

# **GUIDELINE ON INCLUSIVE DISASTER RISK REDUCTION: Early Warnings and Accessible Broadcasting**



**Prepared by**

**The Global Alliance on Accessible  
Technologies and Environments (GAATES)**

**In collaboration with**

**The Asia Pacific Broadcasting Union  
and the Asia Disaster Preparedness Center**



# **GUIDELINE ON INCLUSIVE DISASTER RISK REDUCTION: EARLY WARNING AND ACCESSIBLE BROADCASTING**

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This document has been prepared  
by Betty Dion and Aqeel Qureshi of GAATES

in collaboration with  
the Asia Pacific Broadcasting Union  
and  
the Asia Disaster Preparedness Centre

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This document is available in alternate formats.

# Dedication

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This Guideline document is dedicated to persons with disabilities in the Asia Pacific Region who, in the face of the ever increasing occurrence of natural disasters, tsunamis and armed conflicts, are now demanding their right to be at the table planning for their survival and wellbeing.



Figure 1: Community Consultation in Sri Lanka. Photo: Aqeel Qureshi

# Table of Contents

1	Introduction .....	6
1.1	UN Economic and Social Commission for Asia and the Pacific.....	6
1.2	The Objectives of the Guideline.....	7
1.3	Target groups .....	8
1.4	Scope of the document .....	9
1.5	Statistics .....	10
1.6	Inclusive Disaster Risk Reduction .....	10
2	Early Warning Systems .....	11
2.1	Guiding Principles on Early Warnings and Communications .....	12
2.2	Methods of Delivery of Accessible Early Warnings.....	14
3	Accessible Broadcasting .....	23
3.1	Introduction to Accessible Broadcasting.....	23
3.2	Captioning .....	24
3.3	Sign Language Interpretation .....	26
3.4	Audio Description .....	26
3.5	Operational procedure - Accessible Disaster Warning Broadcast .....	27
Appendix 1	UN Economic and Social Commission for Asia and the Pacific .....	29
Appendix 2	The Convention on the Rights of Persons with Disabilities .....	30
A2.1	Introduction to the Convention.....	30
A2.2	Using The Convention for Inclusive Disaster Risk Reduction .....	31
	Sri Lanka, Myanmar and the Philippines .....	32
A2.3	UN Enable .....	32
Appendix 3	Persons with Disabilities and Older Persons .....	33
A3.1	Statistics .....	33
A3.2	Working with Persons with Disabilities .....	37
A3.3	Older Persons .....	43
Appendix 4	Inclusive Disaster Risk Reduction .....	44

A4.1	Introduction to Inclusive Disaster Risk Reduction .....	44
A4.2	Registry of Persons with Disabilities .....	46
A4.3	Personal Disaster Preparation Kit.....	46
A4.4	Collaboration .....	48
A4.5	Twin track approach.....	48
A4.6	Standard Operating Procedures .....	49
Appendix 5	Disaster Management Agencies.....	50
A5.1	Responsibilities of Disaster Management Agencies .....	50
A5.2	Public Education.....	51
A5.3	Public Education of First Responders.....	51
A5.4	Long Term Health, Rehabilitation and Personal Care Support.....	52
Appendix 6	Universal Design and Accessibility of the Built Environment.....	53
A6.1	Universal Design and Inclusive Disaster Risk Reduction.....	53
A6.2	Accessibility of the Built Environment.....	58
A6.3	Access to Shelters and Temporary Housing .....	68
A6.4	Building an Accessible Community.....	69
A6.5	Designing for Accessible Communities .....	70
Appendix 7	Evacuation Techniques .....	72
A7.1	Evacuation of Persons with Disabilities .....	72
A7.2	Transferring Techniques .....	73
Appendix 8	Accessible Transportation .....	78
A8.1	Transportation and the CRPD.....	78
A8.2	Mainstream Transportation .....	79
A8.3	Methods of Delivery of Accessible Transportation .....	80
Appendix 9	Information and Communications Technologies and Disaster .....	82
A9.1	Introduction to Accessible ICTs and Disaster.....	82
A9.2	Use of Assistive Technologies .....	83
A9.3	Technical Aids .....	86
A9.4	Use of Mobile Telephones .....	89
A9.5	Pre-disaster Planning Information .....	91
Appendix 10	Access to Services and Risks & Vulnerabilities .....	95

A10.1	Risks & Vulnerabilities .....	95
Appendix 11	Communications Strategies .....	100
A11.1	Accessibility Communication Strategies and Tools .....	100
A11.2	Communication Access Options and Tools .....	100
A11.3	Communicating with Persons with Vision Disabilities .....	103
A11.4	Communicating with Persons with Hearing Disabilities .....	105
A11.5	Communicating with Persons with Mobility Disabilities .....	108
A11.6	Communicating with Persons with Cognitive and Developmental Disabilities .....	109
Appendix 12	International and National Legislative Frameworks.....	110
<b>A12.1</b>	<b>International Frameworks</b> .....	110
<b>A12.2</b>	<b>National legislation, regulations and standards</b> .....	114
Appendix 13	Definitions and Acronyms .....	117

# 1 Introduction

## 1.1 UN Economic and Social Commission for Asia and the Pacific



The development of this Guideline document has been funded by the UN Economic and Social Commission for Asia and the Pacific (UN ESCAP) the regional development arm of the United Nations for the Asia-Pacific region.

The UN ESCAP Trust Fund for Tsunami, Disaster and Climate

Preparedness was established in 2005, originally to support tsunami early warnings through a multi-hazard approach and, in 2010, it expanded to include overall disaster and climate preparedness.

The Asia-Pacific region is home to 4.1 billion people, 600 million of whom are people living with some form of disability.



Figure 2: Helping seniors evacuate flooding in Thailand. Photo: CNN



## 1.2 The Objectives of the Guideline

The objectives of this Guideline are to:

- Build community resilience to coastal hazards by improving capacity of inclusive disaster management systems.
- Reduce the mortality rate of persons with disabilities in situations of risk.
- Raise awareness about inclusive policies, practices and disaster risk reduction strategies that address the accessibility of communication, shelter, transportation and early warning systems.
- Foster collaboration between disaster preparedness organizations, broadcasters and organizations of persons with disabilities to mainstreaming disability issues in disaster risk reduction strategies.



*Figure 3: The Asian Disaster Preparedness Center (ADPC) Workshop.  
Photo by ADPC.*

- Build the capacity of disaster management organizations, governments, broadcasters and built environment practitioners by providing technical specifications on accessible communications and the design of accessible shelters and the built environment.



## 1.3 Target groups

The audience for this Guideline includes:

- Broadcasters who are responsible for developing policies and practices for early warning and disaster risk reduction.
- Civil society organizations and Disabled Persons Organizations.
- International Aid Organizations.
- Government officials responsible for disaster risk reduction such as National Disaster Management Centers, Disaster Management Agencies and Bureaux.
- Government officials responsible for establishing standard operating procedures for disaster risk reduction including emergency communication and evacuation planning, and disaster mitigation to reduce the effects on citizens.
- Government officials who are responsible for evacuation, accessible transportation, accessible housing and shelters and those responsible for the implementation of the UN Convention on the Rights of Persons with Disabilities.
- Early warning system planners, telecommunication and communication strategists, transportation planners, international aid and emergency management agencies.



Figure 4: Emergency radio broadcast. Photo: Pacmas

## 1.4 Scope of the document

This Guideline is designed to address the lack of appropriate information and practices on inclusive policies and practices on disaster preparedness, accessible early warnings, accessible transportation, and life safety and evacuation of persons with disabilities. It focuses on inclusive disaster risk reduction strategies, from working with the community of persons with disabilities, to the design of a variety of accessible early warning systems that reach all citizens, disaster preparedness and technical specifications for designing accessible shelters, housing and transportation.



*Figure 5: GAATES Community Consultation Meeting Sri Lanka. Photo: Betty Dion*

People with disabilities are at significant risk in times of disaster, and often lack access to appropriate and disability inclusive disaster risk reduction information.

As a result of the lack of inclusion in disaster risk reduction strategies, persons with disabilities are more likely to succumb or become further disabled in disaster situations. Due to the effects of climate change and, in part to increasing frequency, natural hazards continue to cause significant loss of life in the Asia Pacific region. Between 1970 and 2010, 1.7 million hazard-related deaths were recorded in the region – 51% of the global total.

For this project, the Asia Disaster Preparedness Center has identified Sri Lanka, Myanmar and the Philippines for primary focus, although

the document has been written to be applicable to the entire Asia Pacific region.

## 1.5 Statistics

According to World Health Organization (WHO) statistics, there are over 400 million persons with disabilities in the Asia Pacific Region, (approximately two thirds of the world's population of persons with disabilities), with 80 % of them living in rural areas of the region.

The Asia-Pacific region is the most disaster-prone area in the world, with over 50 % of the world disasters occurring there. The region experiences with regular frequency, geological hazards such as earthquakes and tsunamis, as well as with increasing frequency, weather-related hazards such as typhoons, floods, droughts and wildfires.

## 1.6 Inclusive Disaster Risk Reduction

National and local government departments responsible for disaster preparedness for such multi-hazard events as typhoons, floods, earthquakes, etc. are under increasing pressure as the incidents of disasters continue to occur around the world. The pressure is, of course, to develop mitigation measures and develop appropriate preparedness plans that will reduce the mortality rates of their citizens and constituents. The mitigation measures should be designed for multiple hydro-meteorological events.

Mainstreaming people with differences in age and ability into preparations for emergency situations, (i.e. disaster management and disaster risk reduction) is necessary to ensure the wellbeing of everyone. While people with disabilities do not have “special” needs, it is true that they can face additional barriers in emergency situations. The removal of these barriers can be accomplished with the development of standard operating procedures that plan for accessible early warning systems, accessible communications and accessible transportation and housing.

## 2 Early Warning Systems



Figure 6: Tsunami Early Warning Sign. Photo: Newswire Team/Whitireia Journalism class

An early warning system (EWS) is an information system that provides information on potential hazards that might evolve into a disaster. The objective of an EWS is to monitor the first signs of emerging hazards in order to be able to trigger early disaster warnings to facilitate appropriate responses by individuals and communities to reduce or mitigate their risk.

It is necessary to ensure that early warning systems reach persons with disabilities and comply with the United Nations Convention on the Rights of Persons with Disabilities.

As disasters have become more of a frequent phenomenon worldwide, it has become clear that persons with disabilities have been ignored and excluded from consideration in the design of the disaster early warnings. Possible reasons include: (1) Lack of accessible early warnings (2) Lack of inclusive disaster preparedness and procedures, (3) Lack of access to

information and communication technologies in disaster responses, (4) Lack of anti-discrimination legislation, (5) Lack of understanding on how to reach persons with disabilities and (6) Lack of will to make changes.

Early warnings must be provided in both visual and audio formats to include the wider community. These EWs need to be developed and field tested during the preparedness phase, with the support and participation of persons with disabilities. Accessible EWS must be built according to the guideline mandated by UNCRPD Article 9, Accessibility<sup>1</sup>. See Section 0.

## 2.1 Guiding Principles on Early Warnings and Communications

Access to reliable, accurate and timely disaster early warnings at all levels of society is crucial. Information needs to be readily collected, processed, analyzed, and shared in order for individuals and communities to respond effectively. Without appropriate information, people are often forced to make crucial decisions based on unclear and conflicting reports. Early warning systems are well recognized as a critical life-saving tool for floods, earthquakes, storms, tsunami and other hazards.

The following are the guiding principles for early warning systems:

- Early warning systems need to be a coherent set of linked operational procedures established at national and local levels of public administration and disaster management authorities.
- The early warning process should incorporate best practices to communicate warning and advisory information to all members of society, including persons with disabilities, so that they may take appropriate actions.
- Local communities must be able to understand and respond to advisory information; they should have sufficient knowledge and training about disasters and emergencies to

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<sup>1</sup> UNCRPD, Article 9, Accessibility <http://www.un.org/disabilities/default.asp?id=269>



which they are exposed. This will decrease the possibility of injury, loss of life and damage to property and will greatly assist persons with disabilities.



The local levels of government must have primary responsibilities for early warnings for producing detailed information on risks, acting on the basis of warnings, communicating warnings to those individuals at risk and, ultimately, for facilitating appropriate community actions to prevent loss and damage. The use of symbols is recommended.

For the system to be effective, all aspects of the design, development and implementation of early warning systems require the substantive involvement of individuals and communities, including persons with disabilities at local and national levels. The involvement of persons with disabilities in pre-disaster planning will ensure that early warnings are understandable and accessible to all.

### **Early warning components**

Effective early warning systems can lead to substantive benefits for all aspects of disaster management: risk assessment analysis, monitoring, predicting the location and intensity of the potential disaster, communicating alerts to authorities and to potentially vulnerable populations who may have to respond to the disaster.

An EWS is composed of the following early warning components:

#### **Risk Assessment**

Risk assessment provides essential information to set priorities for mitigation and planning strategies including the design of the EWS.

## Monitoring and Predicting

Systems with monitoring and predicting capabilities provide timely estimates of the potential risks faced by individuals, communities, and the environment.

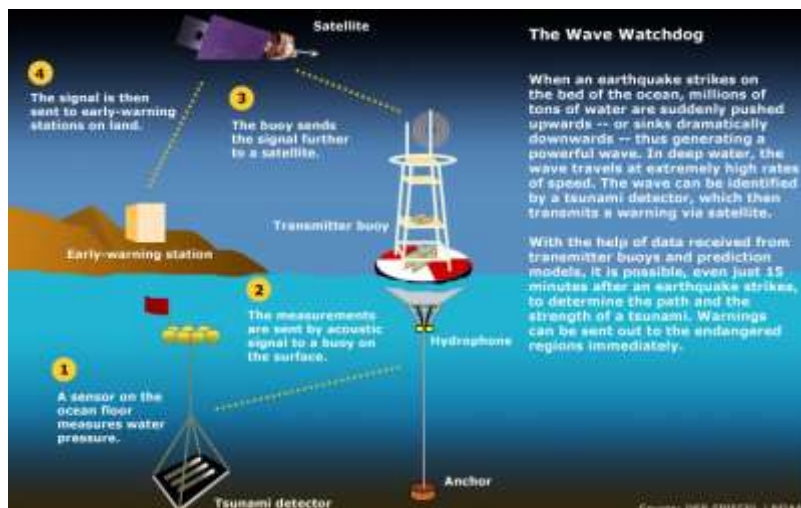


Figure 7: Tsunami prediction and monitoring. Image Der Spiegel / NOAA

## Disseminating Information

Communication systems are needed for delivering warning messages to the potentially affected locations to alert local and regional governmental agencies, including persons with disabilities. The messages need to be reliable, simple and in a variety of formats to be easily understood by authorities and the public. Different formats include audio, visual, print and electronic.

## 2.2 Methods of Delivery of Accessible Early Warnings

### Community Early Warning Systems

Community Early Warning Systems (CEWS) are developed in the local communities and managed by that community. It is based on a "people-centered" approach that empowers individuals and communities, including people with disabilities. It provides those threatened by disasters/hazards to act in sufficient time and in an appropriate manner in a bid to reduce the possibility of personal injury, loss of life, damage to property and the environment. CEWS is a protocol in which at-risk communities are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance capacities. This means that people who are at the heart of the decision making and implementation of disaster risk reduction protocols have



the control of the EWS and can ensure that persons with disabilities are included.

In the last 10 years there has been substantial research and investment in EWS. This has contributed greatly to improving the effectiveness of early warnings, and developing and refining new methodologies, approaches and technologies. However, very little has been done to make disability inclusive EWS in the Asia Pacific Region. The majority of early warning and disaster announcements are delivered primarily in an audible format; this does not meet the needs of persons who are deaf or hard of hearing and others.

### **Volunteers**

Volunteers can go door to door by using motorcycles, auto rickshaws or bicycles to alert those who may not receive an early warning. These volunteers can warn community members with disabilities about disaster/hazards. This personal communication can be very effective in reaching people who are isolated in the community.



*Figure 8: Bangladesh disaster preparedness volunteer making audible announcement with warning flags in background Photo: Claudia Janke. British Red Cross*

### **Sirens**

Sirens are devices that transmit different sounds and voice messages. They are either electro mechanical or electronic. Announcements on electronic systems can be stored on pre-recorded disks or chips containing short instructive early warning alerts.

