly option.

Where the door opens inwards, extra space needs to be created for a wheelchair to manoeuvre – this can be more costly if the floor is concrete.

An outward opening door can be more difficult to close from the inside. A rail or rope to grab hold of on the inside of the door is helpful. A door stop is recommended to prevent the door opening more than 90 degrees, otherwise it is even more difficult to close.

**Internal space:** Extra room is needed depending on the user's needs. A minimum of 200 x 150cm allows a wheelchair to enter and turn, and for a helper to move around at the same time if needed.

If the bathing area is combined with the toilet, the toilet pan can be sited in the corner of the room to allow space for the wheelchair and for bathing.

**Seating arrangements:** are needed for the bather to avoid sitting or lying on a wet or dirty floor in their own bathwater. These may be a fixed feature of the facility, such as a concrete platform, or they may be an AD, such as a stool, which is moveable and usually specific to the individual disabled user.

**Materials:** a range of materials can be used – concrete, metal, wood, bamboo. In general, the higher the cost of materials, the greater their durability.

**Height:** For the wheelchair user, a seat of similar height to the wheelchair makes transfer convenient to and from the wheelchair. A low seat (H: 10-20cm) makes it easy to use a washbasin placed on the floor, and reduces the risk of injury if the bather falls, but makes independent transfer to and from a wheelchair more difficult for some.



**Fig. 5: Wheelchair accessible entrance**  
Mr Mofizzuddin demonstrates how easily he can enter in his wheelchair (BPKS design).



**Fig. 6: Rounded concrete threshold**  
for flood prevention purposes, at CRP women's hostel. Surmountable by a wheelchair.



**Fig. 7: CRP wheelchair with small tyre inner tube**  
in place of the seat cushion for purposes of bathing or toileting.



**Fig. 8: Low wooden stool**  
Miss Popi sits on a low wooden stool to do her washing at CRP women's hostel.

*Support:* Those with poor sitting balance need support from a back and/or arm-rests or rails on each side. These can also provide a handle for picking up and moving the seat without having to bend too low. However, for the wheelchair user, side-rails can be an obstacle to sideways wheelchair transfer.

*Good drainage:* the seat should be narrow so water drains off easily, or have a hole or gap in the seat to let water drain through.

**Multiple use seats:** This is a seat with more than one function, e.g. wheelchair + toilet chair, or bench for bathing + eating. The advantages are several: one piece of equipment generally takes up less space than several would, the cost is often reduced, and the need for the user to move around from one seat to another is also reduced.

A *wheelchair* with the seat cushion replaced by a small wheel inner tube (overall Ø: 40cm, Ø of hole: 20cm) has the advantage that the user can stay in the wheelchair to bathe (Fig. 7). The tube is durable, easy to clean and easily available at reasonable cost in Dhaka. They are also suitable for persons with poor sitting balance. Their disadvantage is that they make the chair wet and may take time to dry out in wet or cool weather.

*Bathing/sleeping bench:* The height needs to be suitable for transfer from a wheelchair, and wide enough to allow for sleeping and other tasks, e.g. eating meals. The disadvantage is that water may not drain off easily, with the result that the bather sits in a pool of water while bathing. One example seen was made of wood: L: 198 x W: 80 x H: 58cm.

Neither would be suitable in cooler climates as they would take much longer to dry, which would hasten rot, corrosion of frame; and create discomfort and pressure sores for the user.

None of the above arrangements need exclude non-disabled people from using the same facilities. Wherever possible, the aim should be for the disabled person to use the same facilities as the rest of the family.

A fixed accessible feature can promote inclusiveness, in that not only does it not exclude, but it can be of positive benefit to other family members, especially women, the elderly and children.

ADs on the other hand can be moved out of the way when not in use, to prevent them getting dirty or deteriorating rapidly. They can also provide more flexibility for the disabled user, who may wish to move a bathing chair to a different location depending on the time of year, or depending on the purpose.

### **2.1.6 Washing clothes, dishes and doing housework**

Facilities seen included accessible facilities with multiple uses, including handpump apron where all kinds of water-related tasks are carried out, and rooms for both bathing and washing clothes or dishes. Assistive devices included different types of tables and stools. No special methods or ADs for house-cleaning were observed or reported. For complete data see Table A8.8 for accessible facilities and A8.9 for ADs.

