



**Inclusive / universal design for water supply,
sanitation and hygiene (WASH) services -
An annotated bibliography**

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¹ Consortium comprises Harewelle International Limited, NR International, Practical Action Consulting, Cranfield University and AEA Energy and Environment

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1. Description of enquiry

WaterAid has just completed the development of an Equity and Inclusion Framework and we are currently developing Sanitation and Hygiene Frameworks intended to guide our staff and partners in these critical issues. Taking this forward, we are considering developing technical guidance notes on inclusive / universal design issues for water, sanitation and hygiene infrastructure. These will form the basis for providing technical guidance and capacity building to water, sanitation and hygiene professionals in developing countries. It will be used by WaterAid programme staff and partners, and shared via a list of key resources on the AskSource website (managed by Handicap International, that is widely used by practitioners of disability-inclusive development) and potentially used as a resource for a combined online Technical Enquiry Service currently being discussed by a number of development and humanitarian support organizations that currently run these services individually.

We would like DEW Point to produce a literature search, annotated bibliography and abstract on the subject: Inclusive / universal design for water supply, sanitation and hygiene (WASH). Sources should include both peer-reviewed and grey literature and all referenced literature in the review should be provided, where they are freely available, preferably in the most convenient electronic format (DVD, CD or ZIP file).

This annotated bibliography was compiled by Hazel Jones, of the Water, Engineering and Development Centre (WEDC), Loughborough University.

2. Literature search method

1. Trawl of consultant's bookshelves.
2. Search on resource/publications pages of specific websites likely to be the most productive.
3. Citation search on Google Scholar and Web of Science on book and Municipal Engineer article by Jones & Reed.
4. Systematic database search of peer-reviewed literature, limited to the year 2000 onwards (see Appendix 1 for more details).

Health related literature has been excluded, e.g. with an occupational therapy focus.

Very little relevant peer-reviewed literature was found; to date, most of the relevant practically focused literature has been produced by service providers and implementers.

A large number of documents were found, but not all have been included here. Time constraints meant the need to prioritise the inclusion of documents of core relevance, and coverage of all aspects of the topic. Those that have been left out either contain only limited sections relevant to the topic, or were of peripheral relevance.

3. Structure of bibliography

The bibliography is structured as follows:

Section 4 presents the principles and ideas that underpin inclusive/ universal design, and their relevance to the WASH sector. There is a huge amount of literature on this from the UK, US and Europe, most of it of limited relevance to low-income countries. A few key documents have been included as the most directly relevant, where they explain the underlying principles, and with the proviso that they are not intended to be directly applicable to low-income settings.

It is important to note that it is inappropriate and may even be counter-productive to take standards and guidelines from one country and simply transfer them directly to another country. The underlying principles of inclusive design are certainly widely applicable, but the form and design these will take in practice will vary from one context to another. The most essential principle of inclusive / universal design is that of 'consensus emerging from participation by all interested persons and institutions' (see Box 1).

Box 1. Concept of the Technical Standard

According to the International Organization for Standardization (ISO),* a technical standard is a document, arrived at by consensus and approved of by a recognized organization, that provides for a common repetitive use of rules, directives, or characteristics for activities or their results in order to achieve an optimal level of order within a given context. Technical standards should be based on results consolidated through science, technology, and experience and promote optimal community benefit.

Once a universal methodology is established, a recognized standardization organization sets the technical standard (by contrast, a technical specification is the sole responsibility of its author).

Accessibility of the physical environment involves considering various guidelines related to environmental characteristics; as well as dimensions, arrangement, safety, and operation of the elements to be incorporated (among other aspects and national circumstances).

These generate varying opinions and subtle differences in conclusions and, therefore, in technical specifications and legal provisions. In turn, this disparity leads to resistance in directly applying the technical specifications or legal provisions and in the generation and oversight of compliance.

Consistency, adaptation, and consensus are essential in order to avoid ambiguity resulting from minor differences or disagreements, which contribute to postponing effective policy decisions.

A technical standard, established by consensus emerging from participation of all interested persons or institutions, conveys (like the interpretation of a group consensus) the social acceptance of a legal instrument that refers to and fully represents it.

* The ISO is the international body of the Pan American Standards Commission (COPANT), a regional organization with 28 national members; the ISO makes it possible to globalize guidelines.

Source: Alvarez (n.d.) Pathways to Accessibility: Disability and the Physical Environment in Latin America and the Caribbean. Inter-American Development Bank, p.7.

Section 4.1 presents practical guidance on inclusive design of public infrastructure in general.

Sections 4.2 and 4.3 focus specifically on practical guidance on making water and sanitation facilities accessible. Note that the content of these documents encompasses both inclusive design, which tends to be more appropriate for public, communal / institutional facilities, and

individualised solutions, which tend to be more appropriate to the specific needs of individuals and household facilities.

Section 4.4 presents accessibility audit tools for use in planning, assessment, evaluation and even in awareness raising.

Section 4.5 includes descriptions of practical implementation of improving accessibility, mostly in the form of pilot projects.

Section 4.6 deals with child- girl- disabled-friendly school sanitation and hygiene, whilst Section 4.7 includes some practical solutions to issues facing women and girls in managing menstruation.

Section 4.8 presents the small number of documents found that describe WASH provision for women and disabled people in emergencies.

Section 4.9 includes a document that focuses on how to make participatory processes accessible and inclusive.

Section 4.10 includes a selection of documents that highlight the issues and problems of exclusion and lack of accessibility, although they provide little guidance on practical solutions. Issues are related to WASH for women and girls, disabled people, older people, people living with HIV/AIDS, and children.

In some cases, several documents exist that deal with different aspects of the same project/ programme, and which when read together provide a more holistic picture. In this case the documents have either been clustered together, or links to the other documents provided.

4. Bibliography

Where documents are available in pdf format, the web link has been provided where known. The actual pdf file is provided on CD where this is freely available. Where the web link is to a document on the WEDC website, registration is required, after which documents are available free to download.

4.1 Inclusive / Universal design/ Barrier-free design – Background and principles

This section presents the principles and ideas that underpin inclusive/ universal design, and their relevance to the WASH sector.