Sirens are used to provide an early warning alert to potentially threatened populations out of doors. Sirens are still the most effective method to warn people outside in the shortest amount of time and can reach isolated areas (e.g. beaches). They can also reach populations that have limited access to other warning devices, such as telephones,

cell phones, televisions and radio. However, sirens are not designed to warn people who are deaf or hard of hearing and people with intellectual disabilities. For this population EW notifications can be provided in other formats.

It is important to note that sirens have limited capabilities for messaging. When activated, persons with disabilities and others will be expected to turn to another source of information such as a radio or a television station or help from family members for further instructions.

Figure 9: Storm early warning flag. Photo: Linda Trischitta



### Flags

Flags can be raised to indicate that an emergency warning has been issued. Different color flags can be assigned to different disaster warning messages. Flags will only work if persons with disabilities and the general community are educated about their meanings.

### Electronic Signs

Electronic signage systems can be very useful before, during and after disasters for providing information to people who are deaf and hard of hearing. These systems form an important visual EW to supplement audio systems, especially in outdoor situations such as stadia, airports, and road and highway message boards. They can be a good communication strategy to reach persons with hearing disabilities that are walking, or driving a car that may not hear sirens. The messages may



Figure 10: Electronic roadside early warning signage. Photo: Jeff Barnard (AP)

contain information such as: “*Earthquake is coming*” or “*Tsunami Alert, Proceed South Immediately, Listen to Radio*”, “*Flood Risk Area, No Entry*”, etc. Electronic signs can also be utilized to direct people to appropriate pedestrian evacuation routes and give emergency status updates at staging areas.

## Television and Radio

Radio and television are among the best mass media for distributing general information to a wide area, including disaster early warnings and updates.

Television is a major source of news and disaster information for millions in developing countries. Of course, access to power and ownership of a television is not always possible in some regions.



Figure 11: Captioned TV emergency broadcast

People with hearing, vision and other disabilities will not have access to accessible EWs unless broadcasters incorporate inclusive accessible broadcasting. Accessible broadcasting includes closed captioning, audio description, sign language interpretations and easy to understand content. These strategies can reduce barriers to accessing early warnings for persons with disabilities. See Section 10 on Accessible Broadcasting.

The effectiveness of radio and television is very substantial in developing countries and rural environments and can be used to quickly send out a warning to individuals and communities. Radio communication systems can also be strengthened by incorporating speech to text capabilities at community based information centers.

There is a method to make radio early warnings accessible to people who are deaf or hard of hearing. This can be done via captioning - speech to text conversation data which can be displayed on a suitably equipped radio. Digital radio can now include data for speech to text display in the receiver. A text display is one of the most effective ways for people who are deaf or hard of hearing to receive the radio early warning.

Radios are also available with strobe lights, pillow vibrators or Braille display<sup>2</sup> and assistive technologies that can alert people who are deaf, hard of hearing and people who are deaf-blind about a potential disaster.



Figure 12: Video phone



Figure 13: Captioned radio, with refreshable Braille. Photo: NPR Labs

## Telephones

Telephones play an important role in warning communities about an impending disaster. For example, simple phone warnings saved many lives during the 2004 Indian Ocean Tsunami. Telephone EWS are particularly effective in sending disaster warnings to individuals and communities.

### Mobile Telephones

Short Message Service (SMS) is available on most mobile phones that permit the sending of short EW messages to everyone including people who are deaf and hard of hearing and even landline telephones are capable of SMS. People with vision disabilities can read SMS EW messages with the help of Screen Reader software<sup>3</sup>.

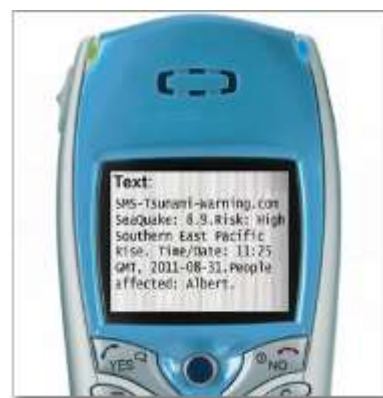


Figure 14: SMS Alerts and warnings. Photo: Virtuasoft Corp.

<sup>2</sup> Braille Display [http://en.wikipedia.org/wiki/Refreshable\\_braille\\_display](http://en.wikipedia.org/wiki/Refreshable_braille_display)

<sup>3</sup> Screen Reader is a software application that attempts to identify and interpret what is being displayed on the computer screen with a text-to-speech synthesizer.

**Captioned Telephone and Videophone** – Telephones with a video screen are capable of full video and audio transmissions for communication in real-time for people who are deaf and hard of hearing. Telephones, both landlines and mobiles are capable of adjusting the volume, transmitting video as well as text.

As an alternative to caption relay services for the deaf and hard of hearing, there is a telephone that will automatically caption the incoming dialogue on a land line. Amplified captioned telephones have a monitor that transcribes the dialogue from the other end of the connection in a high-contrast, large-print screen. If the user is not there to pick up the call, some models of the phone will even record a message in text!



Figure 15. Amplified captioned telephones.  
Photo: Vitac

## Cell Broadcasting

Most mobile systems support a feature called cell broadcasting. A public disaster early warning message text can be sent via text to the screens of all mobile devices with such capability. It can be transmitted to any size of cells, ranging from a single cell to the whole country. People who are blind and have low vision can also access these warning by using a screen reader.

## Software and Applications

A variety of software and mobile applications are available that enable people to use a computer or smartphone to convert speech-to-text and text-to-speech<sup>4</sup>. For example, programs such as Dragon Dictation<sup>5</sup> is

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<sup>4</sup> Text-to-Speech (TTS) is the artificial production of human speech. The computer system used to achieve this is called a speech engine.

<sup>5</sup> Dragon Dictation <http://www.nuance.com/dragon/index.htm>



an easy-to-use voice recognition application<sup>6</sup> that allows one to speak and instantly see the text, it can then be stored on the computer, tablet and smartphone, or be sent by cell broadcast, SMS or email. This software is frequently used by persons with mobility disabilities.

### **Internet**

In the present era of electronic communication, the internet provides a useful platform for disaster mitigation communication and warnings. A number of groups, including several national meteorological services, are using the internet for real-time dissemination of earthquake, storms, flood, and tsunami early warnings and information. This early warning information must be provided in accessible formats, with as captioning, sign language interpretation, audio CDs, mp3 files and Podcast. The website contents must be accessible as per Web Content Accessibility Guidelines (WCAG) 2.0<sup>7</sup> and available in different languages. If the website has not been designed to be accessible, persons who are blind will not be able to read information on the site with their speech reading software.

### **Pop-up Early Warnings for desktop/laptop**

One of the options for early warning providers to consider is software that sends warning messages to "pop-up" on the desktops and laptops of users. This is an excellent feature that can provide information to those that need extra time in order to mobilize assistance or accessible transportation.

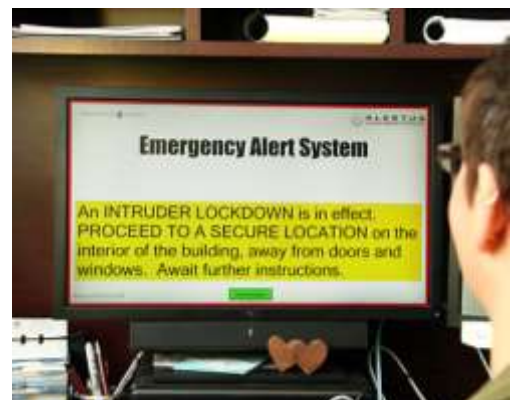


Figure 16: Emergency message distributed via computer. Photo; AlertUs / Thompson Rivers University

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<sup>6</sup> Voice recognition software programs work by analyzing sounds and converting them to text.

<sup>7</sup> Web Content Accessibility Guidelines <http://www.w3.org/TR/WCAG20/>

This software automatically polls a Common Alerting Protocol<sup>8</sup> (CAP) message server and downloads the messages it finds. Only the messages that meet user-specified criteria are brought to the user's attention. These early warning messages come with an option to include audio, video, or graphic elements, all contained in the CAP message. This technology utilizes LAN and WAN networks to deliver short messages, often less than about 120 characters in length, typically in real time. People who are blind and low vision may get this warning with the help of screen reader software<sup>9</sup>. This is an excellent feature.

## **E-mail**

Another method used to warn people with disabilities is to send them early warnings by e-mail so that they can receive it on any device capable of receiving emails.

## **Internet Protocol Captioned Telephone Service**

This is similar to video relay service (rather than a telephone network) to provide the link and captions between the caller with a hearing disability and the communications assistant. The recipient must have internet access and power to receive this message.

## **Internet Protocol (IP) Relay Service:**

This is a text-based form of relay that uses the internet, rather than traditional telephone lines. It is used by people who are deaf or hard of

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<sup>8</sup> Common Alerting Protocol <https://www.oasis-open.org/committees/download.php/6334/oasis-200402-cap-core-1.0.pdf>



hearing and a communications assistant. The caller uses a computer or other web-enabled device to communicate and needs internet connection and power.

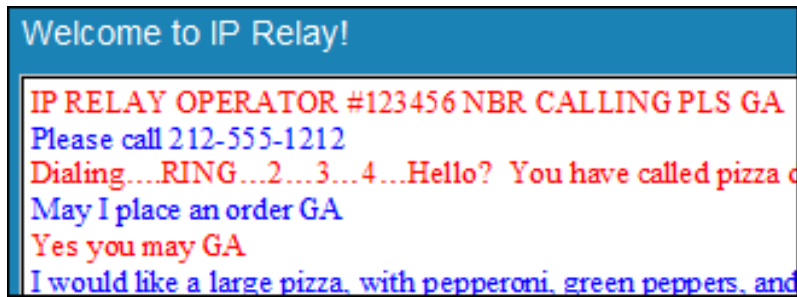


Figure 17: Internet Protocol Captioned Telephone Service. Photo: Wikipedia

## 3 Accessible Broadcasting

### 3.1 Introduction to Accessible Broadcasting

Television and radio broadcasting are media that inform and educate people, and are among the most important traditional electronic media used for disaster warning announcements. The accessibility of these two media is a very significant issue for persons with disabilities who are a large and growing population group.

Accessible broadcasting benefits persons with disabilities, older people, and people with low literacy and linguistic minorities. Without accessible broadcasting, persons with disabilities are in danger of being excluded from early warning alerts and announcements especially before and during emergencies.

People who are deaf, hard of hearing or deaf-blind cannot obtain information that is broadcast audibly, such as via radio, television, siren, loudspeakers and automated telephone messages. Similarly, people who are blind, or have low vision may not be aware of visual information, such as television alerts, scrolling emergency information on televisions or flashing lights. People with intellectual, speech and learning disabilities may not understand emergency spoken or written information. Accessible ICTs are an effective outreach tool for persons with disabilities in terms of accessing disaster information in pre and post-disaster situations.

By providing closed captioning, sign language interpretation and audio description, persons with disabilities are able to access emergency broadcasting contents. Some people may need to also use assistive technologies, low tech devices and special applications to assist them.

As outlined in Section 2, the United Nations Convention on the Rights of Persons with Disabilities<sup>1</sup> mandates that the best possible steps are to be taken to ensure the safety of persons with disabilities in natural disasters and armed conflicts (Article 11 on ‘situations of risk and humanitarian emergencies’) Article 9 on ‘accessibility’, Article 21 on ‘access to information’ and Article 8 on ‘awareness raising’ are all

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<sup>1</sup> UNCRPD <http://www.un.org/disabilities/default.asp?id=150>

relevant to inclusive DRR. As a signatory to the CRPD, Philippines and Sri Lanka have the obligation to ensure that persons with disabilities can access emergency broadcasting content and materials on an equal basis with others.

### 3.2 Captioning

People who are deaf or hard of hearing access television and internet streaming programs via closed captioning or sign language interpretation. Closed captioning is the process of displaying text transcriptions of the audio of a program broadcast on a television screen or computer screen via internet live streaming. Captioning will also help older people and second language learners and those who have learning disabilities to understand disaster information.



Figure 18: Broadcast with Sign Language Interpretation and Captions on Japanese Television. Photo: Japan Broadcasting Corporation

Captions are specifically designed for people who are deaf and hard of hearing. They are carefully placed to identify the speakers, and alert the viewer to on and off-screen sound effects, music and laughter. There are two types of captions: open and closed. Open captioning<sup>2</sup> appears on television screens automatically and cannot be turned off. Closed captioning is hidden as data within the television signal, and must be decoded in order to be displayed on a TV screen.

<sup>2</sup> Open Captioning. <http://www.youtube.com/watch?v=kAibeSGzkmE>

There are two methods of captioning video: Off-line and On-line.

**On-line Captioning (Live Captioning):** Scrolling captions are produced by a stenographer<sup>3</sup> using a shorthand machine that types captions as words are spoken. Voice recognition software<sup>4</sup> may also be used.

The captioner listens to the live news broadcast or program and types out what is being said as it is being spoken. Closed caption encoder hardware is required to close caption a live video broadcast signal.

**Off-line Captioning** is created for captions on video that has already been recorded, like television shows, pre-recorded interviews or disaster information.

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<sup>3</sup> Stenographer - a person who specializes in taking dictation in shorthand.

<sup>4</sup> Voice recognition software programs work by analyzing sounds and converting them to text.

[http://en.wikipedia.org/wiki/Voice\\_recognition\\_software](http://en.wikipedia.org/wiki/Voice_recognition_software)

### 3.3 Sign Language Interpretation



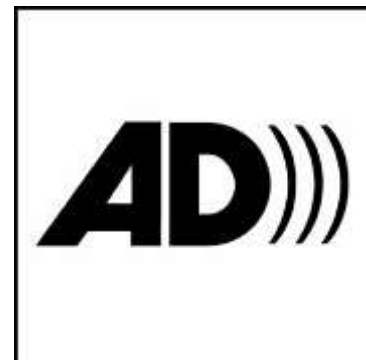
Figure 19: People with hearing disabilities can follow the broadcast coverage with real-time sign language interpretation. Photo: Mohammed Yousuf

For television and internet stream viewing, another method of making programs accessible to people who are deaf is by having an interpreter on screen providing sign language interpretation of the audio. The interpreter usually appears in the bottom corner of the screen during emergency announcements and early warnings. People who are deaf prefer broadcast information in sign language as this is their primary language.

Sign language interpretation can be included permanently in the picture, or it can be controlled by the viewer, using a broadcast multimedia system.

### 3.4 Audio Description

For people who are blind or have low vision the main method of making television programs accessible is to provide audio descriptions. Audio description, also referred to as Described Video<sup>5</sup>, describes the content of the visuals on screen through



<sup>5</sup> FCC Guide on Video Description <http://www.fcc.gov/guides/video-description>

audio. The audio description can be broadcast on a second channel which is mixed in the receiver with the normal audio during natural pauses in the dialogue.

Audio descriptions of graphics, disaster alert areas and disaster evacuation routes and on-screen text alerts, are particularly effective when important disaster information is provided by broadcasters on television screens. Audio descriptions are another format that brings special attention to information that they need to know.

Broadcasters can play a significant role in creating awareness about disasters and issuing early warnings to the public and thereby reduce risks, injuries and deaths. Broadcasters are expected to play an important role in countries like Sri Lanka, Philippines and Myanmar to warn the public about disasters including warning persons with disabilities.

### 3.5 Operational procedure - Accessible Disaster Warning Broadcast

The Asia Broadcasting Union Emergency Warning Broadcasting Systems (EWBS)<sup>6</sup> should be followed by broadcasters, where appropriate, to ensure complete access to the broadcast contents in disaster and emergency situations.

Broadcasters should take note of the following basic principles:

- Accurate real-time (live captioning)<sup>7</sup>, including captioning of all analog and digital TV disaster broadcasts should be provided for people with hearing disabilities.
- Captioning should be displayed on a contrasting background<sup>8</sup> to ensure readability for people with low vision.
- All disaster information that is displayed in text on television must be voiced for people who are blind and low vision.

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<sup>6</sup> ABU EWBS handbook [http://www.abu.org.my/upload/EWBS\\_Handbook.pdf](http://www.abu.org.my/upload/EWBS_Handbook.pdf)

<sup>7</sup> See figure 2: Live Closed Captioning

<sup>8</sup> See figure 3: Closed Captioning contrasting background

- Sign language interpretation should be provided for all emergency information by qualified sign language interpreters.
- Interpreters should be televised in close proximity to the public official who is speaking.
- Easy and understandable disaster contents should be provided.