#### **Lessons learned**

Where it is the norm to wash clothes and dishes at floor level at the water point, whether this is a hand-pump or a tap, some kind of seat can improve accessibility for disabled users. This may be a low level (H: 10 – 20cm) concrete platform (e.g. Fig. 3) or low wood or metal stool (e.g. Fig. 8). These are suitable for those with good sitting balance, and with the ability to transfer to and from a wheelchair.

Low stools are also suitable for a number of floor level tasks – preparing vegetables, cooking, etc. and are widely used by non-disabled people throughout Bangladesh.

For wheelchair users who prefer to stay in their chair, a concrete laundry slab at waist height, with enough knee-hole space beneath for the user to wheel up close, avoids the need to transfer out of the chair. It can also be used by persons standing.

A laundry table/bench is a further option (H: ~50-60cm), where the user sits on the bench and does their laundry beside them. This can be of metal (more durable but costly) or wood (less durable but cheaper). This height is convenient for wheelchair transfer and for those who have difficulty lowering themselves onto a low seat. Again the user needs to have good sitting balance.

Both these options need to be sited as near as possible to a water point for convenience.

### **2.1.7 Water disposal**

Most water disposal facilities were observed to be informal, i.e. throwing water onto the ground of the compound. No ADs to facilitate water disposal were observed or reported.

### **2.1.8 Toilets**

This is the area where most accessible facilities and ADs were observed or reported – a total of 17 accessible latrines were reviewed. The majority (13) of these were in family homes, and were therefore designed with the needs of specific individuals in mind. Ten were in rural and three in urban areas. Four were in institutional settings.

For complete data see Table A8.10 on accessible facilities and A8.11 on ADs for using the toilet.

### **Lessons learned**

**Reachability and access:** See Section 2.1.5.

**Latrine doors:** In addition to the comments made in Section 2.1.5:

The possibility of securely fastening the door is important to many disabled people, especially disabled, and also non-disabled, women. This may be as simple as a string or chain on the inside of the door that hooks over a nail.

**Internal dimensions and layout:** A disabled person usually needs more space inside than a non-disabled person, but how much can vary. A range of internal dimensions was seen that provided a continuum of uses, as outlined below. Where a number of disabled people with a range of needs use a facility, the preferred option is to provide more space, rather than less.

1. The most spacious examples had extra room in front of the toilet for a wheelchair to enter and turn, and at the side for transferring to/from wheelchair, or to move a toilet chair to one side after use.  
E.g. overall dimensions for a dual use toilet/bathroom, with the toilet in the corner: 200 x 150cm.
2. Enough room between the door and toilet for a wheelchair to enter and close the door behind. The user may need to reverse out.  
E.g. overall dimensions: 180 x 102cm. Distance between door and front of toilet: 106cm.
3. Enough room between door and toilet for a person wearing callipers to sit with legs outstretched and to close the door.
4. Where lack of space means it is not possible to close the door, a curtain of sacking or plastic sheeting can provide privacy without restricting outstretched legs. This is a widely used low-cost option, which does not need closing and does not restrict space inside. It is not an ideal solution, however, especially if facilities are communal as it is not as secure. For many disabled people, especially women, privacy and security are a high

priority, and lack of it can lead to anxiety about latrine use, lead to urine retention, and subsequently to medical problems.

**Floor:** smooth cement is easier to keep clean than an earth floor, but more costly. It can also become slippery when wet. This can be dangerous for a person using crutches, which can easily skid on a slippery floor and cause the user to fall. A slightly roughened finish is therefore advised where crutches will be used. The disadvantage of this is that cement absorbs urine and so is difficult to keep clean and hygienic.

### **Internal support structures:**

The most common need is for support to a person unable to squat independently. Some form of seat is needed, for sitting on while urinating or defecating, and/or handles or rails for balance while sitting or squatting, and to help lowering onto the toilet and getting up. Some of these were an integral part of the latrine structure, others were assistive devices which were removable.

**Handrails** are invaluable for support while sitting or squatting, to help the user when lowering onto and getting up off the toilet, or when transferring to/from a wheelchair. Benefits for the disabled user are:

- Improvements in health - a user who may previously have had to place their hands on the floor to balance, can now avoid getting them wet and soiled.
- Greater dignity and privacy – those who previously relied on a carer to stay with them to provide support, can now be left to squat independently in private.