Reference Commission for Architecture and the Built Environment. ***Inclusion and diversity.***

Format Webpage: <http://www.cabe.org.uk/inclusion> (Accessed 24.03.10)

Abstract The built environment can contribute to a more equal, inclusive and cohesive society if places, facilities and neighbourhoods are designed to be accessible and inclusive for all. Decisions about the design, planning and management of places can enhance or restrict a sense of belonging, increase or reduce security, promote or reduce mobility, and improve or damage health. CABE is committed to promoting inclusive design throughout the built environment. Inclusive design is the process of designing, building, managing and populating places and spaces so that they work for as many people as possible, not just some groups.

Reference Commission for Architecture and the Built Environment. ***Inclusive Design.***

Format Webpage: <http://www.cabe.org.uk/inclusion/inclusive-design> (Accessed 24.03.10)

Abstract Inclusive design is the process of designing, building, managing and populating places and spaces so that they work for as many people as possible, not just some groups. It includes where people live and the public buildings they use, such as health centres, education facilities and libraries. It also includes how they get around: neighbourhoods, streets, parks and green spaces and transport. Inclusive design is about:

- access with dignity – how we get to and into places, and use them with ease.
- treatment with respect – how we are talked to and looked after; how we are considered and welcomed.
- services and function – how places meet our needs and give us a sense of belonging, designed and working with us in mind.

Reference CABE (2006) ***The Principles of Inclusive Design (they include you).*** Commission for Architecture and the Built Environment: UK.

Format Pdf: <http://www.cabe.org.uk/publications/the-principles-of-inclusive-design>

Key points 20-page colour booklet presenting key principles of inclusive design, with photo illustrations. Showing a variety of types of users benefiting from well designed buildings (women with small children, people carrying heavy loads, as well as wheelchair users and blind people with guide dogs (UK based examples)).

Reference Snider, H. and Takeda, N. (2008) ***Design for All: Implications for World Bank Operations***. The World Bank: Washington.

Format Pdf:
http://siteresources.worldbank.org/DISABILITY/Resources/Universal_Design.pdf

Key points Proposes Universal Design (UD) (US term for Inclusive design) to be adopted by the World Bank in its infrastructure projects.

Presents the benefits of UD and its applications, including in water and sanitation, and compelling reasons for its adoption, i.e. human rights, essential for inclusive development, and the most cost-effective, flexible and effective approach.

Key considerations for implementing UD:

- Incorporate UD from the outset
- Establish participatory mechanisms for UD in specific projects
- Educate designers, builders and users about UD
- Include a UD component into procurement
- Identify regional or country accessibility standards and anti-discrimination legislation.

Reference Jones, H. and Jansz, S. (2008) ***Disability and Sanitation***. Briefing Note 3. WaterAid: UK.

Format Pdf

Key points Presents issues of poverty and disability, the social model of disability and its relevance to sanitation. Two main approaches to improving access to sanitation are presented and discussed – an Individualised approach and an Inclusive Design approach.

9-page document – internal WaterAid discussion paper.

Reference WELL (2005) ***Why should the water and sanitation sector consider disabled people?*** Briefing Note No. 12. WEDC, Loughborough University: UK.

Format Pdf:
<http://www.lboro.ac.uk/well/resources/Publications/Briefing%20Notes/WELL%20Briefing%20Note%2012%20A3no%20crops.pdf>

Html:
<http://www.lboro.ac.uk/well/resources/Publications/Briefing%20Notes/BN12%20Disabled.htm>

Key points 4-page briefing document for use in advocacy. Aimed at WATSAN planners and

decision makers, presents key messages in succinct, attractive format.

<i>Reference</i>	WELL (2006) <i>Why the water and sanitation sector in East Africa should consider disabled people.</i> WELL Country Note 12.1. WEDC, Loughborough University: UK.
<i>Format</i>	Pdf: http://www.lboro.ac.uk/well/resources/Publications/Briefing%20Notes/WELL%20CN%2012.1%20East%20Africa.pdf Html: http://www.lboro.ac.uk/well/resources/Publications/Briefing%20Notes/WELL%20Briefing%20Note%2012%20A3no%20crops.pdf
<i>Key points</i>	4-page briefing document for use in advocacy. Aimed at WATSAN planners and decision makers, presents key messages in succinct, attractive format. Above BN12 adapted for East African audience, using information from Uganda and Tanzania.

4.2 Practical guidance on inclusive design of public infrastructure

<i>Reference</i>	David, V. et al (2008) <i>How to Build an Accessible Environment in Developing Countries. Manual 1: Introduction and Accessibility Standards.</i> Handicap International France, Cambodia Program: Phnom Penh.
<i>Format</i>	Pdf: http://www.handicap-international.fr/fileadmin/documents/publications/Manual1_light.pdf
<i>Key points</i>	Introduction to accessibility and universal design principles; collaboration with users in planning; UN Disability Convention and accessibility; Cambodia National legislative context; guidance on accessible public infrastructure; public vs. individual household approach. Guidance on accessible public infrastructure, based on Handicap International's international experience, includes e.g. ramp gradients, widths of paths & doors, space requirements, signage, colour and floor tactile markings for people with visual impairments. Aimed at either technical or non-technical audience.

<i>Reference</i>	David, V. et al (2008) <i>How to Build an Accessible Environment in Developing Countries. Manual #3: Free Movement.</i> Handicap International France, Cambodia Program: Phnom Penh.
<i>Format</i>	Pdf: http://www.handicap-international.fr/fileadmin/documents/publications/Manual3_light.pdf
<i>Key points</i>	Focus – design and layout of outdoor ramps and access walkways, handrails and signage. Based on Handicap International's experience in rural Cambodia. Provides technical drawings, 3-D drawings and photos of designs.

Range of designs presented, giving indication of level of difficulty – high or medium, and their advantages and disadvantages, including likely level of cost.

Aimed at planners, construction professionals - engineers, builders, architects, designers, programme implementers, non-engineers, DPOs and other user-groups.

<i>Reference</i>	Centre for Accessible Environments (2004) <i>Design Guidance - Ramps.</i>
<i>Format</i>	Webpage: http://www.cae.org.uk/guidance_ramps.html (Accessed 24.03.10)
<i>Key points</i>	Technical design of ramps for public environments. Based on UK legislation and building standards. Principles applicable to other countries, with adaptation to suit the local context.