## Appendix 1 UN Economic and Social Commission for Asia and the Pacific



The development of this Guideline document has been funded by the UN Economic and

Social Commission for Asia and the Pacific (UN ESCAP), the regional development arm of the United Nations for the Asia-Pacific region.

The UN ESCAP Trust Fund for Tsunami, Disaster and Climate Preparedness was established in 2005, originally to support tsunami early warnings through a multi-hazard approach and, in 2010, it expanded to include overall disaster and climate preparedness.

The Trust Fund recognized that persons living with a disability were amongst the most vulnerable and most likely to die in the event of a major disaster<sup>1</sup>.

In order to maximize the effect of this project, the Trust Fund wisely recommended collaboration between the Asia Disaster Preparedness Center (ADPC), the Asia Pacific Broadcasting Union (ABU) and the Global Alliance on Accessible Technologies and Environments (GAATES). We are most grateful to the UN ESCAP Trust Fund for their support and their recognition that, by working together, we can increase the impact of our work.

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<sup>1</sup> The mortality rate for people with disabilities was twice as high as that of the general population in the Japanese Earthquake of 2011 - Japanese Disability Society

## Appendix 2 The Convention on the Rights of Persons with Disabilities

### A2.1 Introduction to the Convention

In December 2006 the United Nations Convention on the Rights of Persons with Disabilities (CRPD) was adopted by the United Nations. Since that time, over 150 countries have signed and ratified the Convention. This legally binding document obliges countries to take action to protect the lives of persons with disabilities.

The Convention marks a "paradigm shift" in attitudes and approaches to persons with disabilities. It has facilitated a worldwide change from viewing persons with disabilities as "objects" of charity, medical treatment, and social protection towards viewing persons with disabilities as "subjects with rights," who are capable of claiming those rights and making decisions for their lives based on their free and informed consent as well as being active members of society. This is an important distinction as it relates to disability inclusive disaster risk reduction.

The Convention outlines some general principles:

- a) Respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons;
- b) Non-discrimination;
- c) Full and effective participation and inclusion in society;
- d) Respect for difference and acceptance of persons with disabilities as part of human diversity and humanity;
- e) Equality of opportunity;
- f) Accessibility;
- g) Equality between men and women; and

**Article 4** of the Convention outlines the broad range of actions that States Parties should take in order to implement their obligations under the treaty. These actions include adopting legislation, modifying or abolishing laws, regulations, customs and practices that discriminate against persons with disabilities.

- h) Respect for the evolving capacities of children with disabilities and respect for the right of children with disabilities to preserve their identities.

When signing the Convention, States can choose whether to sign the Optional Protocol. This Protocol commits them to additional obligations and also provides an opportunity for people and organizations to file a complaint with the Committee on the Rights of Persons with Disabilities if they feel that they have been denied their rights under the Convention.

While the Convention deals with all aspects of life, it is significant to note that situations of risk and humanitarian emergencies were assigned a specific article in the Convention. They recognized the reality that persons with disabilities and older persons are the most vulnerable populations in situations of disasters, including fire, earthquakes and floods. Persons with disabilities and older persons have a mortality rate twice that of the general population.

**Article 11 Situations of risk and humanitarian emergencies**

The Convention states that countries shall take all necessary measures to ensure the protection and safety of persons with disabilities in situations of risk, including situations of armed conflict, humanitarian emergencies and the occurrence of natural disasters. This means that accessible housing, emergency shelters and accessible transportation must be available to persons with disabilities when situations of risk and humanitarian emergencies occur.

## A2.2 Using The Convention for Inclusive Disaster Risk Reduction

The Convention is a tool that can be used by countries, disaster risk reduction organizations, broadcasters and disabled persons organizations to promote inclusive policies and practices that ensure that persons with disabilities are consulted and included in disaster planning and recovery strategies. This means that they are part of the discussion on early warnings systems, including appropriate notification of pending disasters and risks. Accessible transportation services to reach shelters with accessible sanitary facilities are an important aspect of Article 11.

Countries that have signed and ratified the Convention are obliged to establish a Focal Point within their government, and to develop an action plan for implementation. The Focal Point will necessarily involve all the stakeholders who have responsibility or an interest in the Article. It is the obligation of the government Focal Point to create a framework to promote, protect and monitor the implementation of the Convention. They are also obliged to report on their progress within two years of the date of signing the Convention.

The Convention can be used as a strong impetus for action on the part of the government departments, civil society organizations, broadcasters, disaster risk reduction agencies and Disaster Management Centers.

Article 9 offers specific obligations and responsibilities related to accessibility.

**Article 9 - Accessibility** is of particular importance to persons with disabilities as it addresses the need for accessible buildings, transportation, and access to information and access to services. Accessibility impacts all aspects of life including situations of risk and disasters.

## Sri Lanka, Myanmar and the Philippines

Sri Lanka has signed the Convention on the 30<sup>th</sup> of March in 2007.

Myanmar did not sign the Convention but went directly to the ratification on the 12<sup>th</sup> of July, 2011.

The Philippines signed the Convention on September 25<sup>th</sup>, 2007 and ratified it the following year on April 15, 2008.

### A2.3 UN Enable

The UN Enable website ([www.enable.org](http://www.enable.org)) provides a list of all the countries that have signed the Convention and its Optional Protocol. Additionally, they provide a list of global initiatives such as the International Day on Disaster Reduction and the Global Platform for Disaster Risk Reduction.

More information on International and National Legislative Frameworks is provided in Appendix 1.

## Appendix 3 Persons with Disabilities and Older Persons



Figure 20: Elderly person being lifted. Photo: Daryl Chin

### A3.1 Statistics

According to World Health Organization (WHO) statistics, there are over 400 million persons with disabilities in the Asia Pacific Region, (approximately two thirds of the world’s population of persons with disabilities), with 80 % of them living in rural areas of the region.

The Asia-Pacific region is the most disaster-prone area in the world, with over 50 % of the world disasters occurring there. The region experiences with regular frequency, geological hazards such as earthquakes and tsunamis, as well as with increasing frequency, weather-related hazards such as typhoons, floods, droughts and wildfires.

#### Sri Lanka

The World Health Survey (WHS, 2002–2004) reports that Sri Lanka has a disability prevalence rate of a 12.9%, yet the 2001 Sri Lanka Census indicated a national rate of only 1.6 %, which is lower still than the 1986 disability survey findings of 2.0 %.

The root cause of disability is considered to be poverty and consequently, the effects of inadequate nutrition, disease, poor drinking water, improper hygiene, accidents, armed conflicts and genetic disorders etc.<sup>1</sup>

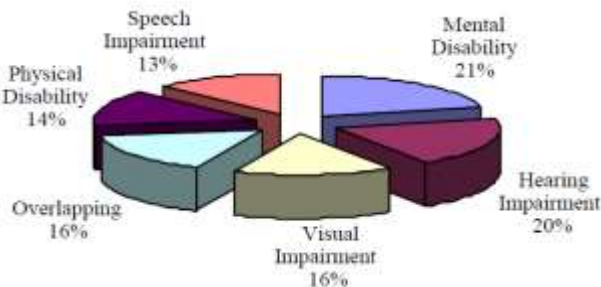
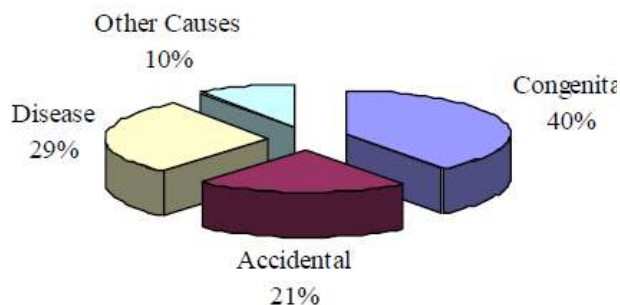


Figure 21: Causes of Disability in Sri Lanka<sup>2</sup>      Figure 22: Types of Disability by Category<sup>3</sup>

## Myanmar

Myanmar was found to have a disability prevalence rate of 6.4 % in the World Health Survey (WHS, 2002–2004), yet a rate of only 2.0 % if using the Myanmar National Census of 1985, affirmed by the 2007 disability survey.

“ The First Myanmar National Disability Survey conducted by the Department of Social Welfare and the Leprosy Mission International in 2010, indicated that a total of 2.3% of Myanmar’s population have some form of disability, translating to approximately 1.3 million persons living with disability. Of this, 68.2% are persons with a physical disability, 13.3% are persons with a visual disability, 10.4% are persons with a hearing disability and 8.1% have some form of intellectual disability.”<sup>4</sup>

Causes of disability include lack of nutrition, congenital conditions and accidents. “The Asian Development Bank estimates that the number of

<sup>1</sup> Prithipura Communities. Sri Lanka. [http://www.prithipura.org/page.php?area\\_id=1&page\\_id=23](http://www.prithipura.org/page.php?area_id=1&page_id=23)

<sup>2</sup> Country Profile on Disability: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA. Japan International Cooperation Agency, Planning and Evaluation Department. March 2002. Final report of The Study of Physically Impaired People of Sri Lanka.

<sup>3</sup> Country Profile on Disability: DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA. Japan International Cooperation Agency, Planning and Evaluation Department. March 2002. TEAMS. Final report of The Study of Physically Impaired People of Sri Lanka.

<sup>4</sup> Disability Rights in Burma (Disability Rights in Burma/Myanmar). Sida. September 2012. [www.sida.se](http://www.sida.se).



persons with disabilities is 15%, with Burma having a very large population of persons with vision disabilities and mine victims.”<sup>5</sup>

## **Philippines**

Philippines was found to have a startling disability prevalence rate of 28.8 % in the World Health Survey (*WHS, 2002–2004*), yet a rate of only 1.2 % if one were to believe the Philippines Census of 2000.

Sadly, the recent Typhoon Haniyan has contributed to the death of over 10,000 people, and has created a new population of Filipinos who are living with a disability.

Of the persons with disabilities, the 1995 National Census found that the breakdown by disabilities indicated that 46% of persons with a disability have a vision disability, 15% have a physical disability, 13% have a hearing disability and 65 % have an intellectual disability. It is obvious that many people have multiple disabilities.

## **Children with Disabilities**

Globally, the World Report on Disability estimates that the prevalence of children with disabilities varies widely due to the varying definitions and measurements used that relate to disability. In more developed countries, children may have a disability, just as likely from birth as from an injury, whereas, in less developed countries, children face additional risk factors for disabilities, including poverty, malnutrition, poor health, and lack of access to health care (including immunization), disease and injury.

In less developed Asia Pacific countries, estimates indicate that approximately 90 % of children with disabilities do not attend schools, and therefore are not included in disaster risk reduction strategies aimed at child safety.

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<sup>5</sup> *Disability Rights in Burma (Disability Rights in Burma/Myanmar)*. Sida. September 2012. [www.sida.se](http://www.sida.se).



## Older Persons



Figure 23: Disaster Risk Management Project (DRM). An elderly person with a disability goes down the stairs of the Cyclone shelter in Mohanagar, Sitakunda, Bangladesh. Photo: IPSnews

As a consequence of the aging process, many older persons typically have some type of activity limitation or disabling condition, but they often do not identify as having a disability because they consider their level of ability and activity as appropriate for their age. It is inevitable that as the population of older persons

increases, there will be higher global and national disability rates.

“The population of older people in the Asia Pacific Region is increasing rapidly in comparison with the other segments of the population. Currently, this cohort represents approximately 11% of the total population and is projected to increase to 20% by the 2025. It will more than quadruple by 2050. Older people who live mostly in rural areas are poor, the majority are women and most of them are widowed.”<sup>6</sup>

While many countries are beginning to recognize the importance of including persons with disabilities in disaster risk reduction strategies, few countries in the Asia-Pacific region, with the exception of Japan, have developed an action plan for addressing and incorporating the specific concerns and limitations of older persons in emergency situations.

<sup>6</sup> International Workshop Human Rights of Older Persons in Asia-Pacific Region Focus on Health and Wellbeing: Summary of Proceedings and Outcome Statement. International Federation on Ageing, Centre for Gerontological Studies. Thiruvananthapuram, India 2012.

## A3.2 Working with Persons with Disabilities

### Use of Language

The appropriate use of language can create an environment whereby persons with disabilities feel greater inclusion within the community. The disability community often develops its own preferences about language, based on regional variations and attitudes. In acknowledgement of multiple viewpoints, the terms 'persons with disabilities' and 'disabled people' are the most common terminology used in the English language. Some prefer the term 'persons with disabilities' to emphasize the person first and the disability as secondary, while others prefer the term 'disabled people' to highlight the role society has in their disability.<sup>7</sup>

It is important to recognize that persons with disabilities are people just like anyone else, with abilities and limitations. They deserve the same respect and acknowledgement of their place and roles in families, in the community and as part of society as a whole, and should not be viewed as second class citizens or as a societal burden.

### Concerns of Persons with Disabilities with respect to Disaster Risk Reduction

#### Mobility

All people have varying degrees of functionality and ability, ranging from limited agility, which may affect one's ability to open doors, get in or out of a cot or off of a cooking stool, to limited capability to get off of the floor, walk very far, or use a manual wheelchair. Mobility and agility disabilities can be due to a variety of causes; a spinal cord injury from a work accident; missing one or more limbs because of violence or a natural disaster; or weak muscles and bones from lack of proper nutrition, etc. A mobility disability may be temporary, like a broken arm or leg, illness and disease, or even pregnancy.



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<sup>7</sup> World Bank. *Disability and Development*. FAQ.

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALPROTECTION/EXTDISABILITY/0..contentMDK:21150847~menuPK:420476~pagePK:210058~piPK:210062~theSitePK:282699,00.html>

People with a mobility disability are concerned about how they will escape from a dangerous environment, situation, or structure during an emergency or disaster. Many people with mobility disabilities cannot stand independently and are able to walk only a short distance to an evacuation center during an emergency situation. Many people who use crutches, canes, braces, etc. and people with limited movement frequently cannot move quickly.

- People who use wheelchairs are often concerned about being left behind, not being able to access shelter facilities or not being assisted. Many people who use wheelchairs cannot independently get in and out of their wheelchairs.
- They may worry that their wheelchair or wheeled mobility aid will be left behind or damaged.
- Most people, during an emergency, are more concerned with their life safety than they are with injuries, but they worry about being dropped during an evacuation.



### Vision

People with a vision disability include people with either low vision or blindness, and includes conditions such as tunnel vision, or only having peripheral vision. Some people with vision disabilities may still have light perception, others may see colours well, but shapes only as a blur; or only a very small area but see it well; or they may see the whole area reasonably well but lack precise vision.

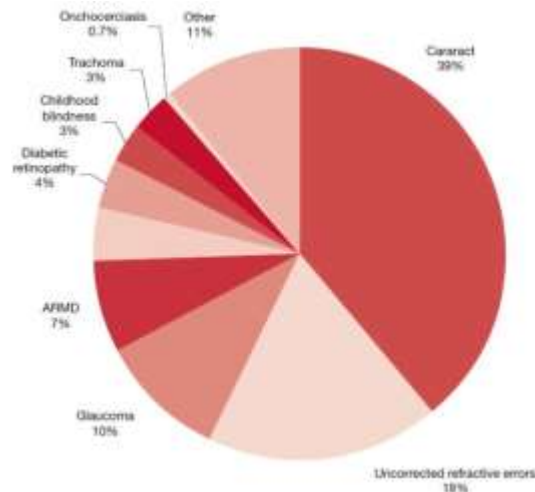


Figure 24: Global causes of blindness due to eye diseases.

In less developed countries, including in the Asia Pacific Region, cataracts and other preventable and treatable issues are the leading causes of blindness and severe vision disabilities.<sup>8</sup>

While a person who is blind or vision disabled can usually manage on their own in a familiar environment, when it comes to a disaster or emergency situation, they will need help to maneuver in a new, unfamiliar environment that may be dangerous.

- People who are blind or who have a vision disability may have a walking stick, guide dog, or a long white cane with a red tip, to guide them; some others may have no mobility aid at all, others use a family member to guide them.
- People who are blind or low vision are concerned about their ability to detect danger and move about safely.
- They may be concerned that the pedestrian route may be blocked and, with the emergency sirens sounding and public announcements, their ability to use their hearing is decreased.
- They may also be concerned about not receiving important disaster risk reduction information, and if they do, it may not be in a format that they can use.