Rails may be of 20–35mm Ø galvanised iron (g.i.) pipe, bamboo or wood. Bamboo and wood are widely and often freely available, but may be less durable than iron pipe.

Rails were seen in different locations:

- Horizontal rail of g.i. pipe, H: 70-74cm, L: 45cm, cemented to each side wall either side of the toilet. (This may be too wide apart for many users).
- Horizontal wooden rail, H: ~70cm tied with string to existing vertical water pipes against the wall in front of the toilet.
- 2 bamboo poles stuck vertically into the ground; one each side of the latrine slab.
- Horizontal bamboo rail tied to 2 bamboo poles stuck vertically into the ground, 1 on either side of the latrine slab (Fig. 9).

Iron rails should be painted to resist corrosion, particularly in a pit latrine, where fumes can contribute to corrosion.

At a household level, the location of rails should be chosen to suit the needs of the individual user.

*Drawbacks:* For most wheelchair users, the easiest way to transfer from wheelchair to toilet is sideways, so care should be taken to avoid a fixed rail at the side of the latrine which may obstruct this.

### **Solutions for communal /rented facilities:**

In this situation fixed adaptations may not be possible. Low-cost alternatives are therefore needed that do not obstruct other users, and are unlikely to be damaged or stolen by others.

*Hand-rails* (see above section) are suitable for communal facilities, as they are of benefit to a wide range of users, including children frail elderly and pregnant women. Iron pipe is the most suitable, cemented into the floor or walls, to withstand heavy use.

A *rope* can be hung from an overhead beam, which the user can hold onto for support while squatting. It can be knotted at intervals to prevent hands slipping. This takes up no space, and can be hooked out of the way when not in use so as not to inconvenience other users.

### **Toilet seats**

A raised toilet seat is suitable for users unable to squat, or with poor balance. It is also convenient for transfer from/to wheelchair, and for crutch users who may have difficulty lowering themselves into a squatting position. The user also avoids the risk of their clothes getting soiled and wet.

*Drawbacks:* A seat may be uncomfortable for people who are used to squatting, or may be perceived as 'Western' and culturally less acceptable. A seat also makes anal cleansing using water more difficult.

Seats can be fixed or moveable.

**Fixed seats** may be built of brick, covered with cement screed, or a commercially available ceramic pedestal toilet.

- Ceramic is the most durable and easiest to clean, but also the most expensive and not easily available in rural areas. It also has the disadvantage of depending on water to flush it, which is unsuitable in areas where water is scarce.
- Cement-covered brick is durable, and when painted, repels urine and is easy to clean. Materials are easily available. It can be used with any kind of latrine.

Three examples seen of similar design were in the form of two cement blocks, one on each side of the toilet pan, with a 27cm gap between blocks. The pan was set on a raised brick platform, so that the blocks were level with the wheelchair seat for ease of transfer (H: 42cm) (Fig. 10).

Precise dimensions could be adjusted to suit individual needs. Reducing the width of the platform could reduce the cost of the platform, and thus the quantity of materials used.

*Drawbacks:* Non-disabled users may continue squatting, and either make the seat dirty by squatting on it, or they may need a separate toilet, which increases costs.

**Moveable toilet seats**, with a hole in the seat, are designed to be placed over the toilet pan, so that urine and faeces drop directly into the hole (Fig. 11). They may be moved to one side when not in use. They come in a range of designs and materials - bamboo, wood, metal or plastic. In general, the more durable the material, the higher the cost. Often an ordinary wooden household chair with a hole cut in the seat can be used.

The hole needs to be large enough, and set near enough to the front of the seat (~10cm) to minimise the risk of fouling the seat. For adults, useful hole dimensions: W: 20-27cm, L: from 20cm to the full length of seat front to back. For a child, the width of the hole may need to be less.

A stool with no back or arms is suitable for those with good sitting balance, or where a carer is available to support the user. For a user with poor balance, a chair with back and or side-rails provides support. However, sideways transfer from a wheelchair is easier when there are no side-rails.

Raised concrete or ceramic footrests need not be an obstacle to using a toilet seat, as long as the legs of the seat fit between rather than on the footrests. This can even be an advantage, by serving to stabilise the seat.

*Advantages:* A wooden or bamboo seat is cheap (in comparison to brick or concrete), as locally available materials can be used. Wood can be varnished or painted to make it more durable and easy to clean. The seat can be moved out of the way when not in use, allowing the disabled person to use the same toilet as the rest of the family, with the same amount of privacy.