<i>Reference</i>	Centre for Accessible Environments (2004) <i>Design guidance - steps and stairs.</i>
<i>Format</i>	Webpage: http://www.cae.org.uk/guidance_stairs.html (Accessed 24.03.10)
<i>Key points</i>	Technical design of steps and stairs for public environments. Based on UK legislation and building standards. Principles applicable to other countries, with adaptation to suit the local context.

<i>Reference</i>	Lacey, A. (2004) <i>Designing for Accessibility: an essential guide for public buildings.</i> Centre for Accessible Environments; RIBA Publishing.
<i>Format</i>	Book only, available from: http://www.cae.org.uk/
<i>Abstract</i>	Guidance on accessible public infrastructure, including ramps, walkways, public toilets. Includes extensive plans and dimensional data illustrating internal and external features that commonly need attention in public buildings. Used as an access standard for grant providers and other organisations in the UK. Based on UK legislation and building standards. Principles applicable to other countries, with adaptation to suit the local context. Aimed at readers with either technical or non-technical background.

<i>Reference</i>	UN (2004) <i>Accessibility for the Disabled: a Design Manual for a Barrier Free Environment.</i>
<i>Format</i>	Webpage: http://www.un.org/esa/socdev/enable/designm/ (Accessed: 24.03.10)
<i>Key points</i>	Focus on urban public infrastructure, both outdoor (obstructions, pathways, curb ramps, etc.) and indoor architectural design considerations, (ramps, stairs, handrails, entrances, doors, corridors and rest rooms (toilets/WCs).

<i>Reference</i>	UNNATI and Handicap International (2004) <i>Design Manual for a Barrier-Free Built Environment.</i> UNNATI-Organisation for Development Education & Handicap International: Ahmedabad, India.
<i>Format</i>	CD only. No contact details for publishers.

Key points Comprehensive guidance and designs for all aspects of barrier-free/ accessible public built environment. Considers access for people with visual impairments and movement restrictions. E.g. space requirements, dimensions, and also signage, colour contrast, auditory signals, etc.

International guidance adapted for India context. Urban style of water points (piped water to taps) and WCs (pedestal flush toilets) used.

N.B. Difficult to navigate the CD, pages cannot be printed out.

Reference Ferneeuw, S. (2005) **Guidelines for planning a barrier-free environment: a practical manual to improve physical accessibility in Afghanistan**. Services Techniques et Etudes pour la Participation Sociale (STEPS): UNDP: Afghanistan.

Format Pdf

Key points Designed for use in Afghanistan, draws on international standards and guidelines for accessibility.

Links Ferneeuw, S. (2005b) See Accessibility audit section.

4.3 Practical guidance on inclusive design of water and sanitation facilities

Reference Reed, B.J., Coates, S. Parry-Jones, S. et. al. (2007) **Infrastructure for All: Meeting the needs of both men and women in development projects**. A practical guide for engineers, technicians and project managers. WEDC, Loughborough University: UK.

Format Pdf

Authors' introduction Provides help for engineers, technicians and project managers to ensure that the facilities they design and build are beneficial to all members of society. Using many examples related to watsan, the book demonstrates that one size does not fit all. It shows how women, men, and children frequently have different needs and priorities because they use infrastructure in different ways. The book emphasises the practical ways in which taking account of gender relations will improve the design, implementation and use of infrastructure.

Links Reed & Smout (2005), Reed & Coates (2007)

Reference Reed, B.J. and Smout, I. (2005) **Building with the Community: engineering projects to meet the needs of both men and women**. WEDC, Loughborough University: UK.

Format Pdf

Authors' introduction 16-page booklet explaining why engineers should involve both men and women in infrastructure projects and why women's participation has a special emphasis. It introduces ways in which engineers and technicians can ensure their projects focus

on the needs of men and women.

Although many people working on development projects may be aware of these issues, others may not be. As well as providing an introduction to engineers and technicians who have not covered some of the social issues before, this booklet is also useful for managers who do understand the issues but are seeking ways to tackle them, or who wish to explain the problems and solutions to their colleagues.

Links Reed et al. (2007), Reed & Coates (2007)

Reference Reed, B.J. and Coates, S. (2007) ***Developing Engineers and Technicians. Notes on giving guidance to engineers and technicians on how infrastructure can meet the needs of men and women.*** WEDC, Loughborough University: UK.

Format Pdf

Authors' introduction These training notes are to help develop awareness amongst engineers in low-income countries of why the needs of men and women should be considered in development projects and how they, as technical professionals, can meet those needs. The trainer/facilitator/project manager should adapt these units to suit the needs of the audience, based on their current level of awareness and knowledge of issues such as social exclusion, gender and the engineering response.

Links Reed et al. (2007), Reed and Smout (2005).

Reference Jones, H.E. and Reed, R.A. (2005) ***Water and Sanitation for Disabled People and other Vulnerable Groups: designing services to improve accessibility.*** Water, Engineering and Development Centre, Loughborough University: UK.

Format Book, CD, pdf: <http://wedc.lboro.ac.uk/wsdp>

Key points Resource book presenting a range of low-cost solutions that disabled and elderly people are using to access and use water supply and sanitation facilities. Main focus on physical access, but also for people with visual problems. Over 400 images - photos, drawings and plan diagrams. Includes drawing, transporting and storing water, bathing, and access and use of latrines. Focus on household facilities, but some case examples are in school settings. Based on field research in Uganda, Bangladesh and Cambodia.

In English and French.

Reference David, V. et al (2008) ***How to Build an Accessible Environment in Developing Countries. Manual #2: Access to Water and Sanitation Facilities. Part 1: Toilets and Closed Showers.*** Handicap International France, Cambodia Program: Phnom Penh.

Format Pdf: http://www.handicap-international.fr/fileadmin/documents/publications/Manual2-1_light.pdf

Key points Focus – physically accessible household latrines and shower cubicle. Based on Handicap International's experience in rural Cambodia. Provides technical drawings, 3-D drawings and photos of designs.

Range of designs presented, giving indication of level of difficulty and cost - high, medium or low.

Aimed at either technical or non-technical audience.