<sup>8</sup> *Vision 20/20: The Right to Sight. Global Initiative for the elimination of avoidable blindness. Action Plan 2006-2011. WHO, Vision20/20, IAPB. Geneva, Switzerland. 2007*

## Hearing

People who are hard of hearing are limited in their ability to hear what is being said in conversation with one or more persons, even if they are fortunate enough to be wearing a hearing aid. They may or may not be able to hear public announcements from a megaphone or loudspeaker. Hearing loss varies from being a slight inconvenience to being a major communication barrier. Persons who have a profound hearing disability usually communicate using sign language.

- The main concerns of a person who is deafened or hard of hearing is not hearing evacuation alarms, people talking or yelling directions or public evacuation announcements or other sounds such as an explosion.
- A common concern is communication with emergency personnel, shelter staff, people at fuel and food distribution sites, etc. During an emergency situation, this is very stressful for a person who is deaf, deafened, or hard of hearing.



In 2007, Sri Lanka's first-ever conversational sign language dictionary was published, and in 2008 the *Sri Lanka Sign Dictionary* was created by Deaf Sri Lankans in association with the Central Federation of the Deaf.<sup>9</sup>

In Myanmar, the government wants to develop and promote a standard sign language; however, they are in the very early stages of developing a unique Myanmar Sign Language. As the Deaf community is not formally organized and does not have a national deaf community presence, a national sign language has not emerged naturally.<sup>10</sup> As a

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<sup>9</sup> Rohana Special School. Sri Lanka. <http://www.rohanaspecialschool.org/sri-lankan-sign-language-dictionary/>

<sup>10</sup> Pluralization: An Alternative to the Existing Hegemony in JSL. Deaf Around the World: The Impact Of Language. Soya Mori. 2010. [http://www.universitypressscholarship.com/search?f\\_0=keywords&q\\_0=Myanmar%20Sign%20Language](http://www.universitypressscholarship.com/search?f_0=keywords&q_0=Myanmar%20Sign%20Language)

first step, however, the Ministry of Social Welfare, Relief and Resettlement Department of Social Welfare, working with the School for the Deaf Children Mandalay, published the Myanmar Sign Language Basic Conversation book, along with the Sign Language Dictionary Parts 1 and 2 on December 1, 2007.<sup>11</sup> There is some evidence that there is a mix of American Sign Language and Japanese Sign Language used at different schools and facilities for the Deaf and hard of hearing.<sup>12</sup>

Instructions or questions should be kept short and simple, using a calm voice.

Use gestures and body language to reinforce your point, in a calm manner.

The Philippine Sign Language or Filipino Sign Language is the national deaf sign language of the Philippines, and has been strongly influenced by American Sign Language. Also there is a strong influence of Signing Exact English which is used in most of the schools for the Deaf in this country.<sup>13</sup> The Philippine National Association of Sign Language Interpreters was established on May 21, 2011.

### Intellectual, Cognitive and Developmental Disabilities

People with intellectual disabilities are people whose ability to learn is affected, they may be slow or limited in their learning processes, and may not be able to apply what they learn. This type of disability is often hidden. It can vary in severity from very mild to an inability to read or write or understand spoken or written communication.



This can affect a person's independence, resulting in a reliance on family or social support networks. Safety can be compromised, especially in a disaster evacuation. Sometimes an individual's behavior may be unpredictable and may appear irrational. Confusion, lethargy, apathy, anxiety and phobias can cause people to refuse to follow directions.

<sup>11</sup> School for the Deaf – Mandalay. <http://deafschoolmdy.com/signlanguage.aspx>

<sup>12</sup> Sign language in Burma: two Burmese finger spelling systems used in Yangon. Justin Watkins. 2010. <http://eprints.soas.ac.uk/10275/>

<sup>13</sup> Sign Writing in the Philippines. <http://www.signwriting.org/philippines/philippines02.html>



Intellectual and developmental disabilities can be caused by a condition that hinders or interferes with development before or during birth, or in the early childhood years. Iodine deficiency is the main cause for potentially preventable developmental disability in childhood, as well as causing goitre and hypothyroidism in people of all ages. It is, unfortunately, still quite prevalent in the Asia Pacific region.

People with learning disabilities have difficulties with perception and trouble processing information. Some people with learning disabilities learn better with visual processing, while others learn more easily with auditory processing.

- Some people with intellectual disabilities or with a learning disability may not be very aware or concerned about their personal safety.
- The characteristic difficulty of dealing quickly with questions or instructions, slowed response times, and an inability to read, write or understand verbal communication may inhibit a person from taking action.

### Hidden/Other

A person could have a combination of disabilities. Some conditions, such as cerebral palsy, strokes and aging can result in a combination of disabilities. Hidden disabilities vary and cannot be seen but can be very limiting. These include epilepsy, breathing or heart problems. People with breathing and heart related disabilities are not easily identified. People with speech disabilities may also be difficult to identify. An emergency is precisely the type of situation in which a hidden disability becomes revealed. Stressful situations can provoke increased symptoms.

Some people with hidden disabilities worry that in an emergency situation, they will not receive the assistance they require, especially if they have not told anyone of their disability. As their disabilities are invisible, it is often assumed that they are capable of evacuating independently.

### A3.3 Older Persons

Older persons are often concerned that they may no longer be as independent as they once were. This is a huge issue as older people who live mostly in rural areas are frequently poor, the majority are women and most of them are widowed.<sup>14</sup>

Persons who are older may not hear a siren, audible announcements or be able to go down steps quickly, cross uneven ground, or evacuate without some assistance. Older persons frequently need a little more time and guidance from their family.

Generational integration is common place whereby older persons are often part of a larger family unit that includes children and grandchildren.

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<sup>14</sup> International Workshop Human Rights of Older Persons in Asia-Pacific Region Focus on Health and Wellbeing Being: Summary of Proceedings and Outcome Statement. International Federation on Ageing. Centre for Gerontological Studies. Thiruvananthapuram, India 2012.

## Appendix 4 Inclusive Disaster Risk Reduction

### A4.1 Introduction to Inclusive Disaster Risk Reduction

National and local government departments responsible for disaster preparedness for such multi-hazard events as typhoons, floods, earthquakes, etc. are under increasing pressure as the incidents of disasters continue to occur around the world.



*Figure 25: Wheelchair user perished in tsunami because they could not access the shelter. Photo: Japan Times*

The pressure is, of course, to develop mitigation measures and develop appropriate preparedness plans that will reduce the mortality rates of their citizens and constituents. The mitigation measures should be designed for multiple hydro-meteorological events.

Mainstreaming people with differences in age and ability into preparations for emergency situations, (i.e. disaster management and disaster risk reduction) is necessary to ensure the wellbeing of everyone. While people with disabilities do not have “special” needs, it is true that they can face additional barriers in emergency situations. The removal of these barriers can be accomplished with the development of standard operating procedures that plan for accessible early warning systems, accessible communications and accessible transportation and housing.

Mortality rates are always highest for those most vulnerable citizens. Much work is now being done to examine that population that includes women, children, persons with disabilities and older persons. The most successful programs have resulted from the realization that the world’s population is made up of people with differences, differences in age, literacy, education, mobility, and financial resources. It is normal to be different, everyone is.

Let’s examine some of those barriers. People with mobility disabilities may move slower and may use a mobility device such as a wheelchair

or crutches. People who are deaf or hard of hearing may not be aware of the early warning system, if it is only audible. People who are blind will likely need some assistance with moving safely in a dangerous environment. People with cognitive disabilities may need assistance to understand a situation and seek a safe place.



Figure 26: Flooding in Indonesia after the tsunami. Photo: AP/ Fili Sagapolutele

Not only do these barriers pose a potential risk to personal safety but it must also be recognized that persons with disabilities are likely at further risk to mortality due to new challenges caused by the disaster, such as lack of access to health care, difficulty maneuvering in a new and unpredictable environment and lack of access to personal support and transportation. This is why they are at increased risk and suffer higher mortality rates than the general population.

Inclusive disaster risk reduction cannot be accomplished with minimal effort. It takes a concerted effort, including consultation with the community of persons with disabilities to ensure that standard operating procedures, training, communication, health care and accessibility of early warnings and assistive technologies are all in place. The disability community is aware of the challenges, successes and short-comings in existing procedures. They can participate in the development of disaster recovery procedures, disaster preparedness community public education sessions, and they can provide information on their own personal preparedness readiness.



dependence on others during an emergency.

The personal survival kit should include:

- A communication plan: a mobile phone, a flag or personal alarm or sign to alert people that help is needed.
- A list of emergency contacts of family and friends who will check on them and will provide assistance if necessary.
- Medical supplies and a supply of personal medications. There are internet sites and social media that have set up systems to communicate with family and friends in an emergency. See Section 11 on Information and Communication Technologies.
- Water, matches, a battery-powered flashlight and dried food supplies.
- Blankets and extra clothing.
- Tools and extra mobility devices, personal items such as hearing aid batteries.



Figure 28: Disaster Survival Products (Japan) Photo: Aqeel Qureshi



## A4.4 Collaboration

National Disaster Management Agencies, state and local agencies and International Aid Agencies all have an important role to play in reducing deaths and injuries in a disaster. Every country has a different organizational structure but there should always be involvement of people with disabilities.

The most important lifesaving strategy for people with disabilities is to work together with those developing disaster preparedness plans.

The most important disaster risk reduction strategy is for the disaster reduction and preparedness agencies and departments to work together with the community of persons with disabilities and older persons. Everyone has important input. Disaster Risk Reduction (DRR) agencies understand the meteorological and hydrological conditions and effects of climate change that affect the forecasting of potential disasters. They are responsible for developing national and district strategies for predicting and mapping coastal hazards and designing early warning systems and disaster recovery programs.

Interestingly, it is has been the author's experience that policies and procedures that have been designed to accommodate persons with disabilities and older persons have had a beneficial impact on the mortality rates and well-being of all citizens.

## A4.5 Twin track approach

While DRR programs developed by mainstream disaster management centres are designed to address situations for all citizens, it must be recognized that the removal of some of the barriers that face persons with disabilities will require specific consideration and mitigation strategies that address their accessibility and personal needs. By working together these strategies can be integrated into the mainstream standard operating procedures.

## A4.6 Standard Operating Procedures

Policies and procedures for both early warnings and disaster risk reduction differ from community to community, depending on geographic considerations, political will, the availability of financial resources, the types of disasters that occur and cultural reasons. While this must be a consideration, it is recognized that the nature of disability remains the same in all communities. Policies and procedures for both early warnings and broadcasting may also differ from community to community.

Working together, the mortality rate of the most vulnerable can be reduced.



*Figure 29 Early Warning Systems: Siren Strobe  
Photo: Northland Regional Council*

The challenge faced by providers of emergency warnings, media, disaster managers, and coastal communities is understanding the similarities and differences among different coastal hazards and the characteristics of the early warnings that are issued. The challenge faced by everyone, but especially persons with disabilities, is ensuring that there is an early warning system that they will be able to hear/see/understand and identify as a hazard warning. Warnings might vary from the posting of a notice in a community centre, to the hoisting of a red flag, to broadcasting warnings on television and radio to a word of mouth information program.

Work is being completed by UN ESCAP to identify different types of coastal hazard early warning systems and reviewing and documenting the relevant existing standard operating procedures in response to developing recommendations for synergies. These synergies will make the existing early warning systems fully operational for the use in multi-hazards contexts.

## Appendix 5 Disaster Management Agencies



Figure 30: Workshop program for Reduction of Vulnerability to Floods in Thailand hosted by ADPC at Tha Luang Municipality of Ayutthaya province, Thailand. Photo: CBM

### A5.1 Responsibilities of Disaster Management Agencies

Some of the responsibilities of the Disaster Management Agencies (DMA) include:

- Hazard mapping.
- Drills and simulations.
- Post disaster analysis of gaps in disaster management policies and practices.
- Auditing the accessibility of potential and existing shelters.
- Preparing a plan to provide transportation to isolated people.
- Developing a pyramid system to alert isolated people.
- Identifying capacities and responsibilities of different stakeholders.
- Conducting risk and vulnerability assessments.
- Identifying and promoting the legal framework for inclusion of persons with disabilities.
- Developing public awareness campaigns about inclusion of persons with disabilities in preparedness strategies.

- Assisting organizations of persons with disabilities to design personal emergency preparedness kits.
- Working with emergency relief agencies to develop strategies to ensure that people with disabilities are able to access food and water.

## A5.2 Public Education

DMAAs should design public education programs to reach vulnerable people:

- Consult with organizations of persons with disabilities.
- Use a variety of formats such as large print, radio, television, electronic formats, community meetings, person-to-person contact to promote information on what to do before a disaster occurs or during a disaster.
- Assess mainstream public education materials to see how it can be improved to reach vulnerable people.
- Hire a sign language interpreter for community meetings.



*Figure 31: A wheelchair user receives help descending a staircase in an emergency. Photo: Betty Dion*

## A5.3 Public Education of First Responders

First responders, emergency and fire personnel and disaster management staff should become familiar with how to include persons with disabilities in disaster preparedness. This Guideline Manual can be very useful in understanding issues and designing mediation strategies. A training program for first responders and emergency

disaster management staff is an excellent idea. International organizations of persons with disabilities have designed some of these public education training programs.

#### **A5.4 Long Term Health, Rehabilitation and Personal Care Support**

Unfortunately, the sad reality is that disasters such as earthquakes, tsunamis, fires and armed conflicts create a whole new population of persons with disabilities. This results in an inordinate need for health and rehabilitation care. Increased numbers of persons with medical needs and persons with disabilities will require that an inclusive, comprehensive and stable long term health strategy be developed and implemented. International organizations of persons with disabilities experienced in post disaster rebuilding are an excellent resource in designing long term rehabilitation and personal support care for persons with disabilities.

## Appendix 6 Universal Design and Accessibility of the Built Environment



*Figure 32: Universally designed corridor, with colour contrasting overhead and wall mounted tactile signage, colour coordinated floor markings. Dual height handrails with Braille information on the top of the handrail. Wide corridors and good illumination. Photo: TOTO Universal Design Laboratory, Kanagawa.*

### A6.1 Universal Design and Inclusive Disaster Risk Reduction

The concept of Universal Design is included in the Preamble for the UN Convention on the Rights of Persons with Disabilities recognizing the importance of designing for all users, including persons with disabilities and older persons.

Applying the principles of Universal Design means developing early warnings, evacuation policies and standard operating procedures that are inclusive and accessible to everyone, including persons with disabilities.



A Universal Design approach will ensure consideration for everyone when planning access to emergency information before, during and after an emergency; as well as access to sheltering facilities, food, water and sanitation facilities and resettlement housing.

Universal Design is based on seven design principles:

- 1) *Equitable Use*
- 2) *Flexibility in Use*
- 3) *Simple and Intuitive*
- 4) *Perceptible Information*
- 5) *Tolerance for Error*
- 6) *Low Physical Effort*
- 7) *Size and Space for Approach and Use.*

Accessibility of the community is the key to integration and inclusion of persons with disabilities. An accessible shelter or school will be able to serve all of the community. Designing a shelter to make it accessible does not increase the cost substantially; it has been estimated to cost about 1% of the cost of the building.

Accessibility of buildings and roadways is an important disaster mitigation strategy that should be part of every country's disaster reduction strategy.

Conversely, not providing accessible shelters puts persons with disabilities, their families and emergency personnel at greater risk of death and injury as the community struggles to recover from a disaster. Without an accessible community, people with disabilities face isolation from the community, which is the biggest obstacle that they have to overcome.

This section on accessibility addresses some technical design issues that contribute to an accessible environment. A great deal of information is available from the internet and from the GAATES website ([www.gaates.org](http://www.gaates.org)) on technical specifications for accessibility of architectural elements such as doors, ramps, and signage and toilet facilities. *The International Best Practices in Universal Design: A Global Review*<sup>1</sup> document which compared accessibility standards and codes around the world is available in English, French, Spanish, Arabic and Serbian from the GAATES website.

Increasingly countries and states are developing building codes and standards that address accessibility, including technical specifications for entrances, doors, clear paths of travel, communication and washroom design. In most countries, compliance with a building code is mandatory, and compliance is monitored and enforced through the use of building and occupancy permits. Where there is non-compliance, financial and other penalties may be levied.



Figure 33: Australia is working with Indonesia to improve accessibility at schools and public facilities. Photo: AusAID

## Sri Lanka

Sri Lanka does not have an official building code; however the Planning and Building Regulations of Colombo were issued under the Urban Development Authority Law in 1999 and apply only to buildings in the capital city Colombo. The regulations only contain general

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<sup>1</sup> *International Best Practices in Universal Design: A Global Review*, Betty Dion Enterprises Ltd., 2006

requirements and controls for building and construction and no specific guidelines. Most other cities and towns in Sri Lanka do not have any mandatory code regulating building construction.