*Drawbacks:* If the seat is left in place, it may get dirty from others using it inappropriately. Enough space is therefore needed inside the latrine to move it to one side of the toilet when not in use. If there is no room to do this, the seat needs to be lifted in and out of the latrine. A carer may need to do this for the disabled person.



**Fig. 9: Bamboo support poles**  
Installed in a rural toilet, to hold on to for balance (CRP CBR project).



**Fig. 10: Raised concrete toilet platform**  
with cement blocks on either side of pan for sitting.



**Fig. 11: Wooden toilet seat**  
placed over squat toilet (CRP design).



**Fig. 12: Commode chair with home adaptations**  
Shop bought chair adapted by family: waist strap and wooden plank added for support, and home-made sitting ring – plastic stuffed with straw.

There is a risk of urine splashing the legs or clothing between the seat and the hole. A splash guard – a board covering the space between the front chair legs, can prevent this.

A firm floor around the toilet hole is needed to support the seat. The risk of damage to an earth floor around the hole may be minimised by attaching runners - a wooden or bamboo bar - between the front and back legs at floor level on each side of the chair, to distribute the chair weight more evenly. These can also contribute to stability of the chair.

**Wheelchair/low trolley as toilet seat.** To avoid the need to transfer on and off the wheelchair or low trolley, the wheelchair may be designed or adapted so that it can also be used as a toilet chair. The seat board and cushion are removed by the user, revealing two metal struts, which support the seat, but are wide enough apart to allow for drainage. The cushion is replaced by a small wheel tyre inner tube, on which the user sits (Fig. 7). The wheelchair is then rolled over the toilet pan, so that faeces and urine fall directly into the hole.

The inner tube is made of rubber and therefore easy to clean. It is widely available in Bangladesh.

*Drawbacks:* This approach can only be used where the toilet pan is set flush with the floor, otherwise the wheelchair or trolley cannot wheel over it. This approach is reportedly most commonly favoured by low-trolley users. For wheelchairs, there is the risk of fouling of the chair frame, because of the long drop between seat and toilet hole. For this reason, most wheelchair users reportedly use the commode chair option (see section on commode seats below).

Some users may need assistance to lift their own weight off the seat in order to swap the cushion for the 'tube'.

The 'tube' may be too expensive for the poorest. However, alternatives can be made using cheaper materials, e.g. a ring of straw covered with plastic (Fig. 12).

### **Squat latrine:**

For persons able to squat, but with poor balance, a handrail is often sufficient to make a squat toilet usable (see hand-rails above).

For persons who use low-trolleys or who crawl, the toilet pan should be installed as level with the surrounding floor as possible. A standard commercially available concrete latrine slab can be installed at ground level instead of being raised, which is the recommended practice. If the slab is raised above ground level, the soil around the slab should be banked up to finish level with the slab, so that there is no step to be surmounted.

**Commode seat:** Where reaching or using the latrine is a problem, for whatever reason, a commode seat may be a good alternative. This is a toilet seat, as described above, but used with a container underneath it, e.g. bucket, bowl, tin can or piece of plastic or paper. The contents are then disposed of, either in the toilet or elsewhere.

For users with poor sitting balance, extra support can be provided with straps, to allow the user to sit without continual support from a carer. A waist strap passes round the back of the chair and around the child's waist. Shoulder straps can be attached to the top of the chair back, and passed over the user's shoulders and either crossed and tied at the back, or fastened to a waist strap. These can be made of wide elastic, or strips of fabric or rubber (Fig. 12).

*Advantages:* The seat can be placed in the most convenient position for the user or carer, either inside or outside the house, e.g. behind the house, in sight of the carer while she or he is working, etc. The problems of distance or inaccessible path to the toilet can be avoided in this way. Because it is located away from where the rest of the family go to the toilet, it is less likely to become dirty or damaged by other users, or by being constantly moved on and off, or in and out, of the toilet.

Carers benefit in terms of reduced time and effort spent taking a disabled person to the toilet, which is often some distance from the house, and staying and holding him or her while using the toilet.

*Drawbacks:* The receptacle needs to be emptied and cleaned by another family member each time it is used, and a separate private area needs to be created. There is also the risk of increased isolation of the disabled person, if they are left sitting alone for long periods, when previously their carer stayed with them.