<i>Reference</i>	David, V. et al (2008) How to Build an Accessible Environment in Developing Countries. Manual #2: Access to Water and Sanitation Facilities. Part 2: Open Washing Areas and Water Points. Handicap International France, Cambodia Program: Phnom Penh.
<i>Format</i>	Pdf: http://www.handicap-international.fr/fileadmin/documents/publications/Manual2-2_light.pdf
<i>Key points</i>	Focus – physically accessible water points (hand-pumps, wells, cantilever lifting devices), and bathing area, giving ideas of design and layout. Based on Handicap International's experience in rural Cambodia. Provides technical drawings, and 3-D drawings of designs. Range of designs presented, giving indication of level of difficulty – high or medium. Aimed at either technical or non-technical audience.

<i>Reference</i>	Lacey, A. (2004) Good Loo Design Guide. Centre for Accessible Environments: UK.
<i>Format</i>	Book only, available from: http://www.cae.org.uk/
<i>Key points</i>	Takes an inclusive approach to the provision of WCs to suit a wide range of users, and gives guidance on various WC layouts. Based on UK legislation and building standards. Principles applicable to other countries, with adaptation to suit the local context. Aimed at readers with either technical or non-technical background.

4.4 Accessibility audits

Accessibility audit tools can be used in planning, assessment, evaluation and even in awareness raising.

<i>Reference</i>	UN Enable (2004) Accessibility for the Disabled - A Design Manual for a Barrier Free Environment. Part III. IMPLEMENTATION CHECKLISTS.
<i>Format</i>	Webpage: http://www.un.org/esa/socdev/enable/designm/AD4-01.htm (Accessed: 24.03.10)
<i>Key points</i>	Provides a tool to assess all aspects of accessibility of public infrastructure, including pathways, signage, ramps, stairs, handrails, entrances and toilets. A series of questions lead to possible solutions. Designed for use in urban context, needs adaptation for use in rural areas.

<i>Reference</i>	Ferneeuw, S. (2005) <i>Planning a Barrier-Free Environment: Practical Tools.</i> Services Techniques et Etudes pour la Participation Sociale (STEPS): UNDP: Afghanistan.
<i>Format</i>	Pdf
<i>Key points</i>	Checklist for planning and assessing accessibility of public infrastructure.
<i>Links</i>	Ferneeuw, (2005) <i>Guidelines for planning a barrier-free environment: a practical manual to improve physical accessibility in Afghanistan.</i> Services Techniques et Etudes pour la Participation Sociale (STEPS): UNDP: Afghanistan.

<i>Reference</i>	British Geriatrics Society (2007) <i>Behind Closed Doors Toilet Access. Environmental Audit.</i>
<i>Format</i>	Pdf: http://www.bgs.org.uk/Publications/dignity/Environmental_audit.pdf Webpage: http://www.bgs.org.uk/campaigns/dignity-laytool.htm
<i>Key points</i>	Easy to use one-page document for use by a family member or carer in assessing the usability of a toilet by an older or disabled person. User-friendly format. UK based - needs adapting for different country context.

4.5 Description of practical implementation

Mostly pilot projects, these papers describe practical attempts to improving accessibility to WASH.

<i>Reference</i>	Sinha, M., Trivedi, R. and Godfrey, S. (2006) <i>A Project to Develop Inclusive Models of Sanitation for Persons with Disabilities.</i> 32nd WEDC International Conference, Colombo, Sri Lanka. WEDC.
<i>Format</i>	Pdf: http://wedc.lboro.ac.uk/resources/conference/32/Sinha.pdf
<i>Authors' abstract (extract)</i>	"Arushi, a voluntary organization working with PWD, in collaboration with UNICEF [in India] initiated a project on developing "Inclusive Models of Sanitation for Persons with Disabilities". This paper outlines the various components of the project, and its outcomes, including a study to detail the special needs of PWD which further lead to the development of a manual on inclusive models of sanitation."
<i>Key points</i>	An example of collaboration between a watsan provider (UNICEF) and a DPO. An interesting step in the process was awareness raising for engineers and masons, to gain their buy-in, and to ensure that any designs would be appropriately constructed. Focus: accessible public latrine, accessible school latrine; rural and urban versions of each. Process of development of designs. (See also ppt presentation <Trivedi_WEDC_presentation> that adds further information.)

<i>Reference</i>	Ahmed, R. (2006) A Case Study on Reaching the Poorest and Vulnerable . 32nd WEDC Conference, Colombo, Sri Lanka. WEDC, Loughborough University: UK.
<i>Format</i>	Pdf: http://wedc.lboro.ac.uk/resources/conference/32/Ahmed.pdf
<i>Key points</i>	Describes an approach to target the very poorest within a WASH programme in urban slum in Bangladesh. Focus on economic access using cross-subsidy approach. Uses poverty ranking by community to identify hard-core poor. Two case studies presented, one a blind elderly man, one a frail elderly woman.
<i>Reference</i>	VERC (2008) Pilot Project on Activities with Differently Able People in Varshaw Union . Project Completion Report submitted to WaterAid. Village Education Resource Centre for WaterAid Bangladesh: Dhaka Bangladesh.
<i>Format</i>	Pdf: <WAB_VERC_DAP field report May_08>
<i>Key points</i>	Describes the implementation of a pilot project in two areas in rural Bangladesh, to target 'Differently Able People' including elderly, pregnant women, disabled people, and children. Intensive process of identification, assessment, hygiene education and counselling. Individually designed household latrines rather than standard designs. Photos show toilet seats that are presumably placed over a toilet hole. Implemented by the NGO VERC, with involvement of local government staff (Union Parishad officials).
<i>Reference</i>	DSK (2008) Report on Piloting of Appropriate Sanitation Options for Differently Abled People . Submitted to WaterAid Bangladesh. Dushtha Shasthya Kendra for WaterAid Bangladesh: Dhaka, Bangladesh.
<i>Format</i>	Pdf: <DSK_DAP Completion Report>
<i>Key points</i>	Describes implementation of pilot project in urban slums in Dhaka, Bangladesh, by Dushtha Shasthya Kendra (DSK) in collaboration with Action on Disability and Development (ADD) with the objective of introducing appropriate and user-friendly sanitation options for 'differently able people' (DAP) (including pregnant women, disabled and elderly people). Step-by-step consultation process with DAP, assessment, community consultation, adaptation of facilities, trialling, readjustment. Focus on adapting existing communal facilities to include DAP (separate special facilities risk creating isolation). One photo of ramp to 'cluster' latrine; no drawings or descriptions provided. Example of benefits of collaboration between watsan NGO (DSK) and disability NGO (ADD).
<i>Reference</i>	WaterAid Mali (2007) All people, one goal, all access: Water and sanitation access for people with disabilities . Briefing Note. WaterAid: Mali.
<i>Format</i>	Pdf: http://www.wateraid.org/documents/plugin_documents/all_people_one_goal_all_access.pdf
<i>Key points</i>	Summary of findings of evaluation of pilot project to install accessible well and

adapted household latrines for disabled people in rural Mali. Focus on technical improvements, with consultative process described.