## Myanmar

In 2012, a project to develop the first draft of the Myanmar National Building Code was organised by the Ministry of Construction, United Nations Human Settlements Program and Myanmar Engineering Society. Representatives from all relevant government departments as well as private sector experts, engineers and other stakeholders were able to participate in developing the draft.

The project was undertaken because the Government of Myanmar, in light of destruction caused by past natural disasters, recognized that the development a building code was an important element of disaster preparedness. They recognized that implementing a building code and ensuring compliance with the code would improve disaster risk reduction.<sup>2</sup>

## Philippines

In December 2007, Presidential Decree (P.D.) No. 1096 was issued, making provisions for the adoption of the “National Building Code of the Philippines” (NBCP), replacing the Republic Act (R.A. No. 6541) of 1972 entitled "An Act to Ordain and Institute a National Building Code of the Philippines”.

The NBCP provides only limited technical specifications for making buildings accessible.

“Universal design” means the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. Universal design shall not exclude assistive devices for particular groups of persons with disabilities where this is needed.”

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<sup>2</sup> (Myanmar Times, Saturday, 03 November 2012. <http://www.mmtimes.com/index.php/national-news/2858-myanmar-s-draft-building-code-bid-to-improve-risk-reduction.html>)

In addition to the National Building Code of the Philippines, the Accessibility Law (Batas Pambansa Bilang 344) was passed in July of 1982. The Accessibility Law states that:

“no license or permit for the construction, repair or renovation of public and private buildings for public use, educational institutions, airports, sports and recreation centers and complexes, shopping centers or establishments, public parking places, work-places, public utilities, shall be granted or issued unless the owner or operator thereof shall install and incorporate in such building, establishment, institution or public utility, such architectural facilities or structural features as shall reasonably enhance the mobility of disabled persons such as sidewalks, ramps, railings and the like.”

## Anthropometrics

Persons who use mobility aids and devices such as wheelchairs, walkers and crutches require a minimum amount of space to manoeuvre about independently through the built and outdoor environments.

For example, a person who uses a wheelchair requires a clear space to turn around, usually a minimum of 1500 mm x 1500 mm. They need some space beside doors so that they can position themselves beside the door so they can pull the door open.



Figure 34: Space requirements vary depending on the size of the wheelchair.  
Photo: Okke Ornstein

Persons who are blind who use a long white cane and people who use crutches may also need a little additional space to manoeuvre in the path of travel.

Persons with vision disabilities have safety concerns regarding objects that might be in their way such as the underside of stairs, tree branches, fountains, cabinets, telephones and low hanging objects such as signs or even tent pegs that can trip them.



*Figure 35: Overhanging tree hazard for blind people. Photo: Japanese Society for Rehabilitation of Persons with Disabilities*

## A6.2 Accessibility of the Built Environment

The following architectural elements will enable basic accessibility for persons with disabilities and older persons. These include the exterior public realm (roadways), entrances, doors, ramps, stairs and washrooms. In addition to information on these basic design elements, this section addresses accessibility of key community facilities such as access to water, sanitation and emergency shelters.

The ability of people to access pedestrian footways and river crossings is especially critical in rural areas where walking, or using a two-wheeler or animal-drawn transport is the main means of travel.

## Roadways

A roadway or sidewalk that is free of obstacles will allow access for people who use mobility devices such as wheelchairs and crutches.

Understandably, during a serious disaster, roadways are apt to be blocked to everyone, but people with mobility disabilities are not able to climb over rubble and will need assistance. See Section 8 on Evacuation Techniques.

When people have to be assisted by emergency response personnel it (1) takes additional time (2) requires that people re-enter the most dangerous zones and (3) it requires that emergency personnel know where to go. Obviously, this situation should be avoided where possible.



*Figure 36: Life in camps is hard for persons with physical and mental disabilities as they are completely dependent upon family for survival.  
Photo: Saiful Huq Omi*

Pedestrian pathways should be:

- Free of steps and stairs
- Wide enough to accommodate a wheelchair
- Free of obstacles such as projecting building elements
- If sidewalks are provided, they should have curb ramps
- Identified so that people know where to find the route



## Entrances

Entrances must be at ground level or be equipped with a ramp or easy slope. They should also be clear of obstacles (1000 mm wide). Entrances should be easy and intuitive to locate for everyone, including for persons with a vision or cognitive disability. A canopy or other covering at an entrance not only makes the entrance easy to find, but it can prevent rain and provide coverage to persons entering and exiting the door.



*Figure 37: Flood shelter with wheelchair ramp on raised land in Bangladesh. The shelter doubles as a school. Photo: James Pender*

Entrances should:

- Be easy to locate
- Be connected to an accessible roadway
- Have a clear path that has a smooth surface
- Be at ground level or have a ramp
- Have curb ramps where sidewalks exist

## Stairs, Ramps and Handrails



Figure 38 Shrine with accessible ramp. Photo: Betty Dion

Stairs are a huge barrier to many persons with mobility disabilities and older persons, especially if they use a wheelchair or crutches.

Stairs, ramps and handrails need to be designed so that they are safe and usable to everyone in a community. Using ramps instead of stairs provides an inclusive means of access to buildings such as shelters and community washrooms and to facilities such as public water pumps and food distribution centres.

Ramps should have a safe slope, no greater than 1:12. Ramps steeper than 1:12 can be dangerous as a wheelchair might tip over backwards. Ramps should also have a side edge or handrail to protect someone from wheeling off the edge.

There are a few basis elements in the design of a ramp:

- It should be at least 900 mm wide
- It should have a slope no greater than 1:12
- It should have edges on the sides so people do not wheel off the side
- It should have enough room at the top and bottom to provide a safe landing so someone can turn
- It should have handrails

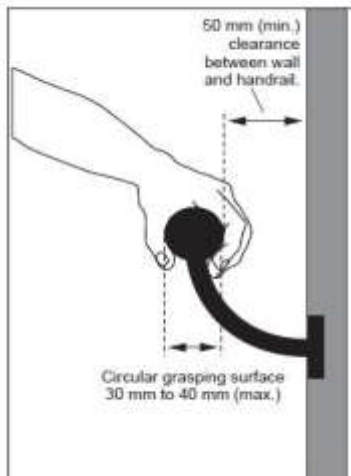


Figure 39: Handrail design. Drawing: City of Ottawa Accessibility Design Standard.

Both stairs and ramps should be equipped with handrails to provide support to persons going up and down. The handrail should be round or oval so that it provides a safe and sturdy grip, and it should have a smooth surface so that the person's grip is not interrupted and so they are not injured.

Handrails should be at a consistent height above each step (865-965 mm) and above the surface of the ramp for the entire length of the stair or ramp. This provides consistency for persons who rely on the handrail for support.

## Doors

Doors at entrances and throughout a building should be easy to open with minimal resistance, but most importantly, be wide enough to accommodate persons using a wheelchair, walker or personal tricycle. Doors should have a clear opening width of at least 800 mm, and have space adjacent to the door to enable people who use wheelchairs to pull or push the door open.

Doors should:

- Be easy to open
- Be wide enough (800 mm)
- Have a latch or handle that is easy to operate
- Have space beside the door to enable people to easily pull or push the door open

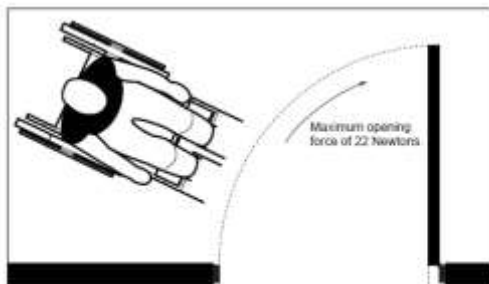


Figure 40: Clear width of door and maneuvering space. Drawing: Outcrop

## Toileting Options



Sanitary facilities must be usable by everyone, children, people with mobility disabilities, older persons and people who need assistance. This is an extremely important safety and health issue. Lack of accessible sanitary facilities will compromise the health of people with disabilities and older persons and may contribute to the spread of disease, thus impacting the health of the community at large.

Figure 41 Accessible Portable toilet. Photo: Betty Dion

Temporary accessible toilet facilities are available and should be part of all post disaster equipment supplied by aid organizations. Donor agencies should ensure that they require accessible sanitary facilities in all their post disaster rebuilding projects.

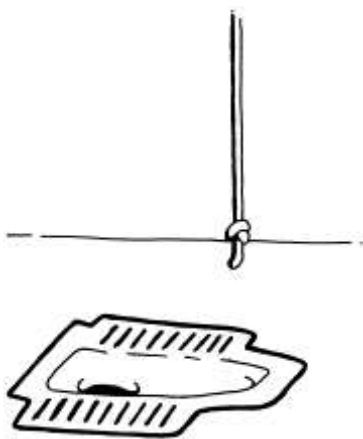


Figure 42 Toilet with support rope. Drawing: Philip Dion

Sanitary facilities vary from the very elementary latrine to a toilet room with a variety of grab bars.

Sufficient space should be provided to allow someone to enter the sanitary facility and position themselves to transfer over the latrine, commode or toilet. Privacy is a consideration so it is important to provide enough space to store a wheelchair and to close the door.

A variety of supports should be considered. Railings, ropes and grab bars should be securely fastened in order to support the weight of someone transferring onto the toilet.

Horizontal railings or grab bars are preferred by many people. Vertical railings or grab bars should be provided beside a bench or toilet to provide support.

### Basic Latrine

A basic latrine should have a clear wide path with a minimal slope. The route should be clear of stairs or steps and be ramped if not level. The door to the latrine should be at least 800 mm wide and provide supports where possible.



#### A commode chair

A commode type chair or an elevated seat will provide much needed support to someone unable to stand independently. The commode should be able to support the weight of someone, should be free of splinters or rough surfaces and should have back support.

Figure 41: Commode Chair over squat toilet.  
Drawing: Philip Dion

### A squat toilet

Asian style latrines, also known as squat toilets can be made accessible for older persons and others by including support bars or rails. People who need additional support will require a commode chair positioned over the hole.



Figure 43: Accessible squat toilet.  
Photo: Betty Dion



## Raised toilet

A raised toilet with a toilet seat is preferred by people with mobility disabilities as it provides adequate support and comfort. The toilet seat should be at a height to accommodate someone trying to transfer from a wheelchair to the toilet seat (420 – 450 mm). Adequate space (900 mm) beside or in front of the toilet to position a wheelchair is necessary to allow for someone to transfer. The toilet should be positioned within easy reach of the grab bars or railings.

The walls or ceilings where grab bars are to be installed should be reinforced in strength to be sure they can support the weight of the user.

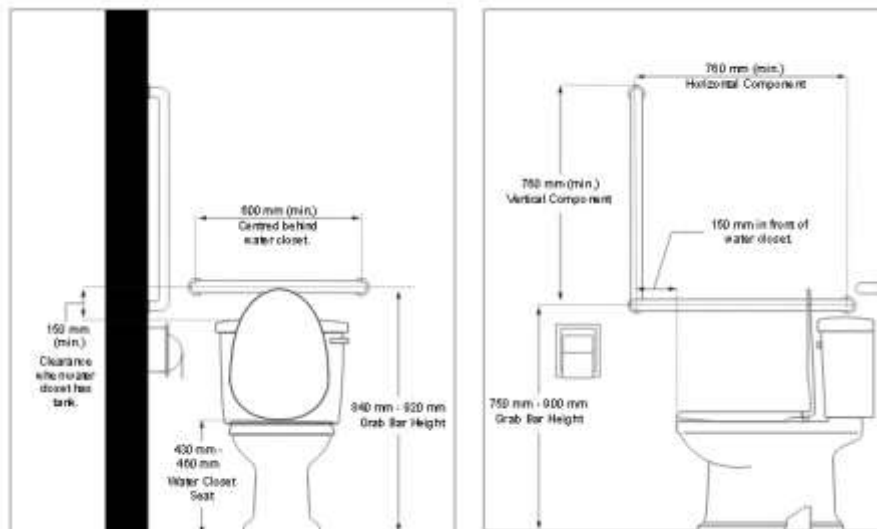


Figure 44: Accessible washroom and stall requirements. Drawing: City of Ottawa Accessibility Design Standard

## Toilet Stalls

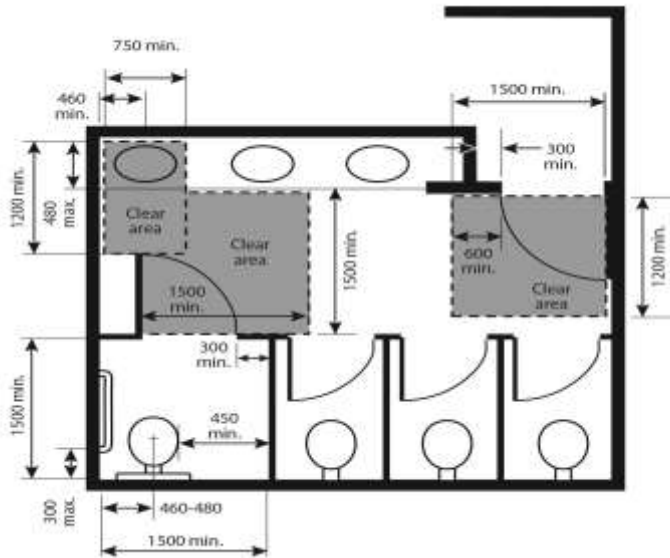


Figure 45: Washroom floor plan with dedicated accessible stall. Drawing: Outcrop

In washrooms with a number of facilities, a dedicated accessible stall should be provided. It should provide sufficient room to allow someone to enter the washroom itself, the door to the accessible stall and be able to close the door.



Figure 46: Accessible Tactile and Braille Signage. Photo: Nova Polymers

Signage should make use of pictographs as much as possible, to ensure that the signage is understood by the greatest number of persons, including persons with cognitive and developmental disabilities, persons who have difficulty reading or persons such as tourists who may not know the language.

Signage that uses tactile and Braille characters and pictographs are designed to be accessible to persons with vision disabilities.

## A6.3 Access to Shelters and Temporary Housing



*Figure 47: Keeping families together in an accessible shelter.  
Photo: Associated Press.*

Shelter sites are commonly public buildings such as schools, government offices and health facilities that may already be accessible. Accessibility should be one of the key criteria for the selection of a new shelter site as it must serve all of the community.

Shelters must comply with the preceding information on roadways, doors, entrances and ramps. In addition, there are specific accessibility issues to be considered in shelters:

- A clear path of travel of 920 mm.
- It should be free of obstacles that would be hazardous to people, including blind people who may not see something sticking out.
- A turn around clear space of 1500 x 1500 mm.

- A clear route to all services including toileting, food, health and information.
- Communication systems that are in a variety of different formats: audio, written, electronic.

People with disabilities wish to stay with their family and friends, they do not want to be segregated and assigned to a separate area of a shelter.

Additional space adjacent to their cot or bed may be required for their wheelchair. Another issue to consider is that some people may not be able to sleep on mats on the floor, and may require additional accommodations such as the provision of a cot or bed.

## A6.4 Building an Accessible Community

Post disaster rebuilding is an opportunity to introduce policies and practices to create a new accessible environment that can promote inclusion of persons with disabilities. Accessible building codes and standards provide valuable technical information that should be mandated for all new re-building initiatives.

Aid donors and government housing strategies frequently require that accessibility be built into a certain percentage of all new housing. This is a cost effective inclusive strategy.

### **Access to Water**

Access to water and to community water sources such as hand pumps and wells enable persons with disabilities to be independent and



Figure 48: Community water source. Photo: AusAID

contributing members of their families and communities. Access to water enables people to help with the preparation of meals, assist with cleaning, etc.

Where hand pumps and well locations are elevated, they should be equipped with ramps, in addition to steps or stairs. Ramps ensure access to persons using wheelchairs as well as persons using carts or trolleys to carry multiple containers of water.

Where there is a water pump apron to control the spill off of water from the pump, one side should be left open to accommodate persons using a wheelchair, walker or other mobility aid so that they can get close enough to the pump handle to use it properly and safely.

## A6.5 Designing for Accessible Communities



Figure 49: Accessible new housing, along accessible route. Photo: CBM.

Designing for an accessible community implies a longer time frame for development and permanency of structures and facilities, compared to resettlement communities. Long term planning should, first of all, involve

persons with disabilities, and secondly, involve designers and architects knowledgeable about Universal Design.