#### **Internal water source:**

An inside water point (e.g. tap) was considered highly desirable, as many disabled people were unable to fetch water for themselves each time they needed it. At the very least, some sort of supply (jug, bucket) is essential, especially for those who need water to wash themselves in privacy.

The water should be within reach when sitting on the toilet.

Tap height for wheelchair users/those using toilet seat: ~1m.

Tap height for those on low trolleys/squatting: ~40cm.

A flexible hose attached to a tap allows the user to fill a receptacle with water using only one hand.

#### **Open defecation – support options:**

Where defecation 'in the open' continues to be the preference, for whatever reason, support options may depend on factors, such as personal preference,

the level of support needed, and whether the device needs to be mobile, or can be fixed in one place. Examples of options include:

- Walking stick or bamboo pole for the user to lean on while walking to their choice of location, and to lean on while squatting (a flexible option, but which provides only minimal support).
- Walking frame, which supports the user to walk to their chosen location, and provides support while squatting (flexible option, providing medium support).
- One or two vertical poles fixed in the ground, at user's arm-length apart (semi-fixed option, providing medium support).
- Horizontal bar tied to 2 vertical poles fixed in the ground, at a suitable height for the user to hold when squatting (semi-fixed option providing medium support).

### **2.1.9 *Rubbish disposal***

No special methods or ADs for rubbish disposal were observed or reported. Other family members or a 'sweeper' usually dealt with this.

## **2.2 Approaches to improving access to water and sanitation for disabled people**

### ***2.2.1 Approaches focusing on provision of assistive devices/ accessible facilities to disabled people and their families***

A range of approaches was seen being used by a number of agencies working with disabled people and their families. One agency has specifically targeted access to both water and sanitation as part of their work; some have addressed WATSAN – mostly sanitation – as the need has arisen, while for others it has not been a focus of their work to date. Nevertheless, their different approaches provide useful lessons that can be applied to WATSAN service delivery. See Table A8.12 for the complete data.

#### **Lessons learned**

1. The most effective solutions are based on an assessment of the disabled person's needs, not as an individual in isolation, but in the context of the family's needs as a whole. Particularly for carers, consideration should be given to solutions that make care-giving tasks more pleasant, less onerous and save time. which may be carried out by a wide range of personnel from different backgrounds - medical, community development or DPO leaders.
2. The assessment may take a different emphasis, depending on the background of the implementer, but should always be done in collaboration with the disabled person and family, so that their role is not only that of a recipient but more a co-contributor to the problem-solving process.
3. Assessment needs to take into consideration: ability to carry out daily living activities in the home environment, including personal care and household tasks; education (for children), employment (for adults), social activities in the family and community, family's living and economic situation, community attitudes and behaviour, and available skills and resources in the family and community.
4. Disabled people and their families are not always aware of what solutions are possible, so the role of external agencies is important in introducing ideas, possible options and in discussing the potential benefits of improved accessibility.
5. At the same time, solutions and adaptations are most likely to be implemented and used when the disabled person and the family understand and value the potential benefits, solutions are affordable and appropriate to the local culture and practices. Action planning to identify

solutions should therefore be through dialogue with the disabled person and family, drawing on the experience and views of the family, and responding to their priority needs.

6. Some form of investment on the part of the family, however small, is likely to lead to better use and maintenance of solutions. Cost-sharing is therefore needed between service provider and the family, in terms of financial, material or labour contribution to a facility or equipment.
7. Where disabled people, families and local community members have been supported to gain skills and confidence, they have improved and initiated further adaptations and equipment, to better suit their disabled members of the community.

**Work with disabled people may usefully take place in different settings:**

**Institution-based rehabilitation**, where rehabilitation takes place in a centre, such as a hospital or residential institution. Specialists, including occupational therapists (OTs) and social workers, provide advice on ways to carry out daily living activities, including personal hygiene and other water-related activities.

There is the opportunity to try out equipment and adaptations, with support and advice from skilled specialists, and to identify those most suitable for use at home. Facilities may be designed to be similar to those found in the rural area. Equipment is made from locally available materials.

*Constraints:*

Facilities in an institution cannot reflect all possible home circumstances. Specialist staff do not visit the disabled person's home, so their advice cannot be based on an understanding of the individual's actual home environment.