Photos and drawings of designs presented.

Example of collaboration between watsan and disability NGOs (WaterAid and Sightsavers).

Links Russell, T. (2008) *All people, all access: WATSAN for disabled people in Mali*. 33rd WEDC International Conference, Accra, Ghana. WEDC: http://wedc.lboro.ac.uk/resources/conference/33/Russell_TJE.pdf

Based on: Russell, T. (2007) *All People, One Goal, All Access: WATSAN for vulnerable groups in Mali*. WEDC, Loughborough University: UK. <http://wedc.lboro.ac.uk>. Copies available on request (permission from author pending).

Reference WaterAid Nepal (2008) ***Creating user-friendly water and sanitation services for the disabled: the experience of WaterAid Nepal and its partners***. Discussion Paper. WaterAid: Nepal.

Format Pdf

Abstract Author's abstract: "This paper reviews the social, technical, financial and policy barriers to meeting the needs of disabled people. It considers the consequences of this neglect on health, dignity and economic and social exclusion, and especially the impact on women. The experiences of WaterAid Nepal and its partners in supporting differently able people without access to water and sanitation are set out and solutions to overcome the barriers are put forward. The document concludes by recommending improved coordination and collaboration in the sector to increase focus on and improve delivery of water and sanitation services to disabled people."

Key points Gives an overview of NEWAH's work to develop accessible water and sanitation facilities in Nepal; individually focused solutions; photos show some toilet designs and accessible tapstand.

Links Read in conjunction with NEWAH (2004); Shrestha (2006) (details below) to get a clear picture of what has actually been implemented.

Content identical to: Pradhan, A. and Jones, O. (2008) *Creating user-friendly water and sanitation services for the disabled: the experience of WaterAid Nepal and its partners*. In: *Beyond construction: use by all: a collection of case studies from sanitation and hygiene promotion practitioners in South Asia*. WaterAid and IRC International Water and Sanitation Centre: London and Delft. http://www.wateraid.org/documents/ch24_creating_userfriendly_water_and_sanitation_services_for_the_disabled_the_experience_of_wateraid_nepal_and_its_partners.pdf

Reference NEWAH (2004) ***Making Latrines User-Friendly for Everyone***. An exploratory research study on the discomfort faced by pregnant women, elderly, overweight, sick and disabled people when using squat latrines. Nepal Water for Health, Western Region Office: Pokhara, Nepal.

Format Pdf: <http://www.newah.org.np/pdf-file/latrines.pdf>

Abstract This study sought to explore the problems experienced by 'physically challenged' people – pregnant women, elderly, overweight, sick and disabled people, when using latrines. The study found that most of these users experience similar types of discomfort when using the latrines, in some cases so extreme that users revert to open defecation. Some reported psychological stress when using the latrines.

Options have been designed to make using a latrine more comfortable, based on suggestions by users themselves, including two types of commode to take the users weight while using the latrine and two types of handles or bars for users to support themselves.

Study methodology described.

Drawings and photos of design solutions given.

Reference Shrestha, G.R. (2006) **Case Study on Addressing Sanitation Needs of Disabled People in Nepal**. Final Draft - 1. Nepal Water for Health (NEWAH): Kathmandu.

Format Pdf: <Case_study_sanitation needs of disabled_2006>

Key points Evaluation of a NEWAH pilot project in rural Nepal to “develop, test and ensure access of disabled friendly latrines to disabled people.”

Project components: Base line survey; sanitary needs assessment of disabled people; training to staff of partners; financial and technical supports to build sanitary units; education on health and hygiene to disabled people and their family members; monitoring and evaluation.

Individualised adaptations for household latrines:

Toilet seats of metal or wood with plastic seats purchased locally to place over toilet hole of existing latrine; where distance to latrine was an issue, rails or walking frames provided.

4.6 Accessible school sanitation and hygiene

Reference Reed, R. and Shaw, R. (2008) **Sanitation for Primary Schools in Africa**. WEDC, Loughborough University: UK.

Format Pdf: <http://wedc.lboro.ac.uk/knowledge/bookshop.html>

Key points Practical manual on planning designing and implementation of school sanitation and handwashing facilities, the design includes separate boys' and girls' blocks, a more spacious cubicle in each block suitable for disabled users and adolescent girls and others needing extra space and proximity to a water point and handwashing facility.

Aimed at planners and implementers of school water and sanitation in Africa. Principles may be applied elsewhere.

Reference Rwanda Ministry of Education (2009) **Child-Friendly Schools Infrastructure Standards and Guidelines: Primary and Tronc Commun Schools**. Ministry of Education: Rwanda.

Format Pdf

Key points Sets standards for 'child-friendly' school infrastructure, with as an integral component "Child-friendly barrier free environment which promotes inclusive access and equal rights of every child." Addresses the whole school environment, including classrooms and outdoor areas as well as toilets and handwashing facilities.
Aimed at planners, educationalists, infrastructure professionals, designers and planners.

Links UNICEF & MINEDUC (2009), Ginoulhiac (2009)

Reference UNICEF and MINEDUC (2009) **Child Friendly School in Rwanda: Typical drawings of school building and toilet block**. UNICEF/ MINEDUC: Rwanda.