Housing and homes for families of persons with disabilities and for older persons should be integrated into the community housing stock. In many countries all new housing is required to be designed to be accessible.

Accessible facilities and environments throughout a community can support social inclusion in all aspects of life including: shopping, recreation, sport, and community and cultural activities.



## Appendix 7 Evacuation Techniques



Figure 50: Various carrying techniques. Photo: CBM.

### A7.1 Evacuation of Persons with Disabilities

The high mortality rates for persons with disabilities are largely due to the fact that they were not able to be evacuated from a dangerous situation.

Evacuation of some people unable to evacuate independently is part of all disaster management procedures. Sometimes it is the military, sometime the emergency response teams including fire and emergency staff and, even more commonly, it is family and private citizens that help to lift and carry others to safe areas. It is important to know how to safely lift and carry someone so that no one is hurt.

No single technique described below is suitable for all persons; everyone is different, with different strengths and weaknesses. In the event of an emergency, it is a good idea to talk about the preferred lifting technique with the person with a disability.

Pre-disaster training protocols should include a module on how to lift and carry someone. Practicing prior to an emergency will prevent unnecessary injuries and will save time in an emergency.

Lifts which may suit the majority of people may not work for others. The weight of the person to be rescued, muscular strength, breathing capacity, spasticity, and susceptibility to bruising/breakage are some of the factors which affect the decision of which technique should be used.

## A7.2 Transferring Techniques

A variety of different transferring techniques are described below, some of which can be done by one person or two. Careful consideration should always be given to the safety of both the lifter and the person being lifted.

Before offering to assist someone it is always best to ask them about their preferred lifting technique.

### **One Person Techniques:**



#### Piggyback Technique

Is preferable unless the person to be rescued has no arm strength or is very light-weight and another lift can be accomplished more easily.

Made easier if done at the top of stairs where a handrail can be used for support.

It causes less restriction to breathing.

Figure 51:  
Piggyback carry.  
Drawing: Philip Dion

### Firefighter's Lift



A commonly used lift that is not suitable for people with restricted breathing due to the pressure on their chest.

This lift is sometimes used to carry people who are not conscious.

Figure 52: Firefighter carry.  
Drawing: Philip Dion

### Cradle Carry

The cradle carry is most often used to carry people who are not very heavy.

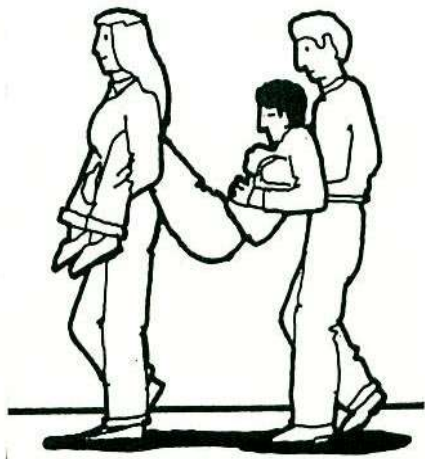
This lift is often favoured in an emergency evacuation but it can be difficult if both people are approximately the same size.



Figure 53: Cradle carry.  
Drawing: Philip Dion

### **Two-Person Techniques:**

#### Fore & Aft Carry (Carry by Extremities)



One person lifts both legs of the person under his/her arms, the second person carries the person under their arms and around their chest.

This method allows sharing of weight.

Figure 54: Fore & Aft carry (Carry by Extremities). Drawing: Philip Dion

## Evacuation Chair



Using a chair for support can be helpful to carry someone who is heavy. Two people are generally required to carry the person in the chair. Evacuation chairs with wheels for evacuating someone down stairs are available. These are sometimes used by the fire service and by building owners. The person with a disability will transfer into the evacuation device and be wheeled down stairs.

*Figure 55: Person in evacuation chair. Drawing: Philip Dion*

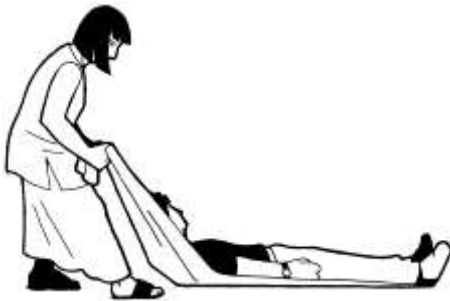
**Whichever technique is used, it is extremely important to have someone bring along the person's wheelchair or mobility aid. Otherwise they will be stranded.**

Note: Because people with spinal cord injuries cannot generally feel a blow or undue pressure, they can be injured and not be aware that anything has happened. For example, someone with paralysis may not be aware that they have a broken bone or they may not be aware that they have been burnt. If someone with a spinal cord injury suffers severe bruising or severely bruises their skin, they may require several months of recuperation.

## Evacuation from a Building

Some techniques are more suitable when evacuating from a building where it might be important to move people from one side of a building to another or to descend one floor in a hurry.

### The Blanket Pull



The blanket pull is used when there is very limited help and people must be moved quickly. It is certainly not the preferred method of moving people as it is more apt to cause increased injury to the person being dragged along the floor or ground.

*Figure 56: Person being dragged on a blanket. Drawing: Philip Dion*

### Bumping Down Stairs

Bumping down stairs is also a technique that is only used in an emergency when descending down stairs from an area of danger must be done quickly. This technique is most often used when there is no assistance available and one's life is in danger. It is commonly used by persons with spinal cord injuries and others who have well developed upper body strength.



*Figure 57: Person bumping down stairs. Drawing: Philip Dion*

A person with a disability may just take someone by the arm, which provides them with just a little additional balance and leverage.



*Figure 58: How to offer one's arm to guide a person who is blind or has a vision disability. Drawing: Philip Dion*

### Guiding a person with a visual disability

Be clear and specific when assisting or giving directions. Do not say "here is a step", rather say "step up" or "step down".

If you are leaving, let the person know. Before leaving make sure the person is well oriented to their surroundings.

If helping a person to sit down, guide their hand to the back of the chair and then allow them to feel their way into the seat.

If help is requested, offer your arm or grasp the person's arm firmly. Gripping too tightly may inhibit the movement of the arm or aid. Pulling on the arm may cause the person to stumble.



## Appendix 8 Accessible Transportation



Figure 59: Train car for "Disabled" that is not accessible. Photo: Svayam/Jindal Saw Ltd.

### A8.1 Transportation and the CRPD

Accessible transportation is a fundamental element of the CRPD and an important requirement in disaster risk reduction for persons with disabilities. The provision of accessible transportation that is safe, reliable and timely is integral to life safety for persons with disabilities, particularly people with mobility disabilities. This is particularly so during a flood, tsunami or typhoon when reaching safe higher ground quickly is the key to survival. This cannot be over-emphasized.

In every country there are different forms of transportation for different purposes, ranging from walking or animal conveyances to the private car to many different types of public transportation including buses, trains, taxis, and auto-rickshaws.

The right to accessible transportation is inherent in the Convention on the Rights of Persons with Disabilities. Although there is no dedicated

Article, accessible transportation is integral to Article 9 on Accessibility and Article 20 on Personal Mobility.

## A8.2 Mainstream Transportation

In larger urban areas, mainstream transportation systems such as light rapid transit, trains, subways and bus rapid transit have increasingly become accessible to their communities as it has been shown that this mainstreaming approach is the most cost effective means to provide accessible transport. These vehicles must meet strict safety requirements and are usually equipped with lifts, ramps, wheelchair tie-downs, and passenger securement systems.



Figure 59: A wheelchair user getting off an accessible bus operating in Ho Chi Minh City. Photo: Talk Vietnam

People who are blind and others with disabilities frequently require assistance to access a transportation system in some of the less developed environments. In the more developed regions, people who are blind or have a vision disability are able to independently maneuver through a transportation system that has been designed with them in mind.



Figure 60: Private cars and taxis can be accessible to some persons with disabilities. Photo: Betty Dion

## A8.3 Methods of Delivery of Accessible Transportation

### Car and Taxis

Private cars and taxis can commonly be used to transport people with a wide range of disabilities, including older people. People who use manual wheelchairs that can fold-down can usually use a car or taxis, if there is sufficient room to store the wheelchair. People who use mobility aids such as crutches and canes can easily store the aids. People who use power wheelchairs cannot generally use a car or taxi as they require additional space and a lift or ramp. Cars and taxis with wider doors are preferred. Even when not wheelchair accessible, taxis equipped with swivel seats can serve 90% of passengers with disabilities.



Figure 60: Accessible bus for persons with disabilities. Photo: China.org.cn

### Buses

Accessible buses are an efficient mode of transport due to the number of people that they can transport at one time. Accessible buses are usually equipped with either a low floor or equipped with a lift that the driver must operate.

### Auto-rickshaws

Auto-rickshaws are increasingly being used in the Asia Pacific region as an accessible mode of transportation, due largely to their cost effectiveness and their ability to accommodate someone with a disability. Space to store a wheelchair or other device is



Figure 61: Accessible bicycle rickshaw. Photo: Access Exchange International

required. India alone manufactures some 400,000 auto-rickshaws every year.

It must be realized that during a disaster, the availability of a driver will be severely compromised as the driver will be concerned with his own safety and the safety of his family.

## Boats



Figure 62: Using the ramp to leave the boat. Photo: John Sage

The effects of climate change have increasingly created water-related disasters such as floods, tsunami and typhoons. Disaster preparedness strategies might include the ability to swim and the availability of boats and other water craft. Boats can be accessible to people with disabilities if there is help for people to transfer into and out of a boat and a place to sit.

The involvement of persons with disabilities and civil society organizations in the design and operation of accessible transportation is key to its success. Such issues as the training of drivers, identification of people with disabilities, prioritization of resources and scheduling are all key components of a successful accessible transportation system. Civil society organizations can seek funding for accessible transportation and assume responsibility for the safe evacuation of community members who are unable to reach safety independently.

An inventory of available accessible transportation can be invaluable in marshaling evacuation of persons with disabilities in an emergency.

In Kuala Lumpur *the Mobility Association of Kuala Lumpur and Selangor* registered as a charitable agency and created the first “door to door” service for the disabled in Malaysia called *Mobiliti*.



## Appendix 9 Information and Communications Technologies and Disaster

### A9.1 Introduction to Accessible ICTs and Disaster

Persons with disabilities are at increased risk when disasters and emergencies strike particularly those for whom the accessibility of information and communication technologies (ICTs) is critical. Accessible ICTs can allow persons with disabilities to make effective decisions before, during and after a disaster. Persons with disabilities have different accessibility requirements and it is very important to help disaster agencies to understand their needs.



*Figure 63: Sirens placed along the coastline from Waimairi Beach to Sumner, NZ. Photo: Adrien Taylor*

Persons with disabilities have the right to equal access to ICTs and multiple accessible information formats such as closed captioning; speech to text; audio description and sign language video relay services, etc. This includes all information on disaster preparedness, warnings, evacuation, shelter and access to food provided by disaster management agencies in both the response and recovery phases. The needs of persons with disabilities in disaster and emergency situations must be part of an emergency evacuation plan, particularly as it involves ICT services.

The rights of persons with disabilities to access information and knowledge, and their right to freedom of expression and opinion, should be recognized and ensured at all phases of disaster management plans. This is a tall order but one that is required by the UN CRPD.

Accessible ICT standards should be adopted and implemented as required by the CRPD in Disaster Risk Reduction, to guarantee

security and safety of everybody, including persons with disabilities. The CRPD Article 9 on accessibility<sup>1</sup> clearly states

“appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to information and communications, including information and communications technologies and systems, and to other facilities and services opened or provided to the public, both in urban and in rural area”.

## A9.2 Use of Assistive Technologies

Assistive technologies play an essential role in enabling persons with disabilities to receive emergency information and reduce their risk in disaster situations.

By using assistive technologies, persons with disabilities are able to independently move, read, communicate, and perform daily living activities such as feeding, dressing, bathing and toileting. Assistive technologies can also provide persons with disabilities with disaster preparedness information, early warning and evacuation information allowing them to act timely in emergency situations.

Assistive technologies help persons with disabilities to hear, see, speak, and move. They can use different types of equipment such as computers, mobile phones, telephones, wheelchairs, walking aids and prosthesis.


Assistive technologies help in all aspects and all stages of disaster and emergency prevention and preparedness planning; early warning, evacuation and transportation, sheltering, first aid and medical services, temporary housing, and recovery and reconstruction measures. The following assistive technologies can be used by persons with disabilities in prevention, preparedness, and response and recovery phases of disasters.

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<sup>1</sup> UNCRPD, Article 9 – Accessibility, <http://www.un.org/disabilities/convention/conventionfull.shtml>



<p>People with <b>mobility disabilities</b>, Use assistive technologies such as...</p>	 <p><i>Figure 64 People with disabilities</i></p>	<p><b>Wheelchair, walking aid, prosthesis</b> – aid in individual’s mobility. These personal aids can be used by people with mobility disabilities in disaster planning, evacuation and other community based DRR activities.</p> <p><b>Electronic wheelchair</b> used by people with mobility disabilities, in addition to other added devices can help them with reading, communicating, feeding, and toileting, grooming and bathing.</p>
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<p>People with <b>Vision Disabilities</b> Use assistive technologies such as...</p>	 <p><i>Figure 65: Participants in the annual White Cane Day race walk through the streets of Yangon. Photo: The Htoo</i></p>	<p><b>White cane</b><sup>2</sup> - is a useful mobility tool for people who are blind or have low vision in navigating their environment independently. It is a tool which allows them to travel where and when they want.</p> <p><b>Magnifier</b> – magnification systems help to enlarge text so it becomes easier for people with low vision to read disaster information.</p> <p><b>Screen readers</b> - is a software application that enables people with vision disabilities to use a computer and mobile phones.</p>
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<sup>2</sup> [http://en.wikipedia.org/wiki/White\\_cane](http://en.wikipedia.org/wiki/White_cane)

	<p><b>Braille Display</b> are electronic devices used to read text tactually that is typically displayed visually on a computer monitor.</p> <p><b>Global Positioning System (GPS)</b><sup>3</sup> – device helps to prevent people with disabilities from getting lost and allows them to inform a caregiver when assistance is needed.</p> <p>A GPS tracking device can be worn by people with disabilities as a bracelet or pendant and will notify caregivers via e-mail and text if they require any assistance. This will allow family and caregivers to track them on the internet.</p>	 <p><i>Figure 66: Refreshable Braille. Photo: U Colorado</i></p>
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<p>People with <b>Hearing Disabilities and Other Disabilities</b> Use assistive technologies such as...</p>	<p><b>Hearing Aid</b> – an electronic battery-powered device that makes listening easier for people with hearing disabilities. A hearing aid consists of a microphone, an amplifier and a receiver. Hearing aids can travel with a person or can be carried by disaster management responders.</p>  <p><i>Figure 67: DeafBind Communicator. Photo: Helen Keller National Center for Deaf-Blind Youths and Adults</i></p> <p><b>Augmentative and Alternative Communication devices (AAC)</b> - encompass methods of communication for those with disabilities or restrictions on the production or comprehension of spoken or written</p>	<p><b>Deaf-blind Communicator</b> - a portable device for people who are deaf-blind which allows them to have face-to-face conversations with anyone. The device provides three types of communication: face-to-face, TTY and SMS texting.</p>
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<sup>3</sup> <http://en.wikipedia.org/wiki/GPS>

	<p>language. For example, pictures on a board that can be used to request food, drink, or other activities; or it can be advanced speech synthesis that is capable of storing hundreds of phrases and words. For people with speech and language disabilities, AAC devices play an especially important role in enabling communication with first disaster responders and participants actively in disaster drills, to become more independent, and to make individual decisions.</p> <p><b>Global Positioning System (GPS)</b> - For people with intellectual and learning disabilities, family and caregivers can create GPS routes to the shelter in the event of a disaster.</p>
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When evacuating persons with disabilities in disaster situations, their assistive devices, or means of communication and walking aids should not be left behind. Emergency management plans should include procedures for assuring that essential assistive technologies and devices stay with persons with disabilities who need them. Whenever possible an inventory of essential items such as hearing aids, white canes and wheelchairs should be available in accessible shelters.

### A9.3 Technical Aids

#### **Low cost wheelchairs**

The World Health Organization (WHO) estimates that 1 out of every 300 people (20 million people, in the developing world) is in need of a good

wheelchair. Whirlwind Wheelchair<sup>4</sup> International and Wheelchairs for Hope<sup>5</sup> makes low-cost, durable and highly functional wheelchairs and they are highly suitable in developing country conditions.