In some institutions, the primary goal is not to support daily living activities, but to provide another service, e.g. vocational training. In this case, facilities tend to be designed to promote the smooth implementation of the service rather than to prepare the disabled person for coping with their home circumstances.

**Community-based rehabilitation (CBR)** The term CBR is used here to refer to approaches that support the disabled person's rehabilitation and development in the family and community setting. CBR workers make home visits, discuss with the disabled person and family to assess needs and identify solutions. These may include skills development, special equipment, adaptations or referral to other relevant services. CBR may draw on specialists who are based in institutions, to provide training and advice for local workers and/or disabled people and families.

CBR supports the disabled person in the home context of family and community, where solutions have a stronger chance of being appropriate. CBR workers provide ongoing support, to monitor implementation, and use trial and error to adapt a solution or try a different approach when needed.

*Constraints:*

The success of community-based approaches depends heavily on the commitment of the community. Lack of commitment of committee members, and drop-out among CBR workers, especially as they are often volunteers, can present obstacles to implementation.

**Disabled People's Organisations** are organisations initiated and run by and for disabled people for their own self-development, are developing extensive networks of local disabled peoples' groups, from *Upazilla* to village level, many with strong links with local government. These have a valuable role to play in disseminating and in collecting information to and from village level, e.g. identifying the actual needs of members, identifying the poorest, monitoring of implementation and impact. These networks could inform the WATSAN sector.

*Constraints*

Without a minimum level of independence, e.g. to leave the house with some confidence, attend group meetings, etc, the ability of a disabled person to self-advocate is severely curtailed.

Basic needs are often unsuitable for discussion in mixed sex groups. Opportunities may therefore be needed for single sex groups to discuss personal issues, such as hygiene and sanitation.

DPOs are not yet present in all Districts of the country.

## **Recommendations to improve effectiveness**

Information is needed for disability sector agencies, including:

- i. possible solutions and approaches, including standard designs with variations for different geographic and climatic areas.
- ii. case-studies illustrating positive examples.
- iii. lists of resource organisations, sources of materials and technical expertise.

There is the need to trial and document a range of options that work, which can be shared with others, in a way that they can implement the learning in their own work.

### ***2.2.2 Approaches to the inclusion of disability issues within general WATSAN service provision***

Agencies contributing data on issues of WATSAN strategy and implementation included: Bangladesh government ministries, international donors, INGOs, local NGOs working in WATSAN service provision and policy and strategy development, and in the disability sector. See Table A8.13 for data on implementation and A8.14 on strategy-related issues.

#### **Lessons learned**

1. There was a general lack of knowledge or awareness among the WATSAN sector of the problems faced by disabled people in accessing water and sanitation services. They had not thought about them in relation to their own job. This is likely to be representative of the WATSAN sector as a whole, not only in Bangladesh. It also reflects and confirms the findings of the project literature review.
2. It is almost certain that some disabled people have benefited from WATSAN programmes, simply by virtue of being members of the community, although no information is available about the extent to which they may or may not have benefited.
3. Once the issue was raised, there was general goodwill and interest, recognition of its importance, and acceptance that this was the responsibility of the WATSAN sector.
4. Current water sector policy and strategy do not specifically address the needs of disabled people. However, 'un-served, under-served and under-privileged groups' are all mentioned, all of which could be deemed to include disabled people. The consensus was that there is no need to change either existing sector policy or regulations. Some thought it might be useful to incorporate it into sector strategy.
5. NGOs are in the best position to promote innovation, in collaboration with government and donors. In view of their focus on poor communities and those without access to services, and the flexible community approaches used by most WATSAN NGOs, it would not be difficult for NGOs to adapt their existing approaches to include disabled people.
6. Co-operation will be needed to tackle the issue of disability in the WATSAN sector, both within government between different responsible ministries and departments, and between the WATSAN sector and the disability sector, especially DPOs.