Format Pdf (3 documents courtesy of Luca Ginoulhiac, UNICEF Rwanda)

Key points Technical drawings for designs of school toilets described above, for:

- Percolate VIP toilets with offset pits
- Non-percolate toilets with septic tank and soak pit/infiltration trenches
- 12 percolate VIP toilets.

N.B. Two of the sets of drawings show a ramp leading directly to the door of the 'toilet for handicapped', with no flat platform in front of it as is good practice, and as recommended in the Standards and Guidelines. This has been improved in the later document <090604 UNICEF CFS Toilets 12> with the addition of a flat platform, with a ramp leading to it. This is in line with good practice.

Aimed at engineers and architects.

Links Rwanda Ministry of Education (2009)

Reference Ginoulhiac, L. (2009) **UNICEF toilet solutions for child-friendly schools in Rwanda**. 34th WEDC International Conference, Addis Ababa, Ethiopia.

Format Pdf: http://wedc.lboro.ac.uk/resources/conference/34/Ginoulhiac_A_L_-_199.pdf

Key points Conference paper based on the above two documents presents design of standard toilet block, with single unisex accessible toilet cubicle for disabled users, providing extra space, pedestal flush toilet and wash handbasin. Ramp access to wide door.
(NB. Consultant's own limited research experience in UK and Uganda indicate that many disabled students resist using unisex facilities.)

Reference Adams, J. et al (2009) **Water, Sanitation and Hygiene Standards for Schools in Low-cost Settings**. World Health Organisation/ UNICEF: Geneva.

Format Book and pdf:
http://www.who.int/water_sanitation_health/publications/wsh_standards_school/en/

Abstract Authors' abstract: These guidelines deal specifically with water, sanitation and hygiene, and are designed to be used in schools in low-cost settings in low- and medium-resource countries to:

- assess prevailing situations and plan for required improvements;

- develop and reach essential safety standards as a first goal; and
- support the development and application of national policies.

Sections relevant to girls and boys, and disabled girls and boys throughout as appropriate.

Target audience Education managers and planners, architects, urban planners, water and sanitation technicians, teaching staff, school boards, village education committees, local authorities and similar bodies.

Reference Steinfeld, E. (2005) ***Education for All: The Cost of Accessibility***. Education Notes 38864. The World Bank.

Format Pdf: http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2007/03/01/000310607_20070301144941/Rendered/PDF/388640EdNotes1August2005CostOfAccess12.pdf

Key points Summary of key issues related to costs of accessible school infrastructure. Proposes universal design as a cost-effective approach that benefits all. Quotes estimates that cost of accessibility is less than 1% of total construction costs. 4 pages.

Reference Menya, C. and Safu, C. (2005) ***Inclusive Educational Facilities Benefit All***. 31st WEDC International Conference, Kampala, Uganda.

Format Pdf: <http://wedc.lboro.ac.uk/resources/conference/31/Menya.pdf>

Key points Describes improvements in school environment implemented by Leonard Cheshire International in a primary school, as part of its programme to support inclusive education in Kenya.

Reference IRC (2006) ***Ghana - Girl-friendly toilets for schoolgirls: helping adolescent girls***.

Format Webpage: <http://www.schools.watsan.net/page/319%20%5b2009> (Accessed 24.03.10.)

Key points Case study of a Plan International project in Ghana to design 'girl-friendly' school toilets, based on consultation with girl students. Includes a room for washing and changing, larger toilet holes to suit girls, door on the urinal, water and soap inside changing room and at exit to urinal. The design is being piloted in 10 schools in Ghana. Photos and 3D drawings provided.

Links WASH in schools website: www.schools.watsan.net

Reference IRC (2009) ***Impact and sustainability of WASH in schools research***

Format Webpage: <http://www.irc.nl/page/48277> (Updated 7.5.09)

Key points Key findings of 2 studies (in Kenya and India):

- If sufficient taps are provided, children wash their hands more often
- If toilets are clean and well maintained, more children use them.

Conclusion: both software and hardware inputs are needed. Perfect facilities alone do not ensure good WASH in schools.

Links For full studies: Mathew, K. et al (2009) The sustainability and impact of school sanitation, water and hygiene education in Kerala, Southern India. IRC International Water and Sanitation Centre: Delft. <http://www.irc.nl/page/48277>. Njuguna, V. et al (2009) see below.

Reference Njuguna, V. et al (2009) ***The sustainability and impact of school sanitation, water and hygiene education in Kenya***. IRC International Water and Sanitation Centre: Delft.

Format Word document, webpage: <http://www.irc.nl/page/48277>
<http://www.globalwaterchallenge.org/newscenter/downloads/resources/Kenyastudyresultsa.pdf>

Key points Key findings:

- Sufficient taps for handwashing in toilets results in increased handwashing and cleaner toilets
- Toilets that are clean and provide privacy are better used by children.

Links IRC impact study: IRC (2009) <http://www.irc.nl/page/48277>

4.7 Facilities for Menstruation management

Reference Ahmed, R. and Yesmin, K. (2008) ***Menstrual hygiene: Breaking the silence. Beyond construction: use by all: a collection of case studies from sanitation and hygiene promotion practitioners in South Asia***. WaterAid and IRC International Water and Sanitation Centre: London.

Format Pdf:
http://www.wateraid.org/documents/ch21_menstrual_hygiene_breaking_the_silence.pdf
 Webpage: <http://www.irc.nl/page/40593>

Authors' abstract Despite major developments in the hygiene and sanitation sector in recent years, the menstrual requirements of women and adolescent girls have been ignored. Overcoming this gap is vital. Menstruation is normal and natural, but many women suffer and die because of widespread ignorance and shame.
 An awareness-building programme from WaterAid Bangladesh (WAB) helped put the issue on the development agenda. Menstrual awareness and management is now incorporated in all WAB and its partners' sanitation and hygiene programmes.

Key points Hygiene education and awareness; 'women friendly' design and construction of latrines – includes extra space for washing and drying sanitary pads, washing platform, drying hanger; disposal facilities for used rags.