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<sup>4</sup> Whirlwind Wheelchair <http://www.whirlwindwheelchair.org>

<sup>5</sup> Wheelchairs of Hope. [www.wheelchairsofhope.org](http://www.wheelchairsofhope.org)



Figure 68: Whirlwind Wheelchair above, and plastic wheelchair from Wheelchairs of Hope. (Photos from manufacturers indicated)

### Low cost hearing aids

The WHO estimates that there are about 600 million people with hearing disabilities and two thirds live in the developing countries. World Wide Hearing<sup>6</sup> provides access to affordable hearing aids to children and youth in developing countries. Other NGOs and civil society organizations provide low cost hearing aids.

### Solar powered hearing aids

Solar powered hearing aids can be very effective where no electrical power is available in disaster stricken areas. Companies such as Solar Ear, a Brazil-based company, and Godisa Technologies<sup>7</sup> of Botswana, create low-cost hearing aids. Solar Ear<sup>8</sup> is a rechargeable,

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<sup>6</sup> World Wide hearing aids <http://www.wwhearing.org>

<sup>7</sup> Solar Aid/ Godisa Technologies

<http://archive.cooperhewitt.org/other90/other90.cooperhewitt.org/Design/solaraid.html>

<sup>8</sup> Solar Powered Hearing Aid <http://www.solarear.com.br>

low-cost hearing aid. The batteries can be charged with light and last for about a week in between charges.



Figure 69: Solar powered hearing aid.  
Photo: SolarEar

### Low cost prosthesis aid

The Jaipur Foot<sup>9</sup> is a rubber-based prosthetic leg for people with below-knee amputations. The organization designs this low cost, water-resistant and quick to fit prosthetic leg in India.

### Computer Aid International<sup>10</sup>

CAI is a UK ICT for development charity which aims to reduce poverty through practical ICT solutions. They collect computer equipment for distribution in universities, schools and NGO's in over 100 countries.



Figure 70: The Jaipur Foot and Knee. Photo: Jaipurfoot.org

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<sup>9</sup> Jaipur Foot, India <http://www.jaipurfoot.org/>

<sup>10</sup> Computer Aid International <http://www.computeraid.org/>



## A9.4 Use of Mobile Telephones

The use of mobile phones is spreading exponentially throughout the world; there are an estimated 6.8 billion mobile phone users worldwide<sup>11</sup> (3.5 billion in the Asia-Pacific region). Many countries are exploring different means to harness the power of information and communication technologies, apps and smartphones. Of course, it must be remembered that ICTs can be knocked out in an emergency due to power being down or towers out.

Mobile phones are an especially valuable tool for persons with disabilities as they can mitigate their personal disability.

Mobile phones are no longer simple two way communication devices but are proving to be the most effective tool for increasing awareness and reaching and informing the public when disaster strikes. Mobile phones enable disaster agencies and the public to manage these challenges and mitigate the risks. Disaster management agencies should develop a program to harness this tool for communications.

Mobile technologies are very important for those people who live in rural and remote areas, as it can allow them to understand when and how pending disasters are likely to impact their lives and living area. It can help inform them how to cope with disasters like floods, typhoons, earthquakes, and tsunami, and also provide them with information on how to manage the situation until professional emergency help arrives. With the help of the latest assistive technologies, such as screen readers, zoom text, vibration alerts, and speech recognition, persons with disabilities can access disaster information on mobile phones.

The following are some very effective and efficient tools to warn populations about disasters:

### **Cell broadcast**

For disasters such as floods, storms, earthquake or tsunami, any delays in alerting the public should be minimized. Cell broadcast<sup>12</sup> technology provides a way of disseminating geographically targeted

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<sup>11</sup> *The World in 2013: ICT Facts & Figures.* <http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2013.pdf>

<sup>12</sup> [http://en.wikipedia.org/wiki/Cell\\_Broadcast](http://en.wikipedia.org/wiki/Cell_Broadcast)



mass public alerts. Cell broadcasting is a more advanced technology than SMS text messaging. It enables a government entity to securely transmit an emergency alert for disaster and emergency situations via mobile phones in an affected area within minutes. The message that is sent through cell broadcasting has greater efficiency than a two-way call or a SMS text message, and it does not overload a network.

### **Short Message Service (SMS)**

When disaster alerts/announcements are issued by national disaster management agencies mobile phone companies immediately start to send SMS to the general public with information about the alert category, event type, response, severity and degree of urgency. SMS has become increasingly important in the developing world as it facilitates communication between the public, government officials and disaster responders. The Bangladeshi government has announced that tens of thousands of mobile phone users in flood and cyclone-prone areas would receive advanced warning of impending natural disasters via SMS alerts.

### **Disaster Mobile Phones Apps**

A more recent technology - that of using mobile apps, can also be utilized by disaster management agencies and communication agencies. When a disaster is approaching, Smart phone alert apps can be sent through a cell broadcasting system or mobile internet connectivity to users, providing extra time for a quick response. During a disaster situation, communication traffic to the disaster-stricken area increases and it becomes difficult to get through.

Alternative format means a format that allows people with disabilities to read or listen to the information.

When the mobile phone networks are down due to the large volume of calls by people panicking or just making inquiries about others' safety, disaster mobile apps can help to keep data space available for emergency responders and help people to post and acquire important

information. Location apps and maps on mobile phone can also help users to understand geographical and hydrological information about pending disasters affecting their community. There are a number of smartphones apps currently available providing information on disaster response and providing a listing and interactive maps of active hazards occurring around the globe.

## Social Media (Twitter and Facebook)

Social Networking sites such as Twitter and Facebook can also act as warning systems. Twitter has already proved its utility in the arena of breaking news, including early information on natural disasters. Yet, there are some concerns regarding the reliability of tweets as a formal early warning system by government authorities. Facebook is helping to improve and speed up responses to natural disasters and emergencies by involving members of the public and it can be used to create disaster information pages and send messages to a group.



## A9.5 Pre-disaster Planning Information

Disaster management agencies should provide useful disaster preparedness information and advice in alternative formats to persons with disabilities. All disability related needs should be accommodated. Disaster preparedness information must be provided in alternative formats, such as mp3 files, e-text, DAISY (Digital Accessible Information System)<sup>13</sup> talking books, captions video, sign language video DVD's, audio CDs, Braille<sup>14</sup> print and Podcast<sup>15</sup>. The website



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<sup>13</sup> DAISY (Digital Accessible Information System) <http://www.daisy.org/>

<sup>14</sup> <http://en.wikipedia.org/wiki/Braille>

<sup>15</sup> Podcast: A multimedia digital file made available on the Internet for downloading to a portable media player, computer, smartphone, etc.

contents must be accessible as per Web Content Accessibility Guidelines (WCAG) 2.0<sup>16</sup> and available in different languages.

Remote video relay service and other technologies can be provided to people who are deaf or hard of hearing.

**Video relay services/ Video Remote interpreting** is a form of



telecommunications relay service that enables people who are deaf or hard of hearing who use Sign Language to communicate over video telephones and similar technologies (video equipment) with hearing people in real-time, via a sign language interpreter.

*Figure 71: PLUSVoice Co. uses sign language interpreters in the company's video relay service designed for people with hearing problems living in disaster-hit areas in the Tohoku region. Photo: The Japan Times*

Some persons with disabilities have difficulty or even an inability to communicate and receive information through speech, hearing, and vision. In a post-disaster situation, it is crucial that everyone have access to information and communications services in accessible formats. Just surviving a disaster is a big challenge for many persons with disabilities due to disrupted continuum of care, the delay in recovering assistive technology, loss of medical equipment and dependency on care providers. Volunteers may be needed to assist people with their personal care. This should be part of the disaster planning exercise.

A variety of assistive technology/aids for daily living, and a communication board should be available in a shelter. In accessible shelters, assistive technology devices for communicating, reading, bathing, personal care, breathing, eating, mobility, seating, sleeping,

<sup>16</sup> Web Content Accessibility Guidelines (WCAG) 2.0 <http://www.w3.org/TR/WCAG20/>

etc. should be available. Minimally, a shelter should have: manual wheelchairs of different sizes, accessible transportation, hearing aids, walking aids and white canes. A list of resources to assist persons with disabilities should be maintained and updated. This can all be part of the inclusive disaster preparedness plan.

In natural disasters and emergency situations, satellite phones and ham radios are often used as a means of emergency communication when telephone landlines, cell phones and other conventional means of communications fail.



Figure 72: Dial 171 - Disaster Emergency Message Dial is a voice message board that is provided when a disaster such as an earthquake or volcanic eruption occurs. Image: NTT East - Japan

An electronic Voice Message Board system can be implemented before a disaster occurs. For example, Dial171 in Japan: Disaster Emergency Message Dial 171<sup>17</sup> is a voice message board system provided when a disaster occurs. When communication is restored, people can phone and leave a message that others can access. It is especially helpful when communication traffic to the disaster-stricken area increases and it is difficult to get through.

**Google Crisis Response**<sup>18</sup> – Critical information can be made accessible in times of post disaster via the internet. People can turn to the internet for information, to collect and share emergency information. It can also be used to support first responders by using technology to help improve and save lives. This could be explored before a disaster occurs.

<sup>17</sup> Japan Dial 171. <http://www.ntt-east.co.jp/en/saigai/voice171/index.html>

<sup>18</sup> Google Crisis Response <http://www.google.org/crisisresponse/response.html>

## **Text-to-Speech**

One type of assistive technologies using speech synthesis is text-to-speech programs. In text-to-speech<sup>19</sup> (TTS) programs, files are copied into a program and then are spoken by the computer.

## **Free and Open Source Screen Readers for Windows Operating System**

There are a variety of free screen readers for the Windows Operating System, while many exists, some examples include; Orca, Thunder, Look-Out, etc. In addition, there are free and open source screen readers such as Non-Visual Desktop Access<sup>20</sup> (NVDA). These free and open source screen readers for the Windows Operating System, enable people with vision disabilities to use their computers.

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<sup>19</sup> Text-to-Speech <http://en.wikipedia.org/wiki/Text-to-speech>

<sup>20</sup> NVDA <http://www.nvaccess.org/download/>

## Appendix 10 Access to Services and Risks & Vulnerabilities

### A10.1 Risks & Vulnerabilities

Persons with disabilities are particularly vulnerable during a disaster, especially if inadequate disaster preparedness has preceded the event. If disaster response agencies are aware of where people with mobility and other disabilities live and what their transportation, health and support needs are, the risks can be reduced.



Figure 73: Persons who are blind advocating for inclusion in disaster preparedness protocols. Photo: Vashkar Bhattacharjee

These strategies when integrated into the disaster response protocols will ensure that people with disabilities are relocated to a safe area. Of course, accessible transportation outlined in Section 9 is required to transport people to the safe area.

### Invisibility

People with disabilities may appear to be invisible to their community. There are many reasons for this. People who are deaf may not be able to communicate with community leaders. People with a mobility disability may not be able to move about the community due to their physical disabilities or due to the inaccessibility of the



Figure 74: Destitute person in a wheelchair. Photo: Aqeel Qureshi



community. People with developmental disabilities may be isolated in their community. Community outreach during disaster preparedness planning with disaster relief organizations can ensure that persons with disabilities are full participants in planning exercises.



Figure 75: Persons with Disabilities advocating for accessible transportation. Photo: Aqeel Qureshi

## Discrimination

Unfortunately, people with disabilities in some communities are still suffering from discrimination and isolation.

Fortunately, there is a worldwide movement to recognize and promote the rights of persons with disabilities due to the existence of the United Nations Convention on the Rights of Persons with Disabilities. See Section 0.

Additionally, most countries now have anti-discrimination legislation that is inclusive of persons with disabilities. This raises the community consciousness and promotes the rights of persons with disabilities to have access to a safe and accessible community.

## Risk of Abuse

Persons with disabilities and older persons may be at greater risk of abuse during a disaster situation. Disasters may put people with disabilities in a situation of isolation where they do not have family support or are not able to defend themselves. They may suffer sexual abuse, or physical abuse or even the abuse of being completely ignored.

## Risk of Starvation

Abuse may occur due to malnutrition. Some people may not be able to wait in line and the lack of pre-planning for the distribution of food to everyone, including older people and persons with disabilities, could lead to malnutrition and possible death.



Figure 76 Person with a disability receiving food aid.  
Photo by AusAid

Malnutrition can also result from discrimination by food distribution providers who are overworked and exhausted.

Family support and a dedicated distribution system are two of the support programs that address malnutrition.

## Dangerous Environments

It is obvious to point out that situations of disaster including floods, earthquakes, typhoons, etc. create very dangerous environments for everyone. People who have a disability or limitation of some sort are necessarily in a more precarious situation. Their safety must be part of the disaster response priority.

## Health Supports

During a disaster, community health care resources such as public health institutions and health support organizations are diverted and over-worked. Significant risks can result.



Figure 77: Post tsunami in Japan, delivering critical care to seniors and the disabled. Photo American Jewish Joint Distribution Centre

This situation may result in limited access to health care by people with disabilities; people may need new medication or care. People who are quadriplegic who are unable to move independently are at risk of skin breakdown if they are not moved regularly to redistribute their weight during the night or even the day. Wheelchairs and other mobility aids may be lost or broken. Hearing aids and other assistive technologies may be unavailable. The internet may be down, telephone access and other communication supports that facilitate access to health supports may not be available.



Figure 78: New sanitary facility with ramp and door opening outwards. Photo: Abilis

Access to sanitary facilities is a fundamental requirement to the well-being and health for everyone. People with disabilities may need

someone to assist them to access sanitary facilities and accessible toilet facilities.

Everyone needs emotional support after a disaster has occurred, but those who have existing conditions need to be remembered and planned for. People with mental health disabilities are particularly at risk in a disaster situation due to the increased anxiety and uncertainty that disasters pose.

People who rely on assistive devices to connect them to the community will be at increased risk as the devices may no longer function and connectivity to the internet or the telecommunication systems will be compromised.



*Figure 79: Elderly person with guide.  
Photo: GAATES*

People who are deaf or have a hearing disability may miss important health information or even information on the availability of health or food services.



## Appendix 11 Communications Strategies

### A11.1 Accessibility Communication Strategies and Tools

Accessible communication is the lifeline between government disaster management agencies and persons with disabilities before, during and after disasters occur. By providing accessible information, they can save the lives of persons with disabilities. Without accessible communication, persons with disabilities and older people are unable to make crucial informed decisions and may be unable to evacuate in a timely fashion. Accessible disaster communication for persons with disabilities includes the “backbones”—broadcast radio, television, mobile telephony, electric power, database management, and internet communications. The following are some accessible communication strategies and tools.

### A11.2 Communication Access Options and Tools

#### **People with hearing disabilities.**

Alerts/announcements need to be visually accessible. Provide information in multiple formats for example:

**Sign language Interpretation** – Interpreters provide complete and precise communication between people who are deaf, hard of hearing and hearing individuals. Sign language is the communication method of choice for a deaf person as it is their primary language.



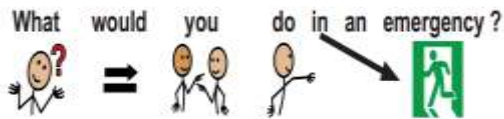
**Captioned telephone** users can listen to the caller, and can also read and reply via the written captions in the bright display screen.



**Communication boards** allow people with disabilities (usually non-verbal) to communicate through pictures. By clicking on the picture labeled on “Communication Boards” people can communicate with others. These boards are a cost effective aid for emergency communication. They also help to communicate with a range of people with communication disabilities.

**Pen, Pencil and Paper** – short

**People with Vision Disabilities** are written the best way to communicate by sign language may have very limited reading skills.



**Pre-printed Communication cards** for people with hearing disabilities may be used with emergency responders, transportation providers, police, hospitals and shelters.

**Pre-recorded information and messages in Sign Language** – A dedicated website can provide pre-recorded disaster preparedness information and messages.

**Teletypewriter (TTY)** – a telecommunications device for people who are deaf and hard of hearing to communicate via text communication over a telephone line.





**Provide information in Braille** – Braille is a reading and writing method used by people who are blind or have low vision. Documents can be converted into Braille using a computer and Braille conversion software and be printed out by a Braille embosser.



**Provide information in large print** – text can be produced in a variety of sizes to meet individual's needs. Red and green type should be avoided as they provide poor contrast and can be difficult for some people to read. Black type on a white background is optimal.