7. Improved communication and collaboration are needed between the disability sector (whether DPOs or other NGOs) and the WATSAN sector. Each could learn from and strengthen the others' work. DPOs could learn from WATSAN providers, many of whom have developed innovative approaches to community participation in service delivery, and development of low-cost community owned solutions.
8. In principle, collaboration between NGOs from the WATSAN sector on the one hand, and DPOs and disability networks on the other should not be too difficult. Both sectors share many basic working principles and approaches, including community participation, empowerment and a focus on the development of local skills and resources. Both work *with* target groups rather than *for* them and to develop local capacity. They support local people to identify their own problems and needs, and come up with appropriate solutions using locally available resources (human and material).
9. Advocacy is needed on the issue at all levels. The main focus should be on government, donors (by hosting workshops and meetings), and private sector providers. Information on the size of the problem, examples of good practice and practical advice on how to deliver them are all needed.
10. Information about possible options should be aimed at communities, in order to raise the general level of demand for accessible facilities.
11. NGOs have a major role to play in informing and influencing for change. Many have wide-reaching networks for information production, dissemination and representation, and good links with local government committees.
12. International organisations are in a strong position to promote and support innovation. They often have good links with government at both national and local level, could undertake role of intermediary with district level organisations, and are less hampered by bureaucracy.
13. Several DPOs have developed extensive networks of local disabled peoples' groups, from *Upazilla* to village level, many with strong links with local government. These have a valuable role to play in disseminating and in collecting information to and from village level, e.g. identifying the actual needs of members, identifying the poorest, monitoring of implementation and impact. These networks could inform the WATSAN sector.

14. DPOs, whose main focus tends to be on disability rights, advocacy and access to services, also have experience of using information on solutions and approaches to lobby service providers, which could be applied to advocating for change in the WATSAN sector at all levels, from *Upazilla* to national level.

## **Opportunities**

The use of the 'demand led approach' by government and NGOs is increasingly widespread. Donors are encouraging organisations to increase the range of options they provide to respond to demand, which could include those appropriate for disabled people.

## **Recommendations to improve effectiveness**

More accurate assessment is needed of the size of the problem, in both rural and urban areas, community perceptions, and the nature of the needs of disabled people related to WATSAN.

- Initial baseline surveys of service providers could include questions related to disability, with follow-up plans and actions to address needs.
- Carry out a situation analysis of disabled access in existing programme areas – what works, what does not, what else needs to be done.

Information is needed on standard design solutions, and ways to adapt existing designs, practical advice on how to deliver them, and examples of good implementation in practice.

Small action-research projects are needed to pilot a number of approaches, to demonstrate what is possible, to develop best practice and share the learning, and to identify programming and skills needs. Making more public buildings accessible would demonstrate what is possible, and stimulate demand.

WATSAN agencies should assign a member of staff to be responsible for disability issues, at a level high enough to carry weight in decision-making. Disability agencies should do the same on issues of WATSAN.

Disabled people should be represented on Village Development Committees (VDCs) and other local government committees. However, they should not be simply individual disabled persons who present only their own point of view, but elected by local DPOs where they exist, to represent the views of disabled members.

## **Constraints:**

Where the demand-led approach is the basis for implementation, families and communities have expressed a demand for accessible facilities. This may be because:

- They often don't know that accessible facilities are possible.
- Families may fear criticism, that they are shirking their duty of care, by asking for facilities that make care-giving tasks easier. The traditional expectation is that disabled and elderly family members are dependent on the family, whose duty it is to take care of them.

The WATSAN sector concentrates on serving the majority population and does not have resources to consider minority issues. There are currently many other problems to solve, so an additional demand to address the needs of disabled people is unlikely to be a priority.

WATSAN providers are engineering based and tend to pay less attention to non engineering matters.

The current Disability Act is not particularly useful, as it does not assign responsibilities for action. Amendments to the Act are however in process. Assigning responsibility for disability to one ministry can prevent other line ministries implementing change within their own sectors (e.g. health or education), as disability may be seen as the sole responsibility of the assigned ministry. However, working between ministries can be very bureaucratic and a barrier to change.

The private sector will be more of a problem to change than government. The challenge will be to emphasise the economic benefits to suppliers of addressing disability needs.

Extensive training for staff on accessibility issues will be needed to change practice.

### **3. General Conclusions**

Accessible facilities, adaptations and assistive devices to improve access and use of water and sanitation, have brought enormous benefits to disabled people and their families in terms of:

- Increased independence, ability to contribute to the family and community, social status, and self-esteem of disabled people;
- Reduced work-load, improved well-being and economic situation of family.

A wide range of options was seen, in terms of technologies, materials, cost, etc. The majority were low-cost, using locally available materials and designs. None of the solutions and approaches seen were highly technical.