Links Briefer version of the above: Ahmed & Yesmin (2008) Breaking the silence on menstrual hygiene in Bangladesh Source Bulletin No.51. <http://www.irc.nl/page/39141>

Reference Pande, A. (2009) ***A Period is no Longer a Full Stop.***

Format Webpage: <http://www.boloji.com/wfs6/2009/wfs1266.htm> (Last updated: 7.06.09; Accessed: 24.03.10)

Key points Describes a UNICEF-funded initiative in Tamil Nadu India to develop and trial sanitary napkin vending machines in government schools and colleges. Also compact electronic incinerator for disposal of soiled napkins. Result – improved menstrual hygiene.

Reference Nawaz, J. et al (2006) ***Screened Toilet, Bathing and Menstruation Units for the Earthquake Response in NWFP, Pakistan.*** 32nd WEDC International Conference, Colombo, Sri Lanka. WEDC.

Format Pdf: <http://wedc.lboro.ac.uk/resources/conference/32/Nawaz.pdf>

Authors' abstract In water and sanitation interventions, sensitivity is required for the particular needs of communities when women live in seclusion. In these communities female-headed households may have restricted access to relief supplies and restricted opportunities to make their needs known. Additional screening around water and sanitation facilities can help to provide additional privacy for women and men living in camp environments in emergency settings.

Key points Based on Oxfam experience in Pakistan.
Describes issues faced by women in camps, consultation process, and practical solutions put in place. Photos and plan drawings.

4.8 Accessibility in Disasters and Emergencies

Reference Oxfam (2007) ***Excreta Disposal for Physically Vulnerable People in Emergencies.*** Oxfam GB: Oxford, UK.

Format Pdf: http://www.oxfam.org.uk/resources/learning/humanitarian/downloads/TBN1_disability.pdf

Key points This Technical Brief highlights good practice in making simple modifications to latrines to make them user-friendly for physically vulnerable people (elderly or disabled people, people with injuries, pregnant women, small children etc). Based on information from Oxfam good practice in the field, including discussions with users who have disabilities, and from WEDC research (Jones & Reed, 2005).

6 pages focus on design options, both individual solutions and accessible design options for communal facilities. Drawings, photos and plans.

<i>Reference</i>	Handicap International (2005) <i>How to Include Disability Issues in Disaster Management: Following floods 2004 in Bangladesh.</i> Handicap International: Bangladesh.
<i>Format</i>	Pdf: http://www.handicap-international.fr/fileadmin/documents/publications/DisabilityEmergencyDisaster.pdf
<i>Key points</i>	Focus on Bangladesh, very practical 'How to..' manual. See pages 29 – 40 for shelter, water and sanitation, water sources, latrines. Photos, 3D drawings and dimensions given. Very accessible to non-technical audience. (N.B. A pat on the head (p.33) is probably not the best form of encouragement) See also Nawaz, J. et al (2006) above.

4.9 Practical Approaches – to process

<i>Reference</i>	Lewis, I. (ed.) (2000) <i>Access for All: Helping to make participatory processes accessible for everyone.</i> Practice Guidelines. Save the Children: UK.
<i>Format</i>	Pdf: http://www.eenet.org.uk/bibliog/scuk/access_for_all.pdf
<i>Key points</i>	Based on Save the Children experience of conducting participatory activities. Includes practical guidance on meeting the needs of children and adults with physical access needs, communication needs (language translation including sign language), and people with visual impairments.

4.10 Background issues

This selection of documents highlights the issues and problems of exclusion and lack of accessibility, although they provide little guidance on practical solutions.

4.10.1 Women and girls & WATSAN

<i>Reference</i>	Fisher, J. (2006) <i>For Her It's the Big Issue: Putting women at the centre of water supply, sanitation and hygiene. Evidence Report.</i> Water Supply and Sanitation Collaborative Council (WSSCC): Geneva.
<i>Format</i>	Pdf: http://www.wsscc.org/fileadmin/files/pdf/publication/FOR_HER_ITs_THE_BIG_ISSUE_Evidence_Report-en.pdf
<i>Key</i>	Presents the contributions that women have made to WASH programmes, strengthening the argument that women can be key agents of change if they are involved at all levels of planning, implementation and operation of WASH projects. In English, French, Spanish, Portuguese.

Reference Irura, C. (2008) **Women, water and sanitation: going the extra mile.**

Format Webpage: <http://www.pambazuka.org/en/category/comment/48637>

Key points Discusses issues facing African women related to water and sanitation. Issues raised include need for proximity of watsan facilities, increased security and privacy and access to good menstrual hygiene.

Reference WaterAid (2009) **Is menstrual hygiene and management an issue for adolescent school girls? A comparative study of four schools in different settings in Nepal.** WaterAid: Nepal.

Format Pdf:
http://www.wateraid.org/documents/plugin_documents/wa_nep_mhm_rep_marc_h2009.pdf

Key points Study of adolescent schoolgirls' perspectives and experience of management of menstrual hygiene. Recommendations include:

- Accurate and adequate information
- Address the lack of privacy (e.g. locks on toilet doors)
- Making sanitary pads available and affordable.

4.10.2 Disabled people and WATSAN

Reference Wateraid (2006) **Equal Access for All: Water and sanitation access for people with motor disabilities.** WaterAid: Ethiopia.

Format Pdf

Key points 4-page briefing note summarises study to understand problems faced by people with motor disabilities (physical impairments) in accessing water and sanitation. Recommendations for designs of facilities based on perspectives of users.

Links Tesfu, M. and Magrath, P. (2007) Water and sanitation access for people with motor disabilities. Research report. WaterAid: Ethiopia.

Reference Diawara, A. (2005) **Etude sur l'Accès et l'Utilisation des Services d'Eau et d'Assainissement par les Couches Vulnérables.** WaterAid Mali: Bamako.

Format Pdf in French.