**MP3 files** – information should be supplied in audio versions and can be listened to via a music player or computer.



**DAISY (Digital Accessible Information System)** – information can be pre-produced in DAISY format. DAISY is the standard for talking books for people who are blind, have low vision and dyslexia. DAISY talking book gives the reader the same flexibility that readers of standard print enjoy: navigation by section, subsection, and page.

Persons with disabilities appreciate receiving information in much the same way everyone else does, in a format that conveys disaster risk reduction and emergency notification in a concise, clear and easy to understand manner.

Unless the person has a hearing disability, they will be able to hear and understand simple and clear audible information provided by community members going door to door as part of a community based information sharing system, community public announcements made by loudspeaker, community alarms and sirens used for early warning, radio or TV broadcasts, etc.

Communicating in writing and other visual formats, such as the use of symbols and flags as part of an early warning system, can also be effective for the majority of people, but can pose challenges for people with vision disabilities. Information that is provided in writing should also be provided in alternate accessible formats, including audible formats or large print. Furthermore, if information is being distributed in print format, persons with literacy and language issues, as well as persons with intellectual and cognitive disabilities may have difficulty comprehending visual communication.

The best way to communicate includes having all information available in a variety of formats, including audibly and visually.

### **A11.3 Communicating with Persons with Vision Disabilities**

When communicating with persons with vision disabilities for the purpose of disseminating disaster risk reduction information prior to an emergency situation, the information should be provided in accessible formats such as large print, audible cassettes and CDs, described videos, Braille, audible DAISY format, etc.

When communicating with persons with vision disabilities during an emergency or evacuation situation speak in a normal tone of voice and identify yourself when addressing them so they know you are speaking to them.

## **COMMUNICATION TIP SHEET**

### **- Vision Disabilities**

- Do not be afraid to offer assistance. If unsure of when and how help should be offered, just ask!
- Do not just grab someone by the arm and start to pull them along as this may cause them to be startled or to fall.
- Be clear and specific when assisting or giving directions, warning of steps, changes in slope, or obstacles in the path.
- Do not say "here is a step", rather say "step up" or "step down".
- Let the person know if you are leaving them alone. Before leaving them, make sure that they are well oriented to their surroundings.
- If you need to know what level of vision the person has, ask them.
- Do not be afraid to use words such as "see" and "look". People who are blind also use these words.

## A11.4 Communicating with Persons with Hearing Disabilities

When communicating with people with hearing disabilities for the purpose of disseminating disaster risk reduction information prior to an emergency situation, the information should be provided in accessible formats such as printed documentation, captioned videos, etc. When presenting in workshops or training sessions, ensure that a sign language interpreter, community or family member who is familiar with the person who is hearing disabled is invited.

Persons who have a hearing disability do not have a cognitive disability, rather, they simply cannot hear what is being said. If the information is provided in another format, they will understand the message being conveying.

### **Communicating with People who are Deaf or Hard of Hearing**

Effective communication with people who are deaf during an emergency or evacuation situation does not require extensive formal knowledge of sign language. In fact, much can be accomplished without any formal use of signs or sign training. People who are deaf are usually very adept at guessing meanings from gestures.

People who are deaf use a variety of ways to communicate. Some will use speech only; some will use a combination of sign language, finger-spelling, and speech; some will write; some will use body language and facial expressions to supplement their interactions. Some may use a local system of gestures.

Examples of common communication modes for emergencies:

- Sign language is the use of gestures consisting of hand-shape, position, movement, and orientation of hands to the body and to each other. There are a variety of sign languages in use around the world, and in some communities, persons who are deaf or hard of hearing will develop their own local sign language to communicate their needs and wants.

- **Finger-spelling:** A manual alphabet with hand-shapes and positions corresponding to each of the letters of the written alphabet.
- **Oral (Verbal) Communication:** Use of speech, residual hearing, and speech-reading as primary means of communication for people who are deaf.
- **Speech-reading:** Recognition of spoken words by watching the speaker's lips, face, and gestures. Speech-reading is a very difficult skill to master. (Most persons that lip read understand only about 25% of what is said. Even those that excel at this can only understand 45 - 50 %.)
- **Simultaneous Communication:** The combined use of speech, signs, and finger-spelling.
- **Writing.**
- **Gestures and facial expression.**

## **COMMUNICATION TIP SHEET**

### **- Hearing Disabilities**

- Face the person directly. Keep your face uncovered, if possible and in the light, to facilitate lip-reading.
- Speak naturally and clearly. Speak in your normal tone of voice. Exaggerating and over emphasizing words distorts lip movements. Do not shout. Shouting can cause difficulties for anyone who speech-reads.
- Rephrase a thought rather than repeating the same words. Many groups of lip movements are difficult to speech-read.
- Use body language and facial expressions while speaking as these are important factors in communicating.
- Maintain eye contact with a person who is deaf, deafened or hard of hearing. Even if an interpreter is present, speak directly to the person who is deaf.
- Make sure that you have the attention of a person who is deaf or hard of hearing before you speak. A tap on the shoulder or the flashing of a light will gain their attention.
- Communicate via pen and paper. Use simple, plain language.
- Remember, not all people who are deaf communicate the same way. Intelligence, personality, age of onset of deafness, language background, listening skills, lip-reading and speech abilities vary with each person who is deaf, deafened or hard of hearing and affects how they communicate.



## A11.5 Communicating with Persons with Mobility Disabilities

Most people with mobility disabilities do not have a cognitive or intellectual disability and are able to understand both visual and audible communication.

During a disaster or emergency situation, do not be afraid to offer assistance. If unsure of when or how to help, just ask!

### **COMMUNICATION TIP SHEET - Mobility Disabilities**

- Speak directly to the person with the disability, not to the person with them. Most people with mobility disabilities can best tell you how to assist them.
- If conversations last more than a few minutes, consider sitting down or kneeling to get yourself on the same level as the person using a wheelchair.
- Do not lean or hold onto a person's wheelchair as it is part of their personal space.
- Do not patronize the person using a wheelchair by patting them on the head.
- It is okay to use terms like "running along" when speaking to a person who uses a wheelchair. They are likely to express things the same way.

## A11.6 Communicating with Persons with Cognitive and Developmental Disabilities

Most people with cognitive or developmental disabilities appreciate information in plain language delivered in a calm normal voice.

### **COMMUNICATION TIP SHEET – Cognitive and Developmental Disabilities**

- In an emergency situation a person with an intellectual or learning disability may have difficulty dealing quickly with questions or instructions; the more severe the disability, the greater the response time may be.
- Keep instructions or questions short and simple, using a calm voice.
- Make use of gestures and body language to reinforce your point, in a calm manner.
- Be prepared to bodily remove the person from danger if they are unable to respond to instructions.

## Appendix 12 International and National Legislative Frameworks

### A12.1 International Frameworks

At the UN 2013 Conference on States Parties in New York, Ms. Margareta Wahlström, head of UN International Strategy for Disaster Reduction (ISDR), said:

“We can expect that as many as 30 million people living with a disability are affected during an average year by earthquakes and weather-related hazards.”<sup>55</sup>

#### UN International Strategy for Disaster Reduction (ISDR)



The International Strategy for Disaster Reduction (ISDR) is a strategic framework, adopted by United Nations Member States in 2000, aiming to guide and coordinate the efforts of a wide range of partners to achieve substantive reduction in disaster losses and build resilient nations and communities as an essential condition for sustainable development.

The United Nations Office for Disaster Risk Reduction (UNISDR) is the secretariat of the ISDR system. The ISDR system is comprised of numerous organizations, states, intergovernmental and non-governmental organizations, financial institutions, technical bodies and civil society, who work together and share information to reduce disaster risk.

For information contact: <http://www.unisdr.org/>

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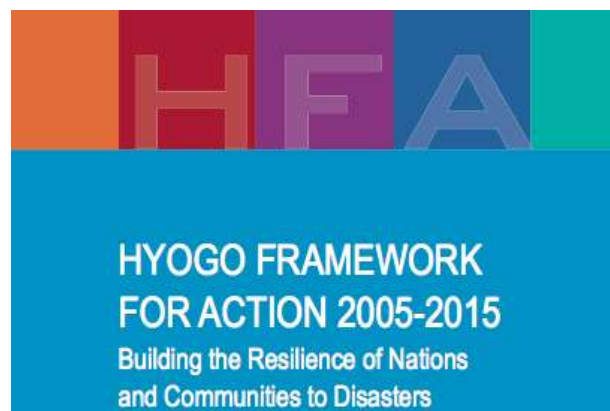
<sup>55</sup> <http://www.unisdr.org/archive/34174>

## **The Biwako Millennium Framework for Action 2003 - 2012**

The Biwako Millennium Framework (BMF) came about as a result of discussions in the Asia Pacific Region on how to meet the Millennium Development Goals (MDG). The Framework coincided with the MDG deadline of 2013. Unfortunately, the MDG goals, when established, did not have persons with disabilities in mind. Understandably, the Biwako Framework suffered for some time from the same deficiency. Fortunately, the BMF was revised in 2007 and now specifically addresses disaster risk reduction for persons with disabilities. For further information: [www.unescap.org/esid/psis/disability/bmf/bmf.html](http://www.unescap.org/esid/psis/disability/bmf/bmf.html)

## **The Hyogo Framework for Action (2005 – 2015)**

The Hyogo Framework was endorsed by the UN General Assembly in the [Resolution A/RES/60/195](#) following the 2005 World Disaster Reduction Conference. This 10-year framework was developed with the goal of making the world safer from natural hazards.



The World Conference on Disaster Reduction (WCDR) was held in January 2005 in Kobe, Hyogo, Japan, and adopted a Framework for Action (2005-2015: Building the Resilience of Nations and Communities to Disasters). The Conference provided a unique opportunity for developing collaborations to promote a systematic approach to reducing vulnerabilities and risks to hazards.

## The Hyogo Framework for Action addresses:

- Challenges posed by disasters
- The Yokohama Strategy: lessons learned and gaps identified
- WCDR: Objectives, expected outcome and strategic goals
- Priorities for action 2005-2015
- Implementation and follow-up

For further information on the Hyogo Framework contact:

<http://www.unisdr.org/>

## The Global Platform for Disaster Risk Reduction



Global Platform for  
Disaster Risk Reduction

The Global Platform for Disaster Risk Reduction grew directly from the Biwako Framework. It was recognized that a concerted emphasis on disaster

reduction was necessary due to the increased number of disasters that were occurring due to climate change and other devastating events. The Platform outlines strategic guidance on disaster risk reduction and provides an opportunity for countries, disaster risk reduction agencies and civil society organizations to share experiences and expertise.

The Global Platform 4<sup>th</sup> session was held at a meeting in Geneva in May 2013 and had a number of speakers and events that specifically addressed the issue of disaster risk reduction for persons with disabilities including side events and presentations by international disability leaders. The purpose of the event was to increase awareness and visibility of Disability-inclusive Disaster Risk Reduction (DiDRR) and to create an opportunity for discussion on a collective approach to the inclusion of the rights of persons with disabilities in the post-2015 framework for DRR.

## **The Disability-inclusive Disaster Risk Reduction (DiDRRN) Network for Asia and the Pacific (2012)**

The Disability-inclusive DRR Network for Asia and the Pacific (DiDRRN) was launched at the 5<sup>th</sup> Asian Ministerial Conference on Disaster Risk Reduction in Indonesia in October 2012.



DiDRRN is a consortium of like-minded disabled people's organizations (DPOs) and 'mainstream' and disability-focused development and relief organizations. Their aim is to secure the active participation, and meaningful contribution, of people with disability in DRR policy and practice post-2015.

DiDRRN works closely with the UN International Strategy for Disaster Reduction (ISDR) and supports the implementation of Article 11 of the UN Convention on the Rights of Persons with Disabilities on risk and humanitarian emergencies.

For information contact: [www.didrrn.net](http://www.didrrn.net)

## **International Day of Disaster Risk Reduction 2013**

The theme of the 2013 International Day of Disaster Risk Reduction was Disability and Disaster: Living with a Disability and Disaster. The United Nations Office for Disaster Risk Reduction and UN Enable co-sponsored a series of events that focused attention on disability. GAATES and their partners developed a series of public service announcements, videos and publications, including a poster.

## **Using the frameworks**

While it might be thought that these frameworks and declarations would have little direct relevance to the lives and safety of persons with disabilities in times of natural disasters and post conflict situations, it would be inaccurate. The frameworks are guiding



documents that implicate government policies and practices and contribute to decisions made about funding priorities.

## **A12.2 National legislation, regulations and standards**

### **Sri Lanka**

As a result of the 2004 Asian Tsunami, The Government of Sri Lanka established the National Council for Disaster Management (NCDM) and the Disaster Management Centre (DMC) under the Presidential Secretariat in accordance with the Sri Lanka Disaster Management Act No. 13 of 2005.

The NCDM is responsible for the development of a disaster risk reduction system for the country. In 2006, the government established a dedicated ministry (Ministry for Disaster Management and Human Rights) that has developed a National Disaster Management Policy that addresses the safety of all people and recovery of essential services. Further, it is the requirement of the Act and the Policy to establish a Divisional Disaster Management Committee to select and appoint members of the Committee. This is the level where consultation with the community of persons with disabilities has taken place.

### **Philippines**

The Philippines has a long history of policies and practices to improve the lives of persons with disabilities. There exists a number of legislative acts that address disability: the Magna Carta for Persons with Disabilities the *Republic Act No. 10524* and *An Act Expanding the Positions Reserved for Persons with Disability*. In 2010, the Permanent Mission of the Special Committee on Persons with Disabilities was created in the House of Representatives and memorandum circular No. 2010 – 103 established Persons with Disability Affairs Office (PDAO) in Every Province, City and Municipality.

## **Myanmar**

Myanmar enacted the Disaster Management Law on 31 July, 2013.

The Republic of the Union of Myanmar is stepping up efforts for fulfilling the needs of the disabled and for organizing and educating the people to actively take part in Myanmar's disaster preparedness and reduction drive as part of efforts for building up strength for disaster preparedness.

# International Day of Disaster Reduction

## Living with Disability & Disasters: A Not So Obvious Conversation

### October 13, 2013



# Don't Leave Us Behind !!



For more information on Disability Inclusive Disaster Risk Reduction (DiDRR),  
contact GAATES at [info@GAATES.org](mailto:info@GAATES.org)

## Appendix 13 Definitions and Acronyms

For terminology on disaster risk reduction, see UNISDR website: <http://www.unisdr.org/we/inform/terminology>

**Accessible transportation** refers to public transit systems and services designed *and* operated so that they are usable by some or all persons with mobility impairments.

**ADPC** - Asia Disaster Preparedness Center.

**ABU** – Asia Pacific Broadcasting Union.

**Alternate format** – Information provided in different methods.

**Assistive technology** means any product or service designed to enable independence for persons with disabilities.

**Audio Description** – Audio description of visuals is provided on television or computer screens.

**Augmentative and Alternative Communications** – the use of alternate communication methods such as picture boards.

**BMF** – Biwako Millennium Framework for Action.

**CEWS** - CEWS is a protocol in which at-risk communities are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance capacities.

**Closed captioning** is the process of displaying text transcriptions of the audio of a program broadcast on a television screen or computer screen via internet live streaming.

**DAISY** – Digital Accessible Information Systems. A talking book protocol.

**DPOs** - Disabled People’s Organizations.

**DMA** – Disaster Management Agency.

**DRR** – Disaster Risk Reduction.

**DiDRR** – Disability-Inclusive Disaster Risk Reduction.

**DiDRRN** – Disability-Inclusive Disaster Risk Reduction Network.

**Early Warning System (EWS)** is “the set of capacities needed to generate and disseminate timely and meaningful warning information.

**GAATES** - The Global Alliance on Accessible Technologies and Environments.

**ICT** – Information and Communication Technology.

**MDG** – Millennium Development Goals.

**NGOs** - Non Governmental Organizations.

**Paratransit** refers to the use of small vehicles, such as vans, mini-buses, motorized auto-rickshaws, cycle-rickshaws, and similar vehicles operated to exclusively *or* partly serve persons with mobility disabilities. Such services are generally “door to door”.

**SMS** – Short Message Service.

**Sign Language Interpretation** – Interpreters provide communication between deaf and hearing people.

**TTY** – Teletypewriter – Text communication transmitted by telephone.

**Universal Design** is the design of products, environments, programmes, services and facilities that are usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

**UN CRPD** – United Nations Convention on the Rights of Persons with Disabilities.

**UNISDR** – United National International Strategy for Disaster Reduction.

**WHO** – World Health Organization.