Good design is good for people, including disabled people. There is a mistaken perception that disabled people all need separate 'special' facilities. For the majority of disabled people this is not the case. There are a number of features that make it easier for disabled people to use a facility, which could be incorporated into standard designs for communal facilities, such as water points, which would benefit the whole community, especially frail elderly, children, pregnant women, at little or no extra cost. For example, providing alternatives to steps, hand-rails for steep access paths, ways to avoid a slippery surface, making the handle easy to reach. All of these are features of good design.

More data was found in the area of sanitation than in the area of water provision. It is likely that this is because there has been more activity in this area, for which there may be a number of reasons. Because everyone has to go to the toilet, the demand for accessible toilets is immediate, whereas fetching water can always be done by other family members. The benefits of improved access to sanitation are likely to be immediately apparent, whilst the benefits of improved access to water may be more indirect, long-term and therefore appear less urgent.

Data was collected from families in both rural and urban areas. Disabled people face different obstacles in rural areas from those in high-density urban areas. These different obstacles may require different solutions, but the approach to service delivery required is generally similar.

A two-pronged approach to physical access is generally required:

- i. accessible WATSAN facilities,
- ii. individual assistive devices (ADs) or adaptations to enable a disabled person to access and use a facility.

As a general rule, the more accessible the facility, the less the need for ADs. However, a combination of both is often required (e.g. ramp (accessible facility) + wheelchair (AD)).

Provision of WATSAN facilities is the responsibility of WATSAN service providers, who so far have not considered the issue of accessibility.

Individual ADs and adaptations for disabled people are the responsibility of disability sector service providers.

Because of the lack of accessible facilities, the onus has fallen mainly to the disability sector to improve access through ADs, and adaptations to existing facilities.

Disability sector service providers are providing a valuable service for many disabled people in accessing water and sanitation (sanitation more than water). This is a new area for most agencies, and some are still at the early stages of service development. They are using a number of different service delivery approaches, largely community-based, and all based on responding to identified needs, in consultation with the disabled person and their family. These are valuable experiences, which other service providers, in both the disability and WATSAN sectors, could learn from and build on, in order for more disabled people to benefit in the future.

Accessible facilities have rarely been considered by the WATSAN sector because:

- a) WATSAN sector have not thought about disabled people. They lack awareness and information about the needs and appropriate solutions for disabled people.
- b) There has been a lack of demand for accessible facilities, because families and communities are not aware of what is possible.
- c) Disability sector agencies, both service providers and DPOs, have not raised the issue in a systematic way with WATSAN providers. Service providers have focused on their own area of responsibility, responding to expressed needs, and on occasion and increasingly, networking with other sectors as needed. DPOs (with a rights-based, advocacy role) have lobbied on other issues such as access to education, access to transport. However, in the area of WATSAN, without information or knowledge of what is possible, the disability sector is at a disadvantage when faced with a dialogue with the WATSAN sector.

## **Recommendations**

There is a need for information on:

- i. The kind of problems faced by disabled people and the extent of the issue.
- ii. Possible solutions and approaches, including standard accessible designs.
- iii. Practical advice on how deliver solutions as part of a mainstream programme, e.g. guidelines on questions to include in a baseline study, how to adapt participatory tools for disabled people, etc.
- iv. Case–studies illustrating positive examples of good practice.

There is a need for continued and prolonged advocacy and awareness-raising, in which the disability sector has a strong role to play (DPOs in particular). They already have information on the problems disabled people face, but they could also use much of the above information in advocacy work.

Universal access needs to be emphasised, rather than ‘special disabled facilities’, and the benefits it brings to other marginalized groups in the wider community, e.g. frail elderly, pregnant women, children, etc. This will help implementers see that addressing the needs of disabled people instead of seeing disability as yet another minority issue, could be a way of simultaneously addressing the needs of a number of marginalized and underserved groups. A selection of standard accessible designs could be useful in gauging and possibly stimulating demand.

There is still a wide knowledge gap in this area, and a clear need for small action research pilot projects implemented with collaboration between the WATSAN and disability sector, will help to build up a body of knowledge on the issue, enable the two sectors to learn from each other, and develop better dialogue and understanding of their different roles in addressing the issue.

Engineers need to see the relevance of their technical skills in addressing disability access. The technical, problem-solving aspect of accessibility therefore needs to be emphasised when communicating with engineers, (rather than the social welfare aspect).

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