Key points Assessment of current situation of disabled people and people living with HIV/AIDS in relation to obstacles accessing water and sanitation in Mali.
Report for WaterAid Mali

4.10.3 Older people and WATSAN

<i>Reference</i>	Sleap, B. (2006) Access for All: securing older people's access to water and sanitation . 32nd WEDC International Conference, Colombo, Sri Lanka.
<i>Format</i>	Pdf: http://wedc.lboro.ac.uk/resources/conference/32/Sleap.pdf
<i>Key points</i>	<p>Presents issues of older people in accessing water and sanitation facilities.</p> <p>Describes two programmes:</p> <ul style="list-style-type: none"> • Improving older people's access to water using traditional water collection and storage methods in india • A sanitation programme initiated and run by an older people's association in Cambodia. <p>4-page paper based on experience of Helpage International.</p>

4.10.4 HIV/ AIDS and WATSAN

<i>Reference</i>	WaterAid & AMREF Tanzania (2009) Water and Sanitation for People Living with HIV and AIDS: Exploring the Challenges . WaterAid; AMREF: Tanzania.
<i>Format</i>	<p>Pdf:</p> <p>http://www.wateraid.org/documents/plugin_documents/wateraid_and_amref_briefing_paper_1.pdf</p>
<i>Key points</i>	<p>Presents the findings from a study in Tanzania, including:</p> <ul style="list-style-type: none"> • Increased need for water • Poor standard of latrines increases the risk of opportunistic infections. <p>Recommendations include:</p> <ul style="list-style-type: none"> • Watsan programmes should work in partnership with HIV/AIDS programmes to ensure affordable access to water • Need for consistent hygiene messages • Consider costing and advocating for household water treatment agents as part of treatment packages for people living with HIV/AIDS (PLWHA). <p>4-page briefing note.</p>
<i>Links</i>	For full report: Nkongo, D. and Chonya, C. (2009) <i>Access to Water and Sanitation for People Living with HIV and AIDS: An Exploratory Study</i> . WaterAid, AMREF: Tanzania.

<i>Reference</i>	Kamminga, E. and Wegelin-Schuringa, M. (2005) HIV/AIDS and water, sanitation and hygiene. Thematic Overview Paper . IRC International Water and Sanitation Centre: Delft.
<i>Format</i>	Pdf
<i>Key points</i>	<p>This paper addresses the links between HIV/AIDS and WASH, the impact of HIV/AIDS on WATSAN organisations and service provision; lessons learned in preventing and mitigating effects of HIV/AIDS both outside and inside the WATSAN sector.</p> <p>Suggestions for what the WATSAN sector can do about the problem of HIV/AIDS at</p>

different levels include:

- Water supply technologies that require less labour for O&M, e.g. handpumps, lower well walls, spring protection, rainwater harvesting
- Home-based water treatment, e.g. SODIS
- Mechanisms for PLWHA especially women, to voice their needs
- To address inequalities, adapt cost-recovery strategies to accommodate the poorest (often HIV/AIDS affected) households.

Links <http://www.irc.nl/page/3462>

Reference Fisher, J. (2004) ***The HIV/AIDS Millennium Development Goal: What water, sanitation and hygiene can do.*** WELL Briefing Note #5. WEDC/WELL: Loughborough University: UK.

Format Pdf: http://wedc.lboro.ac.uk/resources/well/W...Development_Goal.pdf

Key points 4-page coloured format designed for advocacy. Key messages presented in brief headlines with supporting facts, case examples and photos.

Reference van Wijk, C. (2003) ***HIV/AIDS and water supply, sanitation and hygiene.*** WELL Factsheet.

Format Webpage: <http://www.lboro.ac.uk/well/resources/fact-sheets/fact-sheets-htm/hiv-aids.htm>

Key points Proposes the need for nearby and reliable supply of water, including for small-scale production and sanitary latrines, helps those infected stay healthy longer and able to continue work. They reduce the workload for caregivers and help preserve human dignity. Policy makers, programme planners and managers, donors and field workers need to treat HIV as a chronic disease and plan for better water supply, sanitation and hygiene to counteract the cruel impacts on people's day-to-day health, work, income and dignity.

Recommends low-cost household treatment of water, e.g. using SODIS.

4.10.5 Children and WATSAN

Reference UNICEF (2006) ***Progress for Children: a Report Card on Water and Sanitation.*** United Nations Children's Fund: New York.

Format Pdf: http://www.unicef.org/publications/files/Progress_for_Children_No._5_-_English.pdf

Report from 2006 setting out how progress and lack of progress on water and sanitation MDGs affect children in different regions of the world.

Reference Fisher, J. (2006) ***The Child Health MDG: what water, sanitation and hygiene can do.*** WELL Briefing Note #3. WEDC/WELL: Loughborough University: UK.

Format

Pdf:

http://wedc.lboro.ac.uk/resources/well/WELL_BN03_Child_Health_Millennium_Development_Goal.pdf

4-page coloured format designed for advocacy. Key messages presented in brief headlines with supporting facts case examples and photos.

5. Appendix

5.1 Websites

WaterAid > Publications > Equity and inclusion

http://www.wateraid.org/uk/what_we_do/documents_and_publications/default.asp

World Bank > Social Protection > Publications and Reports

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALPROTECTION/0,,contentMDK:20268661~menuPK:282656~pagePK:210058~piPK:210062~theSitePK:282637,00.html>

Make Development Inclusive

<http://www.make-development-inclusive.org/index.php?wid=1024&spk=en>

Helpage International

<http://www.helpage.org/Home>

WEDC Knowledge base

<http://wedc.lboro.ac.uk/knowledge/know.html>

WEDC Conference papers

http://wedc.lboro.ac.uk/knowledge/conference_search.html

UN Enable > Publications

<http://www.un.org/disabilities/default.asp?navid=36&pid=34>

5.2 Database search strategy

Databases searched: Aqualine, Article First, Compendex, Web of knowledge, Zetoc, Geobase, CSA Illumina (ANTE, Aqualine, ASSIA, CSA/ASCE, ESPM, Medline, SSA & SA), Science Direct.

Dates: publication year 2000 onwards.

Keywords used as follows (either as keywords, or descriptors, or all fields):

"inclusive design" +	water supply
"universal design" +	sanitation
accessib* +	latrine*
vulnerab* +	toilet
disab* +	handpump; hand-pump
inclus* or disab* +	sanitation or water
disab* or accessib* +	sanitation or latrine* or toilet
Disable* or vulnerab* +	

Science Direct:

Disabled + sanitation (as keywords)
Disabled + sanitation (all fields)

Disabled and toilet (all fields)
Sanitation + disabled (ATK)
Toilet + disabled (ATK)
Latrine* and disabled (ATK)
Bathing and disabled (ATK)
Water and disabled
Inclusive education and disab*
Inclusive education and sanitation